

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, D.C. 20549

FORM 10-K

(Mark One)

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2018

OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from to

Commission File Number: 001-37792

NantHealth, Inc.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

27-3019889

(I.R.S. Employer
Identification No.)

9920 Jefferson Blvd.
Culver City, California

(Address of principal executive offices)

90232

(Zip Code)

(310) 883-1300

Registrant's telephone number, including area code

Securities registered pursuant to Section 12(b) of the Act:

Title of each class
Common Stock, par value \$0.0001 per share

Name of each exchange on which registered
NASDAQ Global Select Market

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the Registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. YES NO

Indicate by check mark if the Registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act. YES NO

Indicate by check mark whether the Registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the Registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. YES NO

Indicate by check mark whether the Registrant has submitted electronically every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the Registrant was required to submit and post such files). YES NO

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of Registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

Indicate by check mark whether the Registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer", "accelerated filer", "smaller reporting company", and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting company

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or

revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the Registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). YES NO

The aggregate market value of the voting and non-voting common stock held by non-affiliates of the Registrant on June 30, 2018, based on a closing price of \$3.31 per share of common stock on the NASDAQ Global Select Market on June 30, 2018, was approximately \$128.9 million.

The number of shares of Registrant's common stock, \$0.0001 par value per share, outstanding as of March 26, 2019 was 109,921,647.

DOCUMENTS INCORPORATED BY REFERENCE

As noted herein, the information called for by Part III is incorporated by reference to specified portions of the Registrant's definitive proxy statement to be filed in conjunction with the Registrant's 2019 Annual Meeting of Stockholders, which is expected to be filed not later than 120 days after the Registrant's fiscal year ended December 31, 2018.

NantHealth, Inc.

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For the year ended December 31, 2018
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We own or have rights to trademarks and service marks that we use in connection with the operation of our business. NantHealth, Inc. and our logo as well as other brands such as DeviceConX, GPS Cancer, Liquid GPS, HBox, Vitality, VitalsConX, NaviNet, Eviti, Eviti | Connect, Eviti | IQ, and other marks relating to our Eviti product line are used in this Annual Report on Form 10-K. Solely for convenience, the trademarks and service marks referred to in this Annual Report on Form 10-K are listed without the (sm) and (TM) symbols, but we will assert, to the fullest extent under applicable law, our rights or the rights of the applicable licensors to these trademarks, service marks and trade names. Additionally, we do not intend for our use or display of other companies' trade names, trademarks, or service marks to imply a relationship with, or endorsement or sponsorship of us by, these other companies.

SPECIAL NOTE REGARDING FORWARD LOOKING STATEMENTS

This Annual Report on Form 10-K, or this Annual Report, including, without limitation, Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations" and Item 1A, "Risk Factors," contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. In some cases you can identify these statements by forward-looking words such as "believe," "may," "will," "might," "estimate," "continue," "anticipate," "intend," "could," "should," "would," "project," "plan," "outlook," "target," "expect," or similar expressions, or the negative or plural of these words or expressions. These forward-looking statements include, but are not limited to, statements concerning the following:

- the structural change in the market for healthcare in the United States, including uncertainty in the healthcare regulatory framework and regulatory developments in the United States and foreign countries;
- the evolving treatment paradigm for cancer, including physicians' use of molecular information and targeted oncology therapeutics and the market size for molecular information products;
- physicians' need for precision medicine products and any perceived advantage of our solutions over those of our competitors, including the ability of our comprehensive platform to help physicians treat their patients' cancers;
- our ability to generate revenue from sales of products enabled by our molecular and biometric information platforms to physicians in clinical settings;
- our ability to increase the commercial success and to accelerate commercial growth of our sequencing and molecular analysis solutions and our other products and services;
- our plans or ability to obtain reimbursement for our sequencing and molecular analysis solutions, including expectations as to our ability or the amount of time it will take to achieve successful reimbursement from third-party payers, such as commercial insurance companies and health maintenance organizations, and government insurance programs, such as Medicare and Medicaid;
- our ability to effectively manage our growth, including the rate and degree of market acceptance of our solutions;
- our ability to offer new and innovative products and services, including new features and functionality for our existing products and services;
- our ability to attract new partners and clients;
- our ability to estimate the size of our target market;
- our ability to maintain and enhance our reputation and brand recognition;
- consolidation in the healthcare industry;
- competition which could limit our ability to maintain or expand market share within our industry;
- restrictions and penalties as a result of privacy and data protection laws;
- our use of "open source" software;
- our ability to use, disclose, de-identify or license data and to integrate third-party technologies;
- data loss or corruption due to failures or errors in our systems and service disruptions at our data centers;
- breaches or failures of our security measures;
- our reliance on Internet infrastructure, bandwidth providers, data center providers, other third parties and our own systems for providing services to our users;
- risks related to future acquisition opportunities;
- the requirements of being a public company;
- our ability to attract and retain key personnel;
- our expectations regarding the period during which we qualify as an emerging growth company under the Jumpstart Our Business Startups Act, or the JOBS Act;
- our ability to obtain and maintain intellectual property protection for our solutions and not infringe upon the intellectual property of others;
- our ability to implement our comprehensive restructuring plan that includes a wide range of organizational efficiency initiatives and other cost reduction opportunities; and
- our financial performance expectations, including our expectations regarding our revenue, cost of revenue, gross profit or gross margin, operating expenses, including changes in research and development, sales and marketing and general and administrative expenses, and our ability to achieve and maintain future profitability.

We caution you that the foregoing list does not contain all of the forward-looking statements made in this Annual Report.

These forward-looking statements are based on current expectations and assumptions that are subject to risks and uncertainties, which could cause our actual results to differ materially from those reflected in the forward-looking statements. These statements are within the meaning of the "safe harbor" provisions of the Private Securities Litigation Reform Act of 1995. These statements appear throughout this Annual Report and are statements regarding our intent, belief, or current expectations, primarily based on our current assumptions, expectations and projections about future events and trends that may affect our business, financial conditions, operating results, cash flows or prospects, as well as related industry developments. You should not place undue reliance on these forward-looking statements, which apply only as of the date of this Annual Report. Our actual results could differ materially from those anticipated in these forward-looking statements for many reasons, including the risks faced by us and described in Part I, Item 1A, "Risk Factors," and in "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Part II, Item 7 of this Annual Report. We undertake no obligation to update any forward-looking statements for any reason to conform these statements to actual results or to changes in our expectations, except as required by law.

PART I

Item 1. Business

Overview

NantHealth is a next-generation healthcare technology company that is transforming the way critical diseases, such as cancer, are known and treated. Specifically, we employ precision medicine and technology to give physicians, payers, pharma and patients more actionable information.

To accomplish this, we employ a unique systems-based approach to personalized healthcare providing leading solutions across the continuum of care for physicians, payers patients and biopharmaceutical organizations, enabling the use of cutting edge data and technology towards the goals of empowering clinical decision support and improving patient outcomes. NantHealth's comprehensive product portfolio combines the latest technology in molecular analysis (GPS Cancer and Liquid GPS), payer/provider collaboration platforms that exchange information in near-real time (NaviNet and Eviti), and connected care solutions that deliver Medical Device Interoperability (MDI) through vendor neutral medical device connectivity.

As a pioneer in the era of big data and augmented intelligence, we believe we are uniquely positioned to benefit from multiple significant market opportunities as healthcare providers and payers transition from fee-for-service to value-based reimbursement models and accelerate their pursuit of evidence-based clinical practice.

Our mission is to improve the delivery of healthcare and optimize patient outcomes by leveraging the latest advancements in precision medicine and software technology to enable true value-based care. We derive revenue from sales of software-as-a-service, licensed software and maintenance, hardware, services, and molecular analysis services (including GPS Cancer and Liquid GPS) to healthcare providers, payers and self-insured employers.

We Are Uniquely Positioned to Address Transformative Shifts across the Healthcare Continuum

The efficiency and effectiveness of the current healthcare system is often hindered by the complex, dynamic interplay of three uncoordinated and segregated domains: the knowledge domain, the care delivery domain, and the payer domain. The disparate nature of these domains, and their often-inconsistent incentives and conflicting priorities, can inhibit interoperability and coordination. We believe two simultaneous, transformative shifts are highlighting these critical deficiencies of the current healthcare environment:

1. ***A rapid evolution from traditional fee-for-service to patient-centered and patient-empowered, value-based models driven by quantifiable measures of outcomes relative to cost.*** Unsustainable escalating healthcare costs, which we believe is due to broken fee-for-service models, is driving many stakeholders and governments towards alternative delivery models. Despite significant investments in Electronic Health Records ("EHRs") and other technologies designed to enable the transition to more value-based care, we believe that, in a fee-for-service model, the economic incentives generally discourage coordination amongst healthcare stakeholders and encourage volume-driven (rather than outcomes-driven) decision-making. This model results in healthcare and financial data that remains largely segregated into "walled gardens." Thus, patient data often remains static and cannot be easily shared or interpreted due to siloed legacy proprietary platforms that lack interoperability.
2. ***A paradigm shift to molecularly precise and real-time biometric-driven medicine, with both massive volumes and rapidly expanding repositories of complex data from traditional and novel sources.*** Advances in molecular medicine require healthcare providers to promptly aggregate, evaluate and synthesize hundreds to thousands of relevant facts in real time to arrive at a single patient decision. Molecular profiling often generates hundreds of gigabytes of data per patient, which must then be transported, stored, analyzed and interpreted with supercomputing and/or high-performance computing environments. We believe the rapid pace of medical advancements, the massive amount of molecular data and the frequency of biometric information is overwhelming many providers' ability to process that information at the point of care, thereby inhibiting the paradigm shift to individualized medicine.

We believe these shifts, and the associated challenges, require next-generation and advanced technology systems that deliver more information, faster and with more relevance and accuracy than the healthcare continuum has experienced. Our unique portfolio of health care technology solutions allow us to collect, interpret and deliver data to provide decision support and help both payers and providers effectively transition to value-based care. Given the magnitude of these shifts and the difficulty involved in addressing the associated challenges, we believe our solution platforms are unmatched and serve to position NantHealth at the forefront of multiple large and growing market opportunities. We have invested significant capital, healthcare and biotechnology expertise over nearly a decade to develop, acquire and integrate the components that we believe address many of the challenges faced by stakeholders across the continuum of care.

Our Strategy

Our goal is to become the leading evidence-based, personalized healthcare company transforming the way critical diseases, such as cancer, are known and treated. We seek to enable clients and clinicians to deliver improved patient outcomes and more effective treatment decisions for critical illnesses by applying novel molecular analysis tailored to the specific molecular profiles of patient tissues and blood and providing technology solutions that provide near real-time access to large scale clinical data. To accomplish this goal, we plan to deploy NantHealth solutions designed to address and accelerate the transformational shifts occurring in healthcare: rapid evolution from traditional fee-for-service to value-based models and the paradigm shift to molecularly precise and real-time biometric driven medicine. The key elements of our strategy include:

- **Driving global reimbursement, awareness, and adoption of GPS Cancer and Liquid GPS.** To drive the growth of GPS Cancer and Liquid GPS in the United States, we have deployed an integrated, multi-pronged strategy to (1) obtain reimbursement through large national and regional payers and self-insured employers and (2) strategically drive oncologist awareness and adoption in those regions with reimbursement. Likewise, we are pursuing international growth through a combination of reseller agreements and other unique partnership models to yield predictable and recurring revenue. To date, we have announced agreements and agreements in principle for US insurance coverage for GPS Cancer and Liquid GPS with health plans, providers and self-insured employers, as well as reseller agreements in multiple countries outside of the US. We are also increasing recognition of GPS Cancer and Liquid GPS through strategically engaging and educating oncologists and other key oncology stakeholders, and communicating patient outcomes through peer-reviewed journals and conference presentations.
- **Increasing sales of NantHealth solutions to healthcare providers, payers, pharma, and self-insured employers.** We are marketing NantHealth solutions to healthcare providers transitioning from fee-for-service reimbursement models to value-based care models in pursuit of improved patient outcomes and lower costs. We believe we are positioning NantHealth as a next-generation payer intermediary and partner with healthcare payers and self-insured employers as they roll out value-based model partnerships and transition to value-based precision care.
- **Broadening usage of our solutions among existing clients.** Our broad portfolio of NantHealth solutions affords us a unique ability to expand our agreements with existing clients through cross-selling opportunities. We are actively focused on leveraging existing relationships to create these opportunities to drive additional revenue for our solutions including GPS Cancer, Liquid GPS and NantHealth software solutions such as NaviNet, Eviti, DeviceConX, and VitalsConX. Many of our clients are already successfully using certain components of our solutions, and we are working to demonstrate the full value of our integrated systems infrastructure and platforms.
- **Expanding our business in international markets.** We are executing our go-to-market strategies internationally, creating global awareness of our brand and taking steps towards our goal of broader adoption worldwide.
- **Developing new features and functionality for NantHealth solutions.** We plan to continue to leverage NantHealth solutions to create new features and functionality that our clients can use to drive improved patient outcomes and lower the cost of care. This includes expansion of our molecular profiling portfolio, which we expect to broaden clinical utility and enhance usability.
- **Complementing internal growth with strategic acquisitions.** We believe opportunities exist for us to enhance our competitive position by acquiring additional companies with complementary products and technologies and/or acquiring rights to proprietary products or technologies from third parties.

Our Industry

Today, the U.S. healthcare landscape is being redefined by the shift toward value-based reimbursement models and an explosion of the quantity, frequency and complexity of data. We believe there is a demand for platforms that utilize a molecularly precise and systems-based approach to addressing the following underlying transformative shifts and challenges.

A rapid evolution from traditional fee-for-service to patient-centered and patient-empowered, value-based models driven by quantifiable measures of outcomes relative to cost.

In response to the rising cost of healthcare, government and private payers and providers are introducing value-based care models. In value-based models, providers assume increased levels of clinical and financial responsibility for patient outcomes, instead of being reimbursed strictly based on the quantity of services provided. We believe that healthcare platforms that efficiently assist healthcare stakeholders to transition to these value-based models will be best positioned to capture this opportunity.

Challenges associated with the adoption of value-based models

The healthcare continuum can be viewed as an aggregation of three distinct domains:

- The knowledge domain, including academic centers, scientific institutions and companies that discover and commercialize medical and scientific knowledge;
- The care delivery domain, including hospitals, community practices, physicians and other constituents that deliver healthcare to patients; and
- The payer domain, including insurers, governments and self-insured employers that administer and provide funding to the healthcare system.

The disparate and fragmented nature of these domains and economic incentives under traditional fee-for-service models frequently result in overtreatment, high costs and suboptimal patient outcomes. Fee-for-service models are as a general matter inherently site-centric, volume driven, reactive in nature and uncoordinated. In contrast, value-based models are generally more patient-centric, outcomes-focused, proactive and coordinated across the care continuum.

Despite a clear need, the design and implementation of next-generation interoperable systems has been limited due to reliance on legacy, site-specific, fee-for-service technology systems and infrastructure. Since the passage of the HITECH Act in 2009, providers and payers have made significant investments in EHRs, and other technologies meant to enable the transition to value-based care. Despite extensive investment and coordination, the introduction of value-based models has been limited due to the shortcomings of legacy, proprietary systems and the reliance on unstructured data that hinders interoperability and cannot be sufficiently shared or manipulated to produce actionable findings. Value-based models require collection and analysis of longitudinal treatment, outcomes and financial data at the patient level, regardless of treatment site. Critically, these systems must also securely safeguard patient data in compliance with stringent HIPAA and other privacy regulations. We believe that there is a significant need for interoperability platforms that dynamically access, normalize, integrate and update information from disparate sources across the healthcare continuum in real time. Secure interoperability platforms can allow for more comprehensive solutions development that proactively connect, deliver business and clinical intelligence and enable enhanced provider and patient engagement.

A paradigm shift to molecularly precise and real-time biometric-driven medicine, with both massive volumes and rapidly expanding categories of complex data from traditional and novel sources.

The collection and interpretation of molecular profiles and near real-time biometric monitoring has the potential to dramatically improve quality and outcomes.

Evolution to comprehensive molecular analysis

Advances in sequencing over the last 15 years and the associated cost efficiencies have led to the development of targeted therapeutics initiating the transformation from “one size fits all” treatments to personalized, molecularly precise medicine. Single marker and gene panel diagnostic tests have now advanced from the research to clinical care settings. Oncology is leading the rapid advances in molecular testing and the development of targeted therapeutics based on increasing understanding of the impact of molecular profile on disease progression. Recent publications, including The Cancer Genome Atlas Research Network genomic and molecular characterization studies, support selection of treatment regimens based on the underlying molecular pathways and related genomic alterations in the genetic profile of the tumor compared with the patient’s own germline, as opposed to the anatomical location of the cancer in the patient’s body. Cancer is increasingly understood to be a heterogeneous collection of rare diseases, with hundreds of patient-specific, cancer-promoting mutated proteins, some known and many more unknown, called neoepitopes. Identifying and targeting these mutated proteins is requiring more comprehensive genomic and proteomic analysis, which is increasingly becoming embedded in drug approvals. As a result, we believe comprehensive genomic and proteomic analysis is positioned to become the standard of clinical care, replacing single marker or gene panels in treating cancer patients.

Oncology has been an early adopter of precision medicine due to the cost as well as inconsistent and often poor clinical outcomes associated with many traditional “trial-and-error” treatment regimens. While oncology represents the most immediate opportunity, we believe other disease areas are beginning to experience a similar evolution, with immune-related diseases, central nervous system disorders and transplants having a high potential for adoption of personalized medicine. We believe technologies that enable the capture, aggregation and analysis of massive volumes of genomic data will further bolster the growth of precision medicine and its expansion from cancer to additional disease states. Over time, we believe this will lead to identification of drugs that target specific pathways by using a universal personalized companion diagnostics platform, ultimately resulting in improved clinical outcomes.

Limitations of the existing single marker and gene panel approach

The human genome is comprised of approximately 20,000 genes and 3 billion DNA base pairs. Until recently, scientists have focused on less than 2% of the genome that is responsible for coding proteins. As a result, most diagnostic tests today only analyze specific genes, or gene panels, exploring only a fraction of the human genome, while incorporating “a priori” assumptions that capture only a subset of the most common gene alterations. These alterations are calculated relative to a reference genome of a population instead of a patient’s own healthy tissue, or germline. Gene panels that utilize a reference genome often fail to capture key, medically actionable mutations or incorrectly highlight mutations present in both the germline and cancer tissue. Analyses that exclude whole genome sequencing, RNA analysis and comparisons to an individual’s germline instead of a reference genome can lead to materially false positive and false negative results. A more comprehensive molecular analysis would allow providers to develop personalized treatment regimens, replacing existing costly “trial-and-error” approaches to treatment. A comprehensive molecular analysis, including both germline and cancer tissue, would make no assumptions as to the molecular driver of the patient’s disease and would capture mutations that are commonly missed by gene panels.

Challenges associated with the adoption of comprehensive molecular analysis

Comprehensive molecular analysis combines whole genome-to-germline comparison and RNA expression as confirmation of the presence of variants. Comprehensive molecular analysis has been difficult to perform in a practical, timely and cost-effective manner because it has long run times to complete sequencing, creates hundreds of gigabytes of complex data per patient, which must be transported, stored and analyzed with supercomputing and/or high-performance computing environments in a clinically relevant period of time, and requires large capital investments required to perform sequencing at scale. Furthermore, the absence of adaptive machine learning algorithms to enable efficient medical interpretation and effective expression analysis has inhibited the ability to derive value from the massive amount of data produced by comprehensive molecular analysis. Accordingly, comprehensive molecular analysis has primarily been utilized in the academic and research settings, and not in the clinical setting to inform treatment decisions. Finally, there have been insurance coverage and reimbursement challenges for comprehensive molecular analysis solutions, limiting their adoption.

Increasing proliferation and importance of real-time biometric data and its adoption in hospitals and other patient care settings

Several trends are contributing to the rising importance and availability of biometric data, including the increasing prevalence of connected devices in multiple care settings and the opportunity for proactive patient interventions to improve health outcomes. As hospital systems implement EHRs, they have installed hardware and software solutions to connect medical devices to collect periodic sampling of key patient metrics such as respiratory rate, blood pressure and heart rate. Providers have expanded these technologies into other care settings, including skilled nursing facilities, nursing homes, outpatient facilities and patients’ homes. Concurrently, with the advent of connected devices, activity monitors and remote patient monitoring devices are achieving widespread adoption, allowing for the increased quantification of key biometric signals. Healthcare professionals have the potential to gain a more comprehensive view of an individual’s health on a real-time basis across care settings through increased adoption of patient monitoring devices. The increased availability of quantifiable biometric data allows for the implementation of decision support tools and proactive treatment interventions, potentially utilizing care pathways and learning algorithms to improve care outcomes.

Challenges associated with leveraging quantifiable, real-time biometric analysis in multiple care settings

An increasing amount of biometric data is being generated by the proliferation of connected devices. However, complexities associated with synthesizing this data into actionable insights remain an obstacle. Although many hospital-based medical devices can continuously stream data to an EHR, frequently the EHR can only accept periodic data, potentially missing a critically relevant patient episode. There is also a lack of comprehensive solutions that support physician decision-making in real time. The absence of effective data interpretation supported by adaptive machine learning or other algorithms is evidenced by “alarm fatigue” among many healthcare providers (a condition that can occur when one is exposed to many frequent alarms or alters and consequently becomes desensitized to them) as they struggle to establish optimal event thresholds.

Growth in complexity and its promise for value-based models

Advances in molecular medicine and real-time biometrics require healthcare providers to promptly aggregate, evaluate and synthesize hundreds to thousands of relevant facts to arrive at a single patient decision. With the enormous complexity of genomics and expression analysis derived from comprehensive molecular analysis, the pace of medical advancements, and the significant amount of data being created every day by patient care, payment and regulatory compliance systems, it is nearly impossible for a practicing physician to interpret and synthesize the deluge of complex information required for patient treatment.

We believe there is a considerable need for advanced adaptive machine learning algorithms to collect, index and analyze rich biometric, phenotypic, genomic and proteomic data at scale to support physician decision-making. Although this complexity creates significant challenges, it also presents opportunities for developers of systems infrastructures, platforms and learning systems that can identify clinically meaningful correlations that can be employed to improve patient outcomes in a cost-effective manner.

Our Market Opportunity

We believe the increasing focus on value-based reimbursement models and evidence-based, personalized medicine will drive validation and adoption of NantHealth solutions. Recent statistics show that 38% of Americans will be diagnosed with cancer at some point in their lives, resulting in an estimated cost of \$174 billion by 2020. Additionally, we see the precision medicine market growing substantially as comprehensive diagnostics and evidence-based medicine become increasingly important across multiple disease areas and likely assuming greater share of the combined biopharmaceutical and diagnostics markets. We believe several factors support adoption of our universal molecular analysis solutions GPS Cancer and Liquid GPS, which enables an increased understanding of molecular pathways and their targets, such as:

- Improved pharmacoeconomics, including the use of more cost-effective drugs approved for other indications (such as asthma and diabetes) in cancer treatment regimens;
- A clearer understanding of critical drug resistance information;
- Increased adoption of bundled payments as providers and payers recognize the efficiency of optimized therapies; and
- Increased awareness and published clinical results demonstrating the benefits of evidence-based molecular medicine.

We believe the potential addressable market for NantHealth solutions will continue to grow in relation to the market-share gains of value-based models and the adoption of precision medicine.

NantHealth Solutions

Our NantHealth solutions comprise a highly differentiated, integrated model for the delivery of healthcare, comprised of our unique molecular profiling solutions, software, and hardware systems infrastructure, which integrates patient data management, bioinformatics, and molecular medicine, enabling value-based care and evidence-based clinical practice. Our platform and our multi-domain solutions are designed to address some of the most pressing cross-domain challenges across the healthcare continuum. Our solutions are single-domain and cross-domain offerings that can be applied, for example, within a hospital system or for a hospital system and a commercial insurance provider in an Accountable Care Organization, or ACO, crossing multiple domains. We believe unique systems-based approach positions us (i) to deliver 21st century molecular and biometric signature-driven precision medicine and potentially change the current paradigm of uncoordinated healthcare and (ii) as a next-generation payer intermediary who facilitates payment for value.

- **Cancer Care Solutions.** Our comprehensive set of interoperability, advanced molecular analysis, risk stratification and decision support solutions (Eviti) can enable our clients to improve decision-making and coordinate care across the healthcare continuum. Our GPS Cancer molecular profiling solution is the only comprehensive and commercially available molecular profiling solution that integrates whole genome (comparing both a patient's normal and tumor tissue), RNA and molecular pathways information into a clinical report that analyzes this data and identifies actionable targets and potential clinical treatment options. Liquid GPS is NantHealth's blood-based molecular test that provides oncologists with a powerful tool for noninvasive tumor profiling and quantitative monitoring of treatment response. Liquid GPS looks beyond cfDNA to cfRNA, which allows profiling and trending of actionable biomarkers that cannot be assessed through cfDNA alone. In addition to providing molecular insight into key guidelines-based biomarkers (e.g., EGFR, ALK, ROS1, KRAS), this powerful RNA-based approach enables a variety of capabilities and applications not typically available from a liquid biopsy test.

- **Provider Solutions.** Our provider solution software, comprised of an integration of our various solutions, including DeviceConX, VitalsConX and NaviNet, leverage the data available on our systems infrastructure to enable patient-centered engagement and coordination across care locations. Our NantHealth software solutions include real-time vitals connectivity, and clinical and administrative workflows including eligibility and benefits, claims, referral and readmissions management solutions. Our device connectivity modules and flexible applications analyze and interpret patient and provider-specific information and can deliver critical clinical and administrative insights.
- **Payer Solutions.** Our NantHealth payer software solutions establish daily access to the clinical practice and caregiver and leverage the data available on our systems infrastructure to facilitate payment for value. We believe our position between the payer and the provider allows us to align incentives as a next-generation payer intermediary, to help payers ensure consistent evidence-based treatment pathways and to accelerate pre-adjudication and lower administrative overhead for providers. This can ultimately drive quality of care and streamline workflows while improving control over the administrative and operating costs associated with eligibility and benefits, claims processing, referrals, authorizations, document exchange and review utilization. Our multi-payer collaboration solution, NaviNet Open, offers provider end users a uniform set of workflows and services across many or all the payers with whom they routinely collaborate. This multipayer experience benefits payers and providers alike. Providers can benefit from a uniform experience and toolset across multiple payer relationships, and the payer can benefit from the uniform application of best practices, tools, and options, as well as the reduction in costly errors and phone-based interactions that can stem from a non-uniform end-user experience.

We designed our NantHealth solutions to enable providers, payers, pharma and self-insured employers to overcome challenges encountered across the knowledge, care delivery, and payer domains within the healthcare continuum.

We are a leading vendor of payer-provider collaboration solutions (NaviNet Open), with a national provider network of approximately 870,000 active user accounts on the NaviNet platform across all 50 states.

In this Annual Report, "active user account" means a NaviNet Open user account for which the applicable user has established or reset their permanent password in the previous 120 days.

Our Systems Infrastructure

Our unique interoperable systems infrastructure has been built over the last decade to address the knowledge, care delivery and payer domains. As of December 31, 2018, our NantHealth solutions or their components have been widely adopted, processing nearly 50 million payer-provider transactions per month with approximately 853,000 active user accounts nationwide.

NantHealth's systems-based approach enables the near real-time transfer and clinical translation of genomic analysis, biometric signal data and actionable information to the care delivery domain, with access to a HIPAA-compliant cloud, providing the coordination of reimbursement between the care delivery domain and the payer domain.

Our Systems Infrastructure is comprised of:

- Access to next-generation genomic analysis technologies with near real-time bioinformatics, provided as part of GPS Cancer through our affiliate, NantOmics, and as part of our own Liquid GPS test;
- Access to a secure HIPAA-compliant cloud environment; and
- Device connectivity in over 390 client sites, active hospitals/facilities, to what we estimate to be approximately 41,000 medical devices and collecting over 15.4 billion vital signals annually with the ability to connect to over 500 medical device models.

Our access to CAP- and CLIA-certified sequencing capability, coupled with supercomputer environments, enables us to deliver comprehensive genomic analysis. We have established a HIPAA-compliant, secure and scalable cloud computing, storage and transport infrastructure capable of processing, storing and transporting petabytes of diverse, protected patient data. Our device connectivity and near real-time biometric monitoring software and hardware solutions allow us to aggregate data through the open architecture platform, from one of the largest libraries of in-hospital and remote medical devices and wearables on the market. Our cloud-based NantHealth software solutions accesses, integrates and updates information from disparate clinical, operational and financial systems to create a dynamic and actionable dataset. This framework enables us, our clients and third-party partners to develop an integrated ecosystem of compatible applications.

We believe other organizations have not yet been able to integrate these components in a similarly near real-time and continuous manner, and this personalized, evidence-based molecular approach, combined with our NantHealth solutions, significantly differentiates us from our competitors. In addition, third parties may use our solutions to deliver drugs to patients in a more predictive, preventative and evidence-based manner, potentially improving patient outcomes and pharmacoeconomics.

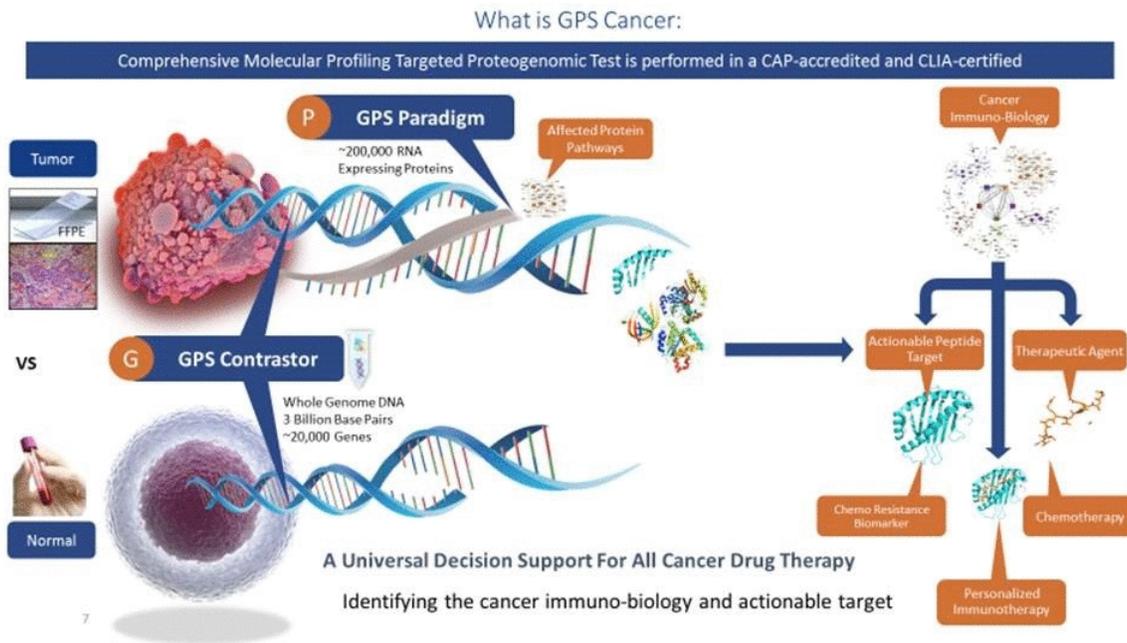
Product Overviews

Precision Insights

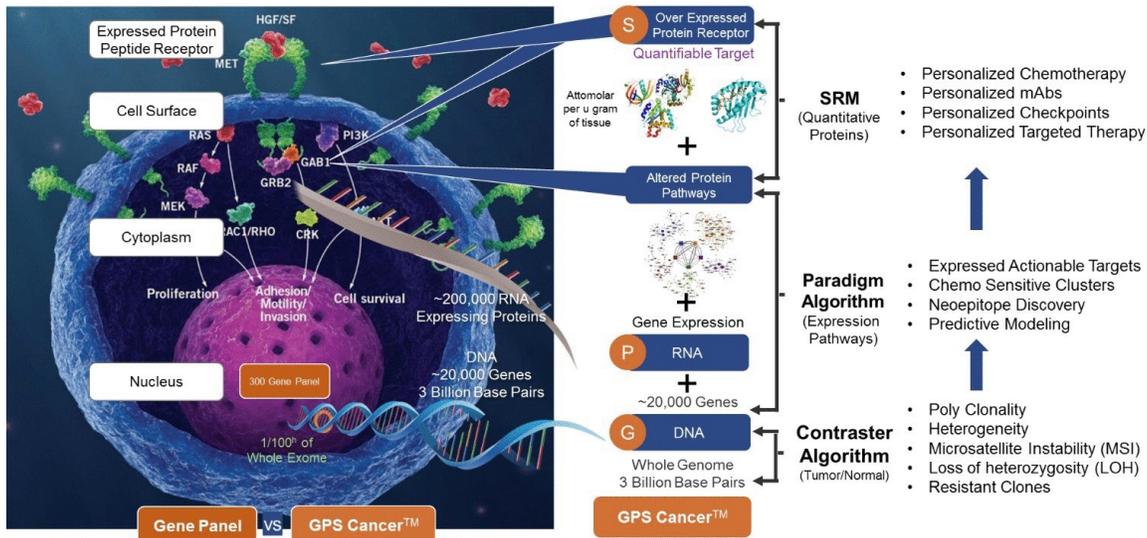
NantHealth's GPS Precision Insights molecular profiling provides comprehensive DNA, RNA, Tumor and Normal Analysis combined with pharmacogenomics data. Each patient's molecular analysis is evaluated for applicability to evidence-based therapies advancing the promise of precision medicine while retaining the values of standard of care practice. NantHealth's Liquid GPS cfDNA and cfRNA platforms provide non-invasive insights into therapeutic selection of targeted therapy, chemotherapy, and immunotherapy.

GPS Cancer:

GPS Cancer is a comprehensive molecular profile that integrates whole genome (DNA) sequencing of tumor and normal germline samples and whole transcriptome (RNA) sequencing, providing oncologists with insights into the unique molecular signature of a patient's cancer to inform personalized treatment strategies. The results of the GPS Cancer profile can provide oncologists with insight into cancer therapies that may have potential benefit - including active clinical trials - and those therapies to which the cancer may be resistant. GPS Cancer profiling is conducted in CLIA-certified and CAP-accredited laboratories.



GPS Cancer compares a total of 6 billion DNA base pairs between a patient's healthy normal (or germline) sample and the tumor sample (usually Formalin-Fixed, Paraffin-Embedded-FFPE or fresh frozen tissue) each encoding for over 20,000 genes. All the RNA (over 200,000 transcripts) from the tumor sample is sequenced to confirm and give evidence of expression of mutations found in the genome. We identify affected molecular pathways that are drivers of a patient's cancer by analyzing DNA and RNA sequence data against our curated database of over 15,000 nodes within approximately 1,500 protein pathways.



Cancer is increasingly understood to be a heterogeneous collection of rare diseases. As such, understanding genomic alterations in tumor samples can help to identify potential treatment options for the personalized management of people with cancer.

Whole genome sequencing of a person's tumor sample against their normal sample highlights molecular alterations that are specific to their tumor DNA, and RNA sequencing subsequently confirms the alterations identified in the DNA of a person's tumor. Whole genome sequencing and RNA sequencing can provide vital clinical information about individual molecular alterations in tumors that result in abnormal proteins, which can be important targets for many cancer therapies.

GPS Cancer identifies genomic alterations with high clinical relevance to each person's tumor. The alterations are then matched to drugs that might be effective against tumors containing the specific change. By identifying the totality of alterations from whole genome sequencing, honing in on alterations that are associated with protein expression from RNA sequencing, a more accurate and comprehensive molecular profile is assembled that can inform the therapeutic options available to oncology care providers and their patients.

By enabling informed therapy selection and utilization, GPS Cancer brings various opportunities to impact both cost and quality of care for individuals with cancer, such as:

- *Avoiding ineffective therapy usage:* By providing molecular insight into sensitivity or resistance to specific drugs, GPS Cancer may help oncologists identify regimens that are unlikely to benefit the patient. This insight may help avoid use of high-cost therapies that are unlikely to help the patient.
- *Decreasing treatment cycles through improved therapy selection:* Therapies selected based on molecular evidence of likely benefit may require fewer cycles to achieve response.
- *Increasing clinical trial participation:* For many advanced cancers, standard-of-care drug options are quickly exhausted, and clinical trials represent a source of additional options for patients. GPS Cancer helps identify trials that may be applicable to the patient based on their tumor's molecular profile.

For example, according to a presentation at ASCO 2015, it was estimated that a typical patient receiving a combination therapy of two checkpoint inhibitors, one anti-PD-1 agent and one anti-CTLA-4 agent, would cost approximately \$300,000 with approximately \$60,000 being the patient's out-of-pocket cost (assuming a 20% copay). Applying this figure to the nearly 600,000 patients dying from metastatic cancer annually (no adjuvant therapy), the treatment would cost society nearly \$174 billion annually. Studies suggest that cancer therapeutics such as immune checkpoint inhibitors are more effective when there is a high neoantigen and nonsynonymous mutation (i.e., results in a change in the amino acid sequence) burden in the tumor. We have presented our data at ASCO 2018 which we believe shows that GPS Cancer is superior to other panel tests in accurately measuring tumor mutation burden. We believe GPS Cancer's ability to identify mutation burden and neoepitopes through its comprehensive omics analysis will serve as a critical and novel source for both pre-treatment efficacy analysis and individualized immunotherapies for cancer patients.

GPS Cancer Report

Our GPS Cancer solution further leverages novel adaptive machine learning algorithms that match the identified alterations to an extensive and evolving library of signaling pathways, drugs and drug targets, regardless of indication, to provide predictive analyses that can enable the physician to make decisions regarding the potential efficacy of personalized therapies, as well as points of resistance. GPS Cancer results are available to the ordering physician in a concise report. While the GPS Cancer report does not recommend treatments, it can enable the treating physician to develop a personalized treatment plan after discussing with the patient the available treatment options and the potential risks associated with each treatment option. The GPS Cancer report can be utilized by the physician in several ways. The report may:

- List targets based on DNA/RNA analysis that may be treated by FDA-approved drugs either in an on-label or off-label manner based on peer-reviewed clinical data;
- List findings that suggest a particular targeted therapy which the physician would otherwise use may not work due to a potential resistance marker;
- Provide information on key biomarkers that inform the use of immunotherapy, including PD-L1, tumor mutational burden, and microsatellite instability (MSI);
- Provide information on key pharmacogenomic markers of chemotherapy drug toxicity and thromboembolic risk;
- Provide the information necessary for the physician to decide whether it is appropriate to place the patient in a clinical trial; and
- Provide key information based on germline sequencing, including germline mutations in cancer predisposition genes and confirmation of provenance - i.e., that the tumor being tested comes from the intended patient.

Pharmacogenomics

Our GPS Cancer test results includes information on a patient's pharmacogenomic profile to provide insight on germline alterations implicated in increased toxicity or altered metabolism of anti-cancer drugs. This information is presented in a patient's GPS Cancer test report.

Specifically, we have added an analysis of eight pharmacogenomic genes, CYP2d6, CYP3A5, DPYD, F5, G6PD, NUDT15, TPMT, and UGT1A1, and their associations with the following drugs: Azathioprine, Belinostat, Capecitabine, Dabrafenib, Eltrombopag olamine, Fluorouracil, Irinotecan, Mercaptopurine, Nilotinib, Pazopanib, Rasburicase, Tacrolimus, Tamoxifen, Tegafur, and Thioguanine. Sources used for pharmacogenomic implications include prescribing information, primary scientific literature, and guidelines published by the Clinical Pharmacogenomics Implementation Consortium (CPIC, see www.cpicpgx.org). In addition, the F5 (Factor V) gene is screened for the Leiden variant that confers increased risk of thromboembolic events.

Insurance Coverage

We announced our first coverage/reimbursement contract for GPS Cancer with a large health plan in January 2016, which represented the nation's first such insurance coverage for a whole genome molecular analysis platform. Subsequently, we have signed contracts for the reimbursement of GPS Cancer by additional health insurance plans (including plans covering various city employees in multiple states) and self-insured employer groups (including a large employer with a national footprint). We believe reimbursement arrangements with health insurance plans and self-insured employers will continue to grow.

Competitive Advantage of GPS Cancer's Comprehensive Molecular Analysis Capabilities

Current approaches to enabling precision cancer care have various limitations described below. GPS Cancer is specifically designed to help oncologists overcome these challenges.

Clinical challenge #1: DNA-only, tumor-only gene panels (i.e., without tumor-germline comparison) may result in inaccurate mutation calls in druggable targets.

GPS Cancer includes:

- RNA sequencing to confirm DNA alterations that may result in expression of abnormal proteins; and
- Tumor-germline comparison to (1) help avoid inappropriate therapies due to misinterpretation of inherited mutations as somatic and (2) confirm provenance - i.e., that the tumor being tested comes from that patient.

GPS Cancer is the only comprehensive and commercially available clinical cancer platform incorporating and integrating whole genome (comparing both a patient's normal and tumor tissue), RNA and molecular pathways information into a clinical report that analyzes this data and identifies actionable targets to inform clinical treatment decisions.

ADDITIONAL MOLECULAR ANALYSES PERFORMED

Tumor Mutation Burden	LOW (47 non-synonymous / 1.9 per Mb) (pg. 4)
Microsatellite Status	STABLE (MSS) (pg. 5)
Immunotherapy Sensitivity	1 of 4 INDICATORS DETECTED (pg. 5)
Chemotherapy Sensitivity/Resistance	2 of 8 INDICATORS DETECTED (pg. 6)
RNA Fusion Analysis	3 FUSIONS DETECTED (<i>NTRK2</i> Internal, <i>TCF3</i> Internal, ...) (pg. 6)
Germline Cancer Predisposition Screening	NO DELETERIOUS, TRUNCATING VARIANTS DETECTED (pg. 8)
Cancer Pharmacogenomics Screening	IMPLICATIONS FOR 1 DRUG (Tacrolimus) (pg. 10)

GPS in Rare Diseases and Chronic Illnesses

Although we are deploying GPS initially for cancer, we believe this solution has potential application in identifying molecular profiles and germline mutations in rare diseases and chronic illnesses. Our molecular profile solutions have been used by a large academic research institution to examine the genomic familial drivers of cardiac disease and to perform additional research in ALS, obesity, suicide and diabetes, among other diseases.

GPS Cancer: Proprietary Methods and Software

Patents with claims related to GPS Cancer are issued or allowed in the United States and internationally, and GPS Cancer is the subject of several U.S. and foreign patent applications. The proprietary methods and software components underlying GPS Cancer include:

- **Liquid Tissue.** Extracts lysates from FFPE tissue using proprietary methods to examine tumor-normal proteins and genomes.
- **Transporter Software.** Securely transfers unassembled data from sequencing instruments to the analytical custom-designed supercomputing environment.
- **Contraster Software.** Rapidly identifies genomic variants in a patient's tumor samples and compares it to that patient's germline or proprietary database of disease associated genes.
- **Paradigm Software.** Integrates DNA sequencing data from the contraster software with RNA sequencing data to identify alterations in cellular signaling behavior that are driving disease progression. The algorithm matches the alterations to the library of all known signaling pathways and all drugs and drug targets, irrespective of indication, to potentially help predict the effectiveness of personalized therapies and points of resistance.

Liquid GPS

Liquid GPS is NantHealth's blood-based molecular test that provides oncologists with a powerful tool for noninvasive tumor profiling and quantitative monitoring of treatment response. Liquid GPS looks beyond cfDNA to cfRNA, which allows profiling and trending of actionable biomarkers that cannot be assessed through cfDNA alone. In addition to providing molecular insight into key guidelines-based biomarkers (e.g., EGFR, ALK, ROS1, KRAS), this powerful RNA-based approach enables a variety of capabilities and applications not typically available from a liquid biopsy test

Key Applications

Targeted therapy monitoring

In addition to assessing guideline-recommended mutations (e.g., EGFR, BRAF, KRAS, and NRAS), Liquid GPS provides cfRNA-based testing and monitoring for gene fusions and translocations (i.e., ALK, ROS1). RNA has also been shown to be a more accurate indicator of fusions and translocations compared to DNA, which can miss or incorrectly classify gene fusions.

Immunotherapy monitoring

With immunotherapy increasingly becoming a central component of care in many cancers, molecular tools are evolving to give oncologists new and earlier insights into their effectiveness in each patient. Liquid GPS includes 4 analytes associated with approved and investigational immunotherapies - PDL1, CTLA-4, LAG-3, and TIM-3. PD-L1 via Liquid GPS's cfRNA analysis has been demonstrated to correlate to measurement by IHC. Not only can this information inform an oncologist's initial treatment selection, it can also be used to monitor response over time. In fact, blood-based PD-L1 assessment has been shown to objectively differentiate between true progression and pseudoprogression, which may help to avoid erroneously changing treatment due to pseudoprogression.

Chemotherapy monitoring

Liquid GPS includes 11 analytes associated with response or resistance to commonly used chemotherapies, including ERCC1 to inform use of platinum and TUBB3 to inform use of taxanes.

Define Right Treatment Before Treatment Begins (Eviti):

The rapid advancement of molecular and biometric medicine is overwhelming many physicians' cognitive ability, while uncoordinated, non-evidence-based treatment pathways are increasing costs and reducing the quality of care.

Within our oncology solutions, Eviti, our decision support solution, provides evidence-based clinical decision support, which is a critical element to ensure optimal treatment regimens. Eviti is a SaaS-based clinical decision support solution that centralizes clinical content, treatment cost data from Medicare reimbursements and treatment toxicity data. The clinical content is curated by our dedicated team of clinicians, including oncologists and nurses, who convert published literature and clinical trials into structured information that can be used for decision support. The Eviti Advisor product is an overlay on this platform and allows physicians to access this data to better inform treatment decisions. Thus, physicians can readily stay abreast of the latest advances in cancer care.

Eviti provides value to our clients through its access to over 7,200 federally-registered clinical trials updated weekly and over 3,500 evidence-based treatment regimens for the treatment of cancer arising from over 40 different anatomical locations. Unique to the care delivery domain, physicians also benefit from improved claim processing by using our Eviti platform that issues a pre-authorization "Eviti code" when the physician chooses an approved evidence-based clinical pathway, thereby validating appropriate treatment and pre-adjudicating the claim. This is an important step in that payers and providers are collaborating on high-value, evidence-based clinical pathways as opposed to non-value-added reimbursements and denials of payments.

Eviti is typically sold to health plans on a per member (or life) per month basis. These health plans sponsor the solution and provide Eviti free of charge to oncologists and their staffs.

The snapshot of our system below illustrates how different cancer treatment options for a patient is presented to compare treatments across a variety of metrics, including expected treatment outcome, plan compliance and costs. By providing the oncologist with this comparison, we believe Eviti drives compliance and a greater number of treatments to be in accordance with evidence-based pathways.

eviti | Connect Home Practice Dashboard Rx Saved Treatments My Account Logout

NantHealth | Eviti Welcome Medical.

Choose A Cancer Type: Breast **Regimen Preference Legend:**
★ Preferred Regimen ● Highly Preferred

Active Filters:
▼ Pathology: Adenocarcinoma ▼ Stage: IIA

● The pricing displayed is for reference at ASP +6%. It may not represent your final reimbursement which is subject to fee schedules, eligibility, and any plan provisions or qualifiers.

Evidence-Based Regimens
Please expand this section to view the evidence-based regimens that meet the diagnosis you entered. Total Regimens Found: 74

Regimen Name	Line of Treatment(s)	Stage(s)	Level of Evidence	Reported Outcome (Most Relevant)	Total Cost of Treatment
<input type="checkbox"/> ★ Dose Dense Doxorubicin and Cyclophosphamide Followed by Paclitaxel Every 2 Weeks (AC-P) (Stages IIA-IIIc, Neoadjuvant)	Neoadjuvant/ Pre-operative	IIA, IIB, IIIA, IIIB, IIIC	A4	3 year OS: 92.0 %	\$4,574.72
<input type="checkbox"/> ★ ● Dose Dense Doxorubicin and Cyclophosphamide Followed by Paclitaxel Every 2 Weeks (AC-P) (Stages IA-IIIc, Adjuvant)	Adjuvant/ Post-operative	IA, IB, IIA, IIB, IIIA, IIIB, IIIC	A4	3 year OS: 92.0 %	\$4,574.72
<input type="checkbox"/> Anastrozole (Arimidex) (Five years) (Stages IA-IIIc, Adjuvant)	Adjuvant/ Post-operative	IA, IB, IIA, IIB, IIIA, IIIB, IIIC	A4	N/A	\$21,645.00
<input type="checkbox"/> Exemestane (Aromasin) After Initial Tamoxifen (Stages IA-IIIc, Adjuvant)	Adjuvant/ Post-operative	IA, IB, IIA, IIB, IIIA, IIIB, IIIC	A4	5 year OS: 98.0 %	\$24,392.16
<input type="checkbox"/> Letrozole (Femara) (Stages IA-IIIc, Adjuvant)	Adjuvant/ Post-operative	IA, IB, IIA, IIB, IIIA, IIIB, IIIC	A4	N/A	\$38,238.00
<input type="checkbox"/> Neratinib (Nerlynx) after Adjuvant Trastuzumab (Stages IIA-IIIc, Adjuvant)	Adjuvant/ Post-operative	IIA, IIB, IIIA, IIIB, IIIC	A4	N/A	\$164,808.00

View / Compare Regimens Save and Continue

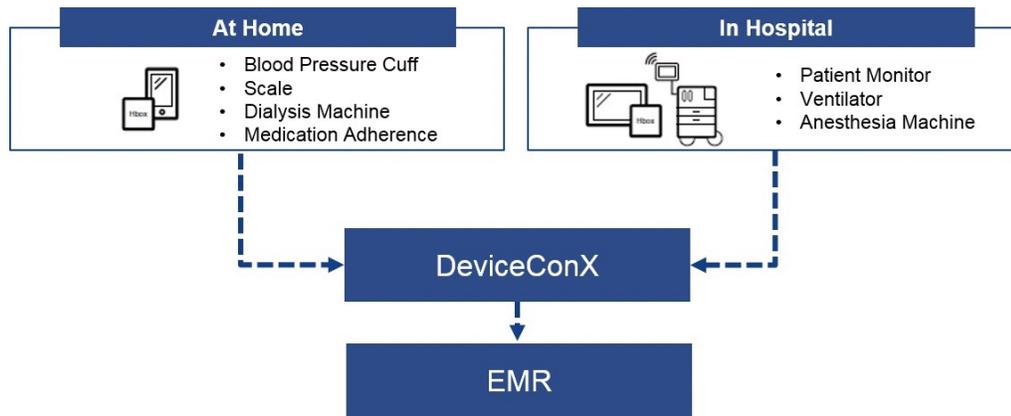
Clinical Trials
Please expand this section to view the Clinical Trials that meet the diagnosis you entered. Total Trials Found: 5

Provider Engagement (NantHealth Software Solutions):

Our web-based and mobile **NantHealth software solutions** include near real-time vitals connectivity, clinical and administrative workflow, eligibility and benefits, claims, and referral management solutions.

Connected Care Software Solutions:

- **Device Connectivity Suite:** Our device connectivity and near real-time biometric software and hardware suite allow us to aggregate data from one of the largest libraries of in-hospital and remote medical devices on the market. Utilizing our hardware and software platform, we can extract data from various disparate provider systems, payer systems and consumer devices across the care continuum. Our offerings can enable the near real-time collection and integration of quantifiable biometric and phenotypic data into EHRs and other clinical systems, resulting in the enrichment of the holistic patient health record which can improve care and treatment. In addition, our offerings can improve care coordination and data aggregation across care settings to facilitate transitioning patients to lower cost care settings such as a skilled nursing facility or the patient's home.



- DeviceConX, or DCX:** DCX is a device data normalization software that connects to hundreds of inpatient and outpatient clinical devices and converts data into a standard format that can be integrated into EHR systems and other clinical systems. This offering provides physicians with a real-time and integrated snapshot of a patient's physiological data. Our software is scalable and can be embedded across the care continuum, including inpatient, outpatient and home settings. In addition, our platform can enable connectivity with both networked and non-networked medical devices and can eliminate the need for manual data entry by clinicians, which can result in time savings and potentially eliminate transcription errors and adverse events in patients. DCX is installed in over 390 client sites, active hospitals/facilities, across the United States, Canada, Denmark, Sweden, and Singapore.
- HBox:** The HBox is an Internet of Medical Things, or IoMT, and Internet of Things, or IoT, hardware hub that provides wired or wireless connectivity to multiple monitoring devices and transmits the data into remote monitoring centers and third-party EHR systems, giving providers near real-time access to physiological data. Several home monitoring devices have been tested and integrated with the HBox to support remote monitoring, readmission management and care coordination solutions and services. The HBox integrates with various weight scales, pulse oximeters and blood pressure monitors and mobile health devices. For non-networked medical devices, we use our proprietary DeviceEscort adapter and HBox to wirelessly connect to nearly any medical device that is capable of outputting discrete medical data. HBox is currently installed at client sites in both the United States, Canada, Denmark, Sweden, and Singapore.
- VitalsConX, or VCX, a NantHealth Software Solutions:** In addition to DCX and HBox, we also provide a tablet-optimized application that sits on top of our DCX platform to provide clinicians more convenient and ubiquitous access to capture a wide array of patient vitals such as respiratory rate, blood pressure and heart rate in addition to performing patient assessments. Our solution can enable a more efficient patient rounding and assessment workflow by providing a near real-time stream of data from the patient's bedside unlike periodic sampling typically entered into an EHR hours later.

NaviNet Open:

NaviNet Open is America's leading payer-provider collaboration platform, enabling health plans and providers to align incentives, boost quality measures, and lower costs. NaviNet Open's multi-payer platform connects health plans with their provider networks to improve communications and facilitate administrative transactions. NaviNet delivers vital administrative and clinical information to provider offices in near real-time, vastly improving the ease and speed of communications between health plans and providers.

NaviNet increases operating efficiency and lowers administrative waste for health plans and providers by reducing the volume of customer service phone calls and manual processes involved. As of December 31, 2018, NaviNet Open supported approximately 870,000 active user accounts nationwide, processing more than 50 million payer-provider transactions across 49 health plans.

NaviNet Open solutions include:

- **Plan Central:** Provides our health plan partners with the ability to deliver a branded custom-content experience to their provider networks, allowing plans to own and manage their communications to users in support of their business. Plan Central is valued by our partners as a single access point for all provider and end-user communications, transactions, and content, delivering ease of use and increased provider satisfaction.
- **Eligibility and Benefits:** Delivers membership verification, insurance coverage, and payment information, such as copayments, deductibles, and benefit intelligence to provider offices in real-time - information that is highly valued by providers and members alike. Provider offices can verify insurance and benefit coverage at the time of a patient visit or as part of the billing cycle.
- **Claims Status Inquiry:** Lets provider offices access detailed financial and claim status information in real-time - automating the delivery of claim receipt confirmation, adjudication status, and payment details. This eliminates the need for provider offices to call health plans directly to maintain a healthy revenue cycle and improves provider satisfaction.
- **Claims Management:** A collection of powerful claim applications that consist of Claim Submission, pre- and post-adjudication Corrections and Adjustments, Claim Attachments, Claim Investigation and a multi-payer Claims Log where users manage their claim submissions. Our integrated Claims Management solution simplifies payment efforts by eliminating phone calls, costly paper claims, and other manual processes associated with claims follow-up, correction, and resubmission. Providers now gain access to a powerful set of claim tools, without needing a sophisticated EMR or practice management system.
- **Referrals:** Lets provider offices submit and access referrals in real-time, guiding patients to the best specialist at the most affordable cost. Referrals empowers provider staff with more referral information - such as benefit tiers, preferred providers, and patient payment implications. Administrative staff becomes better equipped to navigate complex sub-networks, while health plans optimize in-network referrals to reduce leakage and lower costs.
- **Authorizations:** Lets provider offices submit authorizations to health plans and access real-time authorization information, such as status updates and approvals. The authorizations workflow is optimized to make it simple for health plans to configure fields and add additional business logic and links to third party applications. Providers can upload any documents needed for authorization processing, further streamlining workflows and lowering costs.
- **Document Exchange:** Modernizes communication between health plans and providers by transmitting administrative and clinical information in near real-time. This application lets health plans and providers share risk adjustment information, quality measurement data, and performance reports, among other data. Providers are notified of care gaps within their existing workflows, making it easy to upload supporting documents.
NaviNet Open Document Exchange enables health plans and providers to thrive in a world of value-based care by providing near real-time access to critical information at the point of care.
- **AllPayer** provides standard eligibility, benefit, and claim status information to provider offices for hundreds of commercial and government plans through the NaviNet portal. Building on the rich, multi-payer experience of NaviNet Open, AllPayer allows provider offices to quickly find the information they need, without having to jump between portals or spend unnecessary time on the phone with health plans.

NantHealth Systems Infrastructure to Enable NantHealth Solutions:

We host our applications and serve all our clients from four redundant data centers in geographically diverse locations. These infrastructure-hosting services also include capabilities such as secure server and application hosting, secure offsite backup, disaster recovery and business continuity solutions.

Due to the sensitive nature of our clients' data, we have a heightened focus on data security and protection. We have implemented healthcare IT industry-standard processes, policies and tools through all levels of our software development and network administration, including regularly scheduled vulnerability scanning and third-party penetration testing to reduce the risk of vulnerabilities in our system. Our clinical decision support platform achieved initial URAC accreditation in Health Utilization Management, or HUM, during September 2010 and was re-accredited during August 2016 for another 3-year period. Our payer solutions products have been accredited under the Health Network Accreditation Program of the Electronic Healthcare Network Accreditation Commission since 2006 and were re-certified in January 2019 for two years.

Our Relationship with NantOmics and Allscripts

We have worldwide, exclusive rights from NantOmics to resell their proprietary GPS Cancer product to institutional clients, including payers, self-insured employers and healthcare providers. NantOmics provides whole genome, whole exome and RNA sequencing, along with related computational and data management and bioinformatics services. We provide these services as part of our comprehensive molecular analysis offering. Under the agreement, we are responsible for various aspects of delivering our sequencing and molecular analysis solutions, including patient engagement and communications with providers such as providing interpretations of our GPS Cancer reports and resolving any disputes, ensuring customer satisfaction, and managing billing and collections. Our current agreement with NantOmics expires in December 2020, subject to renewal for up to an additional nine years if certain thresholds are met. The terms of the agreement include an annual minimum of \$2.0 million in fees for years 2016-2020, \$25.0 million in fees for years 2021-2023 and \$50.0 million in fees for years 2024-2029 paid to NantOmics.

In May 2015, we and Allscripts Healthcare, LLC, or Allscripts Healthcare, an affiliate of Allscripts, entered into a mutual license and reseller agreement, or the Mutual License and Reseller Agreement, which was subsequently amended and restated in June 2015, pursuant to which we each appointed the other as a non-exclusive marketer and reseller to eligible, approved customers of various products and services, including our DeviceConX, VitalxConX, HBox, Device Escort and Evidi Advisor products and services and Allscripts Healthcare's FollowMyHealth, Care Director, EPSi and dbMotion products and services. In addition, we and Allscripts Healthcare each designated the other as a preferred partner-i.e., subject to certain exceptions and limitations, our DeviceConX family of products and services are the exclusive medical device integration products and services that may be marketed and sold by Allscripts Healthcare, and Allscripts Healthcare's scheduled products and services are the exclusive products and services of the same required functionality that may be marketed and sold by us. Each party retained ownership of any data generated and collected in connection with its respective products, though each party granted the other a non-exclusive, fully paid-up license to use its data, as well as to use its trademarks, marketing materials and product documentation in connection with the marketing and resale of products and services. The agreement has an initial term of five (5) years and renews automatically for successive one (1) year periods, unless terminated by us or Allscripts Healthcare. Each party has the right to terminate the agreement in the event the other party commits a material, uncured breach, is declared insolvent, suffers a prolonged force majeure event, becomes ineligible for federal healthcare programming or undergoes a change-in-control involving such party's competitor. In June 2015, Allscripts purchased a 10% equity stake in our company for \$200.0 million in cash. In addition, NantCapital, LLC, or NantCapital, announced a \$100.0 million investment into Allscripts. NantCapital's investment was executed through a private placement of Allscripts common stock. The investments and commercial agreement strengthened the partnership between Allscripts and our company, originally announced in March 2015, to develop an integrated, evidence-based, personalized approach to healthcare solutions, and specifically cancer care. We plan to use Allscripts' scale, global network of hospital and physician clients and leading software solutions, combined with our clinical platform, applications and connectivity devices to build out the infrastructure for new personalized, precision medicine programs for our clients to improve cancer care. Together, our goal is for physicians and patients to have the tools to stay engaged and active and provide the necessary intervention as early as possible. On August 3, 2017, we entered into an asset purchase agreement with Allscripts Healthcare Solutions, Inc., pursuant to which we agreed to sell to Allscripts substantially all of the assets of the company's provider/patient engagement solutions business, including our FusionFX solution and components of its NantOS software connectivity solutions. The sale was completed on August 25, 2017. Concurrent with the sale to Allscripts and as contemplated by the asset purchase agreement, we and Allscripts modified the amended and restated mutual license and reseller agreement dated June 26, 2015, which was further amended on December 30, 2017, such that, among other things, we committed to deliver a minimum of \$95.0 million of total bookings over a ten-year period ("Bookings Commitment") from referral transactions and sales of certain Allscripts products under this agreement. In the event of a Bookings Commitment shortfall at the end of the ten-year period, we may be obligated to pay 70% of the shortfall, subject to certain credits. We will earn 30% commission from Allscripts on each software referral transaction that results in a booking with Allscripts. We account for the Bookings Commitment at its estimated fair value over the life of the agreement and, as of December 31, 2018, we estimate it to be \$16.9 million.

Our Clients

NantHealth solutions and technology platforms are used by key healthcare stakeholders, including healthcare providers, payers, self-insured employers, academic institutions and biotechnology and pharmaceutical companies. NantHealth solutions, coupled with our engagement methodology, is designed to be tailored to meet the large-scale needs of governmental organizations and private entities while remaining convenient, intuitive and configurable at the user level. We believe that this provides us with a significant advantage over a siloed, single vendor approach, which often requires the removal or replacement of existing information technology infrastructure and applications. While historically many of our solutions have been consumed on a stand-alone basis, we are increasingly bundling our solutions as our clients look for comprehensive approaches that leverage our learning algorithms.

Our total revenue was \$89.5 million and \$86.7 million in 2018 and 2017 respectively. For the year ended December 31, 2018, three customers each accounted for more than 10% of our revenue. For the year ended December 31, 2017, two customers each accounted for more than 10% of our revenue.

Sales and Marketing

Our sales organization is primarily comprised of direct sales executives and pre-sales support teams organized by account type and domain and subject matter expertise. We also leverage strategic reseller arrangements and a channel relationship coverage team.

- **Direct sales organization:** We leverage domain and subject matter expertise, market credibility, thought leadership, and relationships of our executives, senior management, and product leaders in our sales efforts. Our direct sales organization is divided into two focused teams, one dedicated to commercializing our GPS Cancer solution, and the other focused on NantHealth's health information technology solutions portfolio. These two primary direct coverage teams include both sales professionals searching for new accounts and client engagement sales professionals responsible for developing existing accounts. Furthermore, sales professionals have unique expertise and specialized coverage for health plans, self-insured employers, health systems, and individual providers. Our account management organization is responsible for the continuity of current client relationships and the expansion of those relationships to include additional solutions and services.

We have a pre-sales organization that includes clinical, business and technical customer alignment teams to support our sales organization in addition to executive sponsorship with members of our senior management team.

- **Resale and channel partnership:** In the United States, we have entered strategic resale arrangements with major partners, including EHR vendors (including Allscripts), in-hospital medical devices manufacturers and health plans who resell our solutions to their customer base. Internationally, we have entered resale arrangements with other strategic distributors to accelerate our market adoption. Reseller revenue in 2018 and 2017 was \$14.5 million and \$14.8 million, respectively.

We also maintain business relationships with individuals and organizations that promote or support our sales or services. We refer to these individuals and organizations as our channel partners. These channel partners generally do not make sales directly like our resale partners, but instead provide us with leads that we use to develop new business through our direct sales force. These relationships enable access to broader hospital and physician clients, leading software solutions and multiple cross-selling opportunities.

We complement our sales efforts with a marketing organization that plans and execute marketing and communication strategies that are centered on initiatives that drive awareness of our company and solutions. These initiatives include educating the market about our company broadly, as well as solutions-specific campaigns for lead generation. Marketing efforts also include participation in speaking engagements and strategic interfacing with key business and trade media personnel. We employ a broad array of specific events to facilitate these initiatives, including, but not limited to, sponsorship and partnership of key industry conferences such as HIMSS and or ASCO, events and client-focused programs such as key partner user groups.

Our sales cycle can vary significantly and typically ranges from 6 months to 18 months from initial contact to contract execution. The sales cycle significantly differs based on the domain, type of solution and size of the client. Implementation, training and professional services are normally rendered based on a mutually agreed upon timetable.

Competition

The competitive landscape is highly fragmented, and to our knowledge, no single competitor currently offers similarly expansive capabilities and solution offerings in comprehensive molecular analysis, software, and systems infrastructure, particularly with a focus on creating a learning system. Our primary competitors can be characterized by the following categories of companies that provide capabilities or solutions that compete with one or more of our platforms or solutions:

- Molecular analysis vendors, such as Caris Life Sciences, Inc., Foundation Medicine, Inc., Guardant Health, Inc., Paradigm Diagnostics, Inc., Personal Genome Diagnostics, Inc. and Tempus Labs;
- Payer-provider collaboration vendors, such as Availity, LLC, Change Healthcare, Inc. (formerly Emdeon), Experian Information Solutions, Inc. (including its Passport division), Healthx, Inc. and Health Trio, LLC;

- Medical device data system and device connectivity vendors, such as Capsule Technologies, Inc. (formerly Qualcomm Life), Cerner Corporation, Bernoulli Enterprise, Inc., General Electric Company and Medical Information Technology, Inc.; and
- Healthcare information technology decision support vendors such as The Advisory Board Company, Castlight Health, Inc., or Castlight Health, Evolent Health, eviCore Healthcare, HealthCatalyst, Inc., or HealthCatalyst, International Business Machines Corporation, or IBM, Inovalon Holdings, Inc., or Inovalon and Truven Health Analytics, or Truven (acquired by IBM).

The principal competitive factors in our industry include:

- Breadth and depth of application functionality;
- Ease of use and performance;
- Network strength and level of user adoption;
- Client testimonials and recommendations;
- Breadth of client base;
- Cloud-based delivery model;
- Competitive and understandable pricing;
- Ability to deliver actionable information in a relevant time period;
- Size and scope of payer clinical policy knowledge;
- Sale and marketing capabilities of vendor;
- Financial stability of vendor;
- Ability to integrate with legacy enterprise infrastructures and third-party applications; and
- Ability to innovate and respond rapidly to client needs and regulatory changes.

We believe we will compete favorably despite competing against a broad, diverse set of businesses and with increasing competition as other established and emerging companies enter our industry, client requirements evolve, and new products and technologies are introduced. Moreover, some of our actual and potential competitors have certain advantages over us, such as greater financial, technical, marketing, research and development and other resources, stronger brand and business user recognition, larger installed customer bases, larger intellectual property portfolios and broader global distribution and presence.

Research and Development

Our research and development efforts consist primarily of new product research and development, significant product improvements, the development of our knowledge base, the development of our online tools, such as our online portal and mobile applications, and the improvement and augmentation of our learning system.

Our ability to compete and attract new clients depends, in large part, on our continuous commitment to rapidly introduce new applications, technologies, features, and functionality. Our research and development team is responsible for the design and development of our applications and software tools. We follow state-of-the-art practices in software development using modern programming languages, data storage systems, and other tools.

Research and development expenses decreased \$12.9 million or 38.2%, from \$33.9 million in 2017 to \$20.9 million in 2018. This decrease was largely driven by a decrease of \$8.4 million in personnel expenses due to our restructuring in 2017, offset by the addition of research and development personnel from NantHealth Labs, which reduced headcount allocated to research and development by around 26%. There was also a \$2.7 million decrease in stock compensation related to the reduction in research and development headcount, and an equity award granted in November 2017, a portion of which vested immediately increasing the expense recognized for 2017. The lower headcount and lower overall bonus payments in 2018 led to a \$0.5 million decrease in bonus expense. Also, we saw a \$0.7 million decline in expense from external research and development resources as development projects were performed internally.

We expect that our overall research and development expenses will increase in absolute dollars as we continue to innovate our informational technology capabilities, develop additional products, and expand our data management resources.

Intellectual Property

We strive to protect and enhance the proprietary technology, inventions, and improvements that are commercially important to our business, including seeking, maintaining, and defending patent rights, whether developed internally or acquired from third parties. Our policy is to seek to protect our proprietary position by, among other methods, filing patent applications in the United States and in jurisdictions outside of the United States related to our proprietary technology, inventions, and improvements that are important to the development and implementation of our business. We also rely on trade secrets and know-how relating to our proprietary technology, continuing innovation, and acquisition and in-licensing opportunities to develop, strengthen, and maintain our proprietary position in the field of molecular diagnostics and healthcare technology products and services.

Our commercial success may depend in part on our ability to obtain and maintain patent and other proprietary protection for our technology, inventions, and improvements; to preserve the confidentiality of our trade secrets; to defend and enforce our proprietary rights, including our patents; and to operate without infringing on the valid and enforceable patents and other proprietary rights of third parties.

We have developed and acquired numerous patents and patent applications and we possess substantial know-how and trade secrets relating to the development and commercialization of healthcare technology products and services. As of December 31, 2018, our patent portfolio consisted of the following matters relating to our proprietary technology and inventions: (i) seven issued U.S. patents, including six U.S. utility patents and one U.S. design patent; (ii) eighteen pending U.S. patent applications, including sixteen U.S. utility patent applications and two U.S. design patent applications; (iii) one issued patent outside the United States; and (iv) seventeen patent applications pending in jurisdictions outside the United States. Of these U.S. and non-U.S. patents and applications, two patents and seven applications were jointly owned.

Individual patents extend for varying periods of time, depending upon the date of filing of the patent application, the date of patent issuance, and the legal term of patents in the countries in which they are obtained.

Generally, patents issued for applications filed in the United States are effective for 20 years from the earliest effective filing date. The patent term may be adjusted to compensate for delayed patent issuance, when such delays are caused by the patent office or successful appeals against patent office actions. There is no limit on this patent term adjustment. The duration of patents outside of the United States varies in accordance with provisions of applicable local law, but typically is also 20 years from the earliest effective filing date. We estimate that our issued U.S. patents will expire on dates ranging from 2022 to 2036. If patents are issued on our pending U.S. patent applications, the resulting patents are projected to expire on dates ranging from 2026 to 2038. However, the actual protection afforded by a patent varies on a product-by-product basis, from country-to-country, and depends upon many factors, including the type of patent, the scope of its coverage, the availability of legal remedies in a particular country, and the validity and enforceability of the patent.

The patent positions of companies like ours are generally uncertain and involve complex legal and factual questions. No consistent policy regarding the scope of claims allowable in patents in the field of healthcare information technology has emerged in the United States. The patent situation outside of the United States is even more uncertain. Changes in either the patent laws or their interpretation in the United States and other countries may diminish our ability to protect our inventions and enforce our intellectual property rights, and more generally could affect the value of our intellectual property. In particular, our ability to stop third parties from making, using, selling, offering to sell, or importing products that infringe our intellectual property will depend in part on our success in obtaining and enforcing patent claims that cover our technology, inventions, and improvements.

With respect to our intellectual property, we cannot be sure that patents will be granted with respect to any of our pending patent applications or with respect to any patent applications filed by us in the future, nor can we be sure that any of our existing patents or any patents that may be granted to us in the future will be commercially useful in protecting our products and the processes involved in using those products. Moreover, even our issued patents do not guarantee us the right to practice our technology in relation to the commercialization of our products. However, the area of patent and other intellectual property rights in healthcare technology is an evolving one with many risks and uncertainties, and third parties may have blocking patents that could be used to prevent us from commercializing our patented products and practicing our proprietary technology. Our issued patents and those that may issue in the future may be challenged, invalidated, or circumvented, which could limit our ability to stop competitors from marketing related products or limit the length of the term of patent protection that we may have for our products. In addition, the rights granted under any issued patents may not provide us with protection or competitive advantages against competitors with similar technologies. Furthermore, our competitors may independently develop similar technologies. For these reasons, we may have competition for our products and services. Moreover, because of the extensive time required for development and testing of a potential product or service, it is possible that, before any particular product or service can be commercialized, any related patent may expire or remain in force for only a relatively short period following commercialization, thereby reducing any advantage of the patent.

We may also rely, in some circumstances, on trade secrets to protect our technology. However, trade secrets are difficult to protect. We seek to protect our technology and product candidates, in part, by entering confidentiality agreements with those who have access to our confidential information, including our employees, contractors, consultants, collaborators, and advisors. We also seek to preserve the integrity and confidentiality of our proprietary technology and processes by maintaining physical security of our premises and physical and electronic security of our information technology systems. Although we have confidence in these individuals, organizations, and systems, agreements or security measures may be breached and we may not have adequate remedies for any breach. In addition, our trade secrets may otherwise become known or may be independently discovered by competitors. To the extent that our employees, contractors, consultants, collaborators, and advisors use intellectual property owned by others in their work for us, disputes may arise as to the rights in related or resulting know-how and inventions.

For this and more comprehensive risks related to our proprietary technology, inventions, improvements and products, please see the section captioned "Risk Factors-Risks Related to Intellectual Property."

Associates and Culture

We view our employees, which we refer to as associates, and company culture as integral to the successful execution of our vision and mission. As a result, our leadership team prioritizes establishing trusting relationships with our clients, our partners, and each other. We encourage our associates to "rise up" to the challenge and believe that this collective mindset has enabled us to attract and retain some of the best minds in technology, bioscience and healthcare to build and advance our offering. Our core values, which we seek to reflect in our work are:

- Building and cultivating RELATIONSHIPS with our clients and each other. Treating individuals with dignity and respect and contributing to the success of others.
- Demonstrating INTEGRITY by being intellectually honest, doing what you say, and engaging with others from a point of honesty and trust.
- Delivering excellence in SERVICE. Aspiring to be the best through quality outcomes, partnering to optimize solutions, and holding self and others accountable for success.
- Actively seeking out the opportunity to ELEVATE by speaking up, contributing feedback and ideas, and advancing the organization's mission and purpose.

As of December 31, 2018, we had a total of 543 full-time associates in the United States and the United Kingdom. Associate engagement is a core tenant of our leadership focus and monitor of our performance and organizational health. None of our associates are represented by a labor union or covered by a collective bargaining agreement. We have not experienced any work stoppages, and we consider our relations with our associates to be good.

Government Regulation

The products and services that we provide are regulated by federal, state and foreign governmental authorities. Failure to comply with the applicable laws and regulations can subject us to repayment of amounts previously paid to us, significant civil and criminal penalties, loss of licensure, certification, or accreditation, or exclusion from government healthcare programs. The significant areas of regulation are summarized below.

Clinical Laboratory Improvement Amendments of 1988 and State Regulation

The Omics services we perform fall under CLIA. A clinical laboratory is required to hold certain federal and state licenses, certifications, and permits to conduct business. As to federal certifications, Congress passed CLIA in 1988, establishing quality standards for all laboratory testing to ensure the accuracy, reliability, and timeliness of patient test results regardless of where the test was performed. The laboratory that performs our Omics services is CLIA-certified and is also required to meet certain laboratory licensing requirements for states with regulations beyond CLIA.

Under CLIA, a laboratory is any facility which performs laboratory testing on specimens derived from humans for the purpose of providing information for the diagnosis, prevention or treatment of disease, or the impairment or assessment of health. CLIA regulates virtually all clinical laboratories by requiring they be certified by the federal government and comply with various operational, personnel, facilities administration, quality, and proficiency requirements intended to ensure that their clinical laboratory testing services are accurate, reliable, and timely. Laboratories must register and list their tests with CMS, the agency that oversees the CLIA program. CLIA compliance and certification is also a prerequisite to be eligible to bill for services provided to governmental payer program beneficiaries and for many private payers. CLIA is user-fee funded. Therefore, all costs of administering the program must be covered by the regulated facilities, including certification and survey costs.

Clinical laboratories are subject to survey and inspection every two years to assess compliance with program standards and may be subject to additional unannounced inspections. Laboratories performing high complexity testing are required to meet more stringent requirements than laboratories performing less complex tests. In addition, a laboratory, like the one which performs our Omics services, that is certified as "high complexity" under CLIA, may develop, manufacture, validate, and use proprietary tests referred to as laboratory developed tests, or LDTs. CLIA requires full validation, including accuracy, precision, specificity, sensitivity, and establishment of a reference range for any LDT used in clinical testing.

In addition to the federal certification requirements under CLIA, certain states require clinical laboratories to maintain a state license. State licensure authorities typically regulate the day-to-day operations of a clinical laboratory, including the training and skills required of its personnel and quality control. Certain states may also mandate proficiency testing, which requires the clinical laboratory to verify the accuracy of any test or procedure it performs. In addition, certain states require out-of-state laboratories to be licensed if they accept specimens from those states. CLIA provides that a state may adopt laboratory regulations that are more stringent than those under federal law. In some cases, state licensure programs substitute for the federal CLIA program. In other instances, the state's regulations may be in addition to the CLIA program. If a laboratory is out of compliance with state laws or regulations governing licensed laboratories, penalties for violation vary from state to state but may include suspension, limitation, revocation or annulment of the license, assessment of financial penalties or fines, or imprisonment.

FDA

The FDA regulates the sale and distribution in interstate commerce of medical devices under the Federal Food, Drug, and Cosmetic Act, or the FDCA, including in vitro diagnostic devices, reagents, and instruments used to perform diagnostic testing. Devices must undergo premarket review by the FDA prior to commercialization unless the device is of a type exempted from such review by statute, regulation, or pursuant to the FDA's exercise of enforcement discretion. The FDA, to date, has generally not exercised its authority to actively regulate the development and use of LDTs, which are tests that are designed, manufactured, validated, and used within a single laboratory, and, therefore, we do not believe that the LDTs and other tests performed by the Omics laboratory currently require premarket clearance or approval. It is likely that the FDA will more actively regulate LDTs in the future, which could lead to premarket and post-market obligations. In October 2014, the FDA issued draft guidance documents stating that the FDA intends to change its policy and describing an approach to regulating LDTs using a risk-based, phased-in approach. In November 2016, the FDA stated that it had decided to delay finalizing its draft guidance on regulating LDTs, and it would be seeking input from the new presidential administration and Congress on the subject. Based on the request of stakeholders and the significant amount of feedback to the 2014 Draft Guidance, in January 2017, the FDA issued a Discussion Paper on LDTs in which it announced that it would not issue a final guidance on the oversight of LDTs and provided a prospective oversight framework that focuses on new and significantly modified high and moderate risk LDTs. Subject to certain limitations, the proposed focused oversight would mostly exempt a wide range of LDTs from FDA oversight, which include, but are not limited to, previously marketed LDTs (these "grandfathered" LDTs would still be subject to adverse event reporting), traditional LDTs, and low risk LDTs. In the Discussion Paper, FDA proposes a risk-based, phased in approach for premarket review of new and significantly modified LDTs and such premarket review would not be duplicative of CMS's post market oversight of laboratory operations or clinical utility determinations. FDA also proposes to leverage existing CMS/CLIA requirements related to quality systems and expanding third party premarket review, including coordination with a range of programs, including New York's Clinical Laboratory Evaluation Program. In the meantime, the laboratory that performs the Omics services will maintain its CLIA certification, which permits the use of LDTs for the purpose of providing information for treatment and other clinical purposes.

The FDA regulations pertaining to medical devices govern, among other things, the research, design, development, pre-clinical and clinical testing, manufacture, safety, effectiveness, clearance or approval, record-keeping, packaging, labeling, storage, adverse event reporting, advertising, promotion, marketing, sales, distribution, and import and export of medical devices. Pursuant to the FDCA, and its implementing regulations, medical devices are subject to varying degrees of regulatory control and are classified in one of three classes depending on the controls the FDA determines necessary to reasonably ensure their safety and effectiveness.

Class I devices are those for which reasonable assurance of safety and effectiveness can be provided by adherence to the FDA's general controls for medical devices, which include applicable portions of the FDA's QSR, facility registration and product listing, reporting of adverse medical events, and appropriate, truthful, and non-misleading labeling, advertising and promotional materials. Many Class I devices are exempt from premarket regulation; however, some Class I devices require premarket clearance by the FDA through the 510(k) premarket notification process described below.

Class II devices are subject to the FDA's general controls, and any other special controls, such as performance standards, post market surveillance, and FDA guidelines, deemed necessary by the FDA to provide reasonable assurance of the devices' safety and effectiveness. Premarket review and clearance by the FDA for Class II devices are accomplished through the 510(k) premarket notification procedure, although some Class II devices are exempt from the 510(k) requirements. Premarket notifications are subject to user fees, unless a specific exemption applies. To obtain 510(k) clearance, a manufacturer must submit a premarket notification demonstrating that the proposed device is "substantially equivalent" to a predicate device, which is a previously cleared 510(k) device or a pre-amendment device that was in commercial distribution before May 28, 1976, for which the FDA has not yet called for the submission of a premarket approval, or PMA, application. In determining substantial equivalence, the FDA assesses whether the proposed device has the same intended use and technical characteristic as the predicate device, or whether the proposed device has different technological characteristics, but the information submitted in the premarket notification demonstrates the device is as safe and effective as a legally marketed device and does not raise different questions of safety and effectiveness than the predicate device. The FDA may request additional information, including clinical data. Under the FDCA, and its implementing regulations, a manufacturer submits a premarket notification 90 days before introducing a device into interstate commerce, but the FDA's review of the premarket notification can take significantly longer. If the FDA determines that the device is substantially equivalent to the predicate device(s), the subject device may be marketed. However, if the FDA determines that a device is not substantially equivalent to the predicate device(s), then the device would be regulated as a Class III device, discussed below. If a manufacturer obtains a 510(k) clearance for its device and then makes a modification that could significantly affect the device's safety or effectiveness, a new premarket notification must be submitted to the FDA.

Class III devices are those deemed by FDA to pose the greatest risk, such as those that are life-sustaining or life-supporting and for which reasonable assurance of the device's safety and effectiveness cannot be assured solely by the general controls and special controls described above. Some pre-amendment Class III devices for which the FDA has not yet required a PMA require the FDA's clearance of a premarket notification in order to be marketed. However, most Class III devices are required to undergo the PMA process in which the manufacturer must demonstrate reasonable assurance of the safety and effectiveness of the device to the FDA's satisfaction. A PMA application must provide valid scientific evidence, typically extensive preclinical and clinical trial data, and information about the device and its components regarding, among other things, device design, manufacturing, and labeling. PMA applications (and supplemental PMA applications) are subject to significantly higher user fees than are 510(k) premarket notifications. Some PMA applications are exempt from a user fee, for example, a small business's first PMA.

Even if regulatory approval or clearance of a device is granted, the FDA may impose limitations on the uses and indications for which the device may be labeled and promoted, and the device remains subject to significant regulatory requirements. Medical devices may be marketed only for the uses and indications for which they are cleared or approved. Device manufacturers must register their facilities and list their devices with the FDA. A device manufacturer's manufacturing processes and those of some of its suppliers are required to comply with the applicable portions of the QSR, which covers quality management, design, production and process controls, quality assurance, labeling, packaging, shipping, and complaint handling. Device manufacturers must submit to the FDA medical device reports for deaths, serious injuries, and certain malfunctions and report certain field corrections and product recalls or removals. Some manufacturers also may be subject to post-market surveillance regulations. Facility records and manufacturing processes are subject to periodic unscheduled inspections by the FDA.

Failure to comply with applicable regulatory requirements can result in enforcement action by the FDA, which may include any of the following sanctions: public warning letters, fines, injunctions, civil or criminal penalties, recall or seizure of products, operating restrictions, partial suspension or total shutdown of production, delays in or denial of 510(k) clearance or PMA applications for new products, challenges to existing 510(k) clearances or PMA applications, and a recommendation by the FDA to disallow a device manufacturer from entering into government contracts. The FDA also has the authority to request repair, replacement, or refund of the cost of any device manufactured or distributed. If a supplier fails to maintain compliance with a device manufacturer's quality requirements, the manufacturer may have to qualify a new supplier and could experience manufacturing delays as a result.

HIPAA and HITECH

Under the administrative simplification provisions of HIPAA, as amended by the HITECH Act, the HHS issued regulations that establish uniform standards governing the conduct of certain electronic healthcare transactions and protecting the privacy and security of protected health information used or disclosed by healthcare providers and other covered entities. Three principal regulations with which we are required to comply have been issued in final form under HIPAA: privacy regulations, security regulations, and standards for electronic transactions, which establish standards for common healthcare transactions. The privacy and security regulations were extensively amended in 2013 to incorporate requirements from the HITECH Act.

The privacy regulations cover the use and disclosure of protected health information by healthcare providers and other covered entities. They also set forth certain rights that an individual has with respect to his or her protected health information maintained by a covered entity, including the right to access or amend certain records containing protected health information, or to request restrictions on the use or disclosure of protected health information. The security regulations establish requirements for safeguarding the confidentiality, integrity, and availability of protected health information that is electronically transmitted or electronically stored. The HITECH Act, among other things, makes certain of HIPAA's privacy and security standards applicable to business associates of covered entities, and established certain protected health information security breach notification requirements. A covered entity must notify affected individual(s) and the HHS when there is a breach of unsecured protected health information. The HIPAA privacy and security regulations establish a uniform federal "floor" that covered entities and their business associates must meet and do not supersede state laws that are more stringent or provide individuals with greater rights with respect to the privacy or security of, and access to, their records containing protected health information. HIPAA also governs patient access to laboratory test reports. Effective October 6, 2014, individuals (or their personal representatives, as applicable), have the right to access test reports directly from clinical laboratories and to direct that copies of those test reports be transmitted to persons or entities designated by the individual.

These laws contain significant fines and other penalties for wrongful use or disclosure of protected health information. Additionally, to the extent that we submit electronic healthcare claims and payment transactions that do not comply with the electronic data transmission standards established under HIPAA and the HITECH Act, payments to us may be delayed or denied.

In addition to the federal privacy regulations, there are several state laws regarding the privacy and security of health information and personal data that are applicable to our operations. The compliance requirements of these laws, including additional breach reporting requirements, and the penalties for violation vary widely and new privacy and security laws in this area are evolving. Massachusetts, for example, has a state law that protects the privacy and security of personal information of Massachusetts residents that is more prescriptive than HIPAA. Many states have also implemented genetic testing and privacy laws imposing specific patient consent requirements and protecting test results. In some cases, we are prohibited from conducting certain tests without a certification of patient consent by the physician ordering the test. Requirements of these laws and penalties for violations vary widely. We believe that we have taken the steps required of us to comply with health information privacy and security statutes and regulations in all jurisdictions, both state and federal. However, we may not be able to maintain compliance in all jurisdictions where we do business. Failure to maintain compliance, or changes in state or federal laws regarding privacy or security, could result in civil and/or criminal penalties and could have a material adverse effect on our business.

Federal, State and Foreign Fraud and Abuse Laws

In the United States, there are various fraud and abuse laws with which we must comply and we are potentially subject to regulation by various federal, state and local authorities, including CMS, other divisions of the HHS (e.g., the Office of Inspector General), the U.S. Department of Justice, and individual U.S. Attorney offices within the Department of Justice, and state and local governments. We also may be subject to foreign fraud and abuse laws.

In the United States, the federal Anti-Kickback Statute prohibits, among other things, knowingly and willfully offering, paying, soliciting or receiving remuneration to induce, or in return for patient referrals for, or purchasing, leasing, ordering, recommending or arranging for the purchase, lease or order of, any healthcare item or service reimbursable under a governmental payer program. Courts have stated that a financial arrangement may violate the Anti-Kickback Statute if any one purpose of the arrangement is to encourage patient referrals or other federal healthcare program business, regardless of whether there are other legitimate purposes for the arrangement. The definition of "remuneration" has been broadly interpreted to include anything of value, including gifts, discounts, credit arrangements, payments of cash, consulting fees, waivers of co-payments, ownership interests, and providing anything at less than its fair market value. Recognizing that the Anti-Kickback Statute is broad and may technically prohibit many innocuous or beneficial arrangements within the healthcare industry, the HHS issued a series of regulatory "safe harbors." These safe harbor regulations set forth certain provisions, which, if met, will assure healthcare providers and other parties that they will not be prosecuted under the federal Anti-Kickback Statute. Although full compliance with these provisions ensures against prosecution under the federal Anti-Kickback Statute, the failure of a transaction or arrangement to fit within a specific safe harbor does not necessarily mean that the transaction or arrangement is illegal or that prosecution under the federal Anti-Kickback Statute will be pursued. Many states also have anti-kickback statutes, some of which may apply to items or services reimbursed by any third-party payer, including commercial insurers.

In addition, federal false claims laws, including the federal civil False Claims Act, prohibit, among other things, any person or entity from knowingly presenting, or causing to be presented, a false claim for payment to, or approval by, the federal government or knowingly making, using, or causing to be made or used a false record or statement material to a false or fraudulent claim to the federal government. As a result of a modification made by the Fraud Enforcement and Recovery Act of 2009, a claim includes "any request or demand" for money or property presented to the U.S. government. Recently, several pharmaceutical and other healthcare companies have been prosecuted under these laws for allegedly providing free product to customers with the expectation that the customers would bill federal programs for the product. Other companies have been prosecuted for causing false claims to be submitted because of the companies' marketing of the product for unapproved, and thus generally non-reimbursable, uses. The civil monetary penalties statute imposes penalties against any person or entity who, among other things, is determined to have presented or caused to be presented a claim to a federal health program that the person knows or should know is for an item or service that was not provided as claimed or is false or fraudulent.

HIPAA created additional federal criminal statutes that prohibit knowingly and willfully executing, or attempting to execute, a scheme to defraud or to obtain, by means of false or fraudulent pretenses, representations or promises, any money or property owned by, or under the control or custody of, any healthcare benefit program, including private third-party payers and knowingly and willfully falsifying, concealing or covering up by trick, scheme or device, a material fact or making any materially false, fictitious or fraudulent statement in connection with the delivery of or payment for healthcare benefits, items or services.

In addition, various states have enacted false claim laws analogous to the federal False Claims Act, although many of these state laws apply where a claim is submitted to any third-party payer and not merely a governmental payer program. If our operations are found to be in violation of any of the federal and state healthcare laws described above or any other governmental regulations that apply to us, we may be subject to significant penalties, including without limitation, civil, criminal and/or administrative penalties, damages, fines, disgorgement, exclusion from participation in government programs, such as Medicare and Medicaid, injunctions, private "qui tam" actions brought by individual whistleblowers in the name of the government, or refusal to allow us to enter into government contracts, contractual damages, reputational harm, administrative burdens, diminished profits and future earnings, and the curtailment or restructuring of our operations, any of which could adversely affect our ability to operate our business and our results of operations.

In Europe, various countries have adopted anti-bribery laws providing for severe consequences, in the form of criminal penalties and/or significant fines, for individuals and/or companies committing a bribery offence. Violations of these anti-bribery laws, or allegations of such violations, could have a negative impact on our business, results of operations and reputation. For instance, in the United Kingdom, under the Bribery Act 2010, which went into effect in July 2011, a bribery occurs when a person offers, gives or promises to give a financial or other advantage to induce or reward another individual to improperly perform certain functions or activities, including any function of a public nature. Bribery of foreign public officials also falls within the scope of the Bribery Act 2010. Under the new regime, an individual found in violation of the Bribery Act 2010 faces imprisonment of up to 10 years. In addition, the individual can be subject to an unlimited fine, as can commercial organizations for failure to prevent bribery.

Federal and State Physician Self-referral Prohibitions

Under a federal law directed at "self-referral," commonly known as the "Stark Law," there are prohibitions, with certain exceptions, on referrals for certain designated health services, including laboratory services, that are covered by the Medicare and Medicaid programs by physicians who personally, or through a family member, have an investment or ownership interest in, or a compensation arrangement with, an entity performing the tests. The prohibition also extends to payment for any testing referred in violation of the Stark Law. A person who engages in a scheme to circumvent the Stark Law's referral prohibition may be fined up to \$100,000 for each such arrangement or scheme. In addition, any person who presents or causes to be presented a claim to the Medicare or Medicaid programs in violation of the Stark Law is subject to civil monetary penalties of up to \$15,000 per bill submission, an assessment of up to three times the amount claimed and possible exclusion from participation in federal governmental payer programs. Bills submitted in violation of the Stark Law may not be paid by Medicare or Medicaid, and any person collecting any amounts with respect to any such prohibited bill is obligated to refund such amounts. Many states have comparable laws that are not limited to Medicare and Medicaid referrals.

Corporate Practice of Medicine

Numerous states have enacted laws prohibiting business corporations, such as us, from practicing medicine and employing or engaging physicians to practice medicine, generally referred to as the prohibition against the corporate practice of medicine. These laws are designed to prevent interference in the medical decision-making process by anyone who is not a licensed physician. For example, California's Medical Board has indicated that determining what diagnostic tests are appropriate for a particular condition and taking responsibility for the ultimate overall care of the patient, including providing treatment options available to the patient, would constitute the unlicensed practice of medicine if performed by an unlicensed person. Violation of these corporate practice of medicine laws may result in civil or criminal fines, as well as sanctions imposed against us and/or the physician through licensure proceedings. Typically, such laws are only applicable to entities that have a physical presence in the state.

Healthcare Reform

The United States and some foreign jurisdictions are considering or have enacted several legislative and regulatory proposals designed to change the healthcare system in ways that could affect our business. In the United States, there is significant interest in promoting changes in the health care system with the stated goal of containing healthcare costs, improving quality or expanding access. For example, the ACA contains certain measures that may be significant for our business. The ACA includes, among other things, provisions regarding initiatives to revise Medicare payment methodologies; the coordination and promotion of research on comparative clinical effectiveness of different technologies and procedures; and initiatives to promote quality indicators in payment methodologies. The ACA also includes an annual excise tax on device manufacturers of 2.3% of the price for which manufacturers sell their devices. The excise tax has been temporarily suspended for calendar years 2016 through 2019, but will be reinstated in 2020 without additional Congressional action.

There have been other health reform measures taken since the enactment of the ACA. For example, the Budget Control Act of 2011, among other things, created measures for spending reductions by Congress. A Joint Select Committee on Deficit Reduction, tasked with recommending a targeted deficit reduction of at least \$1.2 trillion for fiscal year 2013 through fiscal year 2021, was unable to reach required goals, thereby triggering the legislation's automatic reduction (known as sequestration) to several government programs. This includes aggregate reductions to Medicare payments to providers of 2% per fiscal year, beginning April 1, 2013, which, following passage of subsequent legislation, will remain in effect through 2025 unless additional Congressional action is taken. Furthermore, on January 2, 2013, the American Taxpayer Relief Act of 2012 was signed into law, which, among other things, increased the statute of limitations for the government to recover overpayments to providers from three years to five years.

The current presidential administration and Congress are also expected to attempt broad sweeping changes to the current health care laws. We face uncertainties that might result from modification or repeal of any of the provisions of the ACA, including as a result of current and future executive orders and legislative actions. The impact of those changes on us and potential effect on the participants in the health care system as a whole is currently unknown. But, any changes to the ACA are likely to have an impact on our results of operations and may have a material adverse effect on our results of operations. We cannot predict what other healthcare programs and regulations will ultimately be implemented at the federal or state level or the effect of any future legislation or regulation in the United States may have on our business.

European Regulation

International sales of medical devices are subject to foreign governmental regulations, which vary substantially from country to country. The time required to obtain clearance or approval by a foreign country may be longer or shorter than that required for FDA clearance or approval, and the requirements may be different.

The primary regulatory body in Europe is the European Commission, which has adopted numerous directives and has promulgated standards regulating the design, manufacture, clinical trials, labeling and adverse event reporting for medical devices. Devices that comply with the requirements of a relevant directive will be entitled to bear the European Conformity Marking, or CE Mark, indicating that the device conforms to the essential requirements of the applicable directives and, accordingly, can be commercially distributed throughout the member states of the European Union, and other countries that comply with or mirror these directives. The method of assessing conformity varies depending on the type and class of the product, but normally involves a combination of self-assessment by the manufacturer and a third-party assessment by a notified body, an independent and neutral institution appointed by a country to conduct the conformity assessment. This third-party assessment may consist of an audit of the manufacturer's quality system, review of technical documentation, and specific testing of the manufacturer's device. Such an assessment may be required in order for a manufacturer to commercially distribute the product throughout these countries. We previously received authorization to affix the CE Mark to our HBox device connectivity hardware under Directive 2006/95/EC. The final form of the European Medical Device Regulation, which will replace Europe's Medical Device Directive, was adopted on May 25, 2017 and it becomes effective on May 25, 2020. The Medical Device Regulation will apply in parallel with the Medical Device Directive for a transition period of three years. Our standard DeviceConX software product is not regulated under the European Medical Device Regulation or Europe's Medical Device Directive, but we are currently pursuing a version of our DeviceConX software that may be distributed in Europe and that meets the European Medical Device Regulation, which software would bear a CE Mark upon completion of applicable assessments.

Other Regulatory Requirements

The laboratory performing the Omics services is subject to federal, state and local regulations relating to the handling and disposal of regulated medical waste, hazardous waste and biohazardous waste, including chemical, biological agents and compounds, blood and bone marrow samples, and other human tissue. Typically, the laboratory uses outside vendors who are contractually obligated to comply with applicable laws and regulations to dispose of such waste. These vendors are licensed or otherwise qualified to handle and dispose of such waste.

The U.S. Occupational Safety and Health Administration has established extensive requirements relating to workplace safety for healthcare employers, including requirements to develop and implement programs to protect workers from exposure to blood-borne pathogens by preventing or minimizing any exposure through needle stick or similar penetrating injuries.

Backlog

We have no material backlog of orders.

Geographic and Segment Information

During 2018, substantially all of our long-lived assets were located within the United States and United Kingdom.

Revenue from international markets were approximately 2% of our consolidated revenue for 2018 and approximately 2% of our consolidated revenue for 2017.

We operate in one segment. The Company has one business activity and does not segregate its business for internal reporting. Accordingly, management has determined that the Company operates in one reportable segment.

Seasonality

Our revenues are not seasonal in nature.

Corporate Information

We were founded in 2010 as a Delaware limited liability company under the name "About Advanced Health, LLC." In 2011, our affiliates NantWorks, LLC, or NantWorks, and California Capital Equity, LLC, or Cal Cap, purchased certain assets from Abraxis Bioscience, LLC, which were subsequently contributed to us. We subsequently changed our name to "All About Advanced Health, LLC," and then to "Nant Health, LLC." On June 1, 2016, in connection with our initial public offering, we converted from a limited liability company into a Delaware corporation and changed our name from Nant Health, LLC to NantHealth, Inc., which we refer to as the "LLC Conversion." In conjunction with the LLC Conversion, (a) all of our outstanding units were automatically converted into shares of our common stock, based on the relative rights of our pre-IPO equity holders as set forth in the Nant Health, LLC limited liability company agreement, or the LLC Agreement, and (b) we adopted and filed a certificate of incorporation with the Secretary of State of the State of Delaware and adopted bylaws. Our principal executive offices are located at 9920 Jefferson Blvd, Culver City, CA 90232 and our telephone number is (310) 883-1300. Our corporate website address is www.nanthealth.com. We make available on our website, free of charge, our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and any amendments to those reports, as soon as reasonably practicable after we electronically file such material with, or furnish it to, the Securities and Exchange Commission, or SEC. Our SEC reports can be accessed through the investor relations page of our website located at <http://ir.nanthealth.com/>.

The contents of our website are not a part of, and are not incorporated by reference into, this Annual Report on Form 10-K or any other report or document we file with the SEC, and any references to our website are intended to be inactive textual references only.

Item 1A. Risk Factors

Investing in our common stock involves a high degree of risk. You should carefully consider the risks described below, as well as all other information included in this Annual Report on Form 10-K, including our financial statements and the related notes thereto and Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations", any of which may be relevant to decisions regarding an investment in or ownership of our common stock. Our future operating results may vary substantially from anticipated results due to a number of risks and uncertainties, many of which are beyond our control. The risks and uncertainties described below are not the only ones we face. Additional risks and uncertainties that we are unaware of, or that we currently believe are not material, may also become important factors that affect us. The following discussion highlights some of these risks and uncertainties and the possible impact of these risks on future results of operations. If any of the following risks actually occurs, our business, financial condition, operating results, prospects and ability to accomplish our strategic objectives could be materially harmed. As a result, the trading price of our common stock could decline and you could lose all or part of your investment. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also impair our business operations and the market price of our common stock.

Risks related to our business approach

We are an early, commercial-stage company attempting to integrate a complex learning system to address a wide range of healthcare issues, and we may not be successful in doing so.

We are an early, commercial-stage company with a business model based upon a novel approach to healthcare. NantHealth solutions are designed to address many of the key challenges healthcare constituents face by enabling them to acquire and store sequencing and molecular analysis data, combine diagnostic inputs with phenotypic and cost data, analyze datasets, securely deliver that data to providers in a clinical setting to aid selection of the appropriate treatments, monitor patient biometric data and progression on a real-time basis, and demonstrate improved patient outcomes and costs. In addition, through our acquisition of NantHealth Labs, Inc. ("NantHealth Labs", formerly Liquid Genomics) in 2018, we have expanded into the liquid biopsy analysis market. Integration across our systems infrastructure and platforms may take longer than we expect or may never occur at all.

We have engaged and may in the future engage in the acquisition or disposition of other companies, technologies, and businesses which could divert our management's attention, result in additional dilution to our stockholders and otherwise disrupt our operations and harm our operating results.

Due to the above factors, it may take longer than we expect, or we may never be able, to fully integrate our system as planned. If our integration efforts are not successful we may not be able to attract new clients and to expand our offerings to existing clients.

The success of NantHealth solutions is dependent upon the robustness of the information we and others input into the system to achieve maximum network effects, and if we are unable to amass and input the requisite data to achieve these effects, our business will be adversely affected.

NantHealth solutions become more valuable as more accurate and clinically relevant information is integrated into them, and our ultimate outputs and recommendations to a patient, provider or payer are therefore highly dependent on the information that is input into our system. As a result, we need to consistently and continuously have access to and integrate the most medically relevant and cutting edge clinical data and research studies with patient-specific real-time DNA and RNA analysis and biometric data. To have access to biometric data in particular, we rely on patients, provider and payers to adopt devices that are compatible with our systems and they may not adopt such devices on a scale or at a rate sufficient to support our offerings or at all. Further, to have access to certain other data points, we rely in part on third parties to develop applications to generate more data to be integrated into NantHealth solutions. These third parties may never develop applications compatible with our software solutions or may develop them at a slower rate than our ability to address shifts in healthcare. In addition, if such third-party solutions are not produced to specification, are produced in accordance with modified specifications, or are defective, they may not be compatible with our systems. In such case, the reliability and performance of our products may be compromised. To the extent we are unable to amass enough data, keep an inflow of current and continuous data or integrate and access the data we currently have to continue to populate NantHealth solutions, the network effects we expect will not be fully realized and our business may be adversely affected.

We may be unable to appropriately allocate our financial and human resources across our broad array of product and service offerings.

We have a broad array of product and service offerings. Our management team is responsible for allocating resources across these products and services and may forego or delay pursuit of opportunities with certain products or services that later prove to have greater commercial potential. In August 2017, we announced a comprehensive restructuring plan that included a wide range of organizational efficiency initiatives and other cost reduction opportunities. In addition, in February 2018, we acquired NantHealth Labs and have expanded into the liquid biopsy analysis market, through Liquid GPS. We intend to leverage our current sales and marketing efforts to drive provider acceptance and adoption of Liquid GPS. In addition, we recently introduced the GPS Complete test. This and other resource allocation decisions may cause us to fail to capitalize on attractive products or services or market opportunities. Our spending on current and future research and development programs and future products or services may not yield commercially viable products or services or may fail to optimize the anticipated network effects of NantHealth solutions. If our management team is unable to appropriately prioritize the allocation of our resources among our broad range of products and services in an efficient manner, our business may be adversely affected.

Risks related to our financial condition and capital requirements

We have a limited operating history, which may make it difficult to evaluate our current business and predict our future performance.

We were organized as a limited liability company in Delaware and began operations in 2010. In June 2016, we converted to a Delaware corporation. Additionally, our business has operated as part of the larger NantWorks, LLC, or NantWorks, group of affiliated companies. Our limited independent operating history, particularly in light of the increasingly complex and rapidly evolving healthcare and technology markets in which we operate, may make it difficult to evaluate our current business and predict our future performance. In addition, we have acquired numerous companies or businesses over the past three years, including certain assets of NaviNet, and most recently NantHealth Labs. In addition, in August 2017, we sold our provider/patient engagement solutions business to Allscripts. We have had limited experience operating these businesses as a whole and as such, it may be difficult to evaluate our current business and predict our future operating performance. In light of the foregoing, any assessment of our profitability or prediction about our future success or viability is subject to significant uncertainty. We have encountered and will continue to encounter risks and difficulties frequently experienced by early, commercial-stage companies in rapidly evolving industries. If we do not address these challenges successfully, our business results will suffer.

We have a history of significant losses, which we expect to continue, and we may never achieve or sustain profitability in the future.

We have incurred significant net losses in each fiscal year since inception and expect to continue to incur net losses for the foreseeable future. We experienced net losses of \$192.2 million and \$175.2 million during the years ended December 31, 2018 and 2017, respectively. As of December 31, 2018, we had an accumulated deficit of \$884.1 million. The losses and accumulated deficit were primarily due to the substantial investments we made to grow our business and enhance our systems infrastructure and platforms. We have grown our business through research and development and the acquisition of assets, businesses and customers. We anticipate that our operating expenses will increase substantially in the foreseeable future as we seek to continue to grow our business, including through strategic acquisitions, and build and further penetrate our client base and develop our product and service offerings, including GPS Cancer and Liquid GPS. These efforts may prove more expensive than we currently anticipate, and we may not succeed in increasing our revenue sufficiently to offset these higher expenses.

Our prior losses, combined with our expected future losses, have had and will continue to have an adverse effect on our stockholders' equity and working capital. We expect to continue to incur operating losses for the foreseeable future and may never become profitable on a quarterly or annual basis, or if we do, we may not be able to sustain profitability in subsequent periods. Our failure to achieve and sustain profitability in the future would negatively affect our business, financial condition, results of operations and cash flows, and could cause the market price of our common stock to decline.

We may need to raise additional capital to fund our existing operations, develop our solutions, commercialize new products and expand our operations.

Based on our current business plan, we believe the net proceeds from our convertible notes offering completed in 2016, together with our current cash, cash equivalents, marketable securities, and our ability to borrow from affiliated entities, will be sufficient to meet our anticipated cash requirements over at least the next 12 months. If our available cash balances and anticipated cash flow from operations are insufficient to satisfy our liquidity requirements, we may seek to sell common or preferred equity or convertible debt securities, enter into a credit facility or another form of third-party funding, or seek other debt financing.

We may consider raising additional capital in the future to expand our business, to pursue strategic investments, to take advantage of financing opportunities, or for other reasons, including to:

- increase our sales and marketing efforts to drive market adoption of NantHealth solutions (including GPS Cancer, Liquid GPS, and NantHealth software solutions);
- address competitive developments;
- fund development and marketing efforts of any future platforms and solutions;
- expand adoption of GPS Cancer and Eviti platform solutions into critical illnesses outside of oncology;
- acquire, license or invest in complimentary businesses, technologies or service offerings; and
- finance capital expenditures and general and administrative expenses.

Our present and future funding requirements will depend on many factors, including:

- our success in driving adoption of our molecular analysis solutions, including GPS Cancer and Liquid GPS;
- our success in making our molecular analysis solutions reimbursable by payers;
- our ability to achieve revenue growth;
- the cost of expanding our products and service offerings, including our sales and marketing efforts;
- our ability to achieve interoperability across all of our acquired businesses, technologies and service offerings to deliver networking effects to our clients;
- the effect of competing technological and market developments;
- costs related to international expansion; and
- the potential cost of and delays in product development as a result of any regulatory oversight applicable to our products.

The various ways we could raise additional capital carry potential risks. If we raise funds by issuing equity securities, dilution to our stockholders could result. Any equity securities issued also could provide for rights, preferences or privileges senior to those of holders of our common stock. If we raise funds by issuing debt securities, those debt securities would have rights, preferences and privileges senior to those of holders of our common stock. The terms of debt securities issued or borrowings pursuant to a credit agreement could impose significant restrictions on our operations.

We have identified a material weakness in our internal control over financial reporting. Failure to maintain effective internal controls could cause our investors to lose confidence in us and adversely affect the market price of our common stock. If our internal controls are not effective, we may not be able to accurately report our financial results or prevent fraud.

Section 404 of the Sarbanes-Oxley Act of 2002, or Section 404, requires that we maintain internal control over financial reporting that meets applicable standards. We may err in the design or operation of our controls, and all internal control systems, no matter how well designed and operated, can provide only reasonable assurance that the objectives of the control system are met. Because there are inherent limitations in all control systems, there can be no assurance that all control issues have been or will be detected. If we are unable, or are perceived as unable, to produce reliable financial reports due to internal control deficiencies, investors could lose confidence in our reported financial information and operating results, which could result in a negative market reaction and a decrease in our stock price.

We are required, pursuant to Section 404, to furnish a report by management on, among other things, the effectiveness of our internal control over financial reporting. We will need to disclose any material weaknesses identified by our management in our internal control over financial reporting. As an "emerging growth company," we are availing ourselves of the exemption from the requirement that our independent registered public accounting firm attest to the effectiveness of our internal control over financial reporting under Section 404. However, we may no longer avail ourselves of this exemption when we cease to be an "emerging growth company." When our independent registered public accounting firm is required to undertake an assessment of our internal control over financial reporting, the cost of our compliance with Section 404 will correspondingly increase. Our compliance with applicable provisions of Section 404 will require that we incur substantial accounting expense and expend significant management time on compliance-related issues as we implement additional corporate governance practices and comply with reporting requirements. Moreover, if we are not able to comply with the requirements of Section 404 applicable to us in a timely manner, or if we or our independent registered public accounting firm identifies deficiencies in our internal control over financial reporting that are deemed to be material weaknesses, the market price of our stock could decline and we could be subject to sanctions or investigations by the U.S. Securities and Exchange Commission, or SEC, or other regulatory authorities, which would require additional financial and management resources.

In connection with our 2018 audit, we identified a material weakness in relation to the valuations of our related party equity method investment in NantOmics (see Note 10 to our Consolidated Financial Statements) and the Bookings Commitment liability (see Note 12 to our Consolidated Financial Statements). We have designed and implemented, or expect to implement, measures that we believe address this material weakness, including, among other things, controls to consider all required elements needed to support the measurement of fair value of a liability and assess the reasonableness of assumptions underlying prospective financial information used in the fair value measurement of the Company's investment in a related party. We have incurred and will continue to incur significant costs to remediate this weakness, primarily personnel costs, external consulting and legal fees, system implementation costs, and related indirect costs including the use of facilities and technology, and we expect to incur additional costs to remediate this weakness. We may not be successful in implementing these remediation efforts or in developing other internal controls, which may undermine our ability to provide accurate, timely and reliable reports on our financial and operating results. Further, we will not be able to fully assess whether the steps we are taking will remediate the material weakness in our internal control over financial reporting until we have completed our implementation efforts and sufficient time passes in order to evaluate their effectiveness. In addition, if we identify additional errors that result in material weaknesses in our internal control over financial reporting, we may not detect errors on a timely basis and our financial statements may be materially misstated. Moreover, in the future we may engage in business transactions, such as acquisitions, reorganizations or implementation of new information systems that could negatively affect our internal control over financial reporting and result in material weaknesses.

If we identify new material weaknesses in our internal control over financial reporting, if we are unable to comply with the requirements of Section 404 in a timely manner, if we are unable to assert that our internal control over financial reporting is effective, or if our independent registered public accounting firm is unable to express an opinion as to the effectiveness of our internal control over financial reporting, we may be late with the filing of our periodic reports, investors may lose confidence in the accuracy and completeness of our financial reports and the market price of our common stock could be negatively affected. As a result of such failures, we could also become subject to investigations by the stock exchange on which our securities are listed, the SEC, or other regulatory authorities, and become subject to litigation from investors and stockholders, which could harm our reputation, financial condition or divert financial and management resources from our core business, and would have a material adverse effect on our business, financial condition and results of operations.

We are involved in pending securities litigation and an adverse resolution of such litigation may adversely affect our business, financial condition, results of operations and cash flows.

The Company has been named as a defendant in lawsuits arising out of our initial public offering and later public statements. In March 2017, a number of putative class action securities complaints were filed in U.S. District Court California, naming as defendants the Company and certain of our executive officers and directors. Certain plaintiffs also named as defendants are investment banks who were underwriters in our initial public offering. The complaints generally allege that defendants made material misstatements and omissions in violation of the federal securities laws. The outcomes of litigation are difficult to predict. Plaintiffs may seek recovery of a substantial amount. The monetary and other impact of this action may remain unknown for substantial periods of time. The cost to defend, settle or otherwise resolve this matter may be significant and divert management's attention from the operations of the Company. We cannot assure you that we will prevail in this lawsuit. If we are ultimately unsuccessful in this matter, we could be required to pay substantial amounts which might materially adversely affect our business, operating results and financial condition. For additional information regarding this and other lawsuits in which we are involved, see Part I, Item 3, Legal Proceedings.

Risks related to our sequencing and molecular analysis solutions

We may not be able to generate sufficient revenue from our sequencing and molecular analysis solutions, including GPS Cancer, or our relationships with sequencing and molecular analysis customers, to achieve and maintain profitability.

We believe our commercial success depends significantly upon our ability to successfully market and sell our sequencing and molecular analysis solutions to continue to expand our current relationships and develop new relationships with physicians, self-insured employers, payers and healthcare providers, and expand adoption of sequencing and molecular analysis for disease indications outside oncology. Net revenue from our sequencing and molecular analysis solutions represented 3.5% and 2.9% of our total net revenue for the years ended December 31, 2018 and 2017, respectively. The demand for sequencing and molecular analysis may decrease or may not continue to increase at historical rates for a number of reasons. Our clients may decide to decrease or discontinue their use of sequencing and molecular analysis due to changes in research and product development plans, financial constraints or utilization of internal molecular testing resources or molecular tests performed by others, which are circumstances outside of our control. In addition to reducing our revenue, this may reduce our exposure to early stage research that facilitates the incorporation of newly developed information about cancer and other diseases into our molecular analysis solutions. Further, we may be unsuccessful in expanding our clients' use of sequencing and molecular analysis outside of oncology.

In addition, our expansion into the liquid tumor profiling market may not be successful and may fail to generate the levels of revenue that we project. The future growth of our market and the success of Liquid GPS depends on many factors beyond our control, including recognition and acceptance by the scientific community, and the growth, prevalence, and costs of competing methods of tumor analysis. Additionally, our success depends on the ability of our sales organization to successfully sell Liquid GPS into these markets.

We are currently not profitable. Even if we succeed in increasing adoption of sequencing and molecular analysis by physicians, self-insured employers, payers and healthcare providers, and maintaining and creating relationships with our existing and new clients, we may not be able to generate sufficient revenue from sequencing and molecular analysis to achieve profitability.

Sequencing and molecular analysis may have limited utility unless we or third parties are able to successfully establish links between genomic sequencing and expression analysis and disease and treatment pathways.

Full genomic sequencing and expression analysis may have limited utility on a stand-alone basis. We believe the real value is derived by linking genomic sequencing and RNA analysis with disease pathways to help enable the discovery and development of personalized treatments. We do not currently, and do not expect in the future to, engage in research regarding disease pathways or engage in the development or commercialization of specific therapeutics or drugs. Instead, we will rely on third parties to do so. If, however, third-party time and funding is not devoted to determining disease pathways or to discovering, developing and marketing therapeutics or drugs specific to such pathways, sequencing and molecular analysis and GPS Cancer will be perceived to have limited utility and our business may be adversely affected.

Our success will depend on our ability to use rapidly changing genetic data to interpret molecular analysis results accurately and consistently, and our failure to do so would have an adverse effect on our operating results and business.

Our success depends on our ability to provide reliable, high-quality molecular profiling tests that incorporate rapidly-evolving information about the role of genes and gene variants in disease and clinically relevant outcomes associated with those variants. The accuracy and reproducibility we have demonstrated to date may not continue, particularly for clinical samples, as molecular analysis volume increases. Errors, including as a result of molecular analysis failing to detect genomic variants with high accuracy, or omissions, including as a result of failing to or incompletely or incorrectly identify the significance of gene variants, could have a significant adverse impact on our business. Hundreds of genes can be implicated in some disorders and overlapping networks of genes and symptoms can play a role in multiple conditions. We also rely on clinicians to interpret what we report and to incorporate specific information about an individual patient into the physician's treatment decision. As a result, a substantial amount of judgment is required in order to interpret testing results for an individual patient and to develop an appropriate patient report. Due to such errors in judgment, patient outcomes may not be improved even if our molecular analysis services perform to our expectations.

The efficiency of sequencing and molecular analysis, including GPS Cancer and Liquid GPS, and the results that we achieve depend on the design and operation of our test processes, which use a number of complex and sophisticated biochemical, informatics, optical, and mechanical processes, many of which are highly sensitive to external factors. An operational or technology failure in one of these complex processes or fluctuations in external variables may result in processing efficiencies that are lower than we anticipate or that vary between testing runs. In addition, we regularly evaluate and if necessary, refine our processes. These refinements may initially result in unanticipated issues that further reduce our test run yields or increase the variability of our test run yields. Low test run yields can cause variability in our operating results and damage our reputation. In addition, although we believe GPS Cancer is a comprehensive molecular profiling solution, no solution is fully comprehensive, and it will need to be continually improved in line with improvements in science and technology and potential developments by our competitors. If GPS Cancer proves to not be fully comprehensive, customer demand for GPS Cancer may be adversely affected.

GPS Cancer can determine whether specific genes are over- or under-expressed which can affect protein levels and, as a result, cancer phenotype and drug efficacy in a particular patient. Such gene expression can also capture the effect of post-translational modifications, which can have equally significant implications on how a cancer is expressed in a patient and in turn may impact treatment decisions. Our sequencing and molecular analysis solutions (including GPS Cancer and Liquid GPS) represent a novel and largely unproven approach to the characterization and monitoring of cancer and may not be accurate based on the evolving understanding of how DNA and RNA analysis relate to disease progression and drug efficacy and resistance. As a result, the marketing, sale and use of our sequencing and molecular analysis solutions could subject us to liability for errors in, misunderstandings of, or inappropriate reliance on, information we provide to physicians or geneticists, and lead to claims against us if someone were to allege that our solutions failed to perform as they were designed, if we failed to correctly interpret results, or if the ordering physician were to misinterpret our results or improperly rely on them when making a clinical decision. A product liability or professional liability claim could result in substantial financial and reputational damage and be costly and time-consuming for us to defend. Although we maintain liability insurance, including for errors and omissions, we cannot assure you that our insurance would fully protect us from the financial impact of defending against these types of claims or any judgments, fines or settlement costs arising out of any such claims. Any liability claim, including an errors and omissions liability claim, brought against us, with or without merit, could increase our insurance rates or prevent us from securing insurance coverage in the future. Additionally, any liability lawsuit could cause injury to our reputation or cause us to suspend sales of our sequencing and or molecular analysis solutions. The occurrence of any of these events could have an adverse effect on our business, reputation and results of operations.

Our sequencing and molecular analysis solutions may never achieve significant commercial market acceptance.

Our sequencing and molecular analysis solutions may never gain significant acceptance in the marketplace and, therefore, may never generate substantial revenue or profits for us. Our ability to achieve commercial market acceptance for our sequencing and molecular analysis solutions will depend on several factors, including:

- our ability to convince key thought leaders, physicians and caregivers and other key oncology stakeholders of the clinical utility of our entire product offering and its potential advantages over existing sequencing tests, specifically, the advantages of our RNA sequencing, which maps oncology disease pathways versus a patient's own germline, and our liquid tumor profiling tests;
- the willingness of physicians, self-insured employers, payers and healthcare providers to utilize our sequencing and molecular analysis services; and
- the willingness of commercial third-party payers and government payers to reimburse for our molecular services, the scope and amount of which will affect patients' willingness or ability to pay for our molecular analysis services and likely heavily influence our customers' decisions to recommend our molecular analysis services.

Further, today's most advanced diagnostics tests analyze narrow gene panels that capture only a limited number of the most common gene alterations, as compared to GPS Cancer, which sequences the patient's whole genome (comparing both a patient's normal and tumor tissue) and performs RNA sequencing, gene expression and statistical analysis. These narrow gene panels for specific treatments or disease areas are much less expensive than GPS Cancer. Although we believe that the advantages of sequencing the patient's whole genome for the treatment of cancer, as well as running additional RNA tests, outweigh the costs, key thought leaders, physicians and other caregivers, other key oncology stakeholders and payers may not agree. Further, if advances in the understanding of disease states and pathways do not reveal a benefit to whole genome and RNA sequencing in areas beyond cancer then the market potential for our sequencing and molecular analysis services will be limited. Failure to achieve widespread commercial market acceptance for our sequencing and molecular analysis solutions could materially harm our business, financial condition and results of operations.

If we cannot compete successfully with our competitors for our sequencing and molecular analysis solutions, we may be unable to increase or sustain our revenue or achieve and sustain profitability.

Personalized molecular analysis is a new area of science, and we face competition from companies that offer products, or have conducted research, to profile genes and gene expression in various cancers. Our principal competition for GPS Cancer comes from diagnostic companies that also offer whole genome sequencing. We also compete with diagnostic companies offering molecular diagnostic tests that capture only a single marker or test panels that capture a limited number of the most well-known gene alterations, known as hotspot panel tests. In addition, academic research centers, diagnostic companies and next-generation sequencing, or NGS, platform developers are offering or developing NGS-based testing. NGS-based testing also has the capability to provide whole genome sequencing to compete with GPS Cancer.

Our competitors with respect to GPS Cancer include companies such as Foundation Medicine, Inc., or Foundation Medicine, Caris Life Sciences, Inc., or Caris Life Sciences, Personal Genome Diagnostics, Inc., or Personal Genome Diagnostics, Guardant Health, Inc., and Paradigm Diagnostics, Inc. and Tempus Labs.

With the acquisition of NantHealth Labs, we expanded our product offerings to include liquid tumor profiling services and our principal competitors include Guardant Health, Inc., Foundation Medicine, Inc., Genomic Health, Inc. and Biocept, Inc.

Many hospitals and academic medical centers may also seek to perform the type of molecular testing we perform at their own facilities. As such, our competition may include entities such as the University of Michigan, Baylor Medical Genetics Laboratories, Washington University in St. Louis, Memorial Sloan Kettering Cancer Center and other academic hospitals and research centers. In addition to developing kits, some diagnostic companies also provide NGS platforms. Illumina, Inc., Thermo Fisher Scientific Corporation, Invitae Corporation, and other companies develop NGS platforms that are being sold directly to research centers, biopharmaceutical companies and clinical laboratories. While many of the applications for these platforms are focused on the research and development markets or testing for conditions outside of oncology, these companies have launched and will continue to commercialize products focused on the clinical oncology market. Although we believe GPS Cancer is a comprehensive molecular profiling solution, our competitors may develop more comprehensive or superior alternative offerings. We believe diagnostic platform providers will seek to place sequencing machines in laboratories to develop NGS-based laboratory-developed tests, or LDTs. In addition, we believe these companies will also develop their own diagnostic kits approved by the FDA, which can be sold to the clients who have purchased their platforms. Also, many private companies are developing information technology-based tools to support the integration of NGS-based testing into the clinical setting.

Additionally, some of our competitors' molecular analysis tests are being used in FDA clinical trials as companion diagnostics. Because companion diagnostics help identify whether a patient's disease expresses the molecular target, or biomarker, for the particular drug, they can help ensure the drug's efficacy and are sometimes required by the FDA to be used with certain drugs. Our molecular analysis solutions may not have the DNA and RNA analysis capability on par with a companion diagnostic to guide therapeutic treatments for certain customers. Further, the FDA requires a companion diagnostic test if a new drug works on a specific genetic or biological target that is present in some, but not all, patients with a certain cancer or disease. Even if it is shown to be on par with FDA-approved companion diagnostics, physicians and payors may still not choose to use our molecular analysis solutions. If physicians and payers utilize and pay for these FDA-approved companion diagnostic tests instead of our solutions, our business may be adversely affected.

Any of these competitors could have technological, financial and market access advantages that are not currently available to us.

The molecular diagnostics industry is subject to rapidly changing technology, which could make sequencing and molecular analysis solutions and other products we may develop or license in the future obsolete.

Our industry is characterized by rapid technological changes, frequent new product introductions and enhancements and evolving industry standards, all of which could make our sequencing and molecular analysis solutions or other products we develop or license obsolete. Our future success will depend on our ability to keep pace with the evolving needs of our clients on a timely and cost-effective basis and to pursue new market opportunities that develop as a result of technological and scientific advances. In recent years, there have been numerous advances in technologies relating to the diagnosis and treatment of cancer. There have also been advances in methods used to analyze very large amounts of genomic information. We must continuously enhance our products and solutions, and we may also need to develop or license new technologies, to keep pace with evolving standards of care. If we do not update our products and solutions to reflect new scientific knowledge about cancer biology, information about new cancer therapies, or relevant clinical trials, our solutions could become obsolete and our molecular analysis revenue growth would be limited or eliminated, which would have a material adverse effect on our business, financial condition and results of operations.

If we are not able to establish relationships with, or lose the support of, key thought leaders or payers' key decision makers, it may be difficult to establish our products and solutions as a standard of care for patients with cancer, which may limit our revenue growth and ability to achieve profitability.

We are establishing relationships with leading oncology thought leaders and payors' key decision makers. If we are unable to establish these relationships, or these key thought leaders or payers' key decision makers determine that the products or services that we develop or license are not clinically or operationally effective or that alternative technologies and services are more effective or cost-efficient, or if they elect to use and promote internally developed products, we would encounter significant difficulty driving adoption of our products and solutions and/or validating them as a standard of care, which would limit our revenue growth and our ability to achieve profitability.

Ethical, legal and social concerns related to the use of genomic information could reduce demand for our sequencing and molecular analysis solutions.

Genomic testing, like that conducted using GPS Cancer, has raised ethical, legal and social issues regarding privacy and the appropriate uses of the resulting information. Governmental authorities could, for social or other purposes, limit or regulate the use of genomic information or genomic testing, particularly for those diseases that have no known cure. These concerns may lead patients to refuse to use, or clinicians to be reluctant to order, whole genome genomic tests even if permissible.

Ethical and social concerns may also influence U.S. and foreign patent offices and courts with regard to patent protection for technology relevant to our business. These and other ethical, legal and social concerns may limit market acceptance of our products or reduce the potential markets for products enabled by our sequencing and molecular analysis solutions, either of which could have an adverse effect on our business, financial condition or results of operations.

Risks related to our system infrastructure and software solutions business

The market for our systems infrastructure and software solutions is new and unproven and may not grow.

We believe our future success will depend in large part on establishing and growing a market for our systems infrastructure and that are able to provide operational intelligence, particularly designed to collect and index machine data. Our systems infrastructure is designed to address interoperability challenges across the healthcare continuum. It integrates big data with real time resources and applies machine learning algorithms to inform and optimize treatment decisions. In order to grow our business, we intend to expand the functionality of our offering to increase its acceptance and use by the broader market. In particular our systems infrastructure is targeted at those in the healthcare continuum that are transitioning from fee-for-service to a value-based reimbursement model. While we believe this to be the current trend in healthcare, this trend may not continue in the future. Our systems infrastructure is less effective with a traditional fee-for-service model and if there is a reversion in the industry towards fee-for-service, or a shift to another model, we would need to update our offerings and we may not be able to do so effectively or at all. It is difficult to predict client adoption and renewal rates, client demand for our software, the size and growth rate of the market for our solutions, the entry of competitive products or the success of existing competitive products. Many of our potential clients may already be party to existing agreements for competing offerings that may have lengthy terms or onerous termination provisions, and they may have already made substantial investments into those platforms which would result in high switching costs. Any expansion in our market depends on several factors, including the cost, performance and perceived value associated with such operating system and software applications particularly considering the shifting market dynamics. Although we have experienced rapid adoption of our systems infrastructure and software solutions, the rate may slow or decline in the future, which would harm our business and operating results. In addition, while many large hospital systems and payers use our solutions, many of these entities use only certain of our offerings, and we may not be successful in driving broader adoption of our solutions among these existing users, which would limit our revenue growth.

If the market for our offerings does not achieve widespread adoption or there is a reduction in demand for our offerings in our market caused by a lack of customer acceptance, technological challenges, lack of accessible machine data, competing technologies and products, decreases in corporate spending, weakening economic conditions, or otherwise, it could result in reduced customer orders, early terminations, reduced renewal rates or decreased revenues, any of which would adversely affect our business operations and financial results. You should consider our business and prospects in light of the risks and difficulties we may encounter in this new and unproven market.

The data and information that we provide to our clients, and their constituents, could be inaccurate or incomplete, which could harm both patients and our business, financial condition and results of operations.

Some of our software solutions store and display data from a variety of third-party sources for use in treating patients and to search and compare options for healthcare services and treatments. As part of our Eviti platform solutions, we provide up-to-date information regarding cancer research, along with a list of potential treatments and relevant clinical trials seeking enrollment. Most of this data comes from health plans, our clients, published guidelines, peer-reviewed journals and other third parties. Because data in the healthcare industry is often fragmented in origin, inconsistent in format and often incomplete, the overall quality of certain types of data we receive can be poor. If these data are incorrect or incomplete or if we make mistakes in the capture or input of their data, or in our interpretation or analysis of such data, adverse consequences, including patient death and serious injury, may occur and give rise to product liability and other claims against us. In addition, a court or government agency may take the position that our storage and display of health information exposes us to personal injury liability or other liability for wrongful delivery or handling of healthcare services or erroneous health information. While we maintain insurance coverage, we cannot assure that this coverage will prove to be adequate or will continue to be available on acceptable terms, if at all. Even unsuccessful claims could result in substantial costs, reputational damage, and diversion of management resources. A claim brought against us that is uninsured or under-insured could harm our business, financial condition and results of operations.

Our use of open source technology could impose limitations on our ability to commercialize our offerings.

Our offerings incorporate open source software components that are licensed to us under various public domain licenses. Some open source software licenses require users who distribute open source software as part of their software to publicly disclose all or part of the source code to such software or make available any derivative works of the open source code on unfavorable terms or at no cost. There is little or no legal precedent governing the interpretation of many of the terms of these licenses and therefore the potential impact of such terms on our business is not fully known or predictable. There is a risk that such licenses could be construed in a manner that imposes unanticipated conditions or restrictions on our ability to market our software products and services. While we monitor our use of open source software and try to ensure that none is used in a manner that would require us to disclose our source code or that would otherwise breach the terms of an open source agreement, such use could inadvertently occur and we may be required to release our proprietary source code, pay damages for breach of contract, re-engineer one or more of our offerings, discontinue sales of one or more of our offerings in the event re-engineering cannot be accomplished on a timely basis or take other remedial action that may divert resources away from our development efforts, any of which could cause us to breach obligations to our clients, harm our reputation, result in customer losses or claims, increase our costs or otherwise adversely affect our business and operating results.

If we are not able to enhance our systems infrastructure or software solutions to achieve market acceptance and keep pace with technological developments, our business will be harmed.

Our ability to attract new subscribers and licensees, and increase revenue from existing subscribers and licensees, depends in large part on our ability to enhance and improve our existing offerings and to introduce new products and services, including products and services designed for a mobile user environment. To grow our business, we must develop products and services that reflect the changing nature of business management software and expand our offering. The success of any enhancements to our offerings depends on several factors, including timely completion, adequate quality testing and sufficient demand. Any new product or service that we develop may not be introduced in a timely or cost-effective manner, may contain defects or may not achieve the market acceptance necessary to generate sufficient revenue. If we are unable to successfully develop new products or services, enhance our existing offerings to meet subscriber requirements or otherwise gain market acceptance, our business and operating results will be harmed.

In addition, because many of our offerings are available over the Internet, we need to continuously modify and enhance them to keep pace with changes in Internet-related hardware, software, communications and database technologies and standards. If we are unable to respond in a timely and cost-effective manner to these rapid technological developments and changes in standards, our offerings may become less marketable, less competitive or obsolete, and our operating results will be harmed. If new technologies emerge that are able to deliver competitive products and applications at lower prices, more efficiently, more conveniently or more securely, such technologies could adversely impact our ability to compete. Our offerings must also integrate with a variety of network, hardware, mobile, and software platforms and technologies, and we need to continuously modify and enhance them to adapt to changes and innovation in these technologies. Any failure of our offerings to operate effectively with future infrastructure platforms and technologies could reduce the demand for such offerings. If we are unable to respond to these changes in a cost-effective manner, our offerings may become less marketable, less competitive or obsolete, and our operating results may be adversely affected.

Our data suppliers might restrict our use of or refuse to license data, which could lead to our inability to provide certain products or services.

A portion of the data that we use is either purchased or licensed from third parties or is obtained from our customers for specific customer engagements. Although we typically enter into long-term contractual arrangements with many of these suppliers of data, at the time of entry into a new contract or renewal of an existing contract, suppliers may increase restrictions on our use of such data, increase the price they charge us for data or refuse altogether to license the data to us. In addition, during the term of any data supply contract, suppliers may fail to adhere to our data quality control standards or fail to deliver data. Further, although no single individual data supplier is material to our business, if a number of suppliers collectively representing a significant amount of data that we use for one or more of our services were to impose additional contractual restrictions on our use of or access to data, fail to adhere to our quality-control standards, repeatedly fail to deliver data or refuse to provide data, now or in the future, our ability to provide those services to our clients could be materially adversely impacted, which may harm our operating results and financial condition.

We believe that we have rights necessary to use the data that is incorporated into our offerings. However, in the future, data providers could withdraw their data from us if there is a competitive reason to do so, or if legislation is passed restricting the use of the data, or if judicial interpretations are issued restricting use of the data that we currently use in our products and services. If a substantial number of data providers were to withdraw their data, our ability to provide our offerings to our clients could be materially adversely impacted.

For example, in order to deliver the full functionality offered by some of our solutions, we need access, on behalf of our customers, to sources of pricing and claims data, much of which is managed by a limited number of health plans and other third parties. We have developed various long-term and short-term data sharing relationships with certain health plans and other third parties, including many of the largest health plans in the United States. The health plans and other third parties that we currently work with may, in the future, change their position and limit or eliminate our access to pricing and claims data, increase the costs charged to us for access to data, provide data to us in more limited or less useful formats, or restrict our permitted uses of data. Furthermore, some health plans have developed or are developing their own proprietary price and quality estimation tools and may perceive continued cooperation with us as a competitive disadvantage and choose to limit or discontinue our access to pricing and claims data. Failure to continue to maintain and expand our access to pricing and claims data will adversely impact our ability to continue to serve existing clients and expand our offerings to new clients.

If the validity of an informed consent from a patient enrolled in a clinical trial with one of our clients was challenged, we could be forced to stop using some of our resources, which would hinder the development efforts for our sequencing and molecular analysis solutions.

We have implemented measures designed to ensure that clinical data and genetic and other biological samples that we receive from our customers have been collected from subjects who have provided appropriate informed consent for purposes which extend to our product development activities. We seek to ensure that these data and samples are provided for processing via our molecular profiling solution in a manner that does not use readily individually identifiable information of the subject. We also have measures in place to ensure that the subjects from whom the data and samples are collected do not retain or have conferred on them any proprietary or commercial rights to the data or any discoveries derived from them. Further, our clients may conduct clinical trials in several different countries, and, to a large extent, we rely upon them to comply with the subject's informed consent and with local law and international regulation. The collection of data and samples in many different countries results in complex legal questions regarding the adequacy of informed consent and the status of genetic material under many different legal systems. The subject's informed consent obtained in any country could be challenged in the future, and those informed consents could prove invalid, unlawful, or otherwise inadequate for our purposes. Any findings against us, or our clients, could deny us access to or force us to stop using some of our clinical samples, which would hinder our molecular profiling solution development efforts. We could become involved in legal challenges, which could consume our management and financial resources.

Failure by our clients to obtain proper permissions and waivers may result in claims against us or may limit or prevent our use of data which could harm our business.

We require our clients and business associates to provide necessary notices and to obtain necessary permissions and waivers for use and disclosure of the information that we receive, and we require contractual assurances from them that they have done so and will do so. If they do not obtain necessary permissions and waivers, then our use and disclosure of information that we receive from them or on their behalf may be limited or prohibited by state or federal privacy laws or other laws. This could impair our functions, processes and databases that reflect, contain or are based upon such data and may prevent use of such data. In addition, this could interfere with or prevent creation or use of rules, analyses or other data-driven activities that benefit us. Moreover, we may be subject to claims or liability for use or disclosure of information by reason of lack of valid notice, permission or waiver. These claims or liabilities could subject us to unexpected costs and adversely affect our operating results.

Our sales cycle can be lengthy and unpredictable, which may cause our revenue and operating results to fluctuate significantly.

Our sales cycle can be lengthy and unpredictable. Our sales efforts involve educating our customers about the use and benefits of our offerings and solutions, including the technical capabilities of our solutions and the potential cost savings and productivity gains achievable by deploying them. Additionally, many of our potential clients are typically already in long-term contracts with their current providers and face significant costs associated with transitioning to our offerings and solutions. As a result, potential customers typically undertake a significant evaluation process, which frequently involves not only NantHealth solutions and component systems infrastructure and platforms but also their existing capabilities and solutions and can result in a lengthy sales cycle. We spend substantial time, effort and money on our sales efforts without any assurance that our efforts will produce any sales. In addition, purchases of NantHealth solutions and component systems infrastructure are frequently subject to budget constraints, multiple approvals and unplanned administrative, processing and other delays. For example, currently, hospitals in the United States face significant uncertainty over the continuing impact of federal government budgets, and continuing changes in the implementation and deadlines for compliance with the Patient Protection and Affordable Care Act of 2010, or ACA, and other healthcare reform legislation, as well as potential future statutes and rulemaking. Many of our potential hospital clients have used all or a significant portion of their revenues to comply with federal mandates to adopt electronic medical records to maintain their Medicaid and Medicare reimbursement levels. In the event we are unable to manage our lengthy and unpredictable sales cycle, our business may be adversely affected.

We bill our clients and recognize revenue over the term of the contract for certain of our products. As a result near term declines in new or renewed agreements for these products may not be reflected immediately in our operating results and may be difficult to discern.

A portion of our revenue in each quarter is derived from agreements entered with our clients during previous quarters. Consequently, a decline in new or renewed agreements in any one quarter may not be fully reflected in our revenue for that quarter. Such declines, however, would negatively affect our revenue in future periods and the effect of significant downturns in sales of and market demand for certain of our solutions, and potential changes in our rate of renewals or renewal terms, may not be fully reflected in our results of operations until future periods. In addition, we may be unable to adjust our cost structure rapidly, or at all, to take account for reduced revenue. Our subscription model for certain of our solutions also makes it difficult for us to increase our total revenue through additional sales in any quarterly period, as revenue from new clients for those products must be recognized over the applicable term of the agreement. Accordingly, the effect of changes in the industry impacting our business or changes we experience in our new sales may not be reflected in our short-term results of operations.

A large portion of our revenue is derived from a small group of our clients, and the loss of such clients could adversely affect our business.

During the year ended December 31, 2017, we derived 10.6% of our revenue from a single reseller, who contracts with various health plans and other healthcare entities to manage the utilization of specialty health services for their covered members, and another 10.2% of our revenue through a customer relationship with a major health plan from our acquisition of NaviNet. During the year ended December 31, 2018, we derived 15.3% of our revenue through this reseller and another 12.8% and 11.8% of our revenue through two of NaviNet's major customers. We cannot guarantee that these clients will continue to contract for our services or acquire new services. The contract governing the reseller relationship is terminable without cause upon 12 months' written notice, but the health plan customer cannot terminate without cause. Additionally, the reseller may not be successful in reselling our products to its covered members, or covered members may reduce their orders for our products for several reasons. If this happens, our revenue could be greatly reduced, which would materially and adversely affect our business.

If our existing clients do not continue or renew their agreements with us, renew at lower fee levels or decline to purchase additional applications and services from us, our business and operating results will suffer.

We expect to derive a significant portion of our revenue from renewal of existing customer agreements, and sales of additional applications and services to existing clients. As a result, achieving high customer satisfaction to keep existing clients and sell additional platform offerings is critical to our future operating results.

Factors that may affect the renewal rate for our offerings and our ability to sell additional solutions include:

- the price, performance and functionality of our offerings;
- the availability, price, performance and functionality of competing solutions;
- our ability to develop complementary applications and services;
- our continued ability to access the pricing and claims data necessary to enable us to deliver reliable data in our cost estimation and price transparency offering to customers;
- the stability, performance and security of our hosting infrastructure and hosting services;
- changes in healthcare laws, regulations or trends; and
- the business environment of our clients, in particular, headcount reductions by our clients.

For our SaaS solutions, we typically enter into master services agreements with our clients. These agreements generally have stated terms of three to five years. Our clients have no obligation to renew their subscriptions for our offering after the term expires. In addition, our clients may negotiate terms less advantageous to us upon renewal, which may reduce our revenue from these clients. Factors that are not within our control may contribute to a reduction in our contract revenue. For instance, our clients may reduce their number of employees, which would result in a corresponding reduction in the number of employee users eligible for our offering and thus a lower aggregate monthly services fee. Our future operating results also depend, in part, on our ability to sell new solutions to our existing customers. If our clients fail to renew their agreements, renew their agreements upon less favorable terms or at lower fee levels, or fail to purchase new solutions from us, our revenue may decline, or our future revenue may be constrained.

In addition, a significant number of our customer agreements allow our clients to terminate such agreements for convenience at certain times, typically with one to three months advance notice. Any cancellations of such agreements would have a negative result on our business and results of operations.

If any new applications and services we may develop or acquire are not adopted by our customers, or if we fail to continue to innovate and develop or acquire new applications and services that are adopted by customers, then our revenue and operating results will be adversely affected.

In addition to past investments made in NantHealth solutions, and component systems infrastructure and platforms, we have invested, and will continue to invest, significant resources in research and development and in acquisitions to enhance our existing offerings and introduce new high-quality applications and services. For example, we recently expanded into the liquid tumor profiling market through our acquisition of NantHealth Labs. If existing clients are not willing to make additional payments for such new applications or services, or if new clients do not value such new applications or services, our business and operating results will be harmed. If we are unable to predict user preferences or our industry changes, or if we are unable to modify our offering and services on a timely basis, we might lose clients. Our operating results would also suffer if our innovations and acquisitions are not responsive to the needs of our clients, are not appropriately timed with market opportunity or are not effectively brought to market.

Security breaches, loss of data and other disruptions could compromise sensitive information related to our business and/or protected health information or prevent us from accessing critical information and expose us to liability, which could adversely affect our business and our reputation.

In the ordinary course of our business, we and our clients, consultants, contractors and business associates collect and store petabytes of sensitive data, including legally protected health information, personally identifiable information, intellectual property and proprietary business information owned or controlled by ourselves or our clients, payers, providers and partners. We manage and maintain our applications and data by utilizing a combination of on-site systems, managed data center systems, and cloud-based data center systems. These applications and data encompass a wide variety of business-critical information, including research and development information, commercial information and business and financial information. We face four primary risks relative to protecting this critical information, including loss of access risk, inappropriate disclosure risk, inappropriate modification risk and the risk of being unable to adequately monitor our controls over the first three risks.

The secure processing, storage, maintenance and transmission of this critical information is vital to our operations and business strategy, and we devote significant resources to protecting such information. Although we take measures to protect sensitive information from unauthorized access or disclosure, our information technology and infrastructure, and that of our third-party billing and collections provider, may be vulnerable to attacks by hackers or viruses or breached due to employee error, malfeasance or other disruptions. Any such breach or interruption could compromise our networks and the information stored there could be accessed by unauthorized parties, publicly disclosed, lost or stolen. Any such access, disclosure or other loss of information could result in legal claims or proceedings, liability under laws that protect the privacy of personal information, such as the Health Insurance Portability and Accountability Act, or HIPAA, and regulatory penalties. Although we have implemented security measures and a formal, dedicated enterprise security program to prevent unauthorized access to patient data, there is no guarantee we can continue to protect our online portal or will be able to protect our mobile applications from breach. Unauthorized access, loss or dissemination could also disrupt our operations, including our ability to conduct our analyses, provide test results, bill payers, providers or patients, process claims and appeals, provide customer assistance services, conduct research and development activities, collect, process and prepare company financial information, provide information about our products and other patient and physician education and outreach efforts through our website, manage the administrative aspects of our business and damage our reputation, any of which could adversely affect our business.

The U.S. Office of Civil Rights may impose penalties on us if we do not fully comply with requirements of HIPAA. Penalties will vary significantly depending on factors such as whether we knew or should have known of the failure to comply, or whether our failure to comply was due to willful neglect. These penalties include civil monetary penalties of \$100 to \$50,000 per violation, up to an annual cap of \$1,500,000 for identical violations. A person who knowingly obtains or discloses individually identifiable health information in violation of HIPAA may face a criminal penalty of up to \$50,000 per violation and up to one-year imprisonment. The criminal penalties increase to \$100,000 per violation and up to five years imprisonment if the wrongful conduct involves false pretenses, and to \$250,000 per violation and up to 10 years imprisonment if the wrongful conduct involves the intent to sell, transfer, or use identifiable health information for commercial advantage, personal gain, or malicious harm. The U.S. Department of Justice is responsible for criminal prosecutions under HIPAA. Furthermore, in the event of a breach as defined by HIPAA, we have specific reporting requirements to the Office of Civil Rights under the HIPAA regulations as well as to affected individuals, and we may also have additional reporting requirements to other state and federal regulators, including the Federal Trade Commission, and/or to the media. Issuing such notifications can be costly, time and resource intensive, and can generate significant negative publicity. Breaches of HIPAA may also constitute contractual violations that could lead to contractual damages or terminations.

In addition, the interpretation and application of consumer, health-related and data protection laws in the United States, Europe and elsewhere are often uncertain, contradictory and in flux. It is possible that these laws may be interpreted and applied in a manner that is inconsistent with our practices. If so, this could result in government-imposed fines or orders requiring that we change our practices, which could adversely affect our business. In addition, these privacy regulations vary between states, may differ from country to country, and may vary based on whether testing is performed in the United States or in the local country. Complying with these various laws could cause us to incur substantial costs or require us to change our business practices and compliance procedures in a manner adverse to our business.

We rely on Internet infrastructure, bandwidth providers, data center providers, other third parties and our own systems for providing services to our users, and any failure or interruption in the services provided by these third parties or our own systems could expose us to litigation and negatively impact our relationships with clients, adversely affecting our brand and our business.

Our ability to deliver our internet-based services is dependent on the development and maintenance of the infrastructure of the Internet by third parties. This includes maintenance of a reliable network backbone with the necessary speed, data capacity and security for providing reliable Internet access and services. Our services are designed to operate without interruption in accordance with our service level commitments. However, we expect that we will in the future experience interruptions and delays in services and availability from time to time. We rely on internal systems as well as third-party vendors, including data center providers and bandwidth providers, to provide our services. We store, process and transport petabytes of data and the nature of our business requires us to scale our storage capacity. In the event we are unable to scale appropriately, we may lose clients or fail to realize the network effects of our system and our business may be impaired. We do not maintain redundant systems or facilities for some of these services. In the event of a catastrophic event with respect to one or more of these systems or facilities, we may experience an extended period of system unavailability, which could negatively impact our relationship with users. To operate without interruption, both we and our service providers must guard against:

- damage from fire, power loss and other natural disasters;
- communications failures;
- software and hardware errors, failures and crashes;
- security breaches, computer viruses and similar disruptive problems; and

- other potential interruptions.

Any disruption in the network access or co-location services provided by third-party providers or any failure of or by third-party providers or our own systems to handle current or higher volume of use could significantly harm our business. We exercise limited control over third-party vendors, which increases our vulnerability to problems with services they provide.

Any errors, failures, interruptions or delays experienced in connection with third-party technologies and information services or our own systems could negatively impact our relationships with clients and adversely affect our business and could expose us to third-party liabilities. Although we maintain insurance for our business, the coverage under our policies may not be adequate to compensate us for all losses that may occur. In addition, we cannot provide assurance that we will continue to be able to obtain adequate insurance coverage at an acceptable cost.

The reliability and performance of the Internet may be harmed by increased usage or by denial-of-service attacks. The Internet has experienced a variety of outages and other delays as a result of damages to portions of its infrastructure, and it could face outages and delays in the future. These outages and delays could reduce the level of Internet usage as well as the availability of the Internet to us for delivery of our internet-based services. Any failure to offer high-quality technical support services may adversely affect our relationships with our clients and harm our financial results.

Because of the complexity of the issues facing healthcare providers and payers and the inherent complexity of our solutions to such issues, our clients depend on our support organization to resolve any technical issues relating to our offering. In addition, our sales process is highly dependent on the quality of our offerings, our business reputation and on strong recommendations from our existing clients. Any failure to maintain high-quality and highly responsive technical support, or a market perception that we do not maintain high-quality and highly responsive support, could harm our reputation, adversely affect our ability to sell our offering to existing and prospective clients, and harm our business, operating results and financial condition.

We offer technical support services with our offerings and we may be unable to respond quickly enough to accommodate short-term increases in customer demand for support services, particularly as we increase the size of our customer base. We also may be unable to modify the format of our support services to compete with changes in support services provided by competitors. It is difficult to predict customer demand for technical support services and if customer demand increases significantly, we may be unable to provide satisfactory support services to our clients and their constituents. Additionally, increased customer demand for these services, without corresponding revenue, could increase costs and adversely affect our operating results.

If we cannot implement NantHealth solutions and component systems infrastructure and platforms for customers in a timely manner, we may lose customers and our reputation may be harmed.

Our clients have a variety of different data formats, enterprise applications and infrastructures, and NantHealth solutions and component systems infrastructure and platforms, must support our clients' data formats and integrate with complex enterprise applications and infrastructures. Similarly, our connectivity devices and applications must interact with a wide variety of devices and data formats. If our platforms do not currently support a customer's required data format or appropriately integrate with a customer's applications and infrastructure, then we must configure our systems infrastructure to do so, which increases our expenses. Additionally, we do not control our clients' implementation schedules. As a result, if our clients do not allocate internal resources necessary to meet their implementation responsibilities or if we face unanticipated implementation difficulties, the implementation may be delayed. Further, our implementation capacity has at times constrained our ability to successfully implement our offering for our clients in a timely manner, particularly during periods of high demand. If the customer implementation process is not executed successfully or if execution is delayed, we could incur significant costs, customers could become dissatisfied and decide not to increase usage of our offering, or not to use our offering beyond an initial period prior to their term commitment or, in some cases, revenue recognition could be delayed. In addition, competitors with more efficient operating models with lower implementation costs could penetrate our customer relationships.

Additionally, large and demanding enterprise clients, who currently comprise most of our customer base, may request or require specific features or functions unique to their business processes, which increase our upfront investment in sales and deployment efforts and the revenue resulting from the clients under our typical contract length may not cover the upfront investments. If prospective large customers require specific features or functions that we do not offer, then the market for our offering will be more limited and our business could suffer.

In addition, supporting large clients could require us to devote significant development services and support personnel and strain our personnel resources and infrastructure. Furthermore, if we are unable to address the needs of these clients in a timely fashion or further develop and enhance our offering, or if a client or its constituents are not satisfied with the quality of work performed by us or with the offerings delivered or professional services rendered, then we could incur additional costs to address the situation, we may be required to issue credits or refunds for pre-paid amounts related to unused services, the profitability of that work might be impaired and the client's dissatisfaction with our offerings could damage our ability to expand the number of applications and services purchased by that client. Furthermore, if a client or its constituents do not opt into or need certain aspects of our offering, there may not be enough demand for that aspect of our offering to warrant future purchases by that client, or the client may seek to terminate their relationship with us. These clients may not renew their agreements, seek to terminate their relationship with us or renew on less favorable terms. Moreover, negative publicity related to our client relationships, regardless of its accuracy, may further damage our business by affecting our ability to compete for new business with current and prospective clients. If any of these were to occur, our revenue may decline, and our operating results could be adversely affected.

We face intense competition in our markets, and we may be unable to compete effectively for new clients.

Although our product offerings target the new and emerging market for evidence-based personalized healthcare technology solutions, we compete against a variety of large software vendors and smaller specialized companies, open source initiatives and custom development efforts, which provide solutions in the specific markets we address. Our principal competitors include:

- Payer-provider collaboration vendors such as Availity, LLC, Change Healthcare, Inc. (formerly Emdeon), Experian Information Solutions, Inc. (including its Passport division), Healthx, Inc. and HealthTrio, LLC;
- Medical device data system and device connectivity vendors, such as Qualcomm Technologies, Inc. (formerly Capsule Tech, Inc.), Cerner Corporation, Bernoulli Enterprise, Inc., General Electric Company and Medical Information Technology, Inc.; and
- Healthcare information technology decision support vendors such as The Advisory Board Company, Castlight Health, Inc., or Castlight Health, eviCore healthcare, HealthCatalyst, Inc., or HealthCatalyst, International Business Machines Corporation, or IBM, Inovalon Holdings, Inc., or Inovalon, and Truven Health Analytics, or Truven (acquired by IBM).

The principal competitive factors in our markets include product features, performance and support, product scalability and flexibility, ease of deployment and use, total cost of ownership and time to value. Some of our actual and potential competitors have advantages over us, such as longer operating histories, significantly greater financial, technical, marketing or other resources, stronger brand and business user recognition, larger intellectual property portfolios and broader global distribution and presence. Further, competitors may be able to offer products or functionality similar to ours at a more attractive price than we can by integrating or bundling their software products with their other product offerings. In addition, our industry is evolving rapidly and is becoming increasingly competitive. Larger and more established companies may focus on creating a learning system or solutions that could directly compete with one or more of our offerings. If companies move a greater proportion of their data and computational needs to the cloud, new competitors may emerge which offer services comparable to ours or that are better suited for cloud-based data, and the demand for one or more of our offerings may decrease. Smaller companies could also launch new products and services that we do not offer and that could gain market acceptance quickly.

In recent years, there have been significant acquisitions and consolidation by and among our actual and potential competitors. We anticipate this trend of consolidation will continue, which will present heightened competitive challenges to our business. In particular, consolidation in our industry increases the likelihood of our competitors offering bundled or integrated products, and we believe that it may increase the competitive pressures we face with respect to our solutions. If we are unable to differentiate one or more of our offerings from the integrated or bundled products of our competitors, such as by offering enhanced functionality, performance or value, we may see decreased demand for those solutions, which would adversely affect our business, results of operations, financial condition and cash flows. Further, it is possible that continued industry consolidation may impact our clients' and prospective clients' perceptions of the viability of smaller or even medium-sized software firms and, consequently, their willingness to use technology solutions from such firms. Similarly, if customers seek to concentrate their technology purchases in the product portfolios of a few large providers, we may be at a competitive disadvantage regardless of the performance and features of our offerings. We believe that in order to remain competitive at the large enterprise level, we will need to develop and expand relationships with resellers and large system integrators that provide a broad range of products and services. If we are unable to compete effectively, our business, results of operations, financial condition and cash flows could be materially and adversely affected.

The healthcare technology industry in which we operate is subject to rapidly changing technologies and trends, each of which could contribute to making our products obsolete.

The markets for cloud-based data platforms and internet-based business services such as NantHealth solutions and component systems infrastructure and platforms and their associated offerings, are in the early stages of development, but the market is competitive even at this stage, and we expect it to attract increased competition, which could make it hard for us to succeed. We currently face competition for one or more of our offerings from a range of companies, including EHR vendors such as Allscripts, Cerner, Epic, and GE Healthcare, and healthcare IT decision support vendors such as Castlight Health, IBM, Inovalon and Truven (acquired by IBM). In addition, large, well-financed health plans, with whom we cooperate and on whom we depend in order to obtain the pricing and claims data we need to deliver our offerings to customers have in some cases developed their own cost and quality estimation tools and provide these solutions to their customers at discounted prices or often for free. If enterprises do not perceive the benefits of our services, then the market for these services may not develop at all, or it may develop more slowly than we expect, either of which would materially adversely affect our operating results. In addition, as a new company in this unproven market, we have limited insight into trends that may develop and affect our business. We may make errors in predicting and reacting to relevant business trends, which could harm our business. If any of these risks occur, it could materially adversely affect our business, financial condition or results of operations.

Healthcare industry consolidation could impose pressure on our prices, reduce our potential client base and reduce demand for one or more of our offerings.

Many hospitals, imaging centers and third-party payers have consolidated to create larger healthcare enterprises with greater market and purchasing power. In addition, group purchasing organizations and managed care organizations could increase pressure on providers of healthcare related services to reduce prices. If this consolidation trend continues, it could reduce the size of our potential customer base and give the resulting enterprises greater bargaining or purchasing power, which may lead to erosion of the prices for our software or decreased margins for our offerings.

Our offerings may experience quality problems from time to time that can result in decreased sales, decreased operating margins and harm to our reputation.

We sell complex hardware and software products and services that may contain design and manufacturing defects. Sophisticated operating system software and applications, such as those sold by us, often contain “bugs” that can unexpectedly interfere with the software’s intended operation. Our online services may from time to time experience outages, service slowdowns, or errors. Defects may also occur in components and products we purchase from third parties. There can be no assurance we will be able to detect and fix all defects in the hardware, software and services third parties sell to us. Failure to do so could result in lost revenue, significant warranty and other expenses and harm to our reputation.

Risks related to our connected care solutions, hardware and software

We rely on third-party manufacturers to manufacture our connected care devices, such as HBox, GlowPack and GlowCap. Any failure by a third-party manufacturer to produce supplies for us may delay or impair our ability to provide our connected care devices, which are an integral part of our learning ecosystem.

We rely upon third parties for the manufacture of our connected care devices and intend to continue to do so in the future. We currently do not have any material agreements with third-party manufacturers for our connected care devices. As demand for our products increase, we may seek to enter into long-term third-party manufacturing agreements. If our third-party manufacturers are unable to deliver sufficient quantities of products on a timely basis or we encounter difficulties in our relationships with these manufacturers, the manufacture and sale of our products may be disrupted, and our business, operating results and reputation could be adversely affected. If we are unable to arrange for third-party manufacturing sources, or unable to do so on commercially reasonable terms, we may not be able to deliver our products to clients in a timely manner, or at all.

Reliance on third-party manufacturers entails risks to which we would not be subject if we manufactured product candidates ourselves, including reliance on the third party to comply with applicable regulatory laws, the possibility of breach of the manufacturing agreement by the third party because of factors beyond our control and the possibility of termination or nonrenewal of the agreement by the third party, based on its own business priorities, at a time that is costly or damaging to us. In addition, the FDA and other regulatory authorities require that certain of our connected care devices be manufactured in compliance with Quality System Regulations, or QSR, and similar standards in foreign markets where we sell our products. Any failure by our third-party manufacturers to comply with QSR or failure to scale up manufacturing processes as needed, including any failure to deliver sufficient quantities of products in a timely manner, could have a material adverse effect on our business, financial condition, operating results and cash flows. In addition, such failure could be the basis for action by the FDA to withdraw approvals for product candidates previously granted to us and for other regulatory action.

Our solutions, including our connectivity care hardware and software may experience design or manufacturing defects from time to time that can result in reduced network effects to NantHealth solutions and component systems infrastructure and platforms which could materially and adversely affect our business.

We sell hardware and software solutions, including our connected care hardware and software, that could contain design or manufacturing defects in their materials, hardware, or software. These defects could include defective materials or components, or “bugs” that can unexpectedly interfere with the products’ intended operations or result in inaccurate data. Failure to detect, prevent, or fix defects could result in a variety of consequences, including returns of products, regulatory proceedings, product recalls, and litigation, which could harm our revenue and operating results. If our products fail to provide accurate measurements and data to users, then the network effects of our adaptive clinical learning system may be materially and adversely impacted.

Our solutions, including our connectivity connected care hardware and software could give rise to product liability claims and product recall events that could materially and adversely affect our financial condition and results of operations.

The development, manufacturing and sale of medical devices expose us to significant risk of product liability claims, product recalls and, occasionally, product failure claims. We face an inherent business risk of financial exposure to product liability claims if the use of our connected care devices, including our connectivity suite hardware and software results in personal injury or death. Substantial product liability litigation currently exists within the medical device industry. Some of our connected care devices may become subject to product liability claims and/or product recalls. Future product liability claims and/or product recall costs may exceed the limits of our insurance coverages or such insurance may not continue to be available to us on commercially reasonable terms, or at all. In addition, a significant product liability claim or product recall could significantly damage our reputation for producing safe, reliable and effective products, making it more difficult for us to market and sell our products in the future. Consequently, a product liability claim, product recall or other claim could have a material adverse effect on our business, financial condition, operating results and cash flows.

The sale of medical device products in the United States is subject to government regulations and we may not be able to obtain certain necessary clearances or approvals.

The design, manufacturing, labeling, distribution and marketing of medical devices in the United States are subject to extensive and rigorous regulation by the FDA. Unless an exemption applies, we or our collaborative partners must obtain prior clearance or approval from the FDA for medical devices we intend to commercialize, which can be expensive and uncertain and can cause lengthy delays before we can begin selling our products. We cannot be sure that:

- we or any collaborative partner will make timely filings with the FDA;
- the FDA will act favorably or quickly on these submissions;
- we or any collaborative partner will not be required to submit additional information;
- we or any collaborative partner will not be required to submit an application for premarket approval, rather than a 510(k) premarket notification submission as described below; or
- other significant difficulties and costs related to obtaining FDA clearance or approval will not be encountered.

The FDA may impose strict labeling or other requirements as a condition of its clearance or approval, any of which could limit our ability to market our products. Further, if we or our collaborative partners wish to modify a product after FDA clearance of a premarket notification or approval of a premarket approval application, including changes in indications or other modifications that could affect safety and efficacy, additional clearances or approvals will be required from the FDA. Any request by the FDA for additional data, or any requirement by the FDA that we or our collaborative partners conduct clinical studies or submit to the more rigorous and lengthier premarket approval process, could result in substantial expenses and significant delays in bringing our products to market. Similarly, any labeling or other conditions or restrictions imposed by the FDA on the marketing of our products could hinder our ability to effectively market our products. Any of the above actions by the FDA could delay or prevent altogether our ability to market and distribute our products. Further, there may be new FDA policies or changes in FDA policies that could be adverse to us.

Even if we obtain clearance or approval to sell medical device products, we are subject to ongoing requirements and inspections that could lead to the restriction, suspension or revocation of our clearance.

Ongoing compliance with applicable regulatory requirements will be strictly enforced in the United States through periodic inspections by state and federal agencies, including the FDA, and in international jurisdictions by comparable regulatory authorities. In the past, we have conducted investigations designed to determine whether we meet such regulatory requirements and have identified non-conformances and areas that need improvement. Though we strive to comply with such regulations, there can be no guarantee that the applicable regulators will find that we are in compliance with such regulations in the future. Failure to comply with these regulatory requirements could result in, among other things, warning letters, fines, injunctions, civil penalties, recall or seizure of products, total or partial suspension of production, failure to obtain premarket clearance or premarket approval for devices, withdrawal of approvals previously obtained, and criminal prosecution. The restriction, suspension or revocation of regulatory clearances and approvals or any other failure to comply with regulatory requirements would limit our ability to operate and could increase our costs.

Risks related to our relationships with other companies

Our ability to achieve profitability is dependent upon the success of NantOmics.

We currently secure all of our rights to our sequencing and molecular analysis solutions, including GPS Cancer, from NantOmics. The prospects for these offerings depend in part on the expertise and financial strength of NantOmics, which is controlled by Dr. Patrick Soon-Shiong, our Chairman and Chief Executive Officer. We rely on NantOmics to handle certain aspects of our sequencing and molecular analysis solutions, including GPS Cancer, including but not limited to:

- acquiring appropriate and cost-efficient supplies to produce our sequencing and molecular analysis solutions;
- delivering our sequencing and molecular analysis solutions in a timely manner to us;
- continuing to keep our sequencing and molecular analysis solutions up to date and on pace with current clinical and market developments;
- filing, prosecuting and maintaining patents that cover our sequencing and molecular analysis solutions;
- complying with CLIA regulations and maintaining a CLIA license and all other applicable state laboratory licenses, including through periodic inspections; and
- hiring qualified personnel experienced in completing highly complex laboratory tests.

We are responsible for various aspects of delivering our sequencing and molecular analysis solutions, including but not limited to communications with patients and providers such as providing interpretations of the GPS Cancer reports and resolving any disputes, ensuring customer satisfaction, billing and collections and patient and physician engagement. At December 31, 2018, September 30, 2018, June 30, 2017 and December 31, 2016, we determined that other than temporary impairments of \$14.8 million, \$80.4 million, \$33.9 million and \$29.8 million, respectively, in the value of the investment in NantOmics had occurred, predominantly attributed to declines in the value of goodwill. The estimated decline in fair value at December 31, 2018 was primarily due to altered pricing assumptions for the reseller agreement between the Company and NantOmics. The estimated declines in fair value at September 30, 2018, June 30, 2017 and December 31, 2016 were primarily caused by changes in projected GPS Cancer revenue, due to delays in the Company's GPS Cancer revenue growth and changes in the risk profile of our financial projections for NantOmics. If NantOmics is unable to successfully handle its aspects of our sequencing and molecular analysis solutions or we are unable to successfully handle our aspects of delivering our sequencing and molecular analysis solutions, our business will be adversely affected.

If we are unable to renew our agreement with NantOmics or locate a suitable replacement upon expiration of such agreement at comparable prices, our business would be materially and adversely affected.

Our second amended and restated exclusive reseller agreement with NantOmics, as amended, or the Reseller Agreement, expires on December 31, 2020, subject to three potential three-year renewal options if we complete specified projected GPS Cancer test thresholds. Although NantOmics generally does not have the right to terminate prior to that date, we may be unable to renew such agreement or execute a new arrangement at comparable favorable prices to provide us with molecular profiling tests. In addition, we may not be able to achieve our projected renewal thresholds. Furthermore, NantOmics currently has what we believe is the most comprehensive and clinically validated CAP- and CLIA-certified whole genome and RNA laboratory. If we were unable to fulfill our delivery requirements for our sequencing and molecular analysis solutions to our clients, our business would be materially and adversely affected.

Additionally, through our agreement with NantOmics, we purchase our sequencing and molecular analysis solutions, including GPS Cancer, at a discount to market price. We also receive revenue from our sale of NantOmics' whole genome sequencing and RNA analysis. If we are reimbursed at an amount equal to or less than a certain threshold, our GPS Cancer solution will not be profitable and our business will be materially and adversely affected. Since we expect that pricing pressure from government and third party payers, increasing competition from companies and others offering whole genome sequencing and reductions in the costs of providing whole genome sequencing as technologies mature, will combine to drive the price of whole genome sequencing down, we cannot guarantee that the price we are able to charge for our GPS Cancer solution will continue to yield a profit under the terms of the exclusive reseller agreement.

We rely on third-party computer hardware and software that may be difficult to replace or which could cause errors or failures of our service which could damage our reputation, harm our ability to attract and maintain clients and decrease our revenue.

We rely on computer hardware purchased or leased and software licensed from third parties in order to offer our service. These licenses are generally commercially available on varying terms; however, it is possible that this hardware and software may not continue to be available on commercially reasonable terms, or at all. Any loss of the right to use any of this hardware or software could result in delays in providing NantHealth solutions (including Eviti, Navinet apps, Connected Care solutions, and our sequencing and molecular analysis solutions) until equivalent technology is either developed by us, or, if available, is identified, obtained and integrated, which could harm our business. Any errors or defects in third-party hardware or software could result in errors or a failure of our service which could damage our reputation, harm our ability to attract and maintain clients and decrease our revenue.

We are heavily dependent on our senior management, particularly Dr. Patrick Soon-Shiong, and a loss of a member of our senior management team in the future could harm our business.

If we lose members of our senior management, we may not be able to find appropriate replacements on a timely basis, and our business could be adversely affected. Our existing operations and continued future development depend to a significant extent upon the continued performance and active participation of certain key individuals, including Dr. Patrick Soon-Shiong, our Chairman, Chief Executive Officer and our principal stockholder. Although we expect Dr. Patrick Soon-Shiong will continue to devote on average at least 20 hours per week to our company, he will continue to primarily focus on NantKwest, Inc., or NantKwest, a publicly-traded, clinical-stage immunotherapy company, of which he is Chairman and Chief Executive Officer. Dr. Patrick Soon-Shiong will also devote time to other companies operating under NantWorks, a collection of multiple companies in the healthcare and technology space that Dr. Patrick Soon-Shiong founded in 2011. We do not believe Dr. Patrick Soon-Shiong has any material conflicting obligations as a result of his involvement with other companies. Additionally, we are dependent on commercial relationships with various other parties affiliated with NantWorks and with Dr. Patrick Soon-Shiong, including NantOmics, as described in Note 18 of the accompanying notes to the Consolidated Financial Statements, and we may enter into additional relationships in the future. If Dr. Patrick Soon-Shiong was to cease his affiliation with us or with NantWorks, these entities may be unwilling to continue these relationships with us on commercially reasonable terms, or at all. The risks related to our dependence upon Dr. Patrick Soon-Shiong are particularly acute given his ownership percentage and role in our company. If we were to lose Dr. Patrick Soon-Shiong, we may not be able to find appropriate replacements on a timely basis and our financial condition and results of operations could be materially adversely affected. We have not entered into, nor do we intend to enter into, an employment agreement with Dr. Patrick Soon-Shiong.

We face significant competition for employees from other healthcare-related companies, which include both publicly-traded and privately-held companies, and we may not be able to hire new employees quickly enough to meet our needs. To induce valuable employees to remain at our company, in addition to salary and cash incentives, we have provided equity incentives that vest over time and, in some cases, upon the occurrence of certain events. The value to employees of these equity incentives that vest over time may be significantly affected by movements in our stock price that are beyond our control and may at any time be insufficient to counteract more lucrative offers from other companies. Although we have employment agreements with certain of our key employees, these employment agreements provide for at-will employment, which means that any of our employees could leave our employment at any time, with or without notice. We do not maintain "key man" insurance policies on the lives of these individuals or the lives of any of our other employees.

If we and NantOmics are unable to support demand for our sequencing and molecular analysis solutions, including GPS Cancer and Liquid GPS, including ensuring that we have adequate capacity to meet increased demand, or we or NantOmics are unable to successfully manage the evolution of its molecular information platform, our business could suffer.

As our volume grows, we and NantOmics will need to increase capacity and improve processes to support growing demand. Our sequencing and molecular analysis solutions will need additional certified laboratory scientists and other scientific and technical personnel to process higher volumes of our molecular information products. Portions of our process are not automated and will require additional personnel to scale. We and NantOmics will also need to purchase additional equipment, some of which can take several months or more to procure, setup and validate, and will need to increase our software and computing capacity to meet increased demand. There is no assurance that any of these increases in scale, expansion of personnel, equipment, software and computing capacities, or process enhancements will be successfully implemented.

As additional products are commercialized, including molecular profiling solutions for additional disease indications, we and NantOmics will need to incorporate new equipment, implement new technology systems and laboratory processes, and hire new personnel with different qualifications. Failure to manage growth or a transition to new technologies or processes could result in turnaround time delays, higher product costs, declining product quality, deteriorating customer service, and slower responses to competitive challenges. A failure in any one of these areas could make it difficult for us to meet market expectations for our products and could damage our reputation and the prospects for our business.

Risks related to our business generally

We have in the past and may in the future acquire other companies or technologies, which could divert our management's attention, result in dilution to our stockholders and otherwise disrupt our operations and adversely affect our operating results.

Part of our business model is the acquisition of technologies and businesses that promote our transformational vision for personalized healthcare. We have in the past and may in the future seek to acquire or invest in additional businesses, applications, services and/or technologies that we believe complement or expand our offerings, enhance our technical capabilities or otherwise offer growth opportunities. The pursuit of potential acquisitions may divert the attention of management and cause us to incur various expenses in identifying, investigating and pursuing suitable acquisitions, whether or not they are consummated.

For example, in January 2016, we acquired NaviNet to bolster our payer platform and, in February 2018, we acquired NantHealth Labs to expand into the liquid tumor profiling market. Realizing the benefits of these acquisitions and any future acquisition depend upon the successful integration into our existing operations, and we may not be able to integrate the acquired personnel, operations and technologies successfully, or effectively manage the combined business following the acquisition. We also may not realize the anticipated benefits from any acquired business due to several factors, including:

- inability to integrate or benefit from acquired technologies or services in a profitable manner;
- unanticipated costs or liabilities associated with the acquisition;
- difficulty integrating the accounting systems, operations and personnel of the acquired business;
- difficulties and additional expenses associated with supporting legacy products and hosting infrastructure of the acquired business;
- difficulty converting the customers of the acquired business onto our platform and contract terms, including disparities in the revenue, licensing, support or professional services model of the acquired company;
- difficulty in cross-selling our existing solutions and offerings to the acquired business' customers;
- diversion of management's attention from other business concerns;
- adverse effects to our existing business relationships with business partners and customers as a result of the acquisition;
- the potential loss of key employees;
- use of resources that are needed in other parts of our business; and
- use of substantial portions of our available cash to consummate the acquisition.

In addition, a significant portion of the purchase price of companies we acquire may be allocated to acquired goodwill and other intangible assets, which must be assessed for impairment at least annually. As of December 31, 2018, the value of our goodwill and intangible assets, net of accumulated amortization was \$115.9 million and \$64.7 million, respectively. If our acquisitions do not yield expected returns, we have in the past, and may in the future, be required to take charges to our operating results based on this impairment assessment process, which could adversely affect our results of operations.

Acquisitions could also result in dilutive issuances of equity securities or the incurrence of debt, which could adversely affect our operating results. In addition, if the acquisition of NaviNet, NantHealth Labs, or any other business we may acquire in the future fails to meet our expectations, our operating results, business and financial position may suffer.

We cannot assure you that we will be successful in integrating certain assets of NaviNet, NantHealth Labs, or any other businesses or technologies we may acquire. The failure to successfully integrate these businesses could have a material adverse effect on our business, financial condition, or results of operations.

If our new components and enhancements to our test platform do not achieve sufficient market acceptance, our financial results and competitive position will suffer.

We and NantOmics spend substantial amounts of time and money to research and develop new tests and to optimize the utility and value of our tests for physicians and their patients. When we develop a new component or enhancement to our test platform, we typically incur expenses and expend resources upfront to develop, market and promote the new component. Therefore, when we develop and introduce new components or enhancements to our test platform, they must achieve high levels of market acceptance in order to justify the amount of our investment in developing and bringing them to market. For example, if GPS Cancer and Liquid GPS do not garner widespread market adoption and implementation, our growth prospects, future financial results and competitive position could suffer.

Our new components or enhancements to our test platform and changes to our test platform could fail to attain sufficient market acceptance for many reasons, including:

- our failure to predict physician and patient market demand accurately in terms of test platform functionality and to supply a test platform that meets this demand in a timely fashion
- delays in releasing to the market our new components or enhancements to our test platform to the market;
- failing to keep our sequencing and molecular analysis solutions up to date and on pace with current clinical and market developments;
- complexity in the implementation or utilization of the new components and enhancements;
- negative publicity about their performance or effectiveness;
- introduction or anticipated introduction of competing test platforms and products by our competitors;
- poor business conditions for our physician customers, causing them to delay IT purchases.

If our new components or enhancements and changes do not achieve adequate acceptance in the market, physician customers and their patients may choose to use a competitor's platform instead, our competitive position would be impaired, and our revenue would be diminished. The adverse effect on our financial results may be particularly acute because of the significant research, development, marketing, sales and other expenses we would have incurred in connection with the new components or enhancements.

Business disruptions could seriously harm our future revenue and financial condition and increase our costs and expenses.

Our operations, and those of our contractors and consultants, could be subject to earthquakes, power shortages, telecommunications failures, water shortages, floods, hurricanes, typhoons, fires, extreme weather conditions, medical epidemics, acts of terrorism, acts of war and other natural or man-made disasters or business interruptions, for which we are predominantly self-insured. Our corporate headquarters are in Culver City, California near major earthquake faults and fire zones. We attempt to mitigate these risks through various means including redundant infrastructure, disaster recovery plans, separate test systems and change control and system security measures, but our precautions will not protect against all potential problems. If our clients' access is interrupted because of problems in the operation of our facilities, we could be exposed to significant claims by clients or their patients, particularly if the access interruption is associated with problems in the timely delivery of funds due to clients or medical information relevant to patient care. The occurrence of any of these business disruptions could seriously harm our operations and financial condition and increase our costs and expenses.

As of the date of this Annual Report on Form 10-K, we serve our clients primarily from third-party data hosting facilities. We do not control the operation of these third-party facilities, and they are vulnerable to damage or interruption from earthquakes, floods, fires, power loss, telecommunications failures and similar events. They are also subject to break-ins, sabotage, intentional acts of vandalism and similar misconduct. Despite precautions taken at these facilities, the occurrence of a natural disaster or a crime, a decision to close the facilities without adequate notice or other unanticipated problems at these facilities could result in lengthy interruptions in our service. Even with the disaster recovery arrangements, our service could be interrupted.

We may, from time to time, transition our data hosting to new or alternative providers. In connection with these transitions, we will be moving, transferring or installing some of our equipment, data and software to and in other facilities. Despite precautions taken during this process, any unsuccessful transfers may impair the delivery of our one or more of our offerings. Further, any damage to, or failure of, our systems generally could result in interruptions in one or more of our offerings. Interruptions in our service may reduce our revenue, cause us to issue credits or pay penalties, may cause clients to terminate one or more of our offerings and may adversely affect our renewal rates and our ability to attract new clients. Our business may also be harmed if our clients and potential clients believe one or more of our offerings are unreliable.

If we fail to develop widespread brand awareness, our business may suffer.

We believe that developing and maintaining widespread awareness of our brand is critical to achieving widespread adoption of our offering and attracting new customers. Brand promotion activities may not generate customer awareness or increase revenue, and even if they do, any increase in revenue may not offset the expenses we incur in building our brand. If we fail to successfully promote and maintain our brand, or incur substantial expenses in doing so, we may fail to attract or retain customers necessary to realize a sufficient return on our brand-building efforts, or to achieve the widespread brand awareness that is critical for broad customer adoption of our offerings.

Our marketing efforts depend significantly on our ability to receive positive references from our existing customers.

Our marketing efforts depend significantly on our ability to call on our current customers to provide positive references to new, potential customers. Given our limited number of long-term customers, the loss or dissatisfaction of any customer could substantially harm our brand and reputation, inhibit the market adoption of our offerings and impair our ability to attract new customers and maintain existing customers. Any of these consequences could have a material adverse effect on our business, financial condition and results of operations.

If we become subject to product liability or other litigation, we may incur substantial liabilities and may be required to limit commercialization of our current and any future products.

We are from time to time subject to legal proceedings and claims that arise in the ordinary course of business, such as claims brought by our clients in connection with commercial disputes and employment claims made by our current or former employees. For example, two of our former employees filed a complaint against us alleging they were terminated in violation of Florida's Whistleblower Act, which was settled. Litigation, regardless of merit, may result in substantial costs and may divert management's attention and resources, which may harm our business.

Our services, some of which involve recommendations and advice to healthcare providers regarding complex business and operational processes, regulatory and compliance issues and patient treatment options, may give rise to liability claims by our members or by third parties who bring claims against us. In addition, third parties, including former employees, have in the past, and may in the future, file lawsuits alleging non-compliance with government regulations. Investigating and defending such claims, even if they lack merit, may require significant time and resources and could damage our reputation and harm our business.

In addition, our home healthcare services business, which includes a skilled nursing facility, employs healthcare providers in the home care setting. Healthcare providers in the home care setting increasingly are the subject of litigation, and we cannot assure you that we would not also be the subject of such litigation based on our offerings. In addition, the marketing, sale and use of our offering could lead to the filing of product liability claims were someone to allege that one or more of our offerings identified inaccurate or incomplete information regarding the genomic alterations of the tumor or malignancy analyzed, reported inaccurate or incomplete information concerning the available therapies for a certain type of cancer, or otherwise failed to perform as designed. We may also be subject to liability for errors in, a misunderstanding of, or inappropriate reliance upon, the information we provide in the ordinary course of our business activities. A product liability claim could result in substantial damages and be costly and time-consuming for us to defend.

We maintain product and other insurance, but this insurance may not fully protect us from the financial impact of defending against product liability or other claims. Any product liability or other claim brought against us, with or without merit, could increase our insurance rates or prevent us from securing insurance coverage in the future. Additionally, any product liability lawsuit could damage our reputation, or cause current clients to terminate existing agreements and potential clients to seek other vendors, any of which could impact our results of operations.

We are subject to changes in and interpretations of financial accounting matters that govern the measurement of our performance, one or more of which could adversely affect our business.

Based on our reading and interpretations of relevant guidance, principles or concepts issued by, among other authorities, the American Institute of Certified Public Accountants, the Financial Accounting Standards Board and the Securities and Exchange Commission, or SEC, we believe our current sales and licensing contract terms and business arrangements have been properly reported. However, this guidance involves interpretations, and there continue to be issued interpretations and guidance for applying the relevant standards to a wide range of sales and licensing contract terms and business arrangements that are prevalent in the software industry. For example, we must apply significant judgment to determine whether revenue should be recognized on a gross or net basis for our reseller arrangements, including revenue under our reseller agreement with NantOmics. Disagreement with the regulators as to our current interpretations and any future changes by the regulators of existing accounting standards or changes in our business practices could result in changes in our revenue recognition and/or other accounting policies and practices that could adversely affect our business.

Failure to manage our future growth effectively could increase our expenses, decrease our revenue and prevent us from implementing our business strategy.

We have been experiencing a period of growth. To manage our anticipated future growth effectively, we must continue to maintain and may need to enhance our information technology infrastructure, financial and accounting systems and controls and manage expanded operations in geographically-diverse locations. We also must attract, train and retain a significant number of qualified sales and marketing personnel, professional services personnel, software engineers, technical personnel and management personnel. Failure to manage our rapid growth effectively could lead us to over invest or under invest in technology and operations, could result in weaknesses in our infrastructure, systems or controls, could give rise to operational mistakes, losses, loss of productivity or business opportunities, and could result in loss of employees and reduced productivity of remaining employees. Our growth could require significant capital expenditures and may divert financial resources from other projects, such as the development of new services. If our management is unable to effectively manage our growth, our expenses may increase more than expected, our revenue could decline or may grow more slowly than expected, and we may be unable to implement our business strategy.

Our estimates of market opportunity and forecasts of market growth may prove to be inaccurate, and even if the market in which we compete achieves the forecasted growth, our business could fail to grow at similar rates, if at all.

Our market opportunity estimates and growth forecasts are subject to significant uncertainty and are based on assumptions and estimates that may not prove to be accurate. Our estimates and forecasts regarding the size and expected growth of the healthcare information technology and molecular analysis markets may prove to be inaccurate. Even if the markets in which we compete meet our size estimates and forecasted growth, our business could fail to grow at similar rates, if at all.

The industry-and market-related estimates we rely upon are based on various assumptions and may prove to be inaccurate.

Industry-and market-related estimates we rely upon, including, without limitation, estimates related to our market size and industry data, are subject to uncertainty and are based on assumptions which may not prove to be accurate. This may have negative consequences, such as us overestimating our potential market opportunity.

We are exposed to risks related to our international operations and failure to manage these risks may adversely affect our operating results and financial condition.

We are a global company with operations both inside and outside the United States. For example, we have foreign wholly owned subsidiaries, including NantHealth Singapore Pte Ltd., New NantHealth Canada, Inc. and Navinet Limited. As a result, a portion of our operations are conducted by and/or rely on entities outside the United States. We may therefore be denied access to our customers or suppliers as a result of economic, legislative, political and military conditions in such countries.

International operations are subject to several other inherent risks, and our future results could be adversely affected by several factors, including:

- requirements or preferences for domestic products or solutions, which could reduce demand for our products;
- differing existing or future regulatory and certification requirements;
- management communication and integration problems resulting from cultural and geographic dispersion;
- greater difficulty in collecting accounts receivable and longer collection periods;
- difficulties in enforcing contracts;
- difficulties and costs of staffing and managing non-U.S. operations;
- the uncertainty of protection for intellectual property rights in some countries;
- tariffs and trade barriers, export regulations and other regulatory and contractual limitations on our ability to sell our products;

- greater risk of a failure of foreign employees to comply with both U.S. and foreign laws, including export and antitrust regulations, the FCPA and any trade regulations ensuring fair trade practices;
- heightened risk of unfair or corrupt business practices in certain geographies and of improper or fraudulent sales arrangements that may impact financial results and result in restatements of, or irregularities in, financial statements;
- potentially adverse tax consequences, including multiple and possibly overlapping tax structures; and
- political and economic instability, political unrest and terrorism.

In addition, the expansion of our existing international operations and entry into additional international markets has required, and will continue to require, significant management attention and financial resources. These factors and other factors could harm our ability to gain future revenues and, consequently, materially impact our business, financial condition and results of operations.

The United Kingdom's vote to leave the European Union will have uncertain effects and could adversely affect us.

On June 23, 2016, a referendum was held on the UK's membership in the European Union, or the EU, the outcome of which was a vote in favor of leaving the EU, or the Brexit. Negotiations began in March 2017 to determine the future terms of the UK's relationship with the EU, including the terms of trade between the UK and the EU and the rest of the world. Article 50 of the Treaty of the European Union, or Article 50, allows a member state to decide to withdraw from the European Union in accordance with its own constitutional requirements. On February 1, 2017, the UK Parliament voted in favor of allowing the UK to start the process of leaving the European Union and authorized the filing an Article 50 notice to that end, which was delivered to the European Union in March 2017. Delivery of the Article 50 notice commenced a two-year period for the United Kingdom to exit from the European Union, although this period can be extended with the unanimous agreement of the European Council. Without any such extension (and assuming that the terms of withdrawal have not already been agreed), the United Kingdom's membership in the European Union would end automatically on the expiration of that two-year period. The effects of Brexit will depend on agreements the UK makes to retain access to EU markets either during a transitional period or more permanently. Brexit creates an uncertain political and economic environment in the UK and potentially across other EU member states for the foreseeable future, including during any period while the terms of Brexit are being negotiated and such uncertainties could impair or limit our ability to transact business in the member EU states. Further, Brexit could adversely affect European and worldwide economic or market conditions and could contribute to instability in global financial markets, and the value of the Pound Sterling currency or other currencies, including the Euro. We are exposed to the economic, market and fiscal conditions in the UK and the EU and to changes in any of these conditions. Depending on the terms reached regarding Brexit, it is possible that there may be adverse practical and/or operational implications on our business. A significant amount of the regulatory regime that applies to us in the UK is derived from EU directives and regulations. For so long as the UK remains a member of the EU, those sources of legislation will (unless otherwise repealed or amended) remain in effect. However, Brexit could change the legal and regulatory framework within the UK where we operate and is likely to lead to legal uncertainty and potentially divergent national laws and regulations as the UK determines which EU laws to replace or replicate. Consequently, no assurance can be given as to the impact of Brexit and, in particular, no assurance can be given that our operating results, financial condition and prospects would not be adversely impacted by the result.

Risks related to intellectual property

We may be unable to adequately protect, and we may incur significant costs in enforcing, our intellectual property and other proprietary rights.

Our success depends in part on our ability to enforce our intellectual property and other proprietary rights. We rely upon a combination of trademark, trade secret, copyright, patent and unfair competition laws, as well as license and access agreements and other contractual provisions, to protect our intellectual property and other proprietary rights. In addition, we attempt to protect our intellectual property and proprietary information by requiring certain of our employees and consultants to enter into confidentiality, noncompetition and assignment of inventions agreements. Any disclosure to or misappropriation by third parties of our confidential proprietary information could enable competitors to quickly duplicate or surpass our technological achievements, eroding our competitive position in the market. Moreover, we do not have any written contractual agreements with respect to any intellectual property and technology that relate to our business developed in the future by our Chairman and Chief Executive Officer, Dr. Patrick Soon-Shiong. In the event we are unable to protect our intellectual property and proprietary information, including in particular with respect to such property or information created by Dr. Patrick Soon-Shiong, our business would be adversely affected. In addition, our attempts to protect our intellectual property may be challenged by others or invalidated through administrative process or litigation.

We have developed, acquired, and licensed numerous patents and patent applications and we possess substantial know-how and trade secrets relating to the development and commercialization of healthcare technology products and services. In January 2016, we acquired NaviNet, a leading payer-provider collaboration platform, and in February 2018 we acquired NantHealth Labs, a liquid tumor profiling company. As part of these and other acquisitions, we acquired patents and other intellectual property. As of December 31, 2018, our patent portfolio consisted of the following matters relating to our proprietary technology and inventions: (i) seven issued U.S. patents, including six U.S. utility patents and one U.S. design patent; (ii) eighteen pending U.S. patent applications, including sixteen U.S. utility patent applications and two U.S. design patent applications; (iii) one issued patent outside the United States; and (iv) seventeen patent applications pending in jurisdictions outside the United States. Of these U.S. and non-U.S. patents and applications, two patents and seven applications were jointly owned. We believe we have intellectual property rights that are necessary to commercialize our healthcare technology products and services. However, our patent applications may not result in issued patents, and, even if issued, the patents may be challenged and invalidated. Moreover, our patents and patent applications may not be sufficiently broad to prevent others from practicing our technologies or developing competing products. We also face the risk that others may independently develop similar or alternative technologies or may design around our proprietary property.

If any patents are issued in the future, they may not provide us with any competitive advantages, or may be successfully challenged by third parties. Agreement terms that address non-competition are difficult to enforce in many jurisdictions and may not be enforceable in any particular case. To the extent that our intellectual property and other proprietary rights are not adequately protected, third parties might gain access to our proprietary information, develop and market products or services similar to ours, or use trademarks similar to ours, each of which could materially harm our business. Existing United States federal and state intellectual property laws offer only limited protection. Moreover, the laws of other countries in which we now, or may in the future, conduct operations or contract for services may afford little or no effective protection of our intellectual property. Further, our platforms incorporate open source software components that are licensed to us under various public domain licenses. While we believe we have complied with our obligations under the various applicable licenses for open source software that we use, there is little or no legal precedent governing the interpretation of many of the terms of certain of these licenses and therefore the potential impact of such terms on our business is somewhat unknown. The failure to adequately protect our intellectual property and other proprietary rights could materially harm our business.

The patent application process, also known as patent prosecution, is expensive and time consuming, and we and any current or future licensors and licensees may not be able to prepare, file and prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner. It is also possible that we or any current or future licensors or licensees, will fail to identify patentable aspects of inventions made in the course of development and commercialization activities before it is too late to obtain patent protection on them. Moreover, in some circumstances, we may not have the right to control the preparation, filing and prosecution of patent applications, or to maintain the patents, covering technology that we license from or license to third parties and are therefore reliant on our licensors or licensees. Therefore, these and any of our patents and applications may not be prosecuted and enforced in a manner consistent with the best interests of our business. Defects of form in the preparation or filing of our patents or patent applications may exist, or may arise in the future, for example, with respect to proper priority claims, inventorship, and the like, although we are unaware of any such defects that we believe are of material importance. If we or any current or future licensors or licensees, fail to establish, maintain or protect such patents and other intellectual property rights, such rights may be reduced or eliminated. If any current or future licensors or licensees are not fully cooperative or disagree with us as to the prosecution, maintenance or enforcement of any patent rights, such patent rights could be compromised. If there are material defects in the form, preparation or prosecution of our patents or patent applications, such patents or applications may be invalid and unenforceable. Any of these outcomes could impair our ability to prevent competition from third parties, which may have an adverse impact on our business.

The strength of patent rights involves complex legal and scientific questions and can be uncertain. This uncertainty includes changes to the patent laws through either legislative action to change statutory patent law or court action that may reinterpret existing law or rules in ways affecting the scope or validity of issued patents. The patent applications that we own or license may fail to result in issued patents in the United States or foreign countries with claims that cover our products or services. Even if patents do successfully issue from the patent applications that we own or license, third parties may challenge the validity, enforceability or scope of such patents, which may result in such patents being narrowed, invalidated or held unenforceable. Any successful challenge to our patents could deprive us of exclusive rights necessary for the successful commercialization of our products and services. Furthermore, even if they are unchallenged, our patents may not adequately protect our products and services, provide exclusivity for our products and services, or prevent others from designing around our claims. If the breadth or strength of protection provided by the patents we hold or pursue with respect to our products and services is challenged, it could dissuade companies from collaborating with us to develop, or threaten our ability to commercialize, our products and services.

Patents have a limited lifespan. In the United States, the natural expiration of a utility patent is generally 20 years after its effective filing date and the natural expiration of a design patent is generally 14 years after its issue date, unless the filing date occurred on or after May 13, 2015, in which case the natural expiration of a design patent is generally 15 years after its issue date. Various extensions may be available; however, the life of a patent, and the protection it affords, is limited. Without patent protection for our products and services, we may be open to competition. Further, if we encounter delays in our development efforts, the period of time during which we could market our products and services under patent protection would be reduced.

In addition to the protection afforded by patents, we also rely on trade secret protection to protect proprietary know-how that may not be patentable or that we elect not to patent, processes for which patents may be difficult to obtain or enforce, and any other elements of our products and services that involve proprietary know-how, information or technology that is not covered by patents. However, trade secrets can be difficult to protect. We cannot be certain that our trade secrets and other confidential proprietary information will not be disclosed despite having such confidentiality agreements. If the steps taken to maintain our trade secrets are deemed inadequate, we may have insufficient recourse against third parties for misappropriating any trade secrets. In addition, in some situations, any confidentiality agreement we may have with an employee, consultant, advisor, or others may conflict with, or be subject to, the rights of third parties with whom our employees, consultants, or advisors have previous employment or consulting relationships. To the extent that our employees, consultants, advisors, or contractors use any intellectual property owned by third parties in their work for us, disputes may arise as to the rights in any related or resulting know-how and inventions. Misappropriation or unauthorized disclosure of our trade secrets could significantly affect our competitive position and may have a material adverse effect on our business. Furthermore, trade secret protection does not prevent competitors from independently developing substantially equivalent information and techniques and we cannot guarantee that our competitors will not independently develop substantially equivalent information and techniques. The FDA, as part of its Transparency Initiative, is currently considering whether to make additional information of life science companies publicly available on a routine basis, including information that we may consider to be trade secrets or other proprietary information, and it is not clear at the present time how the FDA's disclosure policies may change in the future, if at all.

Obtaining and maintaining our patent protection depends on compliance with various procedural, documentary, fee payment and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

The United States Patent and Trademark Office, or USPTO, and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent prosecution process. Periodic maintenance fees and various other governmental fees on any issued patent and/or pending patent applications are due to be paid to the USPTO and foreign patent agencies in several stages over the lifetime of a patent or patent application. We have systems in place to remind us to pay these fees, and we employ an outside firm and rely on our outside counsel to pay these fees. While an inadvertent lapse may sometimes be cured by payment of a late fee or by other means in accordance with the applicable rules, there are many situations in which noncompliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. If we fail to maintain the patents and patent applications directed to our products and services, our competitors might be able to enter the market earlier than should otherwise have been the case, which would have a material adverse effect on our business.

Litigation or other proceedings or third-party claims of intellectual property infringement could require us to spend significant time and money and could prevent us from selling our products and services.

Our commercial success depends in part on our avoiding infringement of the patents and proprietary rights of third parties, for example, the intellectual property rights of competitors. Our research, development and commercialization activities may be subject to claims that we infringe or otherwise violate patents owned or controlled by third parties. Numerous U.S. and foreign issued patents and pending patent applications, which are owned by third parties, exist in the fields in which we are developing our products and services. As the healthcare technology industry expands and more patents are issued, the risk increases that our activities related to our products and services may give rise to claims of infringement of the patent rights of others. We cannot assure you that our products and services will not infringe existing or future patents. The coverage of patents is subject to interpretation by the courts, and the interpretation is not always uniform. We may not be aware of patents that have already issued that a third party, for example, a competitor in our market, might assert are infringed by our products and services. It is also possible that patents of which we are aware, but which we do not believe are relevant to our products and services, could nevertheless be found to be infringed by our product candidates. Nevertheless, we are not aware of any issued patents that we believe would prevent us from marketing our healthcare products and services. There may also be patent applications that have been filed but not published that, when issued as patents, could be asserted against us.

Third parties have asserted and may in the future assert that we are employing their proprietary technology without authorization. As we continue to commercialize our products and services in their current or updated forms, launch new products and services and enter new markets, we expect that competitors will claim that our products and services infringe their intellectual property rights as part of business strategies designed to impede our successful commercialization and entry into new markets. We occasionally receive letters from third parties inviting us to take licenses under, or alleging that we infringe, their patents or trademarks. Third parties may have obtained, and may in the future obtain, patents under which such third parties may claim that the use of our technologies constitutes patent infringement.

If we are sued for patent infringement, we would need to demonstrate that our products or services either do not infringe the patent claims of the relevant patent or that the patent claims are invalid or unenforceable, and we may not be able to do this. Proving that a patent is invalid and/or unenforceable is difficult. For example, in the United States, proving invalidity requires a showing of clear and convincing evidence to overcome the presumption of validity enjoyed by issued patents. We could incur substantial costs and divert the attention of our management and technical personnel in defending ourselves or our licensors against any of these claims. Defense of these claims, regardless of their merit, would cause us to incur substantial expenses and, would be a substantial diversion of employee resources from our business. Any adverse ruling or perception of an adverse ruling in defending ourselves against these claims could have a material adverse impact on our business. Furthermore, parties making claims against us may be able to obtain injunctive or other relief, which could block our ability to develop, commercialize, and sell products or services, and could result in the award of substantial damages against us, potentially including treble damages and attorneys' fees if we are found to have willfully infringed a patent. In the event of a successful claim of infringement or misappropriation against us, we may be required to pay damages and obtain one or more licenses from third parties, pay royalties to the third party, redesign any infringing product, or be prohibited from selling certain products or services, all of which could have a material adverse impact on our business. Redesigning any infringing products may be commercially impractical, not readily feasible, and/ or require substantial time and monetary expenditure. Further, we cannot predict whether any required license would be available at all or whether it would be available on commercially reasonable terms.

In addition, we may be unable to obtain these licenses at a reasonable cost, if at all. We could therefore incur substantial costs related to royalty payments for licenses obtained from third parties, which could negatively affect our gross margins. Even if we were able to obtain a license, it could be non-exclusive, thereby giving our competitors access to the same technologies licensed to us. Ultimately, we could be prevented from commercializing a product, or be forced to cease some aspect of our business operations, if, as a result of actual or threatened patent infringement claims, we are unable to enter into licenses on acceptable terms. Moreover, we could encounter delays in product or service introductions while we attempt to develop alternative products or services. Defense of any lawsuit or failure to obtain any of these licenses on favorable terms could prevent us from commercializing products and services, and the prohibition of sale of any of our products and services would materially affect our ability to grow and maintain profitability and have a material adverse impact on our business.

Defending ourselves in litigation is very expensive, particularly for a company of our size, and time-consuming. In addition to infringement claims against us, we may become a party to other patent litigation and other proceedings, including interference, derivation, or post-grant proceedings declared or granted by the USPTO and similar proceedings in foreign countries, regarding intellectual property rights with respect to our current or future products. The cost to us of any patent litigation or other proceeding, even if resolved in our favor, could be substantial. Some of our competitors may be able to sustain the costs of litigation or administrative proceedings more effectively than we can because of greater financial resources. Patent litigation and other proceedings may also absorb significant management time. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could impair our ability to compete in the marketplace. The occurrence of any of the foregoing could have a material adverse effect on our business, financial condition, or results of operations.

We may become involved in lawsuits to protect or enforce our patents or other intellectual property, or the patents of our licensors, which could be expensive, time consuming and ultimately unsuccessful.

Competitors may infringe or misappropriate our patents, trademarks, copyrights or other intellectual property, including our existing patents or patents that may issue to us in the future, or the patents of our licensors to which we have a license. To counter infringement or unauthorized use, we may be required to file infringement or inventorship claims to stop third party infringement, unauthorized use, or to correct inventorship, which can be expensive and time consuming and divert the time and attention of our management and scientific personnel. Any claims that we assert against perceived infringers could provoke these parties to assert counterclaims against us alleging that we infringe their patents, in addition to counterclaims asserting that our patents are invalid or unenforceable, or both. These competitors may further challenge the scope, validity or enforceability of our licensors' patents, requiring our licensors to engage in complex, lengthy and costly litigation or other proceedings. In any patent infringement proceeding, there is a risk that a court will decide that a patent of ours or of our licensors' is invalid or unenforceable, in whole or in part, and that we do not have the right to stop the other party from using the invention at issue. There is also a risk that, even if the validity of such patents is upheld, the court will construe the patent's claims narrowly or decide that we do not have the right to stop the other party from using the invention at issue on the grounds that our patent claims do not cover the invention. An adverse outcome in a litigation or proceeding involving our patents could limit our ability to assert our patents against those parties or other competitors and may curtail or preclude our ability to exclude third parties from making and selling similar or competitive products. Any of these occurrences could adversely affect our competitive business position, business prospects and financial condition. Similarly, if we assert trademark infringement claims, a court may determine that the marks we have asserted are invalid or unenforceable, or that the party against whom we have asserted trademark infringement has superior rights to the marks in question. In this case, we could ultimately be forced to cease use of such trademarks. An adverse determination of any litigation or other proceedings could put one or more of our patents at risk of being invalidated, held unenforceable or interpreted narrowly and could put our patent applications at risk of not issuing.

Interference, derivation or other proceedings, brought at the USPTO or any foreign patent authority may be necessary to determine the priority or patentability of inventions with respect to our patent applications or those our collaborators. Litigation or USPTO proceedings brought by us may fail. An unfavorable outcome in any such proceeding could require us to cease using the related technology or to attempt to license rights to it from the prevailing party or could cause us to lose valuable intellectual property rights. Our business could be harmed if the prevailing party does not offer us a license on commercially reasonable terms, if any license is offered at all. Even if we are successful, domestic or foreign litigation, or USPTO or foreign patent office proceedings may result in substantial costs and distraction to our management. We may not be able, alone or with collaborators, to prevent misappropriation of our trade secrets, confidential information or proprietary rights, particularly in countries where the laws may not protect such rights as fully as in the United States.

Even if we establish infringement, the court may decide not to grant an injunction against further infringing activity and instead award only monetary damages, which may or may not be an adequate remedy. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during litigation. There could also be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have a material adverse effect on the price of shares of our common stock. Moreover, there can be no assurance that we will have sufficient financial or other resources to file and pursue such infringement claims, which typically last for years before they are concluded. Even if we ultimately prevail in such claims, the monetary cost of such litigation and the diversion of the attention of our management and scientific personnel could outweigh any benefit we receive as a result of the proceedings.

Enforcing our intellectual property rights through litigation is very expensive, particularly for a company of our size, and time-consuming. Some of our competitors may be able to sustain the costs of litigation or administrative proceedings more effectively than we can because of greater financial resources. Patent litigation and other proceedings may also absorb significant management time. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could impair our ability to compete in the marketplace. The occurrence of any of the foregoing could have a material adverse effect on our business, financial condition, or results of operations.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation or administrative proceedings, there is a risk that some of our confidential information could be comprised by disclosure. In addition, during the course of litigation or administrative proceedings, there could be public announcements of the results of hearings, motions, or other interim proceedings or developments or public access to related documents. If investors perceive these results to be negative, the market price for our common stock could be significantly harmed.

We may not be able to protect our intellectual property rights throughout the world.

Third parties may attempt to commercialize competitive products or services in foreign countries where we do not have any patents or patent applications where legal recourse may be limited. This may have a significant commercial impact on our foreign business operations.

Filing, prosecuting and defending patents on our products and services in all countries throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States can be less extensive than those in the United States. The requirements for patentability may differ in certain countries, particularly developing countries. For example, Europe has a heightened requirement for patentability of software inventions. Thus, even in countries where we do pursue patent protection, there can be no assurance that any patents will issue with claims that cover our products. In addition, the laws of some foreign countries do not protect intellectual property rights to the same extent as laws in the United States and in some cases may even force us to grant a compulsory license to competitors or other third parties. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States or from selling or importing products concerning our healthcare technology into the United States or other jurisdictions. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and services and further, may export otherwise infringing products and services to territories where we have patent protection, but enforcement on infringing activities is inadequate. These products or services may compete with ours, and our patents or other intellectual property rights may not be effective or sufficient to prevent them from competing.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents and other intellectual property protection, which could make it difficult for us to stop the infringement of our patents or marketing of competing products in violation of our proprietary rights generally. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our patents at risk of being invalidated or interpreted narrowly and our patent applications at risk of not issuing, and could provoke third parties to assert claims against us. We may not prevail in any lawsuits that we initiate and the damages or other remedies awarded, if any, may not be commercially meaningful. In addition, certain countries in Europe and certain developing countries, including India and China, have compulsory licensing laws under which a patent owner may be compelled to grant licenses to third parties. In those countries, we may have limited remedies if our patents are infringed or if we are compelled to grant a license to our patents to a third party, which could materially diminish the value of those patents. This could limit our potential revenue opportunities. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we own or license. Finally, our ability to protect and enforce our intellectual property rights may be adversely affected by unforeseen changes in foreign intellectual property laws.

Developments in U.S. patent law could have a negative impact on our business.

As is the case with other healthcare technology companies, our success is in part dependent on intellectual property, particularly on obtaining and enforcing patents. Obtaining and enforcing patents in the healthcare technology industry involves both technological and legal complexity, and therefore, is costly, time consuming, and inherently uncertain. In addition, the United States has recently enacted and has now implemented wide-ranging patent reform legislation. Further, recent United States Supreme Court rulings have either narrowed the scope of patent protection available in certain circumstances or weakened the rights of patent owners in certain situations. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of patents once obtained. Changes in U.S. patent law could diminish the value of patents in general, thereby impairing our ability to protect our products and services.

For our United States patent applications containing a claim not entitled to priority before March 16, 2013, there is a greater level of uncertainty in the patent law. In September 2011, the Leahy-Smith America Invents Act, or the America Invents Act, or AIA, was signed into law. The AIA includes a number of significant changes to United States patent law, including provisions that affect the way patent applications will be prosecuted and enforced in any patent litigation. The USPTO developed regulations and procedures to govern administration of the AIA, and many of the substantive changes to patent law associated with the AIA. It is not clear what other, if any, impact the AIA will have on the operation of our business. Moreover, the AIA and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents, all of which could have a material adverse effect on our business and financial condition.

An important change introduced by the AIA is that, as of March 16, 2013, the United States transitioned to a “first-to-file” system for deciding which party should be granted a patent when two or more patent applications are filed by different parties claiming the same invention. A third party that files a patent application in the USPTO on or after March 16, 2013 before us could therefore be awarded a patent covering an invention of ours even if we were the first to conceive of the invention. This will require us to be cognizant going forward of the time from invention to filing of a patent application. Furthermore, our ability to obtain and maintain valid and enforceable patents depends on whether the differences between our technology and the prior art allow our technology to be patentable over the prior art. Because patent applications in the United States and most other countries are confidential for a period of time after filing, we cannot be certain that we were the first to either file any patent application related to our products or services or invent any of the inventions claimed in our patents or patent applications.

Among some of the other changes introduced by the AIA are changes that limit where a patentee may file a patent infringement suit and provide opportunities for third parties to challenge any issued patent in the USPTO. This applies to all of our United States patents, even those issued before March 16, 2013. Because of a lower evidentiary standard in USPTO proceedings necessary to invalidate a patent claim compared to the evidentiary standard in United States federal court, a third party could potentially provide evidence in a USPTO proceeding sufficient for the USPTO to hold a claim invalid even though the same evidence may be insufficient to invalidate the claim if first presented in a district court action.

Two cases, one involving diagnostic method claims and the other involving “gene patents” were decided by the Supreme Court. On March 20, 2012, the Supreme Court issued a decision in *Mayo Collaborative v. Prometheus Laboratories*, or Prometheus, a case involving patent claims directed to optimizing the amount of drug administered to a specific patient. According to that decision, Prometheus’ claims failed to incorporate sufficient inventive content above and beyond mere underlying natural correlations to allow the claimed processes to qualify as patent-eligible processes that apply natural laws. On June 13, 2013, the Supreme Court subsequently decided *Association for Molecular Pathology v. Myriad Genetics*, or Myriad, a case brought by multiple plaintiffs challenging the validity of patent claims held by Myriad Genetics, Inc. relating to the breast cancer susceptibility genes BRCA1 and BRCA2, holding that isolated genomic DNA that exists in nature, such as the DNA constituting the BRCA1 and BRCA2 genes, is not patentable subject matter, but that cDNA, which is an artificial construct created from RNA transcripts of genes, may be patent eligible.

On July 3, 2012, the USPTO issued a memorandum to patent examiners providing interim guidelines for examining process claims for patent eligibility in view of the Supreme Court decision in Prometheus. The guidance indicates that claims directed to a law of nature, a natural phenomenon, or an abstract idea that do not meet the eligibility requirements should be rejected as non-statutory subject matter.

Furthermore, a case involving financial software was even more recently decided by the Supreme Court. On June 19, 2014, the Supreme Court issued a decision in *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, or Alice, a case involving patent claims directed to methods of exchanging obligations as between parties so as to mitigate settlement risk in financial transactions, computer systems configured to carry out the method, and computer-readable media containing program code for performing the method. In Alice, the Court applied the analytic framework from Prometheus and extended its application to all types of claims. According to that decision, Alice Corp.’s claims failed to incorporate sufficient inventive content above and beyond the mere idea of intermediated transaction to allow the claimed processes to qualify as patent-eligible processes that apply the idea in a particular way to solve a problem.

On December 16, 2014, the USPTO issued interim guidelines for examining claims for patent eligibility in view of the Supreme Court decision in Alice. The guidance indicates that claims reciting an abstract idea that do not include significantly more than the idea itself should be rejected as non-statutory subject matter. We cannot assure you that our efforts to seek patent protection for our technology, products, and services will not be negatively impacted by the decision in Alice, rulings in other cases, or changes in guidance or procedures issued by the USPTO. Since then, the USPTO has issued several memoranda on the topic of patent eligible subject matter, including those dated May 4, 2016, May 19, 2016, July 14, 2016, November 2, 2016, and December 5, 2017.

More specifically, we cannot fully predict what impact the Supreme Court’s decisions in Prometheus, Myriad and Alice may have on the ability of healthcare technology companies or other entities to obtain or enforce patents relating to genomic discoveries, diagnostic products and services or computer-implemented inventions in the future. Despite the USPTO’s guidance described above, these contours of when certain claims allegedly directed to laws of nature, natural phenomenon or abstract ideas meet the patent eligibility requirements are not clear and may take many years to develop via interpretation in the courts.

There are many patents claiming diagnostic methods based on similar or related correlations that issued before Prometheus, and although some of these patents may be invalid under the standard set forth in Prometheus, until successfully challenged, these patents are presumed valid and enforceable, and certain third parties could allege that we infringe, or request that we obtain a license to, these patents. Whether based on patents issued prior to or after Prometheus, we could have to defend ourselves against claims of patent infringement, or choose to license rights, if available, under patents claiming such methods. Similarly, there are many patents claiming software and/or business methods that include an abstract idea that issued before Alice, and although some of these patents may be invalid under the standard set forth in Prometheus and Alice, until successfully challenged, these patents are presumed valid and enforceable, and certain third parties could allege that we infringe, or request that we obtain a license to, these patents. Whether based on patents issued prior to or after Alice, we could have to defend ourselves against claims of patent infringement, or choose to license rights, if available, under patents claiming such software or business methods. In any of the foregoing or in other situations involving third-party intellectual property rights, if we are unsuccessful in defending against claims of patent infringement, we could be forced to pay damages or be subjected to an injunction that would prevent us from utilizing the patented subject matter in question if we are unable to obtain a license on reasonable terms. Such outcomes could materially affect our ability to offer our products and have a material adverse impact on our business. Even if we are able to obtain a license or successfully defend against claims of patent infringement, the cost and distraction associated with the defense or settlement of these claims could have a material adverse impact on our business. Moreover, one or more of our pending United States patent applications may be rejected based on the changes in the law and the standards set forth in Prometheus, Myriad, Alice, or other cases. Our ability to secure United States patent rights could be impaired if we cannot overcome such rejections, which could have a material adverse impact on our business. In addition, one or more of our issued United States patents could be challenged on the basis of the law and the standards set forth in Prometheus, Myriad, Alice, or other cases, which could have a material adverse impact on our business. Further, on July 30, 2015, in response to the public comment on the Interim Eligibility Guidance, the USPTO issued an update pertaining to the Interim Eligibility Guidance. The Updated Eligibility Guidance includes additional examples from the case law and is intended to assist examiners in applying the Interim Eligibility Guidance during the patent examination process.

If we fail to comply with our obligation in any of the agreements under which we license intellectual property rights from third parties or otherwise experience disruptions to our business relationships with our licensors, we could lose license rights that are important to our business.

Licensing of intellectual property rights is important to our business and involves complex legal, business and scientific issues.

Disputes may arise between us and our licensors regarding intellectual property rights subject to a license agreement, including:

- the scope of rights granted under the license agreement and other interpretation-related issues;
- our right to sublicense intellectual property rights to third parties under collaborative development relationships; and
- our diligence obligations with respect to the use of the licensed technology in relation to our development and commercialization of our product candidates, and what activities satisfy those diligence obligations.

While we would expect to exercise all rights and remedies available to us, including seeking to cure any breach by us, and otherwise seek to preserve our rights under the patents licensed to us, we may not be able to do so in a timely manner, at an acceptable cost or at all. Generally, the loss of any one of our current licenses, or any other license we may acquire in the future, could materially harm our business, prospects, financial condition and results of operations.

Confidentiality agreements with employees and others may not adequately prevent disclosure of our trade secrets and other proprietary information and may not adequately protect our intellectual property, which could limit our ability to compete.

Because we operate in the highly technical field of research and development, we rely in part on trade secret protection in order to protect our proprietary trade secrets and unpatented know-how. However, trade secrets are difficult to protect, and we cannot be certain that others will not develop the same or similar technologies on their own. Enforcing a claim that a party illegally obtained and is using our trade secrets or know-how is difficult, expensive and time consuming, and the outcome is unpredictable. In addition, courts outside the United States may be less willing to protect trade secrets or know-how. The failure to obtain or maintain trade secret protection could adversely affect our competitive position.

We may be subject to claims that our employees, consultants or independent contractors have wrongfully used or disclosed confidential information of third parties.

We have received confidential and proprietary information from third parties. In addition, we employ individuals who were previously employed at other healthcare companies. We may be subject to claims that we or our employees, consultants or independent contractors have inadvertently or otherwise improperly used or disclosed confidential information of these third parties or our employees' former employers. Further, we may be subject to ownership disputes in the future arising, for example, from conflicting obligations of consultants or others who are involved in developing our products and services. We may also be subject to claims that former employees, consultants, independent contractors or other third parties have an ownership interest in our patents or other intellectual property. Litigation may be necessary to defend against these and other claims challenging our right to and use of confidential and proprietary information. If we fail in defending any such claims, in addition to paying monetary damages, we may lose our rights therein. Such an outcome could have a material adverse effect on our business. Even if we are successful in defending against these claims, litigation could result in substantial cost and be a distraction to our management and employees.

We rely in part on trademarks to distinguish our products and services from those of other entities. Trademarks may be opposed or cancelled and we may be involved in lawsuits or other proceedings to protect or enforce our trademarks.

We rely on trademarks, in the United States and in certain foreign jurisdictions, to distinguish our products and services in the minds of our customers and our business partners from those of other entities. Third parties may challenge our pending trademark applications through opposition proceedings in the United States, or comparable proceedings in foreign jurisdictions, in which they seek to prevent registration of a mark. Our registered trademarks may be subject to cancellation proceedings in the United States, or comparable proceedings in foreign jurisdictions, in which a third party seeks to cancel an existing registration. To enforce our trademark rights, we may be involved in lawsuits or other proceedings which could be expensive, time-consuming and uncertain.

Our corporate name, NantHealth, and the names of our products and services have not been trademarked in each market where we operate and plan to operate. Our trademark applications for our corporate name or the name of our products and services may not be allowed for registration, and our registered trademarks may not be maintained or enforced. During trademark registration proceedings, we may receive rejections, which we may be unable to overcome in our responses. If we do not secure registrations for our trademarks, we may encounter more difficulty in enforcing them against third parties than we otherwise would.

Risks related to reimbursement and government regulation

If we fail to comply with applicable health information privacy and security laws and other state and federal privacy and security laws, we may be subject to significant liabilities, reputational harm and other negative consequences, including decreasing the willingness of current and potential customers to work with us.

We are subject to data privacy and security regulation by both the federal government and the states in which we conduct our business. HIPAA established uniform federal standards for certain "covered entities," which include certain healthcare providers, healthcare clearinghouses, and health plans, governing the conduct of specified electronic healthcare transactions and protecting the security and privacy of protected health information, or PHI. The Health Information Technology for Economic and Clinical Health Act, or HITECH Act, which became effective on February 17, 2010, makes HIPAA's security standards directly applicable to "business associates," which are independent contractors or agents of covered entities that create, receive, maintain, or transmit PHI in connection with providing a service for or on behalf of a covered entity. The HITECH Act also increased the civil and criminal penalties that may be imposed against covered entities, business associates and certain other persons, and gave state attorneys general new authority to file civil actions for damages or injunctions in federal courts to enforce HIPAA's requirements and seek attorney's fees and costs associated with pursuing federal civil actions.

A portion of the data that we obtain and handle for or on behalf of our clients is considered PHI, subject to HIPAA. We are also required to maintain similar business associate agreements with our subcontractors that have access to PHI of our customers in rendering services to us or on our behalf. Under HIPAA and our contractual agreements with our HIPAA-covered entity health plan customers, we are considered a "business associate" to those customers and are required to maintain the privacy and security of PHI in accordance with HIPAA and the terms of our business associate agreements with our clients, including by implementing HIPAA-required administrative, technical and physical safeguards. We have incurred, and will continue to incur, significant costs to establish and maintain these safeguards and, if additional safeguards are required to comply with HIPAA regulations or our clients' requirements, our costs could increase further, which would negatively affect our operating results. Furthermore, we cannot guarantee that such safeguards have been and will continue to be adequate. If we have failed, or fail in the future, to maintain adequate safeguards, or we or our agents or subcontractors use or disclose PHI in a manner prohibited or not permitted by HIPAA, our subcontractor business associate agreements, or our business associate agreements with our customers, or if the privacy or security of PHI that we obtain and handle is otherwise compromised, we could be subject to significant liabilities and consequences, including, without limitation:

- breach of our contractual obligations to clients, which may cause our clients to terminate their relationship with us and may result in potentially significant financial obligations to our clients;
- investigation by the federal and state regulatory authorities empowered to enforce HIPAA and other data privacy and security laws, which include the U.S. Department of Health and Human Services, or HHS, the Federal Trade Commission and state attorneys general, and the possible imposition of civil and criminal penalties;
- private litigation by individuals adversely affected by any misuse of their personal health information for which we are responsible; and
- negative publicity, which may decrease the willingness of current and potential future customers to work with us and negatively affect our sales and operating results.

Further, we publish statements to end users of our services that describe how we handle and protect personal information. If federal or state regulatory authorities or private litigants consider any portion of these statements to be untrue, we may be subject to claims of deceptive practices, which could lead to significant liabilities and consequences, including, without limitation, damage to our reputation and costs of responding to investigations, defending against litigation, settling claims and complying with regulatory or court orders.

Federal or state governmental authorities may impose additional data security standards or additional privacy or other restrictions on the collection, use, maintenance, transmission and other disclosures of health information. Legislation has been proposed at various times at both the federal and the state level that would limit, forbid or regulate the use or transmission of medical information outside of the United States. Such legislation, if adopted, may render our use of off-shore partners for work related to such data impracticable or substantially more expensive. Alternative processing of such information within the United States may involve substantial delay in implementation and increased cost.

We may be, or may become, subject to data protection laws and regulations, and our failure to comply with such laws and regulations could lead to government enforcement actions and significant penalties against us, and adversely impact our operating results.

The European Union, the EU, has adopted data protection laws and regulations which may apply to us in certain circumstances, or in the future. The laws impose significant compliance obligations on us and is commonly known as the GDPR, the General Data Protection Regulation. The GDPR, which is wide-ranging in scope and applicability, imposes several requirements relating to the consent of the individuals to whom the personal data relates, the information provided to the individuals, the security and confidentiality of the personal data, data breach notification and the use of third party processors in connection with the processing of personal data, including clinical trials. The GDPR also imposes strict rules on the transfer of personal data out of the EU to the U.S., provides an enforcement authority and imposes large penalties for noncompliance, including the potential for fines of up to €20 million or 4% of the annual global revenues of the noncompliant company, whichever is greater. The recent implementation of the GDPR has increased our responsibility and liability in relation to personal data that we process, including with respect to our employees in the European Union, and we may in the future be required to put in place additional mechanisms to ensure compliance with the GDPR, which could divert management's attention and increase our cost of doing business. In addition, other new regulation or legislative actions regarding data privacy and security (together with applicable industry standards) may increase our costs of doing business. In this regard, we expect that there will continue to be new proposed laws, regulations and industry standards relating to privacy and data protection in the United States, the EU and other jurisdictions, and we cannot determine the impact such future laws, regulations and standards may have on our business.

If we fail to comply with federal and state healthcare laws and regulations, including those governing submissions of false or fraudulent claims to government healthcare programs and financial relationships among healthcare providers, we may be subject to civil and criminal penalties or loss of eligibility to participate in government healthcare programs.

We are subject to certain federal and state laws and regulations designed to protect patients, governmental healthcare programs, and private health plans from fraudulent and abusive activities. These laws include anti-kickback restrictions and laws prohibiting the submission of false or fraudulent claims. These laws are complex and their application to our specific products, services and relationships may not be clear and may be applied to our business in ways that we do not anticipate. Federal and state regulatory and law enforcement authorities have recently increased enforcement activities with respect to Medicare and Medicaid fraud and abuse regulations and other reimbursement laws and rules. From time to time in the future, we may receive inquiries or subpoenas to produce documents in connection with such activities. We could be required to expend significant time and resources to comply with these requests, and the attention of our management team could be diverted to these efforts. Furthermore, third parties have in the past alleged, and may in the future allege that we have sought federal funding in a manner that may violate federal or state law. Though we dispute such allegations, if we are found to be in violation of any federal or state fraud and abuse laws, we could be subject to civil and criminal penalties, and we could be excluded from participating in federal and state healthcare programs such as Medicare and Medicaid. The occurrence of any of these events could significantly harm our business and financial condition.

Provisions in Title XI of the Social Security Act, commonly referred to as the federal Anti-Kickback Statute, prohibit the knowing and willful offer, payment, solicitation or receipt of remuneration, directly or indirectly, in cash or in kind, in return for or to reward the referral of patients or arranging for the referral of patients, or in return for the recommendation, arrangement, purchase, lease or order of items or services that are covered, in whole or in part, by a federal healthcare program such as Medicare or Medicaid. The definition of "remuneration" has been broadly interpreted to include anything of value such as gifts, discounts, rebates, waiver of payments or providing anything at less than its fair market value. Many states have adopted similar prohibitions against kickbacks and other practices that are intended to induce referrals which are applicable to all patients regardless of whether the patient is covered under a governmental health program or private health plan. We attempt to scrutinize our business relationships and activities to comply with the federal Anti-Kickback Statute and similar laws and we attempt to structure our sales and group purchasing arrangements in a manner that is consistent with the requirements of applicable safe harbors to these laws. We cannot assure you, however, that our arrangements will be protected by such safe harbors or that such increased enforcement activities will not directly or indirectly have an adverse effect on our business, financial condition or results of operations. Any determination by a state or federal agency that any of our activities or those of our vendors or customers violate any of these laws could subject us to civil or criminal penalties, monetary fines, disgorgement, individual imprisonment, contractual damages, reputational harm, diminished profits and future earnings and curtailment of our operations, could require us to change or terminate some portions of operations or business, could disqualify us from providing services to healthcare providers doing business with government programs and, thus, could have an adverse effect on our business.

Our business is also subject to numerous federal and state laws, including without limitation the civil False Claims Act, that forbid the knowing submission or "causing the submission" of false or fraudulent information or the failure to disclose information in connection with the submission and payment of claims for reimbursement to Medicare, Medicaid, federal healthcare programs or private health plans. Analogous state laws and regulations may apply to our arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payers. Additionally, HIPAA also imposes criminal and civil liability for, among other things, executing a scheme to defraud any healthcare benefit program or making false statements relating to healthcare matters.

These laws and regulations may change rapidly, and it is frequently unclear how they apply to our business. Errors created by our products or consulting services that relate to entry, formatting, preparation or transmission of claim or cost report information may be determined or alleged to be in violation of these laws and regulations. Any failure of our products or services to comply with these laws and regulations could result in substantial civil or criminal liability, monetary fines, disgorgement, individual imprisonment, contractual damages, reputational harm, diminished profits and future earnings and curtailment of our operations, could adversely affect demand for our one or more of our offerings, could invalidate all or portions of some of our customer contracts, could require us to change or terminate some portions of our business, could require us to refund portions of our services fees, could cause us to be disqualified from serving clients doing business with government payers and could have an adverse effect on our business.

Our activities are also subject to state and federal self-referral laws, including the federal Physician Self-referral Law, commonly known as the Stark Law, which prohibits physicians from referring Medicare or Medicaid patients to providers of "designated health services" with whom the physician or a member of the physician's immediate family has an ownership interest or compensation arrangement, unless a statutory or regulatory exception applies, and similar state equivalents that may apply regardless of payer. In addition, our activities may also implicate state laboratory licensure laws, as well as the corporate practice of medicine prohibition in certain states that maintain such laws or regulations. Our failure to abide by these state and federal laws could result in substantial fines and penalties.

If commercial third-party payers or government payers fail to provide coverage or adequate reimbursement, or if there is a decrease in the amount of reimbursement for our sequencing and molecular analysis solutions, including GPS Cancer, or future products we develop, if any, our revenue and prospects for profitability would be harmed.

In both domestic and foreign markets, sales of our sequencing and molecular analysis solutions, including GPS Cancer, and other products and services we develop will depend, in large part, upon the availability of reimbursement from third-party payers. These third-party payers include government healthcare programs such as Medicare, managed care providers, private health insurers, and other organizations. In particular, we believe that obtaining a positive national coverage decision and favorable reimbursement rate from the Centers for Medicare and Medicaid Services, or CMS, for our sequencing and molecular analysis solutions, including GPS Cancer, will be a necessary element in achieving material commercial success. Physicians and patients may not order our sequencing and molecular analysis solutions unless commercial third-party payers and government payers pay for all, or a substantial portion, of the list price, and certain commercial third-party payers may not agree to reimburse our sequencing and molecular analysis solutions if CMS does not issue a positive coverage decision.

There is currently no national coverage decision that determines whether and how our sequencing and molecular analysis solutions, including GPS Cancer, are covered by Medicare. In the absence of a national coverage decision, local Medicare contractors, or MACs, that administer the Medicare program in various regions have some discretion in determining local coverage and therefore payment for tests. We do not currently receive any payment for our sequencing and molecular analysis solutions provided to patients covered by Medicare. If CMS or an applicable MAC does not issue a coverage decision with respect to our sequencing and molecular analysis solutions, or if CMS or an applicable MAC withdraws its coverage policies after reimbursement is obtained, reviews and adjusts the rate of reimbursement, or stops paying for our sequencing and molecular analysis solutions altogether, our revenue and results of operations would be adversely affected.

Commercial third-party payers and government payers are increasingly attempting to contain healthcare costs by demanding price discounts or rebates and limiting both coverage on which diagnostic products they will pay for and the amounts that they will pay for new molecular diagnostic products. Because of these cost-containment trends, commercial third-party payers and government payers that currently provide reimbursement for, or in the future cover, our sequencing and molecular analysis solutions, including GPS Cancer, may reduce, suspend, revoke, or discontinue payments or coverage at any time. Further, a payer's decision to provide coverage for a product or service does not imply that an adequate reimbursement rate will be approved. Additionally, one payer's determination to provide coverage does not assure that other payers will also provide coverage. Adequate third party reimbursement may not be available to enable us to maintain price levels sufficient to realize an appropriate return on our investment.

As a result, there is significant uncertainty surrounding whether the use of products that incorporate new technology, such as our sequencing and molecular analysis solutions, including GPS Cancer, will be eligible for coverage by commercial third-party payers and government payers or, if eligible for coverage, what the reimbursement rates will be for those products. The fact that a diagnostic product has been approved for reimbursement in the past, for any particular indication or in any particular jurisdiction, does not guarantee that such a diagnostic product will remain approved for reimbursement or that similar or additional diagnostic products will be approved in the future. Reimbursement of NGS-based cancer products by commercial third-party payers and government payers may depend on a number of factors, including a payer's determination that products enabled by our molecular profiling solution are:

- not experimental or investigational;
- medically necessary;
- appropriate for the specific patient;
- cost-effective;
- supported by peer-reviewed publications;
- included in clinical practice guidelines; and
- supported by clinical utility studies.

As a result, our efforts to receive reimbursement on behalf of patients will take a substantial amount of time and may require the development of clinical data to demonstrate the clinical utility of our products and improve patient outcomes, or commercial third-party payers and government payers may never cover or provide adequate payment for our sequencing and molecular analysis solutions, including GPS Cancer, or future molecular profiling tools we license or develop. Our strategy to achieve broad reimbursement coverage is focused on demonstrating the clinical utility and economic benefits of our sequencing and molecular analysis solutions, engaging with thought leaders, oncologists and other caregivers, patient advocacy groups and other key oncology stakeholders and thereby increasing demand. For example, in January 2016, a large health plan announced that it would provide insurance coverage for GPS Cancer, representing the nation's first such insurance coverage for a whole genome and RNA molecular diagnostic platform. Since that time, additional contracts with other large commercial payers have been signed, and efforts are now underway to pursue single case agreements which yield reimbursements from other non-contracted payers. Even in light of these developments, however, there is no assurance that we will continue to succeed in any of these areas or that, even if we do succeed, we will receive favorable reimbursement decisions. If adequate third-party reimbursement is unavailable we may not be able to maintain price levels sufficient to realize an appropriate return on investment in product development. Furthermore, if a commercial third-party payer or government payer denies coverage, it may be difficult for us to collect from the patient, and we may not be successful.

In addition, we are generally considered a "non-contracting provider" by commercial third-party payers because we generally have not entered into specific contracts to provide our molecular analysis services to their covered patients, and as a result we take on primary responsibility for obtaining reimbursement on behalf of patients. If we were to become a contracting provider with additional payers in the future, the amount of overall reimbursement we receive may decrease if we receive less revenue per product that is reimbursed at a contracted rate than at a non-contracted rate, which could have a negative impact on our revenue. Further, we may be unable to collect payments from patients beyond that which is paid by their coverage and will experience lost revenue as a result.

If we fail to comply with the way states and the FDA regulates tests that are developed, manufactured, validated and performed by laboratories like NantOmics, such failure could result in delay or additional expense in offering our tests and tests that we may develop in the future.

Several states require that we and NantOmics hold laboratory licenses to test specimens from patients in those states. Other states may have similar requirements or may adopt similar requirements in the future. We may be subject to regulation in foreign jurisdictions as we seek to expand international distribution of our offerings, which may require review of our offerings in order to offer our services or may have other limitations such as prohibitions on the export of tissue necessary for us to use our GPS Cancer solution that may limit our ability to distribute outside of the United States.

In addition, NantOmics is subject to the Clinical Laboratory Improvement Amendments of 1988, or CLIA, a federal law that regulates clinical laboratories that perform testing on specimens derived from humans for the purpose of providing information for the diagnosis, prevention, or treatment of disease. CLIA regulations mandate specific standards in the areas of personnel qualifications, administration, and participation in proficiency testing, patient test management, quality control, quality assurance, and inspections. NantOmics has a current certificate of accreditation under CLIA to conduct our genomic sequencing and molecular analyses through our accreditation by the College of American Pathologists, or CAP. To renew this certificate, NantOmics is subject to survey and inspection every two years. Moreover, CLIA inspectors may make random inspections of NantOmics' clinical reference laboratory.

Any sanction imposed under CLIA, its implementing regulations, or state or foreign laws or regulations governing licensure, or NantOmics' failure to renew a CLIA certificate, a state or foreign license, or accreditation, could have a material adverse effect on our business. Most CLIA deficiencies are not classified as "condition-level" deficiencies, and there are no adverse effects upon the laboratory operations as long as the deficiencies are corrected. Remediation of these deficiencies is a routine matter, with corrections occurring within several hours or weeks. More serious CLIA deficiencies could rise to the level of "condition-level" deficiencies, and CMS has the authority to impose a wide range of sanctions, including revocation of the CLIA certification along with a bar on the ownership or operation of a CLIA-certified laboratory by any owners or operators of the deficient laboratory. There is an administrative hearing procedure that can be pursued by the laboratory in the event of imposition of such sanctions, during which the sanctions are stayed, but the process can take a number of years to complete. If NantOmics was to lose its CLIA certification or CAP accreditation, we would not be able to offer our GPS Cancer solution services, which would result in material harm to our business and results of operations.

While the FDA currently exercises its enforcement discretion for LDTs by not enforcing its regulations, the FDA has stated that it has a mandate to regulate in this field and that it intends to address LDT regulation using a risk-based, phased-in approach similar to the existing *in vitro* diagnostic framework. Moreover, the FDA could disagree with our current assessment that NantOmics' sequencing services is an LDT, and could require us or NantOmics to seek clearance or approval for such sequencing services for clinical use. If the FDA requires us or NantOmics to seek clearance or approval to offer NantOmics' sequencing services for GPS Cancer or any of our future offerings for clinical use, we may not be able to obtain such approvals on a timely basis, or at all. Failure to comply with applicable regulatory requirements can result in enforcement action by the FDA, which may include any of the following sanctions: warning letters; fines; injunctions; civil or criminal penalties; recall or seizure of current or future products; operating restrictions; partial suspension or total shutdown of production; denial of applications; or challenges to clearances or approvals. We cannot provide any assurance that FDA regulation, including premarket review, will not be required for our GPS Cancer solution or any other molecular profiling solution we offer in the future. If premarket review is required, our business could be negatively impacted if we are required to stop selling our molecular profiling solution pending its clearance or approval or if such approval is delayed by new requirements.

Healthcare policy changes, including recently enacted legislation reforming the U.S. healthcare system, may have a material adverse effect on our financial condition, results of operations and cash flows.

In March 2010, the ACA was enacted in the United States, which made a number of substantial changes in the way healthcare is financed by both governmental and private insurers. Among other things, the ACA:

- requires each medical device manufacturer to pay an excise tax equal to 2.3% of the price for which such manufacturer sells its medical devices. This tax may apply to GPS Cancer and some or all of our products which are in development. The excise tax was temporarily suspended for calendar years 2016 and 2017. On January 22, 2018, the United States Congress extended the suspension for an additional two years. Accordingly, the medical device excise tax does not apply to the sale of taxable medical devices by the manufacturer, producer or importer of the device during the period beginning on January 1, 2016 and ending on December 31, 2019, but will be reinstated in 2020 without additional Congressional action.
- mandates a reduction in payments for clinical laboratory services paid under the Medicare Clinical Laboratory Fee Schedule of 1.75% for the years 2011 through 2015. In addition, a productivity adjustment is made to the fee schedule payment amount.
- creates initiatives to promote quality indicators in payment methodologies and the coordination and promotion of research on comparative clinical effectiveness of different technologies and procedures.

We cannot predict whether future healthcare initiatives will be implemented at the federal or state level, or how any future legislation or regulation may affect us. The taxes imposed by the new federal legislation and the expansion of government's role in the U.S. healthcare industry, as well as changes to the reimbursement amounts paid by payers for our current and future offerings or our medical procedure volumes, may reduce our profits and have a materially adverse effect on our business, financial condition, results of operations, and cash flows. Moreover, Congress has proposed on several occasions to impose a 20% coinsurance on patients for clinical laboratory tests reimbursed under the Medicare Clinical Laboratory Fee Schedule, which would require us to bill patients for these amounts. Because of the relatively low reimbursement for many clinical laboratory tests, in the event that Congress were to ever enact such legislation, the cost of billing and collecting for these tests would often exceed the amount actually received from the patient and effectively increase our costs of billing and collecting.

Furthermore, the current presidential administration and Congress are also expected to attempt broad sweeping changes to the current health care laws. The House of Representatives recently voted to pass the American Health Care Act (the AHCA). As proposed, the AHCA would repeal many provisions of the Affordable Care Act. The Senate is currently expected to consider an alternative version of the AHCA and it is expected that Congress will continue to consider this or similar legislation to repeal and replace some or all elements of the Affordable Care Act. We face uncertainties that might result from modification or repeal of any of the provisions of the Affordable Care Act, including as a result of current and future executive orders and legislative actions. The impact of those changes on us and potential effect on biosimilar manufacturing industry as a whole is currently unknown. But, any changes to the Affordable Care Act are likely to have an impact on our results of operations and may have a material adverse effect on our results of operations. We cannot predict what other healthcare programs and regulations will ultimately be implemented at the federal or state level or the effect of any future legislation or regulation in the United States may have on our business.

We are subject to U.S. and foreign anti-corruption and anti-money laundering laws with respect to our operations and non-compliance with such laws can subject us to criminal and/or civil liability and harm our business.

We are subject to the U.S. Foreign Corrupt Practices Act of 1977, as amended, or the FCPA, the U.S. domestic bribery statute contained in 18 U.S.C. § 201, the U.S. Travel Act, the USA PATRIOT Act, and possibly other state and national anti-bribery and anti-money laundering laws in countries in which we conduct activities. Anti-corruption laws are interpreted broadly and prohibit companies and their employees, agents, third-party intermediaries, joint venture partners and collaborators from authorizing, promising, offering, or providing, directly or indirectly, improper payments or benefits to recipients in the public or private sector. We currently engage in business and sales with government and state-owned hospitals outside of the United States. In addition, we engage third-party intermediaries to promote and sell our products and solutions abroad and/or to obtain necessary permits, licenses, and other regulatory approvals. We or our third-party intermediaries may have direct or indirect interactions with officials and employees of government agencies or state-owned or affiliated entities. We can be held liable for the corrupt or other illegal activities of these third-party intermediaries, our employees, representatives, contractors, partners, and agents, even if we do not explicitly authorize or have actual knowledge of such activities.

We have adopted an anti-corruption policy that, mandates compliance with the FCPA and other anti-corruption laws applicable to our business throughout the world. However, we cannot assure you that our employees and third-party intermediaries will comply with this policy or such anti-corruption laws. Noncompliance with anti-corruption and anti-money laundering laws could subject us to whistleblower complaints, investigations, sanctions, settlements, prosecution, other enforcement actions, disgorgement of profits, significant fines, damages, other civil and criminal penalties or injunctions, suspension and/or debarment from contracting with certain persons, the loss of export privileges, reputational harm, adverse media coverage, and other collateral consequences. If any subpoenas, investigations, or other enforcement actions are launched, or governmental or other sanctions are imposed, or if we do not prevail in any possible civil or criminal litigation, our business, financial condition and results of operations could be materially harmed. In addition, responding to any action will likely result in a materially significant diversion of management's attention and resources and significant defense and compliance costs and other professional fees. In certain cases, enforcement authorities may even cause us to appoint an independent compliance monitor which can result in added costs and administrative burdens.

We are subject to governmental export and import controls that could impair our ability to compete in international markets due to licensing requirements and subject us to liability if we are not in compliance with applicable laws.

Our products and solutions are subject to export control and import laws and regulations, including the U.S. Export Administration Regulations, U.S. Customs regulations, and various economic and trade sanctions regulations administered by the U.S. Treasury Department's Office of Foreign Assets Controls. Exports of our products and solutions outside of the United States must be made in compliance with these laws and regulations. If we fail to comply with these laws and regulations, we and certain of our employees could be subject to substantial civil or criminal penalties, including the possible loss of export or import privileges, fines, which may be imposed on us and responsible employees or managers and, in extreme cases, the incarceration of responsible employees or managers.

In addition, changes in our products or solutions or changes in applicable export or import laws and regulations may create delays in the introduction, provision, or sale of our products and solutions in international markets, prevent customers from using our products and solutions or, in some cases, prevent the export or import of our products and solutions to certain countries, governments or persons altogether. Any limitation on our ability to export, provide, or sell our products and solutions could adversely affect our business, financial condition and results of operations.

We may be subject to fines, penalties or legal liability, if it is determined that we are practicing medicine without a license through our Eviti or molecular analysis solutions.

State laws prohibit the practice of medicine without a license. Our Eviti reports delivered to physicians provide information regarding FDA-approved therapies and clinical trials that oncologists may use in making treatment decisions for their patients, and our molecular analysis reports provide detailed DNA and RNA data about a patient and can make personalized therapy recommendations based on that data. We make members of our organization available to clinicians to discuss the information provided in the report. Our customer service representatives provide support to our clients, including assistance in interpreting the results of Eviti and our molecular analysis reports. A governmental authority or third party could allege that the identification of available therapies and clinical trials in our reports and the related customer service we provide constitute the practice of medicine. A state may seek to have us discontinue the inclusion of certain aspects of our reports or the related services we provide or subject us to fines, penalties, or licensure requirements. Any determination that we are practicing medicine without a license may result in significant liability to us and harm to our reputation and/or our Eviti and molecular analysis businesses.

Errors or illegal activity on the part of our clients may result in claims against us.

We rely on our clients, and we contractually obligate them, to provide us with accurate and appropriate data and directives for our actions. We rely upon our clients, as users of our solutions and systems infrastructure, for key activities to produce proper claims for reimbursement. Failure of clients to provide these data and directives or to perform these activities may result in claims against us that our reliance was misplaced.

Our services present the potential for embezzlement, identity theft or other similar illegal behavior by our employees or subcontractors with respect to third parties.

Our services also involve the use and disclosure of personal and business information that could be used to impersonate third parties or otherwise gain access to their data or funds. If any of our employees or subcontractors takes, converts or misuses such funds, documents or data, we could be liable for damages, and our business reputation could be damaged or destroyed.

Risks related to our convertible notes

Servicing our debt requires a significant amount of cash, and we may not have sufficient cash flow from our business to pay our substantial debt.

Our ability to make scheduled payments of the principal of, to pay interest on or to refinance our indebtedness, including the notes, depends on our future performance, which is subject to economic, financial, competitive and other factors beyond our control. Our business may not continue to generate cash flow from operations in the future sufficient to service our debt and make necessary capital expenditures. If we are unable to generate such cash flow, we may be required to adopt one or more alternatives, such as selling assets, restructuring debt or obtaining additional equity capital on terms that may be onerous or highly dilutive. Our ability to refinance our indebtedness will depend on the capital markets and our financial condition at such time. We may not be able to engage in any of these activities or engage in these activities on desirable terms, which could result in a default on our debt obligations.

We may pay any interest make-whole payment on our notes by delivering shares of our common stock, which could result in significant dilution to our stockholders.

Beginning on or after the date that is one year after the last date of original issuance of the notes, we will in certain circumstances make an interest make-whole payment to a converting holder, payable in cash or shares of our common stock. If we elect, or are deemed to have elected, to pay any interest make-whole payment by delivering shares of our common stock, the number of shares of common stock a converting holder of notes will receive will be the number of shares that have a value equal to the amount of the interest make-whole payment to be paid to such holder in shares of our common stock, divided by the product of (x) 95% and (y) the simple average of the daily VWAP of our common stock for the 10 trading days ending on and including the trading day immediately preceding the conversion date, which could result in significant dilution to our stockholders.

The accounting method for convertible debt securities that may be settled in cash, such as the notes, could have a material effect on our reported financial results.

In May 2008, the Financial Accounting Standards Board, which we refer to as FASB, issued FASB Staff Position No. APB 14-1, *Accounting for Convertible Debt Instruments That May Be Settled in Cash Upon Conversion (Including Partial Cash Settlement)*, which has subsequently been codified as *Accounting Standards Codification 470-20, Debt with Conversion and Other Options*, which we refer to as ASC 470-20. Under ASC 470-20, an entity must separately account for the liability and equity components of the convertible debt instruments (such as the notes) that may be settled entirely or partially in cash upon conversion in a manner that reflects the issuer's economic interest cost. The effect of ASC 470-20 on the accounting for the notes is that the equity component is required to be included in the additional paid-in capital section of stockholders' equity on our consolidated balance sheet, and the value of the equity component would be treated as original issue discount for purposes of accounting for the debt component of the notes. As a result, we will be required to record a greater amount of non-cash interest expense in current periods presented as a result of the amortization of the discounted carrying value of the notes to their face amount over the term of the notes. We will report lower net income in our financial results because ASC 470-20 will require interest to include both the current period's amortization of the debt discount and the instrument's coupon interest, which could adversely affect our reported or future financial results, the trading price of our common stock and the trading price of the notes.

In addition, under certain circumstances, convertible debt instruments (such as the notes) that may be settled entirely or partly in cash are currently accounted for utilizing the treasury stock method, the effect of which is that the shares issuable upon conversion of the notes are not included in the calculation of diluted earnings per share except to the extent that the conversion value of the notes exceeds their principal amount. Under the treasury stock method, for diluted earnings per share purposes, the transaction is accounted for as if the number of shares of common stock that would be necessary to settle such excess, if we elected to settle such excess in shares, are issued. We cannot be sure that the accounting standards in the future will continue to permit the use of the treasury stock method. If we are unable to use the treasury stock method in accounting for the shares issuable upon conversion of the notes, then our diluted earnings per share would be adversely affected.

Risks related to our common stock

Our Chairman and Chief Executive Officer, and entities affiliated with him, collectively own a significant majority of our common stock and will exercise significant influence over matters requiring stockholder approval, regardless of the wishes of other stockholders.

As of December 31, 2018, our Chairman and Chief Executive Officer, Dr. Patrick Soon-Shiong, and entities affiliated with him, collectively beneficially own approximately 64% of the voting power of our common stock. As a result, Dr. Patrick Soon-Shiong and his affiliates have significant influence over management and significant control over matters requiring stockholder approval, including the annual election of directors and significant corporate transactions, such as a merger or other sale of our company or assets, for the foreseeable future. This concentrated control will limit stockholders' ability to influence corporate matters and, as a result, we may take actions that our stockholders do not view as beneficial. As a result, the market price of our common stock could be adversely affected.

Dr. Patrick Soon-Shiong, our Chairman and Chief Executive Officer and our principal stockholder, has significant interests in other companies which may conflict with our interests.

Our Chairman and Chief Executive Officer, Dr. Patrick Soon-Shiong, is the founder of NantWorks. The various NantWorks companies are currently exploring opportunities in the immunotherapy, infectious disease and inflammatory disease fields. In particular, NantOmics provides us with its sequencing and molecular analysis solution for our GPS Cancer solution. NantWorks is the largest member of NantOmics, holding approximately 84% of the outstanding equity and approximately 99% of the outstanding voting equity as of December 31, 2018. As a result, they or other companies affiliated with Dr. Patrick Soon-Shiong may compete with us for business opportunities or, in the future, develop products that are competitive with ours. As a result, Dr. Patrick Soon-Shiong's interests may not be aligned with the interests of our other stockholders, and he may from time to time be incentivized to take certain actions that benefit his other interests and that our other stockholders do not view as being in their interest as investors in our company. Moreover, even if they do not directly relate to us, actions taken by Dr. Patrick Soon-Shiong and the companies and charitable organizations with which he is involved could have a negative impact on our business.

Our certificate of incorporation contains a waiver of the corporate opportunities doctrine for NantWorks and its affiliates, which includes our Chairman and Chief Executive Officer, and therefore covered persons have no obligations to make opportunities available to us.

NantWorks, which is controlled by our Chairman and Chief Executive Officer, and its affiliates, beneficially owns approximately 64% of the voting power of our common stock as of December 31, 2018.

NantWorks and its affiliates engage in a broad spectrum of activities across the life science, biopharmaceutical, healthcare information technology and technology sectors. In the ordinary course of their business activities, NantWorks and its affiliates may from time to time acquire and hold interests in businesses that compete directly or indirectly with us. Our certificate of incorporation provides that none of NantWorks, any of its affiliates and all of their respective partners, principals, directors, officers, members, managers and/or employees, including any of the foregoing who serve as officers or directors of our company, to the fullest extent permissible by law, have any duty to bring business opportunities to our attention or to refrain from engaging, directly or indirectly, in the same business activities or similar business activities or lines of business in which we operate. NantWorks or its affiliates may also pursue acquisition opportunities that may be complementary to our business and, as a result, those acquisition opportunities may not be available to us. In addition, NantWorks may have an interest in pursuing acquisitions, divestitures and other transactions that, in its judgment, could enhance its investment, even though such transactions might involve risks to you.

We can provide no assurances that we will be able to maintain an active, liquid and orderly trading market will develop for our common stock or what the market price of our common stock will be and as a result it may be difficult for you to sell your common stock.

Prior to our initial public offering in June 2016, there was no public market for our common stock. Although our common stock is listed on The NASDAQ Global Select Market, the market for our shares has demonstrated varying levels of trading activity. Further, because a significant amount of our common stock following our initial public offering is and is expected to continue to be held by our Chairman and Chief Executive Officer, Dr. Patrick Soon-Shiong, and entities affiliated with him, we have relatively small historic trading volumes. As a result of these and other factors, you may not be able to sell your common stock quickly or at or above the price you purchased your stock or at all. Further, an inactive market may also impair our ability to raise capital by selling additional common stock and may impair our ability to enter into strategic collaborations or acquire companies or products by using our common stock as consideration.

The trading price of our common stock has been and may continue to be volatile. This volatility may affect the price at which you could sell our common stock, the notes and any common stock you receive upon conversion of your notes.

The trading price of our common stock has been and may continue to be volatile and could be subject to wide fluctuations in response to various factors. The trading price of the notes and our common stock may fluctuate widely in response to various factors, some of which are beyond our control, including:

- announcements by us or our competitors of new products, significant contracts, commercial relationships or capital commitments and the timing of these introductions or announcements;
- adverse regulatory or reimbursement announcements;
- announcements by us or our competitors of significant acquisitions, strategic collaborations, joint ventures or capital commitments;
- the results of our efforts to develop additional offerings;
- our dependence on our customers, partners and collaborators;
- regulatory or legal developments in the United States or other countries;
- reimbursement decisions regarding our future molecular profiling solutions, including GPS Cancer;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;
- the recruitment or departure of key management or other personnel;
- our ability to successfully commercialize our future products;
- the level of expenses related to any of our products;
- actual or anticipated changes in estimates as to financial results, development timelines or recommendations by securities analysts;
- actual or anticipated quarterly variations in our financial results or those of our competitors;
- any change to the composition of the board of directors or key personnel;
- expiration of contractual lock-up agreements with our executive officers, directors and security holders;
- sales of common stock by us or our stockholders in the future, as well as the overall trading volume of our common stock;
- changes in the structure of healthcare payment systems;
- commencement of, or our involvement in, litigation, including claims by our equityholders pertaining to our conversion from a Delaware limited liability company into a Delaware corporation or the pending class action litigation;
- general economic, industry and market conditions and other factors that may be unrelated to our operating performance or the operating performance of our competitors, including changes in market valuations of similar companies; and
- the other factors described in this "Risk Factors" section.

In addition, the stock market in general, and the NASDAQ and the healthcare industry in particular, have from time to time experienced volatility that often has been unrelated to the operating performance of the underlying companies. These broad market and industry fluctuations may adversely affect the market price of our common stock or the notes, regardless of our operating performance. In several recent situations where the market price of a stock has been volatile, holders of that stock have instituted securities class action litigation against the company that issued the stock. If any of our stockholders were to bring a lawsuit against us, the defense and disposition of the lawsuit could be costly and divert the time and attention of our management and would harm our business operating results or financial condition.

Our common stock may be delisted from The Nasdaq Global Select Market if we cannot maintain compliance with Nasdaq's continued listing requirements.

In order to maintain our listing on Nasdaq, we are required to comply with the Nasdaq requirements, which includes maintaining a minimum bid price. In particular, we are required to maintain a minimum bid price of \$1.00, and we traded below that threshold between November 30, 2018 and January 15, 2019. On January 16, 2019, we received a notice from Nasdaq stating that we were not in compliance with Nasdaq Listing Rule 5450(a)(1) (the "Minimum Bid Price Rule") because our common stock failed to maintain a minimum closing bid price of \$1.00 for 30 consecutive business days. This notice had no immediate effect on the Nasdaq listing or trading of the company's common stock. On March 21, 2019, we received a notice from Nasdaq confirming that we had regained compliance with the Minimum Bid Price Rule.

Even though we have regained compliance with the Minimum Bid Price Rule, in the future we may fail to maintain compliance with the minimum bid price requirement, and our stock may be delisted. Delisting from the Nasdaq Global Select Market or any Nasdaq market could make trading our common stock more difficult for investors, potentially leading to declines in our share price and liquidity. Without a Nasdaq market listing, stockholders may have a difficult time getting a quote for the sale or purchase of our stock, the sale or purchase of our stock would likely be made more difficult and the trading volume and liquidity of our stock could decline. Delisting from Nasdaq could also result in negative publicity and could also make it more difficult for us to raise additional capital. The absence of such a listing may adversely affect the acceptance of our common stock as currency or the value accorded by other parties. Further, if we are delisted, we would also incur additional costs under state blue sky laws in connection with any sales of our securities. These requirements could severely limit the market liquidity of our common stock and the ability of our stockholders to sell our common stock in the secondary market. If our common stock is delisted by Nasdaq, our common stock may be eligible to trade on an over-the-counter quotation system, such as the OTCQB market, where an investor may find it more difficult to sell our stock or obtain accurate quotations as to the market value of our common stock. We cannot assure you that our common stock, if delisted from Nasdaq, will be listed on another national securities exchange or quoted on an over-the counter quotation system. If our common stock is delisted, it may come within the definition of "penny stock" as defined in the Securities Exchange Act of 1934, or the Exchange Act, and would be covered by Rule 15g-9 of the Exchange Act. That Rule imposes additional sales practice requirements on broker-dealers who sell securities to persons other than established customers and accredited investors. For transactions covered by Rule 15g-9, the broker-dealer must make a special suitability determination for the purchaser and receive the purchaser's written agreement to the transaction prior to the sale. Consequently, Rule 15g-9, if it were to become applicable, would affect the ability or willingness of broker-dealers to sell our securities, and accordingly would affect the ability of stockholders to sell their securities in the public market. These additional procedures could also limit our ability to raise additional capital in the future.

We may pay any interest make-whole payment by delivering shares of our common stock, which could result in significant dilution to our stockholders and cause our stock price to fall.

On or after the date that is one year after the last date of original issuance of the notes, we will in certain circumstances make an interest make-whole payment, as described under "Description of notes-Conversion rights-Settlement upon conversion," to a converting holder, payable in cash or shares of our common stock. If we elect, or are deemed to have elected, to pay any interest make-whole payment by delivering shares of our common stock, the number of shares of common stock a converting holder of notes will receive will be the number of shares that have a value equal to the amount of the interest make-whole payment to be paid to such holder in shares of our common stock, divided by the product of (x) 95% and (y) the simple average of the daily VWAP of our common stock for the 10 trading days ending on and including the trading day immediately preceding the conversion date, which could result in significant dilution to our stockholders.

We have incurred and will continue to incur costs as a result of operating as a public company and our management has been and will be required to devote substantial time to public company compliance initiatives.

As a public company, listed in the United States, we have incurred and will continue to incur significant legal, accounting and other expenses due to our compliance with regulations and disclosure obligations applicable to us, including compliance with the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act, as well as rules implemented by the SEC and the Nasdaq. The SEC and other regulators have continued to adopt new rules and regulations and make additional changes to existing regulations that require our compliance. In July 2010, the Dodd-Frank Wall Street Reform and Consumer Protection Act, or the Dodd-Frank Act, was enacted. There are significant corporate governance and executive compensation related provisions in the Dodd-Frank Act that have required the SEC to adopt additional rules and regulations in these areas. Stockholder activism, the current political environment, and the current high level of government intervention and regulatory reform may lead to substantial new regulations and disclosure obligations, which may lead to additional compliance costs and impact, in ways we cannot currently anticipate, the manner in which we operate our business. Our management and other personnel have and will continue to devote a substantial amount of time to these compliance programs and monitoring of public company reporting obligations and, as a result of the new corporate governance and executive compensation related rules, regulations, and guidelines prompted by the Dodd-Frank Act and further regulations and disclosure obligations expected in the future, we will likely need to devote additional time and costs to comply with such compliance programs and rules. These rules and regulations will cause us to incur significant legal and financial compliance costs and will make some activities more time-consuming and costly.

To continue to comply with the requirements of being a public company, we may need to undertake various activities, including implementing new internal controls and procedures and hiring new accounting or internal audit staff. The Sarbanes-Oxley Act requires that we maintain effective disclosure controls and procedures and internal control over financial reporting. We are continuing to develop and refine our disclosure controls and other procedures that are designed to ensure that information required to be disclosed by us in the reports that we file with the SEC is recorded, processed, summarized and reported within the time periods specified in SEC rules and forms, and that information required to be disclosed in reports under the Securities Exchange Act of 1934, or the Exchange Act, is accumulated and communicated to our principal executive and financial officers. Our current controls and any new controls that we develop may become inadequate and weaknesses in our internal control over financial reporting may be discovered in the future. For example, we have identified a material weakness in our internal control over financial reporting related to our valuations of the Bookings Commitment liability and our related party equity method investment in NantOmics, as more fully described in Item 9A of our Form 10-K. In addition, in connection with our preparation of the Consolidated and Combined Financial Statements for the year ended December 31, 2017, several control deficiencies relative to Information Technology general controls were not remediated prior to year end. These deficiencies primarily related to change management controls over our general ledger and financial reporting system. We performed an assessment and determined that it did not rise to the level of a material weakness, but did represent a significant deficiency in our internal control over financial reporting. A control deficiency is considered a significant deficiency if it represents a deficiency, or a combination of deficiencies, in internal control over financial reporting that is less severe than a material weakness, yet important enough to merit attention by those responsible for oversight of a company's financial reporting.

We cannot assure you that the measures we have taken, or will take, to remediate the material weakness and significant deficiencies will be effective or that we will be successful in implementing them. Moreover, we cannot assure you that we have identified all significant deficiencies or material weaknesses or that we will not in the future have additional significant deficiencies or material weaknesses, in particular as we seek to transition to a more developed internal control environment and continue to grow as a company in terms of size, complexity of business and potentially in connection with future strategic transactions. Our independent registered public accounting firm has not evaluated any of the measures we have taken, or that we propose to take, to address these significant deficiencies or the material weakness discussed above.

Any failure to develop or maintain effective controls could adversely affect the results of periodic management evaluations regarding the effectiveness of our internal control over financial reporting which we may be required to include in our periodic reports that we file with the SEC under Section 404 of the Sarbanes-Oxley Act, harm our operating results, cause us to fail to meet our reporting obligations, or result in a restatement of our prior period financial statements. In the event that we are not able to demonstrate compliance with the Sarbanes-Oxley Act, that our internal control over financial reporting is perceived as inadequate or that we are unable to produce timely or accurate financial statements, investors may lose confidence in our operating results and the price of our common stock could decline. In addition, if we are unable to continue to meet these requirements, we may not be able to remain listed on Nasdaq.

In addition, our independent registered public accounting firm did not perform an evaluation of our internal control over financial reporting during any period in accordance with the provisions of the Sarbanes-Oxley Act. Had our independent registered public accounting firm performed an evaluation of our internal control over financial reporting in accordance with the provisions of the Sarbanes-Oxley Act, additional control deficiencies amounting to significant deficiencies or material weaknesses may have been identified. Our independent registered public accounting firm may not be required to formally attest to the effectiveness of our internal control over financial reporting until the later of our second annual report or the first annual report required to be filed with the SEC following the date we are no longer an “emerging growth company” as defined in the JOBS Act, depending on whether we choose to rely on certain exemptions set forth in the JOBS Act. We cannot assure you that there will not be additional material weaknesses or significant deficiencies in our internal controls in the future. If we are unable to remediate the material weakness, assert that our internal control over financial reporting is effective, or if our independent registered public accounting firm is unable to express an opinion on the effectiveness of our internal control over financial reporting, we could lose investor confidence in the accuracy and completeness of our financial reports, which could have a material adverse effect on the price of our common stock.

New legislation that would change U.S. or foreign taxation of international business activities or other tax-reform policies, including the imposition of tax based on gross income, could seriously harm our business.

Reforming the taxation of international businesses has been a priority for politicians, and a wide variety of potential changes have been proposed. Some proposals, several of which have been enacted, impose incremental taxes on gross revenue, regardless of profitability. Any changes in the taxation of such activities may increase our worldwide effective tax rate and the amount of taxes we pay and seriously harm our business.

For example, the Tax Cuts and Jobs Act, or the Tax Act, was enacted on December 22, 2017 and significantly reforms the U.S. Internal Revenue Code of 1986, as amended, or the Code. The Tax Act lowers U.S. federal corporate income tax rates, changes the utilization of future net operating loss carryforwards, allows for the expensing of certain capital expenditures, and puts into effect sweeping changes to U.S. taxation of international business activities. As a result, our net U.S. deferred tax assets and corresponding valuation allowances will be revalued at the new U.S. corporate rate. We continue to examine the impact this tax reform legislation may have on our business. The impact of this tax reform on us and on holders of our common stock is uncertain and could seriously harm our business.

Our ability to use our net operating loss carryforwards to offset future taxable income may be subject to certain limitations.

In general, under Section 382 of the Internal Revenue Code of 1986, as amended, or the Code, a corporation that undergoes an “ownership change” is subject to annual limitations on its ability to use its pre-change net operating loss carryforwards (“NOLs”) or other tax attributes, to offset future taxable income or reduce taxes. We believe that we have recently undergone one or more ownership changes and accordingly, our ability to use our NOLs may be limited.

Additionally, the Tax Act, which was enacted on December 22, 2017, significantly reforms the Code, including changes to the rules governing net operating loss carryforwards. For net operating loss carryforwards arising in tax years beginning after December 31, 2017, the Tax Act limits a taxpayer’s ability to utilize such carryforwards to 80% of taxable income. In addition, net operating loss carryforwards arising in tax years ending after December 31, 2017 can be carried forward indefinitely, but carryback is generally prohibited. Net operating loss carryforwards generated by us before January 1, 2018 will not be subject to the taxable income limitation and will continue to have a twenty-year carryforward period. However, the changes in the carryforward and carryback periods as well as the new limitation on use of net operating losses may significantly impact our ability to use net operating loss carryforwards generated after December 31, 2017, as well as the timing of any such use, and could seriously harm our business.

We do not anticipate paying any cash dividends on our common stock in the foreseeable future.

We do not currently intend to pay any cash dividends on our common stock in the foreseeable future. We currently intend to retain all of our future earnings, if any, to finance the growth and development of our business. In addition, the terms of any future debt agreements may preclude us from paying dividends. As a result, capital appreciation, if any, of our common stock may be investors’ sole source of gain for the foreseeable future.

We are an “emerging growth company” and a “smaller reporting company,” and the reduced disclosure requirements applicable to emerging growth companies and smaller reporting companies could make our common stock less attractive to investors.

We are an “emerging growth company,” as defined in the JOBS Act, and may remain an “emerging growth company” for up to five years following the completion of our initial public offering or December 31, 2021. We would cease to be an emerging growth company upon the earliest of: (i) the last day of the fiscal year following the fifth anniversary of the completion of our initial public offering; (ii) the last day of the fiscal year during which we have annual gross revenue of at least \$1.07 billion; (iii) the date on which we are deemed to be a “large accelerated filer” under the Exchange Act (we will qualify as a large accelerated filer as of the first day of the first fiscal year after we have (a) more than \$700.0 million in outstanding common equity held by our non-affiliates and (b) been public for at least 12 months; the value of our outstanding common equity will be measured each year on the last business day of our second fiscal quarter); or (iv) the date on which we have, during the previous three-year period, issued more than \$1.0 billion in non-convertible debt securities. For as long as we remain an “emerging growth company,” we are permitted and intend to rely on exemptions from certain disclosure requirements that are applicable to other public companies that are not “emerging growth companies.” These exemptions include:

- being permitted to provide only two years of audited financial statements, in addition to any required unaudited interim financial statements, with correspondingly reduced “Management’s Discussion and Analysis of Financial Condition and Results of Operations” disclosure;
- not being required to comply with the auditor attestation requirements in the assessment of our internal control over financial reporting;
- not being required to comply with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor’s report providing additional information about the audit and the financial statements;
- reduced disclosure obligations regarding executive compensation; and
- exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved.

We have taken advantage of reduced reporting requirements in our public filings. In particular, we have not included all of the executive compensation related information that would be required if we were not an emerging growth company. In addition, the JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards, delaying the adoption of these accounting standards until they would apply to private companies. We have irrevocably elected not to avail ourselves of this exemption and, as a result, we will adopt new or revised accounting standards on the relevant dates on which adoption of such standards is required for other public companies. Even after we no longer qualify as an emerging growth company, we may, under certain circumstances, still qualify as a “smaller reporting company,” which would allow us to take advantage of many of the same exemptions from disclosure requirements, including reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements. We cannot predict whether investors will find our common stock less attractive as a result of our reliance on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and the market price of our common stock may be reduced or may be more volatile.

Because we are relying on the exemptions from corporate governance requirements as a result of being a “controlled company” within the meaning of the NASDAQ listing standards, you do not have the same protections afforded to stockholders of companies that are subject to such requirements.

Our Chairman and Chief Executive Officer, Dr. Patrick Soon-Shiong, and entities affiliated with him, control a majority of our common stock. As a result, we are a “controlled company” within the meaning of NASDAQ listing standards. Under these rules, a company of which more than 50% of the voting power is held by an individual, a group or another company is a “controlled company” and may elect not to comply with certain NASDAQ corporate governance requirements, including (1) the requirement that a majority of the board of directors consist of independent directors and (2) the requirement that we have a nominating and corporate governance committee that is composed entirely of independent directors with a written charter addressing the committee’s purpose and responsibilities. We have elected to rely on certain of these exemptions, and do not have a nominating and corporate governance committee. Accordingly, you will not have the same protections afforded to stockholders of companies that are subject to all of the NASDAQ corporate governance requirements.

If securities or industry analysts do not publish research or publish inaccurate or unfavorable research about our business, our share price and trading volume could decline.

The trading market for our common stock will depend on the research and reports that securities or industry analysts publish about us or our business. We do not have any control over these analysts. There can be no assurance that analysts will cover us or provide favorable coverage. If one or more of the analysts who cover us downgrade our stock or change their opinion of our stock, our share price would likely decline. If one or more of these analysts cease coverage of our company or fail to regularly publish reports on us, we could lose visibility in the financial markets, which could cause our share price or trading volume to decline.

We are not subject to the provisions of Section 203 of the Delaware General Corporation Law, which could negatively affect your investment.

We elected in our amended and restated certificate of incorporation to not be subject to the provisions of Section 203 of the Delaware General Corporation Law, or Section 203. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a “business combination” with an “interested stockholder” for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner. A “business combination” includes a merger, asset sale or other transaction resulting in a financial benefit to the interested stockholder. An “interested stockholder” is a person who, together with affiliates and associates, owns (or, in certain cases, within three years prior, did own) 15% or more of the corporation’s voting stock. Our decision not to be subject to Section 203 will allow, for example, Dr. Patrick Soon-Shiong, our Chairman and Chief Executive Officer (who, with entities affiliated with him, beneficially own approximately 64% of the voting power of our common stock, as of December 31, 2018), to transfer shares in excess of 15% of our voting stock to a third-party free of the restrictions imposed by Section 203. This may make us more vulnerable to takeovers that are completed without the approval of our board of directors and/or without giving us the ability to prohibit or delay such takeovers as effectively.

Some provisions of our charter documents and Delaware law may have anti-takeover effects that could discourage an acquisition of us by others, even if an acquisition would be beneficial to our stockholders, and may prevent attempts by our stockholders to replace or remove our current management.

Provisions in our amended and restated certificate of incorporation and amended and restated bylaws, as well as provisions of Delaware law, could make it more difficult for a third party to acquire us or increase the cost of acquiring us, even if doing so would benefit our stockholders. These provisions include:

- a requirement that special meetings of stockholders be called only by the board of directors, the president or the chief executive officer;
- advance notice requirements for stockholder proposals and nominations for election to our board of directors; and
- the authority of the board of directors to issue preferred stock on terms determined by the board of directors without stockholder approval and which preferred stock may include rights superior to the rights of the holders of common stock.

These anti-takeover provisions and other provisions in our amended and restated certificate of incorporation and amended and restated bylaws could make it more difficult for stockholders or potential acquirers to obtain control of our board of directors or initiate actions that are opposed by the then-current board of directors and could also delay or impede a merger, tender offer or proxy contest involving our company. These provisions could also discourage proxy contests and make it more difficult for you and other stockholders to elect directors of your choosing or cause us to take other corporate actions you desire. Any delay or prevention of a change of control transaction or changes in our board of directors could cause the market price of our common stock to decline.

Claims for indemnification by our directors and officers may reduce our available funds to satisfy successful third-party claims against us and may reduce the amount of money available to us.

Our amended and restated certificate of incorporation and amended and restated bylaws provide that we will indemnify our directors and officers, in each case to the fullest extent permitted by Delaware law. In addition, as permitted by Section 145 of the Delaware General Corporation Law, our amended and restated bylaws and our indemnification agreements that we have entered into with our directors and officers provide that:

- We will indemnify our directors and officers for serving us in those capacities or for serving other business enterprises at our request, to the fullest extent permitted by Delaware law. Delaware law provides that a corporation may indemnify such person if such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the registrant and, with respect to any criminal proceeding, had no reasonable cause to believe such person’s conduct was unlawful.

- We may, in our discretion, indemnify employees and agents in those circumstances where indemnification is permitted by applicable law.
- We are required to advance expenses, as incurred, to our directors and officers in connection with defending a proceeding, except that such directors or officers shall undertake to repay such advances if it is ultimately determined that such person is not entitled to indemnification.
- We will not be obligated pursuant to our amended and restated bylaws to indemnify a person with respect to proceedings initiated by that person against us or our other indemnitees, except with respect to proceedings authorized by our board of directors or brought to enforce a right to indemnification.
- The rights conferred in our amended and restated bylaws are not exclusive, and we are authorized to enter into indemnification agreements with our directors, officers, employees and agents and to obtain insurance to indemnify such persons.
- We may not retroactively amend our bylaw provisions to reduce our indemnification obligations to directors, officers, employees and agents.

To the extent that a claim for indemnification is brought by any of our directors or officers, it would reduce the amount of funds available for use in our business.

Our amended and restated certificate of incorporation designates the Court of Chancery of the State of Delaware as the sole and exclusive forum for certain types of actions and proceedings that may be initiated by our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or other employees.

Our amended and restated certificate of incorporation provides that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for (i) any derivative action or proceeding brought on our behalf, (ii) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders, (iii) any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law, our amended and restated certificate of incorporation or our amended and restated bylaws, or (iv) any action asserting a claim against us governed by the internal affairs doctrine. Any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock shall be deemed to have notice of and consented to the provisions of our amended and restated certificate of incorporation described above. This choice of forum provision may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and other employees. Alternatively, if a court were to find these provisions of our amended and restated certificate of incorporation inapplicable to, or unenforceable in respect of, one or more of the specified types of actions or proceedings, we may incur additional costs associated with resolving such matters in other jurisdictions, which could adversely affect our business, financial condition or results of operations.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Our corporate headquarters are located in Culver City, California, where we occupy facilities totaling approximately 8,000 square feet on a month-to-month basis pursuant to a Shared Services Agreement with NantWorks. We use these facilities for administration, sales and marketing, research and development, engineering, client support, and professional services. In addition, we have 5 U.S. locations across four states and one international location. Our key facilities include the following:

- United States
 - Boston, Massachusetts
 - Panama City, Florida
 - Philadelphia, Pennsylvania
 - Phoenix, Arizona
 - Prescott, Arizona
- International
 - Belfast, Northern Ireland

We believe that our facilities are adequate to meet our needs in the near term, and that, if needed, suitable additional space will be available to accommodate any expansion of our operations.

The following table outlines our facilities location, square footage, and use:

City	State	Country	Sqft	Type	Business Nature/Use
Boston	MA	USA	31,752	Lease	Administrative, sales, client support, R&D, engineering, professional services
Panama City	FL	USA	51,288	Lease	Administrative, sales, client support, R&D, engineering, professional services
Belfast	NI	UK	15,500	Lease	R&D, engineering, administrative
Phoenix	AZ	USA	4,865	Lease	Administrative, sales, client support, professional services
Prescott	AZ	USA	860	Lease	Sales, client support, professional services
Philadelphia	PA	USA	14,183	Lease	Administrative, sales, client support, R&D, engineering, professional services
			118,448		

Item 3. Legal Proceedings

We are from time to time subject to claims and litigation that arise in the ordinary course of our business. We intend to defend vigorously any such litigation that may arise under all defenses that would be available to us. Except as discussed below, in the opinion of management, the ultimate outcome of proceedings of which management is aware, even if adverse to us, would not have a material adverse effect on our Consolidated Financial Condition or Results of Operations. Regardless of the outcome, litigation can have an adverse impact on us because of defense and settlement costs, diversion of management resources and other factors.

Securities Litigation

In March 2017, a number of putative class action securities complaints were filed in U.S. District Court for the Central District of California, naming as defendants the Company and certain of our current or former executive officers and directors. These complaints have been consolidated with the lead case captioned *Deora v. NantHealth, Inc.*, 2:17-cv-01825. ("Deora") In June 2017, the lead plaintiffs filed an amended consolidated complaint, which generally alleges that defendants violated federal securities laws by making material misrepresentations in NantHealth's IPO registration statement and in subsequent public statements. In particular, the complaint refers to various third-party articles in alleging that defendants misrepresented NantHealth's business with the University of Utah, donations to the university by non-profit entities associated with our founder Dr. Soon-Shiong, and orders for GPS Cancer. The lead plaintiffs seek unspecified damages and other relief on behalf of putative classes of persons who purchased or acquired NantHealth securities in the IPO or on the open market from June 1, 2016 through May 1, 2017. In March 2018, the court largely denied Defendants' motion to dismiss the consolidated amended complaint. In September 2018, the lead plaintiffs filed a motion for certification of two plaintiff classes. We believe that the claims lack merit and intend to vigorously defend the litigation.

In May 2017, a putative class action complaint was filed in California Superior Court, Los Angeles County, asserting claims for violations of the Securities Act based on allegations similar to those in *Deora*. That case is captioned *Bucks County Employees Retirement Fund v. NantHealth, Inc.*, BC 662330. The parties have agreed to stay the case until the next case management conference, scheduled for September 17, 2019. We believe that the claims lack merit and intend to vigorously defend the litigation.

In April 2018, two putative shareholder derivative actions-captioned *Engleman v. Soon-Shiong*, Case No. 2018-0282-AGB, and *Petersen v. Soon-Shiong*, Case No. 2018-0302-AGB were filed in the Delaware Court of Chancery. The plaintiff in the *Engleman* action previously filed a similar complaint in California Superior Court, Los Angeles County, which was dismissed based on a provision in the Company's charter requiring derivative actions to be brought in Delaware. The *Engleman* and *Petersen* complaints contain allegations similar to those in *Deora*, but assert causes of action on behalf of NantHealth against various of the Company's current or former executive officers and directors for alleged breaches of fiduciary duty, abuse of control, gross mismanagement, and unjust enrichment. The Company is named solely as a nominal defendant. In July 2018, the court issued an order consolidating the *Engleman* and *Petersen* actions as *In re NantHealth, Inc. Stockholder Litigation*, Lead C.A. No. 2018-0302-AGB, appointing *Petersen* as lead plaintiff, and designating the *Petersen* complaint as the operative complaint. On September 20, 2018, the defendants moved to dismiss the complaint. In October 2018, in response to the motion to dismiss, *Petersen* filed an amended complaint. In November 2018, the defendants moved to dismiss the amended complaint. In January 2019, the defendants filed their opening brief in support of the motion to dismiss the amended complaint. We believe that the claims lack merit and intend to vigorously defend the litigation.

In April 2018, a putative shareholder derivative action captioned *Shen v. Soon-Shiong* was filed in U.S. District Court for the District of Delaware. The complaint contains allegations similar to those in *Deora*, but asserts causes of action on behalf of NantHealth against various of the Company's current or former executive officers and directors for alleged breaches of fiduciary duty and unjust enrichment, as well as alleged violations of the federal securities laws based on alleged misstatements or omissions in the Company's 2017 proxy statement. The parties have agreed to stay the case pending a decision on defendants' motion to dismiss in the derivative action in the Delaware Court of Chancery.

Real Estate Litigation

On March 9, 2018, PayPal, Inc. ("PayPal") commenced an action against the Company in the Superior Court Department of the Trial Court of the Commonwealth of Massachusetts, for Suffolk County. The action was originally captioned *PayPal, Inc. v. NantHealth, Inc.*, Civil Action No. 18-0780-E. On April 10, 2018, the Superior Court transferred the case to its Business Litigation Section, where it is currently pending and captioned as *PayPal, Inc. v. NantHealth, Inc.*, Civil Action No. 18-0780-BLS1. This action arises out of a Sublease Agreement that PayPal and the Company entered into on or about November 30, 2017. The Sublease Agreement pertained to commercial real estate that PayPal leased at One International Place in Boston, Massachusetts. On January 25, 2018, we notified PayPal that we were electing to terminate the Sublease Agreement.

In its Verified Complaint, and a contemporaneous notice of default that the Company disputed, PayPal alleges that the Company breached the Sublease Agreement. In addition, PayPal asserts claims for breach of the covenant of good faith and fair dealing, and violations of Massachusetts General Laws, Chapter 93A, sections 2 and 11, and seeks a declaratory judgment recognizing and enforcing the terms of the Sublease Agreement. Among other relief, PayPal seeks damages, treble damages, interest, costs, and attorneys' fees.

On April 12, 2018, the Company filed its answer and jury demand in the action. On August 2, 2018, PayPal requested a status conference with the court in order to discuss PayPal's potential filing of a motion for partial judgment on the pleadings pursuant to Mass. R. Civ. P. 12(c). A Rule 16 Litigation Control Conference ("Rule 16 Conference") was held on August 22, 2018. During the Rule 16 Conference, the court denied PayPal's request for leave to file a motion for partial judgment on the pleadings. Following the Rule 16 Conference, the court issued a tracking order setting deadlines and other procedures that would apply to this action.

On September 26, 2018, we filed our Assented to Motion for Leave to Amend Its Answer. The court granted our motion on October 3, 2018. On October 9, 2018, we filed and served our amended answer and jury demand.

On January 8, 2019, the parties filed a joint motion to extend certain of the tracking order deadlines, which motion the court granted by endorsed order dated January 9, 2019.

The parties are currently engaged in discovery, including non-party discovery.

The Company denies any liability to PayPal and intend to vigorously defend the action.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Market Information for Common Stock

Our common stock trades on the Nasdaq Global Select Market under the symbol "NH".

Holders of Record

As of March 26, 2019, we had approximately 144 holders of record of our common stock. We believe the actual number of stockholders is greater than the number of record holders and includes stockholders who are beneficial owners but whose shares are held in street name by brokers and other nominees. This number of holders of record also does not include stockholders whose shares may be held in trust or by other entities.

Dividend Policy

No cash dividends were declared for our common stock during the fiscal years ended in 2018 and 2017. We currently intend to retain all available funds and any future earnings for use in the operation of our business and do not anticipate paying any dividends on our common stock in the foreseeable future. Any future determination to declare dividends will be made at the discretion of our board of directors and will depend on, among other factors, our financial condition, operating results, capital requirements, general business conditions and other factors that our board of directors may deem relevant.

Recent Sales of Unregistered Securities

None.

Repurchases of Equity Securities by the Issuer

We did not make any stock repurchases during the twelve months ended December 31, 2018.

Use of Proceeds

Our initial public offering of 6,900,000 shares of common stock was effected through a registration statement on Form S-1 (File No. 333-211196), which was declared effective on June 1, 2016. Our initial public offering closed on June 7, 2016 and resulted in net proceeds of approximately \$83.6 million, after deducting underwriting discounts and commissions of approximately \$4.9 million and other offering expenses of approximately \$8.1 million. No payments for such expenses were made directly or indirectly to (i) any of our officers or directors; (ii) any persons owning 10% or more of any class of our class of our equity securities; or (iii) any of our affiliates.

Jefferies LLC, Cowen and Company, LLC, First Analysis Securities Corporation, Canaccord Genuity Inc. and FBR Capital Markets & Co. acted as the underwriters. There has been no material change in the planned use of proceeds from our initial public offering as described in our final prospectus filed with the SEC on June 3, 2016 pursuant to Rule 424(b) of the Securities Act.

Item 6. Selected Financial Data

Omitted, as not required for a smaller reporting company.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following is a discussion and analysis of our financial condition and the results of operations as of and for the periods presented below. The following discussion and analysis should be read in conjunction with the "Consolidated Financial Statements" and notes thereto included elsewhere in this Annual Report on Form 10-K, or Annual Report. This discussion contains forward-looking statements that are based on the beliefs, assumptions, and information currently available to our management, and are subject to known and unknown risks, uncertainties, and other factors that may cause our actual results to differ materially from those expressed or implied by such forward-looking statements. These risks, uncertainties, and other factors include, among others, those described in greater detail elsewhere in this Annual Report, particularly in Item 1A, "Risk Factors".

Overview

We are a leading next-generation, evidence-based, personalized healthcare company focused on enabling our clients to fundamentally change the diagnosis and treatment of cancer and other critical illnesses. We believe a molecular-driven, systems-based approach to making clinical treatment decisions based on large-scale, real time biometric and phenotypical data will become the standard of care initially for patients with cancer and, ultimately, other critical illnesses. We derive revenue from selling molecular sequencing and analysis services (including our unique, comprehensive GPS Cancer test, for which we obtained exclusive rights from an affiliate that provides sequencing and analysis of tumor & normal samples and our liquid/blood-based tumor profiling test service, Liquid GPS, which analyzes cell-free DNA (cfDNA) and cell-free RNA (cfRNA)), and from selling software solutions to healthcare payers, self-insured employers and healthcare systems.

We market certain of our solutions as a comprehensive integrated solution that includes our molecular sequencing and analysis services, Clinical Decision Support, and Payer Engagement solutions. We also market our molecular sequencing and analysis services, Clinical Decision Support, Payer Engagement and Connected Care solutions on a stand-alone basis. To accelerate our commercial growth and enhance our competitive advantage, we intend to continue to:

- introduce new marketing, education and engagement efforts and foster relationships across the oncology community to drive adoption of molecular sequencing and analysis services;
- pursue reimbursement of molecular sequencing and analysis services from regional and national third-party payers and government payers;
- publish scientific and medical advances;
- strengthen our commercial organization to increase our NantHealth solutions client base and to broaden usage of our solutions by existing clients; and
- develop new features and functionality for NantHealth solutions to address the needs of current and future healthcare provider and payer, self-insured employer and biopharmaceutical company clients.

Since our inception, we have devoted substantially all of our resources to the development and commercialization of NantHealth solutions, as well as the commercial launch and expansion of our molecular sequencing and analysis business. To complement our internal growth and expertise, we have made several strategic acquisitions of companies, products and technologies. We have incurred significant losses since our inception and, as of December 31, 2018, our accumulated deficit was approximately \$ 884.1 million. We expect to continue to incur operating losses over the near term as we drive adoption of our molecular sequencing and analysis solutions (including GPS Cancer and Liquid GPS), expand our commercial operations, and invest further in NantHealth solutions.

We plan to (i) continue investing in our infrastructure, including but not limited to solution development, sales and marketing, implementation and support, (ii) continue efforts to make infrastructure investments within an overall context of maintaining reasonable expense discipline, (iii) add new clients through maintaining and expanding sales, marketing and solution development activities, (iv) expand our relationships with existing clients through delivery of add-on and complementary solutions and services and (v) continue our commitment of service in support of our client satisfaction programs.

2018 Acquisition of NantHealth Labs (formerly Liquid Genomics, Inc.)

On February 28, 2018, we acquired 100% of the equity of NantHealth Labs, Inc. ("NantHealth Labs", formerly Liquid Genomics, Inc.), a company that provides liquid biopsy analysis of gene expressions and mutations using cell free RNA and DNA, pursuant to an assignment agreement dated February 1, 2018 between the Company and NantOmics, LLC a related party. The purchase price for the acquisition consisted of 9,088,362 Series A-2 units of NantOmics previously owned by the Company that were transferred at the closing plus 564,779 of Series A-2 units of NantOmics owned by the Company that were transferred to NantOmics as of May 31, 2018.

We believe that we have a substantial opportunity to leverage NantHealth Labs' testing as a complementary offering to our current portfolio of sequencing and molecular analysis solutions. There are significant synergies available and we intend to leverage our current sales and marketing efforts to drive provider acceptance and adoption. A key value proposition for liquid biopsy tests is ease of use (e.g., no tissue biopsy necessary, and fast delivery time). This complements our GPS Cancer test by enabling repeated measurement and monitoring of select biomarker response to therapy. NantHealth Labs services are provided under the "Liquid GPS" brand.

2018 Impact of Hurricane Michael

On October 10, 2018, our leased Panama City, Florida office was hit by Hurricane Michael. Due to the geographic spread of our customers, no revenue was lost. However, certain implementation revenues for our software and hardware related business were delayed until later in the fourth quarter and into 2019, due to the disruption caused to our personnel living in the region. Personnel costs for time not worked by our employees in the region during the initial period of recovery totaled \$0.7 million. Our office suffered water damage, which temporarily disabled our on-site servers, and delayed filing of our Form 10-Q for the period ended September 30, 2018. We spent \$0.1 million directly on maintaining operations and repairing our office.

Evolution of GPS Cancer Test Platform

NantHealth and NantOmics, LLC (our exclusive technology partner for the GPS Cancer test) are continually taking steps to optimize the utility and value of our tests for physicians and their patients. To this end, we have leveraged our deep experience with RNA sequencing, bioinformatics and statistics to expand the clinical utility of the GPS Cancer test, while also streamlining and improving our lab workflow by consolidating to next-generation sequencing as our sole testing platform. A fundamental result of this work is that the key cancer treatment biomarkers previously assessed using our proprietary quantitative proteomics platform are, beginning in April 2018, now assessed solely via RNA sequencing, gene expression and statistical analysis. This change is based on the established clinical and scientific utility of tumor RNA sequencing. The tumor RNA transcriptome reveals gene and somatic variant expression, identifies gene fusions and validates their expression, and determines the relevance of gene copy number alterations. GPS Cancer currently assesses RNA expression of over 19,000 genes in a tumor sample and we have shown significant concordance between our RNA and proteomics expression platforms. We believe this change will result in operational efficiencies, an improved cost structure and more rapid transfer of scientific advancements in expression analysis to our clinical report. We also believe that our proprietary quantitative proteomics platform remains the most advanced technology available and a strategic asset of NantOmics. This platform continues to have potential commercial and research applications going forward.

2017 Asset Purchase Agreement with Allscripts

On August 3, 2017, we entered into an asset purchase agreement, which we refer to as the "APA," with Allscripts Healthcare Solutions, Inc., or "Allscripts", pursuant to which we agreed to sell to Allscripts substantially all of the assets of our provider/patient engagement solutions business, including our FusionFX solution and components of its NantOS software connectivity solutions (the "Business"). On August 25, 2017, we and Allscripts completed the sale pursuant to the APA.

Allscripts conveyed to us 15,000,000 shares of our common stock at par value of \$0.0001 per share that were previously owned by Allscripts as consideration for the transaction. We retired the shares of stock. Allscripts also paid \$1.7 million of cash consideration to us as an estimated working capital payment, and we recorded a receivable of \$1.0 million related to final working capital adjustments. We are also responsible for paying Allscripts for fulfilling certain customer service obligations of the business post-closing.

Concurrent with the closing and as contemplated by the APA, we and Allscripts modified the amended and restated mutual license and reseller agreement dated June 26, 2015, which was further amended on December 30, 2017, such that, among other things, the Company committed to deliver a minimum of \$95.0 million of total bookings over a ten-year period ("Bookings Commitment") from referral transactions and sales of certain Allscripts products under this agreement (see Note 3 of the Consolidated Financial Statements). In the event of a Bookings Commitment shortfall at the end of the ten-year period, we may be obligated to pay 70% of the shortfall, subject to certain credits. We will earn 30% commission from Allscripts on each software referral transaction that results in a booking with Allscripts. We account for the Bookings Commitment at its estimated fair value over the life of the agreement. As of December 31, 2018, the estimated fair value was \$16.9 million, and at December 31, 2017, the fair value was estimated not to be material.

The sale of the Business qualified as a discontinued operations because it comprised operations and cash flows that could be distinguished, operationally and for financial reporting purposes, from the rest of the Company. The disposal of the Business sold to Allscripts represented a strategic shift in our operations as the sale enables us to focus on molecular sequencing and analysis, clinical decision support, connected care and payer engagement.

2017 Corporate Restructuring Plan

In August 2017, we committed to and began implementation of a comprehensive restructuring plan that includes a wide range of organizational efficiency initiatives and other cost reduction opportunities. The plan will allow us to focus on our core competencies of molecular sequencing and analysis, clinical decision support, connected care and payer engagement. We incurred charges from this restructuring related to severance and other cash expenditures and recognized the majority of the expenses related to this restructuring in the year ended December 31, 2017.

Non-GAAP Net Loss from Continuing Operations and Non-GAAP Net Loss Per Share from Continuing Operations

Adjusted net loss from continuing operations and adjusted net loss per share from continuing operations are financial measures that are not prepared in conformity with United States generally accepted accounting principles (U.S. GAAP). Our management believes that the presentation of Non-GAAP financial measures provides useful supplementary information regarding operational performance, because it enhances an investor's overall understanding of the financial results for our core business. Additionally, it provides a basis for the comparison of the financial results for our core business between current, past and future periods. Other companies may define these measures in different ways. Non-GAAP financial measures should be considered only as a supplement to, and not as a substitute for or as a superior measure to, financial measures prepared in accordance with U.S. GAAP.

Non-GAAP net loss from continuing operations excludes the effects of (1) loss from equity method investments including impairment losses, (2) stock based compensation expense, (3) intangible amortization, (4) corporate restructuring expenses, (5) acquisition related sales incentives, which have been recorded as contra revenue, (6) change in fair value of derivatives liability, (7) change in fair value of the Bookings Commitment, (8) non-cash interest expense related to convertible notes, (9) securities litigation costs, (10) impairment of investments without readily determinable fair value, and (11) the impacts of certain income tax benefits and provisions from non-cash activity.

The following table reconciles Net loss from continuing operations to Net loss from continuing operations - Non-GAAP and Shares outstanding to Shares outstanding-Non-GAAP for the years ended December 31, 2018 and 2017:

	Year Ended December 31,	
	2018	2017
Net loss from continuing operations	\$ (190,433)	\$ (131,399)
Adjustments to GAAP net loss:		
Corporate restructuring from continuing operations (1)	—	2,422
Acquisition related sales incentive	1,420	2,732
Intangible amortization from continuing operations	9,150	9,388
Loss from related party equity method investment including impairment loss	108,409	50,334
Non-cash interest expense related to convertible notes	5,019	4,417
Change in fair value of derivatives liability	(7)	(264)
Change in fair value of Bookings Commitment	16,947	—
Stock-based compensation expense from continuing operations	5,657	8,102
Securities litigation costs	1,317	777
Impairment of equity securities	1,750	—
Tax benefit resulting from certain non-cash tax items	(3,760)	(1,976)
Total adjustments to GAAP net loss from continuing operations	145,902	75,932
Net loss - Non-GAAP from continuing operations	\$ (44,531)	\$ (55,467)
Weighted average shares outstanding	109,168,798	116,737,860
Net loss per share from continuing operations - Non-GAAP	\$ (0.41)	\$ (0.47)

The following table reconciles Net loss per share to Net loss per share Non-GAAP for the years ended December 31, 2018 and 2017:

	Year Ended December 31,	
	2018	2017
Net loss per common share from continuing operations - GAAP	\$ (1.74)	\$ (1.12)
Adjustments to GAAP net loss per common share from continuing operations:		
Corporate restructuring from continuing operations (1)	—	0.02
Acquisition related sales incentive	0.01	0.02
Intangible amortization from continuing operations	0.08	0.08
Loss from related party equity method investment including impairment loss	0.98	0.43
Non-cash interest expense related to convertible notes	0.05	0.04
Change in fair value of derivatives liability	—	—
Change in fair value of Bookings Commitment	0.16	—
Stock-based compensation expense from continuing operations	0.05	0.07
Securities litigation costs	0.01	0.01
Impairment of equity securities	0.02	—
Tax benefit resulting from certain non-cash tax items	(0.03)	(0.02)
Total adjustments to GAAP net loss per common share from continuing operations	1.33	0.65
Net loss per common share from continuing operations - Non-GAAP	\$ (0.41)	\$ (0.47)

(1) Corporate restructuring includes accrued bonus reversal of \$0.5 million for the year ended December 31, 2017.

Components of Our Results of Operations

Revenue

We generate our revenue from the sale of software-as-a-service, software, hardware and services, sequencing and molecular analysis and home health care services. Our systems infrastructure and platforms support the delivery of both personalized comprehensive sequencing and molecular analysis and the implementation of value-based care models across the healthcare continuum. We generate revenue from the following sources:

Software-as-a-service related - SaaS related revenue is generated from our clients' access to and usage of our hosted software solutions on a subscription basis for a specified contract term. In SaaS arrangements, the customer cannot take possession of the software during the term of the contract and generally only has the right to access and use the software and receive any software upgrades published during the subscription period. Solutions sold under a SaaS model include our Eviiti platform solutions and NaviNet.

Software and hardware related - Software and hardware related revenue is generated from the license of our software, on a perpetual basis, the sale of hardware and professional services that are complementary to the software and may or may not be required for the software to function as desired by the customer. The services are generally provided in the form of implementation and training services and do not include maintenance revenue. The software is installed on the customer's site or the customer's designated vendor's site and is not hosted by us or by a vendor contracted by us. We also generate revenue from the resale of third-party software and hardware to our clients. Our software license and hardware solutions include DeviceConX software and HBox.

Maintenance - Maintenance revenue includes ongoing post contract client support ("PCS") or maintenance on software and hardware during the PCS term. Additionally, PCS includes ongoing development of software updates and upgrades provided to the customer on a when-and-if-available basis. We sell our DeviceConX solution with maintenance contracts.

Sequencing and molecular analysis - Sequencing and molecular analysis revenue is generated by providing customers with reports of the results of performing sequencing and analysis of whole genome DNA, RNA, and/or proteomic testing under our reseller agreement with NantOmics, LLC ("NantOmics"), and from blood samples via our liquid/blood-based tumor profiling platform through our subsidiary, NantHealth Labs, Inc. ("NantHealth Labs", formerly Liquid Genomics, Inc.). Revenue is recognized at a point in time, when reports of results are transferred to the ordering physician or institution, or on a cash basis; or ratably over time for the period of a stand-ready obligation to provide blood-based tumor profiling services.

Home health care services - Home health care services revenue includes revenue related to nursing and therapy services provided to patients in a home care setting.

Cost of Revenue

Cost of revenue includes associated salaries and fringe benefits, stock-based compensation, consultant costs, direct reimbursable travel expenses, depreciation related to software developed for internal use, depreciation related to lab equipment, and other direct engagement costs associated with the design, development, sale and installation of systems, including system support and maintenance services for customers. System support includes ongoing customer assistance for software updates and upgrades, installation, training and functionality. All service costs, except development of internal use software and deferred implementation costs, are expensed when incurred. Amortization of deferred implementation costs are also included in cost of revenue. Cost of revenue associated with each of our revenue sources consists of the following types of costs:

Software-as-a-service related - SaaS related cost of revenue includes personnel-related costs, amortization of deferred implementation costs, depreciation of internal use software, and other direct costs associated with the delivery and hosting of our subscription services.

Software and hardware related - Software and hardware related cost of revenue includes third-party software and hardware costs directly associated with solutions, including purchasing and receiving costs, and includes direct costs associated with software implementation services provided to our customers. Software and hardware related cost of revenue also includes hardware costs directly related to bringing manufactured products to their final selling destination.

Maintenance - Maintenance cost of revenue includes personnel-related costs and other direct costs associated with the ongoing support or maintenance provided to our customers.

Sequencing and molecular analysis - Sequencing and molecular analysis cost of revenue includes personnel-related costs associated with fulfillment of these services, including those of our subsidiary, NantHealth Labs, and amounts due to NantOmics under the reseller agreement for the sequencing and analysis of whole genome, DNA, RNA, and/or proteomic results. It also includes depreciation of internal use software and lab equipment.

Home health care services - Home health care services cost of revenue includes direct expenses relating to our nursing and therapy services provided to patients in a home care setting.

We plan to continue to expand our capacity to support our growth, which will result in higher cost of revenue in absolute dollars. We expect cost of revenue to decrease as a percentage of revenue over time as we expand NantHealth solutions and realize economies of scale.

Operating Expenses

Our operating expenses consist of selling, general and administrative, research and development, and amortization of software license and acquisition-related assets.

Selling, general and administrative

Selling, general and administrative expense consists primarily of personnel-related expenses for our sales and marketing, finance, legal, human resources, and administrative associates, stock-based compensation, advertising and marketing promotions of NantHealth solutions, and corporate shared services fees from NantWorks. It also includes trade show and event costs, sponsorship costs, point of purchase display expenses and related amortization as well as legal costs, facility costs, consulting and professional fees, insurance and other corporate and administrative costs.

We continue to review our other selling, general and administrative investments and expect to drive cost savings through greater efficiencies and synergies across our company. Additionally, we expect to continue to incur additional costs for legal, accounting, insurance, investor relations and other costs associated with operating as a public company. These increases include additional costs we expect to incur associated with compliance with the Sarbanes-Oxley Act and other regulations governing public companies as well as increased costs for directors' and officers' liability insurance and an enhanced investor relations function. However, we expect our selling, general and administrative expense to decrease as a percentage of revenue over the long term as our revenue increases and we realize economies of scale.

Research and development

Research and development expenses consist primarily of personnel-related costs for associates working on development of solutions, including salaries, benefits and stock-based compensation. Also included are non-personnel costs such as consulting and professional fees to third-party development resources.

The majority of our research and development expenses are related to developing new software solutions and improving our existing software solutions. A portion of research and development costs are related to the personnel operating costs of the laboratory operations of NantHealth Labs.

We expect our research and development expenses to continue to increase in absolute dollars and as a percentage of revenue as we continue to make significant investments in developing new solutions and enhancing the functionality of our existing solutions with a focus on cancer care. However, we expect our research and development expenses to decrease as a percentage of revenue over the long term as we realize economies of scale from our developed technology.

Amortization of Acquisition Related Assets

Amortization of acquisition related assets consists of non-cash amortization expense related to our non-revenue generating technology as well as amortization expense that we recognize on intangible assets that we acquired through our investments.

Interest Expense, net

Interest expense, net primarily consists of interest expense associated with our outstanding borrowings, including coupon interest expense, amortization of debt discounts and amortization of deferred financing offering cost, offset by interest income earned on our cash and cash equivalents and marketable securities.

Other Income (Expense), net

Other income (expense), net consists primarily of unrealized and realized gains (losses), dividends received from our marketable securities, change in fair value of derivative liability and other non-recurring items.

Loss from Equity Method Investment Including Impairment Loss

Loss from equity method investments consists of our pro rata share of losses of a company that we own an ownership interest in and account for under the equity method of accounting including impairment loss. We regularly evaluate our investments, which are not carried at fair value, for other than temporary impairment in accordance with U.S. GAAP.

Provision for (Benefit from) Income Taxes

Provision for income taxes consists of U.S. federal and state and foreign income taxes. We are required to allocate the provision for income taxes between continuing operations and other categories for earnings, such as discontinued operations. To date, we have no significant U.S. federal, state and foreign cash income taxes because of our LLC status prior to June 1, 2016 and current and accumulated net operating losses.

We record a valuation allowance when it is more likely than not that some portion or all of a deferred tax asset will not be realized. In making such a determination, we consider all the available positive and negative evidence, including future reversals of existing taxable temporary differences, projected future taxable income, and ongoing prudent and feasible tax planning strategies in assessing the amount of the valuation allowance. When we establish or reduce the valuation allowance against the deferred tax assets, our provision for income taxes will increase or decrease, respectively, in the period such determination is made.

Results of Operations

The following table sets forth our Consolidated Statements of Operations data for each of the periods indicated:

(Dollars in thousands except per share amounts)

	Year Ended December 31,	
	2018	2017
Revenue:		
Software-as-a-service related	\$ 65,646	\$ 60,730
Software and hardware related	4,534	7,648
Maintenance	9,834	10,421
Total software-related revenue	80,014	78,799
Sequencing and molecular analysis	3,129	2,554
Home health care services	6,321	5,323
Total net revenue	89,464	86,676
Cost of Revenue:		
Software-as-a-service related	23,691	21,939
Software and hardware related	3,335	4,749
Maintenance	924	749
Amortization of developed technologies	4,933	5,172
Total software-related cost of revenue	32,883	32,609
Sequencing and molecular analysis	8,055	6,084
Home health care services	3,331	2,829
Total cost of revenue	44,269	41,522
Gross profit	45,195	45,154
Operating Expenses:		
Selling, general and administrative	70,763	74,976
Research and development	20,916	33,862
Amortization of acquisition-related assets	4,217	4,216
Total operating expenses	95,896	113,054
Loss from operations	(50,701)	(67,900)
Interest expense, net	(17,120)	(16,168)
Other (loss) income, net	(17,876)	800
Loss from related party equity method investment, including impairment	(108,409)	(50,334)
Loss from continuing operations before income taxes	(194,106)	(133,602)
Benefit from income taxes	(3,673)	(2,203)
Net loss from continuing operations	(190,433)	(131,399)
Loss from discontinued operations, net of tax	(1,719)	(43,812)
Net loss	\$ (192,152)	\$ (175,211)
Basic and diluted net loss per share		
Continuing operations - common stock	\$ (1.74)	\$ (1.12)
Discontinued operations - common stock	\$ (0.02)	\$ (0.37)
Total net loss per common stock	\$ (1.76)	\$ (1.49)
Weighted average shares outstanding:		
Basic and diluted - common stock	109,168,798	116,737,860

The following table sets forth our Consolidated Statements of Operations data as a percentage of revenue for each of the periods indicated (Unaudited):

	Year Ended December 31,	
	2018	2017
Revenue:		
Software-as-a-service related	73.3%	70.1%
Software and hardware related	5.1%	8.8%
Maintenance	11.0%	12.0%
Total software-related revenue	89.4%	90.9%
Sequencing and molecular analysis	3.5%	2.9%
Home health care services	7.1%	6.2%
Total net revenue	100.0%	100.0%
Cost of Revenue:		
Software-as-a-service related	26.5%	25.3%
Software and hardware related	3.7%	5.5%
Maintenance	1.0%	0.9%
Amortization of developed technologies	5.6%	5.9%
Total software-related cost of revenue	36.8%	37.6%
Sequencing and molecular analysis	9.0%	7.0%
Home health care services	3.7%	3.3%
Total cost of revenue	49.5%	47.9%
Gross profit	50.5%	52.1%
Operating Expenses:		
Selling, general and administrative	79.1%	86.4%
Research and development	23.4%	39.1%
Amortization of acquisition-related assets	4.7%	4.9%
Total operating expenses	107.2%	130.4%
Loss from operations	(56.7%)	(78.3%)
Interest expense, net	(19.1%)	(18.7%)
Other (loss) income, net	(20.0%)	0.9%
Loss from related party equity method investment, including impairment	(121.2%)	(58.0%)
Loss from continuing operations before income taxes	(217.0%)	(154.1%)
Benefit from income taxes	(4.1%)	(2.5%)
Net loss from continuing operations	(212.9%)	(151.6%)
Loss from discontinued operations, net of tax	(1.9%)	(50.5%)
Net loss	(214.8%)	(202.1%)

Comparison of the years ended December 31, 2017 and 2018

Revenue

(Dollars in thousands)	Year Ended December 31,		Period-To-Period Change	
	2018	2017	2018 vs. 2017	
	Amount	Amount	Amount	Percentage
Software-as-a-service related	\$ 65,646	\$ 60,730	4,916	8.1 %
Software and hardware related	4,534	7,648	(3,114)	-40.7 %
Maintenance	9,834	10,421	(587)	-5.6 %
Total software-related revenues	80,014	78,799	1,215	1.5 %
Sequencing and molecular analysis	3,129	2,554	575	22.5 %
Home health care services	6,321	5,323	998	18.7 %
Total net revenue	\$ 89,464	\$ 86,676	\$ 2,788	3.2 %

Comparison of the years ended December 31, 2017 and 2018

Total revenue increased \$2.8 million, or 3.2%, from \$86.7 million for the year ended December 31, 2017 to \$89.5 million for the year ended December 31, 2018. Our total revenue growth was driven primarily by growth in our SaaS, home health care services, and sequencing and molecular analysis revenue categories.

Total software-related revenue was \$80.0 million for the year ended December 31, 2018 compared to \$78.8 million for the year ended December 31, 2017, an increase of 1.2 million, or 1.5%. The increase in total software-related revenue was primarily driven by SaaS revenue from our NaviNet product. This increase was partially offset by a decrease in our software and hardware line of business because of the timing of completed implementations as compared to the prior year.

Software and hardware revenue decreased \$3.1 million, or 40.7%, for the year ended December 31, 2018 compared to the prior year. The primary driver of this decrease was lower revenue from completed implementations of DeviceConX compared to the prior year.

SaaS revenue was \$65.6 million for the year ended December 31, 2018, an increase of \$4.9 million, or 8.1%, from \$60.7 million compared to the prior year. This growth was primarily driven by higher revenue from our NaviNet product due to a higher number of implementations being completed during the year.

Maintenance revenue decreased \$0.6 million, or 5.6%, from \$10.4 million in the year ended December 31, 2017 to \$9.8 million for the year ended December 31, 2018. This decrease was primarily driven by the timing of recognition of maintenance fees on an individual contract in the prior year, which had been deferred until implementation was complete under the previous revenue recognition guidance. This decrease was partially offset by a larger customer base for DeviceConX post contract support maintenance services compared to the prior year.

Sequencing and molecular analysis revenue increased from \$2.6 million for the year ended December 31, 2017 to \$3.1 million for the year ended December 31, 2018. This increase was due to the acquisition of NantHealth Labs and the resulting addition of the Liquid GPS test to our products during 2018, which provided \$0.8 million of revenue in 2018. GPS Cancer revenues declined slightly driven by a change in product mix on tests performed and reimbursed as we transitioned a part of our sequencing and molecular analysis business to the Liquid GPS test to accommodate a growing segment of the market.

Currently, we recognize revenue from customers with executed contracts, and from customers without a contractual agreement where we recognize revenue on a cash basis given the uncertainty of reimbursement. As the company gains additional insurance coverage, including coverage under government insurance programs, we expect to be able to reduce the portion of GPS Cancer revenue which is recognized on a cash basis.

The commercial team's efforts are focused on increasing reimbursement of the GPS Cancer profile by developing partnerships, which include pilot arrangements with commercial insurance and self-insured employers, expanding physician relationships, and enhancing operational performance and efficiencies. The partnership strategy that we developed for commercial health plans supports an alignment with designated provider/oncology groups within the health plan's network. We work directly with the physician groups to support education of test ordering and interpretation and enable aggregate review of results with the plans. In the initial pilot arrangement that we have with commercial health plan, reimbursement is recognized for each test order throughout the pilot arrangement and the GPS Cancer profile value is assessed by the plan with the goal of full medical policy adoption at pilot end.

We have also continued focused efforts to enhance reimbursement from plans when profiles are ordered and there is no payer contract in place. We are actively engaging plans with detail which supports a physician's reason for ordering. Our utilization of pre-authorizations and supporting documentation assists in the overall billing and appeal process, optimizing payment with payers, who do not have a formal agreement with us. The GPS Cancer profile provides all information that can be found in other market molecular tests that physicians deem necessary for treatment recommendation and expands insight for the oncologist with the comprehensive information available on each patient tested.

In parallel with the private payer activities described above, we are also making extensive efforts to achieve coverage from governmental programs such as Medicare, using approval pathways including FDA in-vitro medical device clearance. Those activities are ongoing but have uncertainty on the timelines as to formal approval.

Home health care services revenue increased \$1.0 million, or 18.7%, from \$5.3 million in 2017 to \$6.3 million for the year ended December 31, 2018. This was a result of increased home visits in the year, partially as a result of the territory of our home health care services expanding to Prescott, Arizona.

We believe that significant opportunities exist for expanded cross-selling across our products and across our existing customer base, including Eviiti and NaviNet customer bases. We also believe that our customer base and our product solutions provide unique opportunities to expand the volume of GPS Cancer and Liquid GPS analysis reporting to our customer base. Maintaining our current customer base will be important to our future maintenance and SaaS recurring revenue streams.

Cost of Revenue

(Dollars in thousands)	Year Ended December 31,		Period-To-Period Change	
	2018	2017	2018 vs. 2017	
	Amount	Amount	Amount	Percentage
Software-as-a-service	\$ 23,691	\$ 21,939	\$ 1,752	8.0 %
Software and hardware	3,335	4,749	(1,414)	-29.8 %
Maintenance	924	749	175	23.4 %
Amortization of developed technologies	4,933	5,172	(239)	-4.6 %
Total software-related cost of revenue	32,883	32,609	274	0.8 %
Sequencing and molecular analysis	8,055	6,084	1,971	32.4 %
Home health care services	3,331	2,829	502	17.7 %
Total cost of revenue	\$ 44,269	\$ 41,522	\$ 2,747	6.6 %

Comparison of the years ended December 31, 2017 and 2018

Cost of revenue increased \$2.7 million, or 6.6%, from \$41.5 million in the year ended December 31, 2017 to \$44.3 million for the year ended December 31, 2018. The primary driver of this increase was an additional \$3.4 million depreciation from newly capitalized internally developed software supporting software-as-a-service and sequencing and molecular analysis solutions.

Total software-related cost of revenue increased \$0.3 million, or 0.8%, from \$32.6 million in 2017 to \$32.9 million for the year ended December 31, 2018. The primary driver of this was a \$2.8 million increase in SaaS cost of revenue primarily attributed to increased depreciation of internally developed software, compared to amortization of deferred implementation costs in the prior year under ASC 605, attributable to our NaviNet solutions. This was partially offset by reductions in costs associated with purchased software and reduced salary costs associated with our software and hardware business.

Sequencing and molecular analysis cost of revenue increased \$2.0 million, or 32.4%, from \$6.1 million in 2017 compared to \$8.1 million in 2018. This increase was due to the addition of NantHealth Labs during 2018, which introduced laboratory expenses of \$0.4 million and led to personnel expenses increasing \$0.6 million. There was also an increase of \$0.5 million in relation to the depreciation of internally developed software related to GPS Cancer and Liquid GPS.

Cost of revenue associated with the cost of tests performed by NantOmics increased by \$0.3 million for 2018 compared to the prior year. We record the cost of revenue expense upon delivery of the GPS Cancer report to our clients. As a result, there will be a timing difference between the revenue recorded and the cost of revenue recorded. In addition, the cost of revenue is recorded as defined by the applicable contract with our clients and as outlined in the amended and restated Reseller Agreement ("Reseller Agreement") for genomic and proteomic sequencing services and related bioinformatics and analysis services with NantOmics. On December 18, 2017, the Company and NantOmics executed Amendment No. 1 to the Second Amended Reseller Agreement. The Second Amended Reseller Agreement was amended to allow fee adjustments with respect to services completed by NantOmics between the amendment effective date of October 1, 2017 to June 30, 2018.

We believe that there are opportunities going forward to grow the volume of sequencing and molecular analysis activity which would increase the associated costs of delivering such revenue. We record the cost of revenue expense upon delivery of the GPS Cancer report to our clients. There may be a timing difference between the revenue recorded and the cost of revenue recorded in the event that revenue recognition is delayed. Sequencing and molecular analysis revenue in the current period was limited to what could be recognized on a cash basis due to uncertainty over reimbursement for the GPS Cancer profiles delivered in the period. As we gain additional insurance coverage and reimbursement experience, we expect to be able to reduce the portion of GPS revenue which is recognized on a cash basis.

Home health care services cost of revenue increased \$0.5 million, or 17.7%, from \$2.8 million in 2017 to \$3.3 million for the year ended December 31, 2018. This was in line with revenue growth, as more personnel were hired and consultants used in order to meet the higher number of visits performed in the year.

Selling, General and Administrative

(Dollars in thousands)	Year Ended December 31,		Period-To-Period Change	
	2018	2017	2018 vs. 2017	
	Amount	Amount	Amount	Percentage
	Selling, general and administrative	\$ 70,763	\$ 74,976	\$ (4,213)

Comparison of the years ended December 31, 2017 and 2018

For the year ended December 31, 2018, selling, general and administrative expenses decreased \$4.2 million, or 5.6%, from \$75.0 million in 2017 to \$70.8 million in 2018. This decrease was due to a \$2.6 million decrease in corporate shared services expenses charged to us by affiliated companies, as we have developed additional functional areas internally and started providing services to affiliated entities, which we charge back, offsetting corporate shared services expenses. There was also a \$1.2 million decline in personnel costs, largely due to a reduced bonus payout for 2018.

Research and Development

(Dollars in thousands)	Year Ended December 31,		Period-To-Period Change	
	2018	2017	2018 vs. 2017	
	Amount	Amount	Amount	Percentage
	Research and development	\$ 20,916	\$ 33,862	\$ (12,946)

Comparison of the years ended December 31, 2017 and 2018

Research and development expenses decreased \$12.9 million, or 38.2%, from \$33.9 million in 2017 to \$20.9 million in 2018. This decrease was largely driven by a decrease of \$8.4 million in personnel expenses due to our restructuring in 2017, offset by the addition of research and development personnel from NantHealth Labs, which reduced headcount allocated to research and development by around 26%. There was also a \$2.7 million decrease in stock compensation expense related to the reduction in research and development headcount, and an equity award granted in November 2017, a portion of which vested immediately increasing the expense recognized for 2017. The lower headcount and lower overall bonus payments in 2018 led to a \$0.5 million decrease in bonus expense. Also, we saw a \$0.7 million decline in expense from external research and development resources as development projects were performed internally and a reduction of \$0.3 million from travel expense, related to cost control measures.

Interest Expense, Net

(Dollars in thousands)	Year Ended December 31,		Period-To-Period Change	
	2018	2017	2018 vs. 2017	
	Amount	Amount	Amount	Percentage
	Interest expense, net	\$ (17,120)	\$ (16,168)	\$ (952)

In December 2016, we issued an aggregate principal amount of \$107.0 million of our 5.5% convertible senior notes due 2021 (the "Convertible Notes") in a private placement offering to qualified institutional buyers pursuant to Rule 144A under the Securities Act of 1933, as amended (the "Securities Act"), as amended and to non-U.S. persons pursuant to Regulation S under the Securities Act, of which \$10 million were issued to a related party. The Convertible Notes will mature on December 15, 2021 unless earlier converted, redeemed or repurchased in accordance with the terms of the Convertible Notes. Please see the section entitled "Liquidity and Capital Resources" below and Note 11 to our audited consolidated financial statements included in Item 8 of this Annual Report on Form 10-K for further discussion of the Convertible Notes.

In January 2016, we executed a demand promissory note with NantCapital (the "NantCapital Note"), a personal investment vehicle for Dr. Patrick Soon-Shiong, our Chairman and Chief Executive Officer. Through December 31, 2018, the total advances made by NantCapital to us pursuant to the NantCapital Note amounted to approximately \$112.7 million. We can request additional advances subject to approval from NantCapital. The NantCapital Note bears interest at a per annum rate of 5.0% compounded annually and computed on the basis of the actual number of days in the year.

In May 2016, the NantCapital Note was amended and restated to provide that all outstanding principal and accrued and unpaid interest was due and payable on June 30, 2021, and not on demand. On December 15, 2016, in connection with the offering of the Convertible Notes, we entered into a Second Amended and Restated Promissory Note which amended and restated the Second Amended and Restated Promissory Note, dated May 9, 2016, between us and NantCapital, to extend the maturity date of the Second Amended and Restated Promissory Note to June 30, 2022 and to subordinate the Second Amended and Restated Promissory Note in right of payment to the Convertible Notes.

Please see the section entitled "Liquidity and Capital Resources" below and Note 18 to our audited consolidated financial statements included in Item 8 of this Annual Report on Form 10-K for further discussion of these notes.

Comparison of the years ended December 31, 2017 and 2018

Interest expense, net, increased by \$1.0 million, from \$16.2 million for the year ended December 31, 2017 to \$17.1 million for the year ended December 31, 2018. This increase was attributable to a \$0.6 million increase in interest expense from the amortization of debt discounts on the Convertible Notes issued in 2016 and a \$0.3 million increase in interest expense from the NantCapital Note, due to interest accruals.

Other Income (Expense), net

(Dollars in thousands)	Year Ended December 31,		Period-To-Period Change	
	2018	2017	2018 vs. 2017	
	Amount	Amount	Amount	Percentage
	Other income (expense), net	\$ (17,876)	\$ 800	\$ (18,676)

Comparison of the years ended December 31, 2017 and 2018

Other income or expense moved by \$18.7 million, from an income of \$0.8 million for the year ended December 31, 2017 to an expense of \$17.9 million for the year ended December 31, 2018. The expense was mainly driven by a \$16.9 million increase in the fair value of the Bookings Commitment liability, as a result of changes in the status of identified opportunities, reductions in the estimated value of identified opportunities and delays in executing management's planned sales strategy. There was a further expense due to a \$1.8 million impairment loss on our investment in Innovative Oncology Business Solutions Inc. These expenses were offset by other income associated with the services performed under the transition services agreement with Allscripts.

Loss from Related Party Equity Method Investment including impairment loss

(Dollars in thousands)	Year Ended December 31,		Period-To-Period Change	
	2018	2017	2018 vs. 2017	
	Amount	Amount	Amount	Percentage
Loss from related party equity method Investment including impairment loss	\$ (108,409)	\$ (50,334)	\$ (58,075)	115.4%

Comparison of the years ended December 31, 2017 and 2018

For the year ended December 31, 2018, loss from equity method investment increased \$ 58.1 million compared to the prior year, from \$50.3 million during the year ended December 31, 2017 to \$108.4 million during the year ended December 31, 2018.

This increase was primarily due to impairment charges of \$14.8 million and \$80.4 million at December 31, 2018 and September 30, 2018, respectively, as a result of our determination that the fair value of our investment in NantOmics had declined below our carrying value and that this decline in value was other than temporary. The decline in the fair value of our investment in NantOmics at December 31, 2018 was primarily caused by changes in the pricing assumed in the Reseller Agreement. At September 30, 2018, the impairment was primarily caused by changes in projected GPS Cancer revenue, due to delays in our GPS Cancer revenue growth.

Our loss from equity investments in the year ended December 31, 2017 included a \$36.0 million impairment charge, as a result of our determination that the fair value of our investment in NantOmics had declined below our carrying value as of June 30, 2017 and that this decline in value was other than temporary. The decline in the fair value of our investment in NantOmics was primarily caused by a change in the risk profile of our financial projections for NantOmics resulting from the delay in our GPS Cancer revenue growth.

The increase in loss from equity method investments was due to the impairment above, our pro rata share of losses from our investment in NantOmics, and the amortization of the basis difference in the investment. We report our share of NantOmics' loss and the amortization of basis difference using a one quarter lag.

Provision for (Benefits from) Income taxes

(Dollars in thousands)	Year Ended December 31,		Period-To-Period Change	
	2018	2017	2018 vs. 2017	
	Amount	Amount	Amount	Percentage
Provision for (benefit from) income taxes	\$ (3,673)	\$ (2,203)	\$ (1,470)	66.7%

Comparison of the years ended December 31, 2017 and 2018

For the year ended December 31, 2018, the benefit from income taxes in continuing operations was \$3.7 million, compared with a \$2.2 million benefit for income taxes during the year ended December 31, 2017.

The 2018 tax benefit is mainly due to the Tax Cuts and Jobs Act of 2017 that allowed net operating losses generated in 2018 to be carried forward indefinitely.

In 2017, we recorded a benefit from income taxes in the continuing operations in the amount of \$3.0 million due to the tax law changes under the Tax Cuts and Jobs Act of 2017.

On December 22, 2017, the Tax Cuts and Jobs Act of 2017, or the Tax Act, was signed into law making significant changes to the Code. Changes include, but are not limited to, a corporate tax rate decrease to 21% effective for tax years beginning after December 31, 2017. This change in tax rate resulted in a reduction in our net U.S. deferred tax assets before valuation allowance by \$46.5 million, which was mostly offset by a reduction in our valuation allowance. The other provisions of the Tax Act, including the one-time transition tax on the mandatory deemed repatriation of cumulative foreign earnings, did not have a material impact on our financial statements as of December 31, 2017.

In December 2017, the SEC issued Staff Accounting Bulletin No. 118 ("SAB 118"), which provides guidance on accounting for the income tax effects of the TCJA. SAB 118 provides a measurement period that should not extend beyond one year from the TCJA enactment date for companies to complete the accounting relating to the TCJA under Accounting Standards Codification Topic 740, "Income Taxes" ("ASC 740"). In accordance with SAB 118, a company must reflect the income tax effects of those aspects of the TCJA for which the accounting under ASC 740 is complete. To the extent that a company's accounting for TCJA-related income tax effects is incomplete, but the company is able to determine a reasonable estimate, it must record a provisional estimate in its financial statements. If a company cannot determine a provisional estimate to be included in its financial statements, it should continue to apply ASC 740 on the basis of the provisions of the tax laws that were in effect immediately before the enactment of the TCJA. The Company has completed its evaluation of the potential impacts of the Act of 2017 on its December 31, 2018 financial statements under the one-year measurement period provided under SAB 118. No adjustment has been recorded as there were no material changes between the provisional estimate and the final accounting for the Act.

Liquidity and Capital Resources

Sources of Liquidity

As of December 31, 2018, we had cash and cash equivalents and marketable securities of \$18.3 million, compared to \$61.7 million as of December 31, 2017, of which \$0.1 million and \$0.2 million, respectively, related to foreign subsidiaries. We believe our existing cash, cash equivalents and ability to borrow from affiliated entities will be sufficient to fund operations through at least 12 months following the issuance date of the financial statements based upon our Chairman and CEO's intent and ability to support our operations with additional funds as required. We may also seek to sell additional equity, through one or more follow-on public offerings or in separate financings, or sell additional debt securities or obtain a credit facility. However, we may not be able to secure such financing in a timely manner or on favorable terms. Without additional funds, we may choose to delay or reduce our operating or investment expenditures. Further, because of the risk and uncertainties associated with the commercialization of our existing products as well as products in development, we may need additional funds to meet its needs sooner than planned. To date, our primary sources of capital were private placement of membership interests prior to its IPO, debt financing agreements, including the NantCapital Note, convertible notes, and our IPO.

Convertible Notes

In December 2016, we entered into a purchase agreement (the "Purchase Agreement") with J.P. Morgan Securities LLC and Jefferies LLC, as representatives of the several initial purchasers named therein (collectively, the "Initial Purchasers"), to issue and sell \$90.0 million in aggregate principal amount of our 5.50% Convertible Senior Notes due 2021 (the "Convertible Notes") in a private placement to qualified institutional buyers pursuant to Rule 144A under the Securities Act and to non-U.S. persons pursuant to Regulation S under the Securities Act. In December 2016, we entered into a purchase agreement (the "Cambridge Purchase Agreement") with Cambridge Equities, L.P., an entity affiliated with Dr. Patrick Soon-Shiong, our Chairman and Chief Executive Officer ("Cambridge"), to issue and sell \$10.0 million in aggregate principal amount of the Convertible Notes in a private placement pursuant to an exemption from the registration requirements of the Securities Act afforded by Section 4(a)(2) of the Securities Act. In December 2016, pursuant to the exercise of the overallotment by the Initial Purchasers, we issued an additional \$7.0 million principal amount of the Convertible Notes. The total net proceeds from this offering were approximately \$102.7 million, comprised of \$9.9 million from Cambridge and \$92.8 million from the Initial Purchasers, after deducting of Initial Purchasers' discount and debt issuance costs of \$4.3 million in connection with the Convertible Notes offering.

On December 21, 2016, we entered into an Indenture, relating to the issuance of the Convertible Notes (the "Indenture"), by and between us and U.S. Bank National Association, as trustee (the "Trustee"). The interest rates are fixed at 5.50% per year, payable semi-annually on June 15 and December 15 of each year, beginning on June 15, 2017. The Convertible Notes will mature on December 15, 2021, unless earlier repurchased by us or converted pursuant to their terms. The initial conversion rate of the Convertible Notes is 82.3893 shares of common stock per \$1 thousand principal amount of Convertible Notes (which is equivalent to an initial conversion price of approximately \$12.14 per share). Prior to the close of business on the business day immediately preceding September 15, 2021, the Convertible Notes will be convertible only under the following circumstances: (1) during any calendar quarter commencing after March 31, 2017 (and only during such calendar quarter), if, for at least 20 trading days (whether or not consecutive) during the 30 consecutive trading day period ending on the last trading day of the immediately preceding calendar quarter, the last reported sale price of our common stock on such trading day is greater than or equal to 120% of the conversion price on such trading day; (2) during the five business day period after any five consecutive trading day period in which, for each day of that period, the trading price per \$1 thousand principal amount of the Convertible Notes for such trading day was less than 98% of the product of the last reported sale price of the Company's common stock and the conversion rate on such trading day; or (3) upon the occurrence of specified corporate transactions. Upon conversion, the Convertible Notes will be settled in cash, shares of the Company's common stock or any combination thereof at our option.

Upon the occurrence of a fundamental change (as defined in the Indenture), holders may require us to purchase all or a portion of the Convertible Notes in principal amounts of \$1 thousand or an integral multiple thereof, for cash at a price equal to 100% of the principal amount of the Convertible Notes to be purchased plus any accrued and unpaid interest to, but excluding, the fundamental change purchase date. The conversion rate will be subject to adjustment upon the occurrence of certain specified events.

NantCapital Notes

In January 2016, we issued the NantCapital Note to NantCapital, a personal investment vehicle for Dr. Patrick Soon-Shiong, our Chairman and CEO. As of December 31, 2018, the total advances made by NantCapital to us pursuant to the NantCapital Note was approximately \$112.7 million. In May 2016, the NantCapital Note was amended and restated to provide that all outstanding principal and accrued and unpaid interest is due and payable on June 30, 2021, and not on demand. On December 15, 2016, in connection with the offering of the Convertible Notes, we entered into a Second Amended and Restated Promissory Note which amended and restated the Amended and Restated Promissory Note, dated May 9, 2016, between us and NantCapital, to, among other things, extend the maturity date of the NantCapital Note and to subordinate the NantCapital Note in right of payment to the Convertible Notes. We can request additional advances subject to NantCapital approval, and the NantCapital Note bears interest at a per annum rate of 5.0% compounded annually and computed on the basis of the actual number of days in the year. NantCapital has the option, but not the obligation, to require us to repay any such amount in cash, Series A-2 units of NantOmics (based on a per unit price of \$1.484) held by us, shares of our common stock based on a per share price of \$18.6126 (if such equity exists at the time of repayment), or any combination of the foregoing at the sole discretion of NantCapital.

On August 8, 2018, we executed a promissory note in favor of NantCapital, with a maturity date of June 15, 2022. The note bears interest at a per annum rate of 9.75% and is compounded annually, interest payments on outstanding amounts are due on June 15 and December 15 of each calendar year. No advances have currently been made under the promissory note. The note allows us to request advances, up to a maximum commitment of \$100.0 million. Advances can be requested of up to \$10.0 million per calendar quarter until March 31, 2019 and following that, up to \$20.0 million per calendar quarter until December 31, 2020, after which no further advances can be requested. The promissory note is subordinated to the Convertible Notes. The promissory note includes customary negative covenants and a Performance to Plan - Adjusted EBITDA covenant, that stipulates, in order for the Company to draw on the promissory note, the profit measure, as defined in the promissory note, may not negatively deviate from board approved financial plans by more than 25%. At December 31, 2018, we were in compliance with the covenants.

If we raise additional funds by issuing equity securities or securities convertible into equity, our stockholders could experience dilution. Additional debt financing, if available, may involve covenants restricting our operations or our ability to incur additional debt. Any additional debt financing or additional equity that we raise may contain terms that are not favorable to us or our stockholders and require significant debt service payments, which diverts resources from other activities. Additional financing may not be available at all, or in amounts or on terms acceptable to us. If we are unable to obtain additional financing, we may be required to delay the development, commercialization and marketing of our products and scale back our business and operations.

Cash Flows

The following table sets forth our primary sources and uses of cash for the periods indicated:

	Year Ended December 31,	
	2018	2017
Cash provided by (used in):		
Operating activities	\$ (29,632)	\$ (81,148)
Investing activities	(10,478)	(12,275)
Financing activities	(2,159)	(5,335)
Effect of exchange rate changes on cash and cash equivalents	(300)	65
Net decrease in cash and cash equivalents	<u>\$ (42,569)</u>	<u>\$ (98,693)</u>

To date, our operations have been primarily financed through the proceeds from related party promissory notes and through equity issuances, including net cash proceeds from our IPO and net cash proceeds from our Convertible Notes private placement. In June 2016, we sold 6,900,000 shares of common stock at a price of \$14.00 per share, which includes 400,000 shares sold to the underwriter upon exercise of their overallotment option to purchase additional shares of our company. We raised net proceeds of \$83.6 million from our IPO, after underwriting fees, discounts and commissions of \$4.9 million and other offering costs of \$8.1 million. In December 2016 we issued Convertible Notes to related party and others for net proceeds of \$102.7 million, \$9.9 million from Cambridge and \$92.8 million from others, respectively, after deducting underwriting discounts and commissions and offering costs of \$4.3 million.

Operating Activities

Our cash flows from operating activities have been driven by rate of revenue, billings, and collections, the timing and extent of spending to support product development efforts, and enhancements to existing services, and the timing of general and administrative expenses, and the continuing market acceptance of our solution. In addition, our net loss in the year ended December 31, 2018 has been significantly greater than our use of cash for operating activities due to the inclusion of substantial non-cash charges.

Cash used in operating activities of \$29.6 million in the year ended December 31, 2018 was a result of our continued investments in sales and marketing, research and development, costs associated with public company reporting and corporate governance requirements, and other expenses incurred to grow our business. In the year ended December 31, 2018, \$156.6 million, or 81% of our net loss of \$192.2 million consisted of non-cash items, including a \$108.4 million equity in net loss of a related party investment, \$22.4 million of depreciation and amortization, \$16.9 million increase in the fair value of the Bookings Commitment liability, \$5.7 million in stock-based compensation, and \$5.0 million amortization of debt discounts and deferred financing offering costs, partially offset by a \$3.8 million decrease in deferred tax liabilities.

Cash used in operating activities in the year ended December 31, 2018 included a \$1.7 million reduction in accounts payable, a \$4.8 million reduction in accrued and other liabilities, a \$3.8 million decrease in net deferred tax liabilities, a \$0.6 million decrease in deferred revenue. The cash used in operating activities was offset by a \$3.1 million cash inflow due to the change in other assets and liabilities, a \$2.3 million decrease in prepaid expenses and other current assets, a \$0.3 million decrease in inventories, and an increase of \$6.0 million in related party payables, net.

Cash used in operating activities of \$81.1 million in the year ended December 31, 2017 was a result of our continued significant investments in research and development, sales and marketing, and costs associated with public company reporting and corporate governance requirements, and other expenses incurred to grow our business. In the year ended December 31, 2017, \$102.7 million, or 59% of our net loss of \$175.2 million consisted of non-cash items, including a \$4.5 million in stock-based compensation, \$28.1 million of depreciation and amortization, a \$50.3 million equity in net loss of a related party investment, \$9.6 million of loss on sale of business and dissolution of business component, \$5.1 million deferred income taxes, net expense, a \$0.2 million provision for accounts receivable bad debts, a \$0.7 million inventory provision, \$4.4 million amortization of debt discounts and deferred financing offering costs, and partially offset by a \$0.3 million decrease in fair value of derivatives liability.

Cash used in operating activities in the year ended December 31, 2017 included a decrease in prepaid expenses and other current assets of \$0.6 million, a \$2.2 million increase in deferred implementation costs due to an increase in business activity associated with the growth of our business, \$1.9 million in reduction in accounts payable, \$6.3 million reduction in accrued and other liabilities, a \$1.0 million decrease in deferred revenue, and a \$0.3 million increase in other assets and liabilities. The cash used in operating activities was offset by a \$0.2 million decrease in inventories, an increase of \$2.8 million in related party payables, net, and a decrease of \$0.6 million of related party receivable, net.

Investing Activities

Our primary investing activities have consisted of acquisitions to expand our features and functionality of NantHealth solutions and capital expenditures to develop our software as well as to purchase computer equipment and furniture and fixtures in support of expanding our infrastructure.

We used \$10.5 million of cash in investing activities in the year ended December 31, 2018, primarily comprised of purchases of equipment and investments in our capitalized software.

We used \$12.3 million of cash in investing activities in the year ended December 31, 2017, primarily comprised of \$13.6 million of purchases of equipment and investments in our capitalized software and \$0.4 million of purchases of marketable securities, partially offset by \$1.7 million of cash consideration as an estimated working capital payment related to the Allscripts sale.

Financing Activities

Cash used in financing activities in the year ended December 31, 2018 of \$2.1 million was due to payment to tax authorities on the employee's behalf to satisfy withholding requirements on income earned from vested shares.

Cash used in financing activities in the year ended December 31, 2017 of \$5.3 million was due to payment to tax authorities on the employee's behalf to satisfy withholding requirements on income earned from vested shares.

Contractual Obligations, Commitments and Contingencies

Our principal commitments consist of obligations under our outstanding debt obligations, non-cancellable leases for our office space and certain equipment and vendor contracts to provide research services, and purchase obligations and minimum commitments under license agreements and reseller agreements. The following table summarizes these contractual obligations as of December 31, 2018 in thousands:

Contractual Obligations	Payments Due by Period				
	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
Purchasing obligations	\$ 383,500	\$ 2,500	\$ 28,000	\$ 51,000	\$ 302,000
Long term debt obligations:					
Related party promissory note	154,685	—	—	154,685	—
Related party convertible notes	10,000	—	—	10,000	—
Other convertible notes	97,000	—	—	97,000	—
Operating leases and capital leases obligations	20,528	3,201	6,435	5,959	4,933
Total Obligations	\$ 665,713	\$ 5,701	\$ 34,435	\$ 318,644	\$ 306,933

In September 2016, we entered into a Second Amended and Restated Reseller Agreement, ("Reseller Agreement"), for genomic and proteomic sequencing services and related bioinformatics and analysis services with NantOmics, with an effective date of June 19, 2015. The Reseller Agreement has a contract period from June 2015 through December 31, 2020, subject to three potential three-year renewal options if we meet certain GPS Cancer thresholds. We agreed to pay NantOmics non-cancellable annual minimum fees of \$2.0 million for each of the calendar years from 2016 through 2020, and subject to us exercising at least one of our renewal options, we are required to pay annual minimum fees to NantOmics of \$25.0 million for each of the calendar years from 2021 through 2023 and \$50.0 million per year for each of the calendar years from 2024 through 2029. We have the ability to terminate this agreement without cause. The Reseller Agreement permits us to use vendors other than NantOmics to provide any or all of the services that are currently being provided by NantOmics and clarifies that we are responsible for order fulfillment and branding.

New Accounting Pronouncements

See Note 2, "Summary of Significant Accounting Policies" of accompanying Notes to Consolidated Financial Statements for a discussion of new accounting standards.

Off-Balance Sheet Arrangements

During the periods presented, we did not have any off-balance sheet arrangements.

Related Party Transactions

See Note 18 of accompanying notes to Consolidated Financial Statements for a discussion of related party transactions.

Critical Accounting Policies and Significant Judgments and Estimates

This Management's Discussion and Analysis of our Financial Condition and Results of Operations is based on our Consolidated Financial Statements, which we have prepared in accordance with accounting principles generally accepted in the United States. The preparation of our financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of our financial statements, as well as the reported revenues and expenses during the reported periods. We evaluate these estimates and judgments on an ongoing basis. We base our estimates on historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

Transition to FASB ASC 606

On January 1, 2018, we adopted ASC 606, *Revenue from Contracts with Customers*, using the modified retrospective method applied to those contracts which were not completed as of January 1, 2018. Results for reporting periods beginning after January 1, 2018 are presented in accordance with ASC 606, while prior period amounts continue to be reported in accordance with our historic accounting under ASC 605 and ASC 985-605.

Revenue Recognition for the Company's revenue accounting beginning January 1, 2018 under ASC 606

Revenue is recognized upon transfer of control of promised products or services to customers in an amount that reflects the consideration we expect to receive in exchange for those products or services. Revenue is recognized net of sales taxes collected from customers, which are subsequently remitted to governmental authorities. Our revenue is generated from the following sources:

- **Software-as-a-service related ("SaaS")** - SaaS related revenue is generated from customers' access to and usage of our hosted software solutions on a subscription basis for a specified contract term. In SaaS arrangements, the customer cannot take possession of the software during the term of the contract and generally has the right to access and use the software and receive any software upgrades published during the subscription period.

SaaS contracts are accounted for as a single performance obligation, as implementation and hosting services are not distinct. As a result, we recognize all fees, including any up front initial system implementation services or other fees, ratably over time from when the system implementation or deployment services are completed, and where necessary accepted by the customer, over the contract term, as stated, or with consideration of termination for convenience clauses as discussed below.

- **Software and hardware related** - Software and hardware related revenue is generated from the license of our software, on a perpetual basis, the sale of hardware and professional services that are complementary to the software and may or may not be required for the software to function as desired by the customer. The services are generally provided in the form of implementation and training services and do not include maintenance revenue. The software is installed on the customer's site or the customer's designated vendor's site and is not hosted by us or by a vendor contracted by us. See the section below "*Contracts with Software, Hardware, and Implementation Services*" for details of our judgments and recognition of revenue relating to this category.
- **Maintenance** - Maintenance revenue includes ongoing post contract client support ("PCS") or maintenance on software and hardware during the PCS term. Additionally, PCS includes ongoing development of software updates and upgrades provided to the client on a when-and-if-available basis. Revenue is recognized over the maintenance term.

- **Sequencing and molecular analysis** - Sequencing and molecular analysis revenue is generated by providing customers with reports of the results of performing sequencing and analysis of whole genome DNA, RNA and/or proteomic testing under our reseller agreement with NantOmics, LLC ("NantOmics"), and from blood samples via its liquid/blood-based tumor profiling platform through our subsidiary, NantHealth Labs, Inc. ("NantHealth Labs", previously named Liquid Genomics, Inc.) (see Note 18 of the financial statements). Revenue is recognized at a point in time, when reports of results are transferred to the ordering physician or institution, or when cash is received as described below, or ratably over time for the period of stand-ready obligation to provide blood-based tumor profiling services.

Our sequencing and molecular analysis revenue is primarily generated from payments received from commercial third-party payers, hospitals and other provider networks and patients. We report revenue from arrangements with these customers on a gross basis in accordance with ASC 606. When reports are transferred to the ordering physician or institution, but we cannot conclude whether there is a contract with a customer, based on the assessment of collectibility, revenue recognition is deferred until non-refundable payment is received or payment is considered probable.

- **Home health care services** - Home health care services revenue includes the sale of nursing and therapy services provided to patients in a home care setting. These revenues are recognized at a point in time or over time, as services are provided.

Management assesses whether contracts entered into at, or near, the same time, should be combined, based on evaluation of the commercial objectives of the contracts.

Certain of our customer contracts allow for termination for convenience, with advanced notice, without substantive termination penalty. In these cases, we have concluded the contract term is equal to the remaining noncancellable period. Such termination rights do not allow for refunds other than prepaid PCS or other services. These provisions do not affect when we commence revenue recognition.

Contracts with Multiple Promises for Goods and Services

We engage in various contracts with promises for multiple goods and services, which may generate revenue across any of the sources noted above.

In certain contracts, we recognize our proprietary software, hardware, PCS, results of sequencing and molecular analysis, certain professional services and other software-related services as distinct performance obligations.

Standalone selling prices ("SSP") are required to be allocated and revenue recognized for each distinct performance obligation within each contract. The SSP for each performance obligation is determined by considering contracts in which the good or service is sold separately, and other factors including market conditions and our experience selling similar goods and services, as well as costs and margins achieved. In some cases, to estimate the SSP, we first estimate the selling price of each performance obligation for which an SSP is observable and then estimate the SSP of the remaining performance obligation as the residual contractual amount.

Contracts with Software, Hardware, and Implementation Services

We have some contracts where we provide implementation services involving significant integration of our licensed software and hardware, with customer networks that maintain patient electronic health records. These contracts represent a single performance obligation to the customer for a combined output due to the significant service of integrating the hardware, software and professional services. Revenue for the single performance obligation is recognized over time based on actual, or estimated, direct implementation labor hours, as a measure of progress.

In certain of those contracts, our performance also requires significant customization of our licensed software. For such contracts, we will also record revenue over time using the percentage of completion method to estimate the satisfaction of our performance obligations. However, where we lack history and experience with certain projects involving the development of software according to customer specified criteria, we may be initially unable to reasonably estimate total direct software development labor hours to be expected under the project. As a result, we would not be able to reasonably measure our progress toward complete satisfaction of our single performance obligation.

As a result, in these contracts, we will commence recognizing revenue when we conclude that we can reasonably measure our progress and determine that costs will be recoverable, which is typically at or near the time of the customers' acceptance of the software and the related professional services. At that point, substantially all of the uncertainty related to our ability to reasonably estimate direct labor hours to satisfy our performance obligations will have been resolved, and we will be able to reasonably measure the remaining progress toward complete satisfaction of our remaining professional services obligations. In such cases, we will commence recording revenue, at the date of meeting the customer acceptance criteria, with a cumulative catch up for the work performed to date using direct labor hours as a measure of progress consistent with other contracts involving software, hardware and implementation services. Recognition will continue for our performance obligation over the remaining performance period using the same measure of progress. A provision for the entire loss, from such a contract, will be recognized in any period it becomes evident that the contract will not be profitable.

Other contracts for perpetual software licenses, hardware, and implementation services do not include a service of software development or significant integration. Therefore, the perpetual software licenses, hardware, and implementation services are considered separate, distinct performance obligations. Software revenue is recognized upon the later of the license term commencement or the date the software is provided to the customer, hardware revenue is recognized upon delivery, and implementation revenue is recognized over time based on actual, or estimated, direct implementation labor hours as a measure of progress.

We delineate between contracts with, or without, a service of significant integration by considering the complexity of the integration services and whether such services can be performed by the customer or another third party. We have both reseller arrangements with gross revenue presentation due to our control of goods and services before transfer to the customer, and others with net revenue presentation due to the reseller's control of goods and services before transfer to the customer. We assess control in terms of relevant indicators of performance, inventory, and pricing risk, such as which party negotiates pricing with the end customer and which party is ultimately responsible for fulfilling services, transferring goods and services, and ensuring support.

Revenue Recognition for the Company's revenue accounting before January 1, 2018 under ASC 605 and ASC 985

Revenue is recognized when persuasive evidence of an arrangement exists, services or products have been provided to the client, fees are fixed or determinable, and collectibility is reasonably assured. While most of our arrangements include short-term payment terms, we on occasion provide payment terms to clients in excess of one year from the date of contract signing. We do not recognize revenue for arrangements containing these extended payment terms until such payments become due. Certain of our customer arrangements allow for termination for convenience with advanced notice. Such termination rights do not allow for refunds other than prepaid PCS or other services. These provisions do not affect the recognition of revenue. We also have certain arrangements which allow for termination and refunds of fees in the event that software acceptance by the customer has not occurred. In these instances, we will defer all revenue until software acceptance has occurred.

The sequencing and molecular analysis revenue is primarily generated from payments received from commercial third-party payers, hospitals and other provider networks and patients. We report revenue from arrangements with these customers on a gross basis in accordance with ASC 605-45, *Principal Agent Considerations*. We recognize revenue from these arrangements when all revenue recognition criteria have been met or on a cash basis when it cannot conclude that the fees are fixed or determinable and collectibility is reasonably assured. We use judgment in our assessment of whether the fees are fixed or determinable and whether collectibility is reasonably assured in determining when to recognize revenue in the future as it continues to gain payment experience with our customers. Accordingly, we expect to recognize revenue on a cash basis when we cannot conclude that the fees from a particular customer are fixed or determinable and collectibility is reasonably assured until it has a sufficient history to reliably estimate payment patterns from such customer.

We engage in various multiple-element arrangements, which may generate revenue across any of the sources noted above. For multiple-element software arrangements that involve the sale of our proprietary software, PCS, and other software-related services, VSOE of fair value is required to allocate and recognize revenue for each element. VSOE of fair value is determined based on the price charged in which each deliverable is sold separately. We have established VSOE for PCS on certain of our software solutions using the Stated Renewal Method. In this instance, we have determined that our stated renewals are substantive and appropriate for use in the Stated Renewal Method. We have not yet established VSOE of fair value for any element other than PCS for our arrangements. In situations where VSOE of fair value exists for PCS but not a delivered element (typically the software license and services elements), the residual method is used to allocate revenue to the undelivered element equal to its VSOE value with the remainder allocated to the delivered elements. In situations in which VSOE of fair value does not exist for all of the undelivered software-related elements, revenue is deferred until only one undelivered element remains (typically the PCS element) and then recognized following the pattern of delivery of the final undelivered element. Our multiple element arrangements typically provide for renewal of PCS terms upon expiration of the original term. The amounts of these PCS renewals are recognized as revenue ratably over the specified PCS renewal period.

For non-software arrangements that include multiple elements, primarily consisting of our SaaS agreements, revenue recognition involves the identification of separate units of accounting after consideration of combining and/or segmenting contracts and allocation of the arrangement consideration to the units of accounting on the basis of their relative selling price. The selling price used for each deliverable is based on VSOE of fair value, if available, third party evidence, or TPE, of fair value if VSOE is not available, or our best estimate of selling price if neither VSOE nor TPE is available. In determining the units of accounting for these arrangements, we evaluate whether each deliverable has standalone value as defined in the Financial Accounting Standards Board's guidance. Our SaaS arrangements are treated as a single unit of accounting as the professional services do not have standalone value. As a result, we recognize initial system implementation and deployment fees ratably over a period of time from when the system implementation or deployment services are completed and accepted by the customer over the longer of the life of the agreement or the estimated customer life. SaaS revenue consists of revenue earned from clients (typically on a monthly basis) for use of our subscription or license-based solutions and services. We recognize revenue from such contracts ratably over the contract period.

If an arrangement to deliver software requires significant production, modification or customization of the licensed software, we account for the arrangement as a construction-type contract. Currently we recognize revenue for these arrangements using the completed-contract method as it does not currently have sufficient information to reliably estimate the percentage of completion for these projects. We consider these arrangements to be substantially complete upon the clients' acceptance of the software and related professional services and consistently apply this policy to all contract accounting arrangements.

Transaction processing fees are recognized on a monthly basis based on the number of transactions processed and the fee per transaction.

Revenue derived from reseller arrangements is recognized when the resellers, in turn, sell the software solution to their clients and installation of the software solution has occurred, provided all other revenue recognition criteria are met. This is commonly referred to as the sell-through method and we defer recognition until there is a sell-through by the reseller to an actual end user clients and acceptance by the end user has occurred.

Stock-Based Compensation

We account for stock-based compensation arrangements granted to employees in accordance with ASC 718, *Compensation—Stock Compensation*, by measuring the grant date fair value of the award and recognizing the resulting expense over the period during which the employee is required to perform service in exchange for the award.

We account for stock-based compensation arrangements issued to non-employees using the fair value approach prescribed by ASC 505-50, *Equity-Based Payments to Non-Employees*. The value of non-employee stock-based compensation is re-measured at the end of each reporting period until the award vests and is recognized as stock-based compensation expense over the period during which the non-employee provides the services.

Stock-based compensation expense for both employee and non-employee awards is recognized on a straight-line basis over the appropriate service period for awards that are only subject to service conditions and is recognized using the accelerated attribution method for awards that are subject to performance conditions. Stock-based compensation expense is only recognized for awards subject to performance conditions if it is probable that the performance condition will be achieved.

All excess tax benefits and tax deficiencies are recognized as income tax benefit or expense in the income statement as discrete items in the reporting period in which they occur, and such tax benefits and tax deficiencies are not included in the estimate of an entity's annual effective tax rate, applied on a prospective basis. The recognition of excess tax benefits is not deferred until the benefit is realized through a reduction to taxes payable. When we apply the treasury stock method, in calculating diluted earnings per share, excess tax benefits, if applicable, are excluded and deficiencies from the calculation of assumed proceeds since such amounts are recognized in the income statement. Excess tax benefits if applicable, are classified as operating activities in the same manner as other cash flows related to income taxes on the statement of cash flows. We have elected to account for forfeitures when they occur. Cash paid by us when directly withholding shares for tax withholding purposes is classified as a financing activity in the Statement of Cash Flows.

Profits Interest Plan

On December 3, 2013, we adopted the Profits Interests Plan and reserved an aggregate of 63.8 million Series C units for issuance to our associates, consultants and contractors in consideration for bona fide services provided.

The Series C units were considered profits interests of us and did not entitle their holders (the "Series C members") to receive distributions if we were liquidated immediately after the grant. Instead, the Series C members were entitled to receive an allocation of a portion of our profits and losses arising after the date of the grant and, subject to vesting conditions, distributions made of a portion of our profits arising after the grant date of the Series C units. Grants of the Series C units were either fully vested, partially vested, or entirely unvested at the time of the grant as determined by our Board of Directors.

Series C members were not entitled to receive any distributions until our aggregate distributions exceeded a hurdle amount applicable to those Series C units. The hurdle amount for each grant was determined by the Board of Directors at the date of issuance of such units. After all other members received their applicable hurdle amount, the Series C members were entitled to receive their percentage interest of such excess distributions.

Prior to the LLC Conversion on June 1, 2016, we had 3.5 million Series C units outstanding. Upon the LLC Conversion on June 1, 2016, we issued 28,973 shares of common stock to holders of vested Series C units and 10,462 shares of restricted stock to holders of unvested Series C units. The shares of restricted stock issued to holders of unvested profits interest are subject to forfeiture until becoming fully vested in accordance with the terms of the original Series C unit grant agreements.

Stock compensation expense for the Series C units/restricted stock issued to the nonemployees is calculated based on the fair value of the award on each balance sheet date and the attribution of that cost is being recognized ratably over the vesting period.

Phantom Unit Plan

On March 31, 2015, we approved the Phantom Unit Plan. The maximum number of phantom units that may be issued under the Phantom Unit Plan is equal to 11.6 million minus the number of issued and outstanding Series C units. As of December 31, 2018, we had 0.6 million phantom units outstanding under the Phantom Unit Plan. Each grant of phantom units made to a participant under the Phantom Unit Plan vests over a defined service period, subject to completion of a liquidity event, and is subject to forfeiture upon termination of the participant's continuous service to us for any reason. Our IPO satisfied the liquidity event condition, and the phantom units now entitle their holders to cash or non-cash payments in an amount equal to the number of vested units held by that participant multiplied by the fair market value of our common stock, as determined by our board of directors.

We intend to settle all vested phantom unit payments held by United States-based participants in shares of our common stock and classified these awards as equity awards in our Consolidated Balance Sheets. Awards held by participants who are based outside of the United States will be settled in cash and are classified within accrued expenses on our Consolidated Balance Sheet as of December 31, 2018 and 2017. In order to satisfy payroll withholding tax obligations triggered by the issuance of shares of common stock to holders of vested phantom units, we issue recipients a net lower number of shares of common stock to satisfy tax withholding obligations and remitted a cash payment for the related withholding taxes.

During the years ended December 31, 2018 and 2017, the Company issued 0.3 million and 0.9 million shares, respectively, of common stock to participants of the Phantom Unit Plan based in the United States, after withholding approximately 0.2 million and 0.5 million shares, respectively, to satisfy tax withholding obligations. The Company made a cash payment of \$0.6 million and \$3.1 million to cover employee withholding taxes upon the settlement of these vested phantom units during the years ended December 31, 2018 and 2017. During the years ended December 31, 2018 and 2017 the Company also paid \$0.1 million and \$0.3 million, respectively, to cash-settle 16 thousand and 59 thousand vested phantom units, respectively, held by participants of the Phantom Unit Plan based outside of the United States, and to pay cash in lieu of fractional shares for vested units held by participants based in the United States.

Change in fair value of Bookings Commitment

We account for the Bookings Commitment at its estimated fair value over the life of the agreement and, as of December 31, 2018 the estimated fair value was \$16.9 million and at December 31, 2017 the fair value was estimated not to be material. We value the liability using a Monte Carlo simulation based on management's estimate of its performance in securing bookings and resulting annual payments, discounted at the cost of debt in a range of 17% to 20% based on a yield curve, to calculate the fair value of the liability. The change in the fair value of the Bookings Commitment of \$16.9 million for the year ended December 31, 2018 was due to changes in the status of identified opportunities, reductions in the estimated value of identified opportunities and delays in executing management's planned sales strategy.

We base our assumptions on projected financial information that we believe is reasonable, but those assumptions require judgment and are forward looking in nature. However, actual results may differ materially from those projections. The fair value of the Bookings Commitment is most sensitive to management's estimate of the discount rate applied to present value the liability. If the discount rate applied was 2% lower, the fair value of the liability would increase by \$2.5 million.

Change in fair value of derivative liability

We have classified the interest make-whole provision of our convertible notes due 2021 issued in December 2016 as a derivative liability that is recorded at fair value. This derivative liability is subject to re-measurement at each balance sheet date and we recognize any change in fair value in our Consolidated and Combined Statements of Operations and Comprehensive Loss as a change in fair value of the derivative liability. The change in the fair value of this derivative liability of \$7,000 and \$0.3 million for the year ended December 31, 2018 and 2017 is due primarily to the change in the value of our common stock.

Income taxes

FASB ASC Topic 740, *Income Taxes* ("Topic 740"), provides the accounting treatment for uncertainty in income taxes recognized in an enterprise's financial statements. Topic 740 prescribes a recognition threshold and measurement attribute for the financial statement recognition and measurement of a tax position taken or expected to be taken in a tax return. Topic 740 also provides guidance on derecognizing, classification, interest and penalties, accounting in interim periods, disclosure and transition.

Significant management judgment is required in determining our provision for income taxes, our deferred tax assets and liabilities, tax contingencies, unrecognized tax benefits, and any required valuation allowance, including taking into consideration the probability of the tax contingencies being incurred. Management assesses this probability based upon information provided to us by our tax advisers, our legal advisers and similar tax cases. If at a later time our assessment of the probability of these tax contingencies changes, our accrual for such tax uncertainties may increase or decrease.

Tax Cuts and Jobs Act, or the Tax Act, was enacted on December 22, 2017 and significantly reformed the U.S. Internal Revenue Code of 1986, as amended, or the Code. The Tax Act lowers U.S. federal corporate income tax rates, changes the utilization of future net operating loss carryforwards, allows for the expensing of certain capital expenditures, and puts into effect sweeping changes to U.S. taxation of international business activities. As a result, our net U.S. deferred tax assets and corresponding valuation allowances will be revalued at the new U.S. corporate rate. We continue to examine the impact this tax reform legislation may have on our business. The impact of this tax reform on us and on holders of our common stock is uncertain and could seriously harm our business.

In December 2017, the SEC issued Staff Accounting Bulletin No. 118 ("SAB 118"), which provides guidance on accounting for the income tax effects of the TCJA. SAB 118 provides a measurement period that should not extend beyond one year from the TCJA enactment date for companies to complete the accounting relating to the TCJA under Accounting Standards Codification Topic 740, "Income Taxes" ("ASC 740"). In accordance with SAB 118, a company must reflect the income tax effects of those aspects of the TCJA for which the accounting under ASC 740 is complete. To the extent that a company's accounting for TCJA-related income tax effects is incomplete, but the company is able to determine a reasonable estimate, it must record a provisional estimate in its financial statements. If a company cannot determine a provisional estimate to be included in its financial statements, it should continue to apply ASC 740 on the basis of the provisions of the tax laws that were in effect immediately before the enactment of the TCJA. The Company has completed its evaluation of the potential impacts of the Act of 2017 on its December 31, 2018 financial statements under the one year measurement period provided under SAB 118. No adjustment has been recorded as there were no material changes between the provisional estimate and the final accounting for the Act.

Utilization of Net Operating Loss Carryforwards

We had federal, state and foreign income tax NOL carryforwards of approximately \$395.4 million, \$288.9 million and nil, respectively, available to offset taxable income in tax year 2019 and thereafter. The federal NOL's will start to expire in year 2021.

Under Sections 382 and 383 of the Code, if a corporation undergoes an "ownership change" (generally defined as a greater than 50% change (by value) in its equity ownership over a three-year period), the corporation's ability to use its pre-change net operating loss carry forwards and other pre-change tax attributes to offset its post-change income may be limited. We believe that we have recently undergone one or more ownership changes. The above NOL amounts do not include the NOLs expected to expire before they can be utilized under Section 382.

The occurrence of such ownership changes could limit our ability to utilize our NOLs and possibly other tax attributes. Limitations imposed on our ability to use NOLs and other tax attributes to offset future taxable income could cause us to pay U.S. federal income taxes earlier than we otherwise would if such limitations were not in effect. Any further ownership change also could cause such NOLs and other tax attributes to expire unused, thereby reducing or eliminating the benefit of such NOLs and other tax attributes to us and adversely affecting our future cash flows.

In addition, we may determine that varying state laws with respect to NOL utilization may result in lower limits, or an inability to utilize NOLs in some states altogether, which could result in us incurring additional state income taxes. In the event that state law results in lower limits, or an inability to utilize loss carryforwards, or we become subject to federal alternative minimum tax, this could adversely affect our future cash flows.

Business Combinations

We account for business combinations using the acquisition method of accounting. Under the acquisition method, assets acquired and liabilities assumed are recorded at their respective fair values as of the acquisition date. Any excess of the purchase price over the estimated fair values of the net assets acquired is recorded as goodwill. We routinely monitor the factors impacting the acquired assets and liabilities. Transaction related costs are expensed as incurred. The operating results of the acquired business are reflected in our Consolidated and Combined Financial Statements as of the acquisition date.

Software Developed for Internal Use

We account for the costs of computer software obtained or developed for internal use in accordance with FASB ASC 350, " *Intangibles — Goodwill and Other* " ("ASC 350"). Computer software development costs are expensed as incurred, except for internal use software that qualify for capitalization as described below, and include employee related expenses, including salaries, benefits and stock-based compensation expenses; costs of computer hardware and software; and costs incurred in developing features and functionality. These capitalized costs are included in property and equipment on the Consolidated Balance Sheets. We expense costs incurred in the preliminary project and post implementation stages of software development and capitalize costs incurred in the application development stage and costs associated with significant enhancements to existing internal use software applications. Software costs are amortized using the straight-line method over an estimated useful life of three years commencing when the software project is ready for its intended use.

Goodwill and Intangible Assets

Goodwill acquired in a business combination and determined to have an indefinite useful life is not amortized but is tested for impairment annually as of October 1 or between annual tests when an impairment indicator exists. In the event there is a change in reporting units or segments, we will test for impairment at the reporting unit. A component of an operating segment is a reporting unit if the component constitutes a business for which discrete financial information is available and segment management regularly reviews the operating results of that component.

As part of the annual impairment test, we may conduct an assessment of qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount. In a qualitative assessment, we would consider the macroeconomic conditions, including any deterioration of general conditions, industry and market conditions, including any deterioration in the environment where the reporting unit operates, increased competition, changes in the products/services and regulator and political developments; cost of doing business; overall financial performance, including any declining cash flows and performance in relation to planned revenues and earnings in past periods; other relevant reporting unit specific facts, such as changes in management or key personnel or pending litigation, and events affecting the reporting unit, including changes in the carrying value of net assets.

If an optional qualitative goodwill impairment assessment is not performed, we are required to determine the fair value of each reporting unit. If a reporting unit's fair value is lower than its carrying value, we must determine the amount of implied goodwill that would be established if the reporting unit was hypothetically acquired on the impairment test date. If the carrying amount of a reporting unit's goodwill exceeds the amount of implied goodwill, we would record an impairment loss equal to the excess.

At September 30, 2018, due to declines in our stock price, we carried out an interim impairment assessment, using the optional qualitative goodwill impairment assessment. Macroeconomic and industry conditions, including specific indicators of the market value of our business, outweighed the negative impairment indicators in our overall financial performance.

The determination of fair value of a reporting unit is based on a combination of a market approach that considers benchmark company market multiples and an income approach that uses discounted cash flows for each reporting unit utilizing Level 3 inputs. Under the income approach, we determine the fair value based on the present value of the most recent income projections for each reporting unit and calculates a terminal value utilizing a terminal growth rate. The significant assumptions under this approach include, among others: income projections, which are dependent on sales to new and existing clients, new solution introductions, client behavior, competitor pricing, operating expenses, the discount rate and the terminal growth rate. The cash flows used to determine fair value are dependent on a number of significant management assumptions based on historical experience, expectations of future performance, and the expected economic environment. Estimates are subject to change given the inherent uncertainty in predicting future results. Additionally, the discount rate and the terminal growth rate are based on judgment of the rates that would be utilized by a hypothetical market participant.

Accounting guidance requires that definite-lived intangible assets be amortized over their respective estimated useful lives and reviewed for impairment whenever events or changes in circumstances indicate that their carrying amounts may not be recoverable. We estimate the useful lives of the intangible assets and ratably amortize the value over the estimated useful lives of those assets. If the estimates of the useful lives change, we will amortize the remaining book value over the remaining useful lives or, if an asset is deemed to be impaired, a write-down of the value of the asset to its fair value may be required at such time.

Investment in Related Party

Investment in and advances to a related party in which we have a substantial ownership interest of approximately 20% to 50%, or for which we exercise significant influence but not control over policy decisions, are accounted for by the equity method. An investment in a limited liability company that is similar to a partnership is also accounted for under the equity method if more than minor influence over the operation of the investee exists (generally through more than 3-5% ownership). As part of that accounting, we recognize gains and losses that arise from the issuance of stock by a related party that results in changes in the proportionate share of the dollar amount of the related party's equity.

The investment in related party is assessed for possible impairment when events indicate that the fair value of the investment may be below the carrying value. When such a condition is deemed to be other than temporary, the carrying value of the investment is written down to its fair value, and the amount of the write-down is included in net loss. In making the determination as to whether a decline is other than temporary, we consider such factors as the duration and extent of the decline, the investee's financial performance, and our ability and intention to retain the investment for a period that will be sufficient to allow for any anticipated recovery in the investment's market value. The new cost basis of the investment is not changed for subsequent recoveries in fair value.

In the case of our related party investee, NantOmics, a privately held limited liability company, the fair value of our equity method investment is estimated using the income approach. The income approach utilizes a discounted cash flow model incorporating management's expectations of the investee's future revenue, operating expenses, and earnings before interest, taxes, depreciation and amortization, capital expenditures and an anticipated tax rate ("EBITDA"). The related cash flow forecasts are discounted using an estimated weighted average cost of capital ("WACC") at the date of valuation.

We base our assumptions on projected financial information that we believe is reasonable, but those assumptions require judgment and are forward looking in nature. However, actual results may differ materially from those projections. The most impactful assumptions would include estimated revenues, estimated EBITDA margins and the WACC. For example, if NantOmics' revenues were subsequently materially lower than expected, if significant adverse changes were to occur in its operating environment, if a significant increase in the discount rate were to be needed, and/or if changes in other assumptions were to happen, our estimate of the fair value of our equity investment in NantOmics could change materially.

Qualitative matters that may impact our estimates of the fair value of our equity investment in NantOmics include assumptions regarding the timing and ramp of provider, payer and pharma adoption of genomic and RNA tests, accompanying market pricing pressures on our GPS Test and resultant impact on amounts owed by us under a reseller arrangement to NantOmics, potential success of alternate diagnostic testing solutions from competitors, regulatory impacts, technological shifts and advances in diagnostic testing for cancer, and laboratory operational matters that may impact NantOmics' ability to deliver its services in sufficient scale.

At December 31, 2018, September 30, 2018 and June 30, 2017 as a result of our analysis of the estimated fair value of our investment, we recorded other than temporary impairments on our equity method investment in NantOmics of \$14.8 million, \$80.4 million and \$36.0 million, respectively. It is reasonably possible that the estimate of the impairment will change in the near term if future NantOmics revenues are materially lower than expected; if future EBITDA margins are materially lower than expected; and/or, if we were to determine that the WACC used in a future discounted cash flow model would need to be significantly increased. These three estimates represent the most significant drivers of the estimated fair value of the discounted cash flow model. To demonstrate, as of December 31, 2018, while holding all other estimates in our estimated discounted cash flow model constant, a 100 basis point decline in our discrete and terminal period revenue growth rate and EBITDA margins, and a 100 basis point increase in the WACC used in the model would have resulted in increases in the other than temporary impairment of \$3.7 million, \$0.9 million, and \$3.6 million, respectively, on our equity method investment in NantOmics.

Differences between the carrying value of an equity investment and its underlying equity in the net assets of the related party are assigned to the extent practicable to specific assets and liabilities based on our analysis of the various factors giving rise to the difference. When appropriate, our share of the related party's reported earnings is adjusted quarterly to reflect the difference between these allocated values and the related party's historical book values, as well as our equity share of other than temporary impairments identified.

JOBS Act

On April 5, 2012, the Jumpstart Our Business Startups Act of 2012, or the JOBS Act, was enacted. Section 107 of the JOBS Act provides that an "emerging growth company" can take advantage of the extended transition period provided in Section 7(a)(2)(B) of the Securities Act for complying with new or revised accounting standards. In other words, an "emerging growth company" can delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have irrevocably elected not to avail ourselves of this extended transition period and, as a result, we adopt new or revised accounting standards on the relevant dates on which adoption of such standards is required for other public companies. Subject to certain conditions set forth in the JOBS Act, as an "emerging growth company," we intend to rely on certain exemptions and reduced reporting requirements provided by the JOBS Act, including those relating to (i) providing an auditor's attestation report on our system of internal control over financial reporting pursuant to Section 404(b) of the Sarbanes-Oxley Act and (ii) complying with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor's report providing additional information about the audit and the financial statements, known as the auditor discussion and analysis. We will remain an "emerging growth company" until the earliest of (i) the last day of our first fiscal year in which we have total annual gross revenues of \$1.07 billion or more, (ii) the date on which we are deemed to be a "large accelerated filer" under the rules of the SEC with at least \$700 million of outstanding equity securities held by non-affiliates, (iii) the date on which we have issued more than \$1 billion in non-convertible debt during the previous three years, or (iv) the last day of our fiscal year following the fifth anniversary of the date of the completion of our initial public offering.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Interest Rate Risk

As of December 31, 2018, we had \$18.3 million in cash and cash equivalents and marketable securities which were held for working capital purposes. Our cash and cash equivalents and marketable securities are comprised primarily of mutual funds listed on active exchanges, U.S. treasury securities, money market funds, and cash held in FDIC - insured institutions. Our investments are made for capital preservation purposes. We do not enter into investments for trading or speculative purposes. All our investments are denominated in U.S. dollars. If overall interest rates had decreased by 10% during the periods presented, our interest income would not have been materially affected.

Credit Risk

Our cash equivalents and our portfolio of marketable securities are subject to market risk due to changes in interest rates. Fixed rate securities may have their market value adversely affected due to a rise in interest rates, while floating rate securities may produce less income than expected if interest rates fall. Due in part to these factors, our future investment income may fall short of expectations due to changes in interest rates or we may suffer losses in principal if we are forced to sell securities that decline in market value due to changes in interest rates.

Foreign Currency Risk

We maintain offices in the United Kingdom and have selected clients in the Canada, Europe, the Middle East, Southeast Asia and United Kingdom. However, due to the low volume of activity outside the United States, the foreign currency risk is minimal. The effect of a 10% adverse change in exchange rates on foreign currency denominated cash and payables as of December 31, 2018 would not have been material. However, fluctuations in currency exchange rates could harm our business in the future.

Item 8. Consolidated and Combined Financial Statements and Supplementary Data

NantHealth, Inc.
Consolidated Financial Statements
Years Ended December 31, 2018 and 2017
(Dollars in thousands, except per share amounts)

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NantOmics, LLC
Consolidated and Combined Financial Statements
Years Ended December 31, 2018 and 2017
(Dollars in thousands, except per unit amounts)

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Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of NantHealth, Inc.

Opinion of the Financial Statements

We have audited the accompanying consolidated balance sheets of NantHealth, Inc. (the Company) as of December 31, 2018 and 2017, the related consolidated statements of operations, comprehensive loss, stockholders' equity and cash flows for each of the two years in the period ended December 31, 2018, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2018, in conformity with U.S. generally accepted accounting principles.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2013.

Los Angeles, California

March 29, 2019

NantHealth, Inc.
Consolidated Balance Sheets
(Dollars in thousands, except per share amounts)

	December 31,	
	2018	2017
Assets		
Current assets		
Cash and cash equivalents	\$ 18,305	\$ 61,660
Accounts receivable, net	15,286	11,491
Inventories	496	839
Deferred implementation costs	—	1,960
Related party receivables, net	1,007	585
Prepaid expenses and other current assets	4,350	5,358
Total current assets	39,444	81,893
Property, plant, and equipment, net	22,978	18,517
Deferred implementation costs, net of current	—	3,951
Goodwill	115,930	114,625
Intangible assets, net	64,703	69,424
Investment in related party	40,000	156,863
Related party receivable, net of current	1,611	1,727
Other assets	1,671	2,195
Total assets	<u>\$ 286,337</u>	<u>\$ 449,195</u>
Liabilities and Stockholders' Equity		
Current liabilities		
Accounts payable	\$ 1,650	\$ 3,164
Accrued and other current liabilities	13,832	18,134
Deferred revenue	16,263	10,057
Related party payables, net	4,791	4,504
Total current liabilities	36,536	35,859
Deferred revenue, net of current	6,704	7,126
Related party liabilities	17,708	11,500
Related party promissory note	112,666	112,666
Related party convertible note, net	8,378	7,947
Convertible notes, net	79,433	74,845
Deferred income taxes, net	2,437	5,838
Other liabilities	19,644	112
Total liabilities	283,506	255,893
Stockholders' equity		
Common stock, \$0.0001 par value per share, 750,000,000 shares authorized; 109,491,277 and 108,383,602 shares issued and outstanding at December 31, 2018 (including 1 share of restricted stock) and 2017 (including 3,490 shares of restricted stock), respectively	11	10
Additional paid-in capital	887,289	886,669
Accumulated deficit	(884,122)	(693,233)
Accumulated other comprehensive loss	(347)	(144)
Total stockholders' equity	2,831	193,302
Total liabilities and stockholders' equity	<u>\$ 286,337</u>	<u>\$ 449,195</u>

The accompanying notes are an integral part of these Consolidated Financial Statements.

NantHealth, Inc.
Consolidated Statements of Operations
(Dollars in thousands, except per share amounts)

	Year Ended December 31,	
	2018	2017
Revenue:		
Software-as-a-service related	\$ 65,646	\$ 60,730
Software and hardware related	4,534	7,648
Maintenance	9,834	10,421
Total software-related revenue	80,014	78,799
Sequencing and molecular analysis	3,129	2,554
Home health care services	6,321	5,323
Total net revenue	89,464	86,676
Cost of Revenue:		
Software-as-a-service related	23,691	21,939
Software and hardware related	3,335	4,749
Maintenance	924	749
Amortization of developed technologies	4,933	5,172
Total software-related cost of revenue	32,883	32,609
Sequencing and molecular analysis	8,055	6,084
Home health care services	3,331	2,829
Total cost of revenue	44,269	41,522
Gross profit	45,195	45,154
Operating Expenses:		
Selling, general and administrative	70,763	74,976
Research and development	20,916	33,862
Amortization of acquisition-related assets	4,217	4,216
Total operating expenses	95,896	113,054
Loss from operations	(50,701)	(67,900)
Interest expense, net	(17,120)	(16,168)
Other (loss) income, net	(17,876)	800
Loss from related party equity method investment, including impairment	(108,409)	(50,334)
Loss from continuing operations before income taxes	(194,106)	(133,602)
Benefit from income taxes	(3,673)	(2,203)
Net loss from continuing operations	(190,433)	(131,399)
Loss from discontinued operations, net of tax	(1,719)	(43,812)
Net loss	\$ (192,152)	\$ (175,211)
Basic and diluted net loss per share		
Continuing operations - common stock	\$ (1.74)	\$ (1.12)
Discontinued operations - common stock	\$ (0.02)	\$ (0.37)
Total net loss per common stock	\$ (1.76)	\$ (1.49)
Weighted average shares outstanding:		
Basic and diluted - common stock	109,168,798	116,737,860

The accompanying notes are an integral part of these Consolidated Financial Statements.

NantHealth, Inc.
Consolidated Statements of Comprehensive Loss
(Dollars in thousands)

	Year Ended December 31,	
	2018	2017
Net loss	\$ (192,152)	\$ (175,211)
Other comprehensive loss, net of reclassification adjustments and taxes:		
Amounts reclassified from accumulated other comprehensive loss (1)	—	(977)
Other comprehensive (loss) income from foreign currency translation	(203)	312
Comprehensive loss	<u>\$ (192,355)</u>	<u>\$ (175,876)</u>

(1) See Note 3 for a discussion of this reclassification of foreign currency translation adjustment.

The accompanying notes are an integral part of these Consolidated Financial Statements.

NantHealth, Inc.
Consolidated Statements of Changes in Stockholders' Equity
(Dollars in thousands)

	Common Stock		Additional Paid-In Capital	Accumulated Deficit	Accumulated Other Comprehensive Income (Loss)	Total Equity
	Shares	Amount				
Balance at December 31, 2016	121,250,437	\$ 12	\$ 886,334	\$ (475,273)	\$ 521	\$ 411,594
Stock-based compensation expense	—	—	5,670	—	—	5,670
Shares issued in connection with employee stock plans, net of shares withheld for employee taxes	2,133,165	—	(5,335)	—	—	(5,335)
Retirement of stock	(15,000,000)	(2)	—	(42,749)	—	(42,751)
Other comprehensive loss	—	—	—	—	(665)	(665)
Net loss	—	—	—	(175,211)	—	(175,211)
Balance at December 31, 2017	108,383,602	10	886,669	(693,233)	(144)	193,302
Modified retrospective adjustment on adoption of ASC 606	—	—	—	1,263	—	1,263
Stock-based compensation expense	—	—	5,936	—	—	5,936
Shares issued in connection with employee stock plans, net of shares withheld for employee taxes	1,107,675	1	(2,067)	—	—	(2,066)
Assignment of NantHealth Labs, Inc.	—	—	(3,249)	—	—	(3,249)
Other comprehensive loss	—	—	—	—	(203)	(203)
Net loss	—	—	—	(192,152)	—	(192,152)
Balance at December 31, 2018	109,491,277	\$ 11	\$ 887,289	\$ (884,122)	\$ (347)	\$ 2,831

The accompanying notes are an integral part of these Consolidated Financial Statements.

NantHealth, Inc.
Consolidated Statements of Cash Flows
(Dollars in thousands)

	Year Ended December 31,	
	2018 (1)	2017 (1)
Cash flows from operating activities:		
Net loss	\$ (192,152)	\$ (175,211)
Adjustments to reconcile net loss to net cash used in operating activities:		
Loss on sale of business and dissolution of a business component	—	9,648
Provision for bad debt expense	7	220
Inventory provision	—	692
Depreciation and amortization	22,355	28,055
Loss from related party equity method investment including impairment loss	108,409	50,334
Amortization of debt discounts and deferred financing offering cost	5,018	4,417
Change in fair value of derivatives liability	(7)	(264)
Change in fair value of Bookings Commitment	16,947	—
Impairment of equity securities	1,750	—
Deferred income taxes, net	(3,769)	5,059
Stock-based compensation	5,657	4,511
Other noncash expense	219	—
Changes in operating assets and liabilities, net of business combinations:		
Accounts receivable, net	406	4
Inventories	343	196
Related party receivables, net	(306)	623
Prepaid expenses and other current assets	2,270	(588)
Deferred implementation costs	48	(2,214)
Accounts payable	(1,667)	(1,852)
Accrued and other current liabilities	(4,822)	(6,321)
Deferred revenue	570	(999)
Related party payables, net	6,026	2,832
Other assets and liabilities	3,066	(290)
Net cash used in operating activities	<u>(29,632)</u>	<u>(81,148)</u>
Cash flows from investing activities:		
Proceeds from sale of business, net of cash disposed	—	1,721
Assignment of NantHealth Labs, Inc., net of cash acquired (see Note 18)	68	—
Purchase of property and equipment including internal use software	(10,546)	(13,636)
Purchases of marketable securities	—	(360)
Net cash used in investing activities	<u>(10,478)</u>	<u>(12,275)</u>
Cash flows from financing activities:		
Capital lease obligation payment	(93)	—
Tax payments related to stock issued, net of stock withheld, for vested phantom units	(2,066)	(5,335)
Net cash used in financing activities	<u>(2,159)</u>	<u>(5,335)</u>
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(300)	65
Net decrease in cash, cash equivalents and restricted cash	(42,569)	(98,693)
Cash, cash equivalents and restricted cash, beginning of period (2)	62,010	160,703
Cash, cash equivalents and restricted cash, end of period (2)	<u>\$ 19,441</u>	<u>\$ 62,010</u>

NantHealth, Inc.
Consolidated Statements of Cash Flows (Continued)
(Dollars in thousands)

	Year Ended December 31,	
	2018	2017 ⁽¹⁾
Supplemental disclosure of cash flow information:		
Interest paid	\$ (5,885)	\$ (5,778)
Interest received	13	63
Noncash investing and financing activities:		
Noncash consideration (common stock) from sale of Business (Note 3) and subsequent retirement of stock	—	42,749
Purchases of property and equipment (including internal use software)	(529)	(759)
Assignment of NantHealth Labs, Inc. (see Note 18)	(8,956)	—

⁽¹⁾ The statement for 2017 includes provider/patient engagement solutions business.

⁽²⁾ Cash and cash equivalents included restricted cash of \$350 and \$1,136 at December 31, 2017 and December 31, 2018, respectively, and \$350 at December 31, 2016.

The accompanying notes are an integral part of these Consolidated Financial Statements.

NantHealth, Inc.
Notes to Consolidated Financial Statements
(Dollars in thousands, except per share amounts)

Note 1 Description of Business and Basis of Presentation

Nature of Business

Nant Health, LLC was formed on July 7, 2010, as a Delaware limited liability company. On June 1, 2016, Nant Health, LLC converted into a Delaware corporation (the "LLC Conversion") and changed its name to NantHealth, Inc. ("NantHealth"). NantHealth, together with its subsidiaries (the "Company"), is a healthcare IT company converging science and technology. The Company works to transform clinical delivery with actionable clinical intelligence at the moment of decision, enabling clinical discovery through real-time machine learning systems. The Company markets certain of its solutions as a comprehensive integrated solution that includes our molecular sequencing and analysis services, clinical decision support, and payer engagement solutions. The Company also markets molecular sequencing and analysis services, clinical decision support, payer engagement and connected care solutions. NantHealth is a majority-owned subsidiary of NantWorks, LLC ("NantWorks"), which is a subsidiary of California Capital Equity, LLC ("Cal Cap"). The three companies were founded by and are led by Dr. Patrick Soon-Shiong.

On August 25, 2017, the Company sold substantially all of the assets of the Company's provider/patient engagement solutions business. The sale enabled the Company to focus on its core competencies of genomic sequencing, clinical decision support, connected care, and payer engagement.

As of December 31, 2018, the Company conducted the majority of its operations in the United States, the United Kingdom, Singapore and Canada.

Basis of Presentation and Principles of Consolidation

The accompanying Consolidated Financial Statements include the financial statements of NantHealth and its wholly owned subsidiaries. All intercompany accounts and transactions have been eliminated in consolidation. These Consolidated Financial Statements have been prepared in accordance with accounting principles generally accepted in the United States of America ("GAAP"). Certain reclassifications have been made to prior period amounts to conform to the current year presentation.

The results of operations of the entities disposed of are included in the Consolidated Financial Statements up to the date of disposal and, where appropriate, these operations have been reflected as discontinued operations.

The Consolidated Financial Statements for the year ended December 31, 2017 have been derived from the audited Consolidated Financial Statements at that date, without retrospective application of ASC 606, *Revenue from Contracts with Customers*. The adoption of ASC 606 led to the treatment of certain products and services being accounted for as a single performance obligation. As a result, the Company changed the names of several of its reported revenue categories. Software and hardware has become Software and hardware related, Software-as-a-service has become Software-as-a-service related, and Other services has become Home health care services. Classification in prior periods has been conformed to the current period presentation.

The accompanying Consolidated Financial Statements have been prepared assuming the Company will continue as a going concern, which contemplates the realization of assets and the satisfaction of liabilities in the normal course of business, and do not include any adjustments to reflect the possible future effects on the recoverability and classification of assets or amounts and classification of liabilities that may result from the outcome of this uncertainty. The Company believes its existing cash, cash equivalents and ability to borrow from affiliated entities will be sufficient to fund operations through at least 12 months following the issuance date of the financial statements based upon the Company's Chairman and CEO's intent and ability to support the Company's operations with additional funds as required. The Company may also seek to sell additional equity, through one or more follow-on public offerings or in separate financings, or sell additional debt securities or obtain a credit facility. However, the Company may not be able to secure such financing in a timely manner or on favorable terms. Without additional funds, the Company may choose to delay or reduce its operating or investment expenditures. Further, because of the risk and uncertainties associated with the commercialization of the Company's existing products as well as products in development, the Company may need additional funds to meet its needs sooner than planned. To date, the Company's primary sources of capital were private placement of membership interests prior to its IPO, debt financing agreements, including the promissory note with Nant Capital, LLC ("NantCapital"), convertible notes, and its IPO.

NantHealth, Inc.
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Note 2 Summary of Significant Accounting Policies

Use of Estimates

The preparation of consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the amounts reported in the Consolidated and Combined Financial Statements and accompanying notes. Actual results may differ from those estimates. The estimates and assumptions used in the accompanying Consolidated and Combined Financial Statements are based upon management's evaluation of the relevant facts and circumstances at the balance sheet date. On an ongoing basis, the Company evaluates its estimates, including those related to revenue recognition, accounts receivable allowance, inventory provisions, useful lives of long-lived assets and intangible assets, income taxes, stock-based compensation, impairment of long-lived assets and intangible assets, expected performance against minimum reseller commitments and the fair value of its investments and derivatives liability. The Company bases its estimates on historical experience and on various other assumptions that are believed to be reasonable, the results of which can affect the reported amounts of assets and liabilities as of the date of the financial statements, as well as the reported amounts of revenue and expenses during the periods presented.

Variable Interest Entities

The Company evaluates its ownership interests, contractual rights and other interests in entities to determine if the entities are variable interest entities ("VIEs"), if it has a variable interest in those entities, and the nature and extent of those interests. These evaluations are highly complex and involve judgment, the use of estimates and assumptions based on available historical information. In order for the Company to be the primary beneficiary of a VIE, it must have both (1) the power to direct the activities of a VIE that most significantly affect the VIE's economic performance and (2) the obligation to absorb losses or the right to receive benefits that, in either case, could potentially be significant to the VIE. The Company consolidates entities of which it is the primary beneficiary.

The Company determines whether it is the primary beneficiary of a VIE upon its initial involvement with the VIE and reassesses whether it is the primary beneficiary on an ongoing basis. This determination is based upon an analysis of the design of the VIE, including the VIE's structure and activities, the power to make significant economic decisions held by the Company and by other parties, and the variable interests owned by the Company and other parties.

Revenue from Contracts with Customers

Transition to FASB ASC 606

On January 1, 2018, the Company adopted ASC 606 using the modified retrospective method applied to those contracts which were not completed as of January 1, 2018. Results for reporting periods beginning after January 1, 2018 are presented in accordance with ASC 606, while prior period amounts continue to be reported in accordance with the Company's historic accounting under ASC 605 and ASC 985-605, which are described below.

The Company recorded a decrease of \$1,263, net of tax, to the opening accumulated deficit as of January 1, 2018 due to the cumulative impact of adopting ASC 606. The most significant changes were to begin recognizing revenues from certain software and hardware implementation projects based on an estimate of percentage of completion, rather than at completion of the contract; to recognize estimated revenues from nursing and therapy services as the services are performed, rather than on final determination of contractual billable amounts; and to capitalize commissions as assets for contracts with performance obligations of more than one year. The adoption also led to certain costs, in relation to Software-as-a-Service ("SaaS") contracts, previously treated as deferred implementation costs in current and long-term assets, being treated as software developed for internal use. This resulted in an increase of \$5,827 of software developed for internal use being recorded at January 1, 2018, with a corresponding decrease in deferred implementation costs.

On implementing ASC 606, the Company concluded that its accounts receivable should be reported separately from deferred revenue. Therefore, the outstanding and unpaid invoices for undelivered services are not excluded from accounts receivable. This led to an increase of \$5,247 in accounts receivable and a corresponding increase in deferred revenue at January 1, 2018.

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This table summarizes the impact on the Company's consolidated financial statements due to the adoption of ASC 606:

	As Reported December 31, 2017	Adjustments due to ASC 606	Balance as at January 1, 2018
Balance Sheet			
Accounts receivable, net	\$ 11,491	\$ 5,247	\$ 16,738
Deferred implementation costs, current	1,960	(1,960)	—
Prepaid expenses and other current assets	5,358	1,117	6,475
Property, plant, and equipment, net	18,517	5,827	24,344
Deferred implementation costs, net of current	3,951	(3,949)	2
Other assets	2,195	562	2,757
Deferred revenue, current	10,057	3,184	13,241
Deferred revenue, net of current	7,126	2,030	9,156
Deferred income taxes	5,838	367	6,205

The impact of the adoption of ASC 606 as of December 31, 2018 is presented here:

	As of December 31, 2018		
	As Reported	Adjustments due to ASC 606	Without new Revenue Standard
Balance Sheet			
Accounts receivable, net	\$ 15,286	\$ (5,659)	\$ 9,627
Deferred implementation costs, current	—	2,830	2,830
Prepaid expenses and other current assets	4,350	(666)	3,684
Property, plant, and equipment, net	22,978	(5,961)	17,017
Deferred Implementation costs, net of current	—	3,322	3,322
Other assets	1,671	(498)	1,173
Deferred revenue, current	16,263	(2,404)	13,859
Deferred revenue, net of current	6,704	(529)	6,175
Deferred income taxes	2,437	(72)	2,365

The impact of the adoption of ASC 606 during the year ended December 31, 2018 is presented here:

	Year Ended December 31, 2018		
	As Reported	Adjustments due to ASC 606	Without new Revenue Standard
Statement of Operations			
Total net revenue	\$ 89,464	\$ (2,255)	\$ 87,209
Cost of revenue	44,269	(108)	44,161
Operating expenses	95,896	302	96,198
Benefit from income taxes	(3,673)	225	(3,448)

The Company's accounting policies under the new standard are applied prospectively and are noted below.

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Revenue Recognition under ASC 605

Revenue represents the consideration received or receivable from clients for solutions and services provided by the Company. The Company's revenue is generated from the following sources:

- **Software-as-a-service ("SaaS") related** - SaaS revenue is generated from clients' access to and usage of the Company's hosted software solutions on a subscription basis for a specified contract term, which is usually monthly. In SaaS arrangements, the client cannot take possession of the software during the term of the contract and generally has the right to access and use the software and receive any software upgrades published during the subscription period.
- **Software and hardware related** - Software and hardware revenue is generated from the sale of the Company's software, on either a perpetual or term license basis, and the sale of hardware. The software is installed on the client's site or the client's designated vendor's site and is not hosted by the Company or by a vendor contracted by the Company. The Company also sells third-party software and hardware to its clients. Software and hardware related revenue also includes revenue from professional services provided that are generally complementary to the software and may or may not be required for the software to function as desired by the client. The services are generally provided in the form of training and implementation services during the software license period and do not include post contract client support.
- **Maintenance** - Maintenance revenue includes ongoing post contract client support ("PCS") or maintenance during the paid PCS term. Additionally, PCS includes ongoing development of software updates and upgrades provided to the client on a when and if available basis.
- **Sequencing and molecular analysis** - Sequencing and molecular analysis revenue is generated by the process of performing sequencing and analysis of whole genome DNA (or whole exome DNA based on tissue quantity and quality), RNA and proteomic results under the Company's reseller agreement with NantOmics, LLC ("NantOmics") (see Note 18).
- **Home health care services** - Home health care services revenue includes the sale of nursing and therapy services provided to patients in a home care setting and any other services not included in the preceding revenue sources.

Revenue is recognized when persuasive evidence of an arrangement exists, services or products have been provided to the client, fees are fixed or determinable, and collectibility is reasonably assured. While most of the Company's arrangements include short-term payment terms, the Company on occasion provides payment terms to clients in excess of one year from the date of contract signing. The Company does not recognize revenue for arrangements containing these extended payment terms until such payments become due. Certain of the Company's customer arrangements allow for termination for convenience with advanced notice. Such termination rights do not allow for refunds other than prepaid PCS or other services. These provisions do not affect when the Company commences revenue recognition. The Company also has certain arrangements which allow for termination and refunds of fees in the event that software acceptance by the customer has not occurred. In these instances, the Company will defer all revenue until software acceptance has occurred.

The Company's clinical sequencing and molecular analysis revenue is primarily generated from payments received from commercial third-party payers, hospitals and other provider networks and patients. The Company reports revenue from arrangements with these customers on a gross basis in accordance with ASC 605-45, *Principal Agent Considerations*. The Company recognizes revenue from these arrangements when all revenue recognition criteria have been met or on a cash basis when it cannot conclude that the fees are fixed or determinable and collectibility is reasonably assured. The Company uses judgment in its assessment of whether the fees are fixed or determinable and whether collectibility is reasonably assured in determining when to recognize revenue in the future as it continues to gain payment experience with its customers. Accordingly, the Company expects to recognize revenue on a cash basis when it cannot conclude that the fees from a particular customer are fixed or determinable and collectibility is reasonably assured until it has a sufficient history to reliably estimate payment patterns from such customer.

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The Company engages in various multiple-element arrangements, which may generate revenue across any of the sources noted above. For multiple-element software arrangements that involve the sale of the Company's proprietary software, PCS and other software-related services, vendor-specific objective evidence ("VSOE") of fair value is required to allocate and recognize revenue for each element. VSOE of fair value is determined based on the price charged in which each deliverable is sold separately. The Company has established VSOE for PCS on certain of its software solutions using the Stated Renewal Method. In this instance, the Company has determined that its stated renewals are substantive and appropriate for use in the Stated Renewal Method. The Company has not yet established VSOE of fair value for any element other than PCS for a portion of its arrangements. In situations where VSOE of fair value exists for PCS but not a delivered element (typically the software license and services elements), the residual method is used to allocate revenue to the undelivered element equal to its VSOE value with the remainder allocated to the delivered elements. In situations in which VSOE of fair value does not exist for all of the undelivered software-related elements, revenue is deferred until only one undelivered element remains (typically the PCS element) and then recognized following the pattern of delivery of the final undelivered element. The Company's multiple element arrangements typically provide for renewal of PCS terms upon expiration of the original term. The amounts of these PCS renewals are recognized as revenue ratably over the specified PCS renewal period.

For non-software arrangements that include multiple-elements, primarily consisting of the Company's SaaS agreements and research sequencing and molecular analysis agreements, revenue recognition involves the identification of separate units of accounting after consideration of combining and/or segmenting contracts and allocation of the arrangement consideration to the units of accounting on the basis of their relative selling price. The selling price used for each deliverable is based on VSOE of fair value, if available, third party evidence ("TPE") of fair value if VSOE is not available, or the Company's best estimate of selling price ("BESP") if neither VSOE nor TPE is available. In determining the units of accounting for these arrangements, the Company evaluates whether each deliverable has stand-alone value as defined in the FASB's guidance. The Company's SaaS arrangements are treated as a single unit of accounting as the professional services do not have standalone value. As a result, the Company recognizes initial system implementation and deployment fees ratably over a period of time from when the system implementation or deployment services are completed and accepted by the customer over the longer of the life of the agreement or the estimated customer life.

If an arrangement to deliver software requires significant production, modification or customization of the licensed software, the Company accounts for the arrangement as a construction-type contract. The Company currently recognizes revenue for these arrangements using the completed-contract method as it does not currently have sufficient information to reliably estimate the percentage of completion for these projects. The Company considers these arrangements to be substantially complete upon the clients' acceptance of the software and related professional services and consistently applies this policy to all contract accounting arrangements.

Transaction processing fees are recognized on a monthly basis based on the number of transactions processed and the fee per transaction.

Revenue derived from reseller arrangements is recognized when the resellers, in turn, sell the software solution to their clients and installation of the software solution has occurred, provided all other revenue recognition criteria are met. This is commonly referred to as the sell-through method and the Company defers recognition until there is a sell-through by the reseller to an actual end user clients and acceptance by the end user has occurred.

The Company expense as incurred incremental direct costs incurred related to the acquisition or origination of customer contracts.

Cost of Revenue under ASC 605

Cost of revenue includes associate salaries, bonuses and benefits, stock-based compensation, consultant costs, direct reimbursable travel expenses, depreciation related to software developed for internal use and other direct engagement costs associated with the design, development, sale and installation of systems, including system support and maintenance services for clients. System support includes ongoing client assistance for software updates and upgrades, installation, training and functionality. All service costs except deferred implementation costs are expensed when incurred. Amortization of deferred implementation costs are also included in cost of revenue. Cost of revenue associated with each of the Company's revenue sources consists of the following types of costs:

- **Software-as-a-service related** - SaaS cost of revenue includes personnel-related costs, amortization of deferred implementation costs and other direct costs associated with the delivery and hosting of the Company's subscription services.

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- **Software and hardware related** - Software and hardware cost of revenue includes third-party software and hardware costs directly associated with solutions, including purchasing and receiving costs. It also includes personnel-related, amortization of deferred implementation costs and other direct costs associated with the Company's software training and implementation services provided to our clients.
- **Maintenance** - Maintenance cost of revenue includes personnel-related costs and other direct costs associated with the ongoing support or maintenance provided to the Company's clients.
- **Sequencing and molecular analysis** - Sequencing and molecular analysis cost of revenue includes (a) personnel-related costs associated with these services and (b) amounts due to NantOmics under the reseller agreement (see Note 19) for the sequencing and analysis of whole genome DNA (or whole exome DNA based on tissue quantity and quality), RNA, and proteomic results.
- **Home health care services** - Home health care services cost of revenue includes personnel and direct expenses relating to the Company's nursing and therapy services provided to patients in a home care setting.

Revenue Recognition under ASC 606

Revenue is recognized upon transfer of control of promised products or services to customers in an amount that reflects the consideration we expect to receive in exchange for those products or services. Revenue is recognized net of sales taxes collected from customers, which are subsequently remitted to governmental authorities. The Company's revenue is generated from the following sources:

- **Software-as-a-service ("SaaS") related** - SaaS related revenue is generated from customers' access to and usage of the Company's hosted software solutions on a subscription basis for a specified contract term. In SaaS arrangements, the customer cannot take possession of the software during the term of the contract and generally has the right to access and use the software and receive any software upgrades published during the subscription period.

SaaS contracts are accounted for as a single performance obligation, as implementation and hosting services are not distinct. As a result, the Company recognizes all fees, including any up front initial system implementation service fees, or other fees, ratably over time from when the system implementation or deployment services are completed, and where necessary accepted by the customer, over the contract term, as stated, or with consideration of termination for convenience clauses as discussed below.

- **Software and hardware related** - Software and hardware related revenue is generated from the license of the Company's software, on a perpetual basis, the sale of hardware and professional services that are complementary to the software and may or may not be required for the software to function as desired by the customer. The services are generally provided in the form of implementation and training services and do not include maintenance revenue. The software is installed on the customer's site or the customer's designated vendor's site and is not hosted by the Company or by a vendor contracted by the Company. See the section below "*Contracts with Software, Hardware, and Implementation Services*" for details of management's judgments and recognition of revenue relating to this category.
- **Maintenance** - Maintenance revenue includes ongoing post contract client support ("PCS") or maintenance during the paid PCS term. Additionally, PCS includes ongoing development of software updates and upgrades provided to the client on a when and if available basis. Revenue is recognized over the maintenance term.
- **Sequencing and molecular analysis** - Sequencing and molecular analysis revenue is generated by providing customers with reports of the results of performing sequencing and analysis of whole genome DNA (or whole exome DNA based on tissue quantity and quality), RNA, and/or proteomic testing under the Company's reseller agreement with NantOmics, and from blood samples via its liquid/blood-based tumor profiling platform through the Company's subsidiary, NantHealth Labs, Inc. ("NantHealth Labs", formerly Liquid Genomics, Inc.) (see Note 18). Revenue is recognized at a point in time, when reports of results are transferred to the ordering physician or institution, or when cash is received as described below; or ratably over time for the period of a stand-ready obligation to provide blood-based tumor profiling services.

The Company's sequencing and molecular analysis revenue is primarily generated from payments received from commercial third party payers, hospitals and other provider networks and patients. The Company reports revenue from arrangements with these customers on a gross basis in accordance with ASC 606. When reports are transferred to the ordering physician or institution, but the Company cannot conclude whether there is a contract with a customer, based on the assessment of collectibility, revenue recognition is deferred until non-refundable payment is received or payment is considered probable.

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- **Home health care services** - Home health care services revenue includes the sale of nursing and therapy services provided to patients in a home care setting. These revenues are recognized at a point in time or over time, as services are provided.

Certain of the Company's customer contracts allow for termination for convenience, with advanced notice, without substantive termination penalty. In these cases, the Company has concluded the contract term is equal to the remaining noncancelable period. Such termination rights do not allow for refunds other than prepaid PCS or other services. These provisions do not affect when the Company commences revenue recognition.

Management assesses whether contracts entered into at, or near, the same time, should be combined, based on evaluation of the commercial objectives of the contracts.

As of December 31, 2018, the Company has allocated a total transaction price of \$15,666 to unfulfilled performance obligations that are expected to be fulfilled within three years. Excluded from this amount are contracts of less than one year and variable consideration that relates to the value of services provided.

Contracts with Multiple Promises for Goods and Services

The Company engages in various contracts with promises for multiple goods and services, which may generate revenue across any of the sources noted above.

In certain contracts, the Company recognizes its proprietary software, hardware, PCS, results of sequencing and molecular analysis, certain professional services, and other software-related services as distinct performance obligations.

Standalone selling prices ("SSP") are required to be allocated and revenue recognized for each distinct performance obligation within each contract. The SSP for each performance obligation is determined by considering contracts in which the good or service is sold separately and other factors, including market conditions and the Company's experience selling similar goods and services, as well as costs and margins achieved. In some cases, to estimate the SSP, the Company first estimates the selling price of each performance obligation for which an SSP is observable and then estimates the SSP of the remaining performance obligation as the residual contractual amount.

Contracts with Software, Hardware, and Implementation Services

The Company has some contracts where it provides implementation services involving significant integration of its licensed software and hardware, with customer networks that maintain patient electronic health records. These contracts represent a single performance obligation to the customer for a combined output due to the significant service of integrating the hardware, software and professional services. Revenue for the single performance obligation is recognized over time based on actual, or estimated, direct implementation labor hours, as a measure of progress.

In certain of those contracts, the Company's performance also requires significant customization of its licensed software. For such contracts, the Company will also record revenue over time using the percentage of completion method to estimate the satisfaction of its performance obligations. However, where the Company lacks history and experience with certain projects involving the development of software according to customer specified criteria, the Company may be initially unable to reasonably estimate total direct software development labor hours to be expected under the project. As a result, the Company would not be able to reasonably measure its progress toward complete satisfaction of its single performance obligation.

As a result, in these contracts, the Company will commence recognizing revenue when it concludes that it can reasonably measure its progress and determine that costs will be recoverable, which is typically at or near the time of the customers' acceptance of the software and the related professional services. At that point, substantially all of the uncertainty related to its ability to reasonably estimate direct labor hours required to satisfy its performance obligations will have been resolved, and the Company will be able to reasonably measure the remaining progress toward complete satisfaction of its remaining professional services obligations. In such cases, the Company will commence recording revenue, at the date of meeting the customer acceptance criteria, with a cumulative catch up for the work performed to date using direct labor hours as a measure of progress consistent with other contracts involving software, hardware and implementation services. Recognition will continue for its performance obligation over the remaining performance period using the same measure of progress. A provision for the entire loss, from such a contract, will be recognized in any period it becomes evident that the contract will not be profitable.

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Other contracts for perpetual software licenses, hardware, and implementation services do not include a service of software development or significant integration. Therefore, the perpetual software licenses, hardware, and implementation services are considered separate, distinct performance obligations. Software revenue is recognized upon the later of the license term commencement or the date the software is provided to the customer, hardware revenue is recognized upon delivery, and implementation revenue is recognized over time based on actual, or estimated, direct implementation labor hours as a measure of progress.

The Company delineates between contracts with, or without, a service of significant integration by considering the complexity of the integration services and whether such services can be performed by the customer or another third party. The Company has both reseller arrangements with gross revenue presentation due to the Company's control of goods and services before transfer to the customer, and others with net revenue presentation due to the reseller's control of goods and services before transfer to the customer. The Company assesses control in terms of relevant indicators of performance, inventory, and pricing risk, such as which party negotiates pricing with the end customer and which party is ultimately responsible for fulfilling services, transferring goods and services, and ensuring support.

Contract Balances

The Company records deferred revenue when cash payments are received, or payment is due, in advance of its fulfillment of performance obligations. There were revenues of \$13,518 recognized during the year ended December 31, 2018, that were included in the deferred revenue balance at the beginning of the year.

Contract assets are recognized when a contractual performance obligation has been satisfied, but payment is not due until the completion of additional performance obligations, or the right to receive payment becomes unconditional. Contract assets reduced to \$434 at December 31, 2018 from \$796 at January 1, 2018, due to payments from customers.

Assets Recognized from the Costs to Obtain a Contract with a Customer

The Company recognizes an asset for the incremental costs to obtain a contract with a customer, where the stated contract term, with expected renewals, is longer than one year. The Company amortizes these assets over the expected period of benefit. These costs are generally employee sales commissions, with amortization of the balance recorded in selling, general and administrative expenses. The value of these assets was \$1,163 at December 31, 2018 and \$866 at January 1, 2018, and amortization during the year ended December 31, 2018 was \$605.

Where management is not able to conclude that the costs of a contract will be recovered, costs to obtain the contract are expensed as incurred.

Practical Expedients

The Company does not disclose the value of unsatisfied performance obligations for: contracts with an original expected length of one year or less; or where variable consideration, related to the Company's performance, is allocated to goods and services delivered as a series and accounted for as a single performance obligation.

Cost of Revenue under ASC 606

Cost of revenue includes associate salaries, bonuses and benefits, stock-based compensation, consultant costs, direct reimbursable travel expenses, depreciation related to software developed for internal use and other direct engagement costs associated with the design, development, sale and installation of systems, including system support and maintenance services for clients. System support includes ongoing client assistance for software updates and upgrades, installation, training and functionality. All service costs except deferred implementation costs are expensed when incurred. Amortization of deferred implementation costs are also included in cost of revenue. Cost of revenue associated with each of the Company's revenue sources consists of the following types of costs:

- **Software-as-a-service related** - SaaS related cost of revenue includes personnel-related costs, amortization of deferred implementation costs, depreciation of internal use software, and other direct costs associated with the delivery and hosting of the Company's subscription services.
- **Software and hardware related** - Software and hardware related cost of revenue includes third-party software and hardware costs directly associated with solutions, including purchasing and receiving costs, and includes direct costs associated with the Company's software implementation services provided to our customers. Software and hardware related cost of revenue also includes hardware costs directly related to bringing manufactured products to their final selling destination, including costs of design and compliance for proprietary hardware products.

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- **Maintenance** - Maintenance cost of revenue includes personnel-related costs and other direct costs associated with the ongoing support or maintenance provided to the Company's clients.
- **Sequencing and molecular analysis** - Sequencing and molecular analysis cost of revenue includes (a) personnel-related costs associated with these services, (b) amounts due to NantOmics under the reseller agreement (see Note 18) for the sequencing and analysis of whole genome DNA (or whole exome DNA based on tissue quantity and quality), RNA, and proteomic results, and (c) lab supply and equipment costs from processing blood samples via its liquid/blood-based tumor profiling platform. It also includes depreciation of internal use software.
- **Home health care services** - Home health care services cost of revenue includes personnel-related, as well as direct expenses relating to the Company's nursing and therapy services provided to patients in a home care setting.

Selling, General and Administrative Expenses

Selling, general and administrative expense consists primarily of shared service fees from NantWorks, personnel-related expenses for our sales and marketing, finance, legal, human resources, and administrative associates, stock-based compensation, and advertising and marketing promotions of NantHealth solutions. This includes amortization of deferred commission costs. It also includes trade show and event costs, sponsorship costs, as well as legal costs, consulting and professional fees, insurance and other corporate and administrative costs. Advertising costs are expensed as incurred.

Research and Development Expenses

Research and development ("R&D") costs incurred to establish the technological feasibility of software to be sold are expensed as incurred. These expenses include the costs of the Company's proprietary R&D efforts, as well as costs incurred in connection with certain licensing arrangements.

Development costs, consisting primarily of employee salaries and benefits (including stock-based compensation), incurred in the research and development of new software products and maintenance to existing software products are expensed as incurred. These costs are associated with both the preliminary project stage and post-implementation stage of internally developed software. Costs associated with the application development stage are capitalized.

Stock-Based Compensation

The Company accounts for stock-based compensation arrangements granted to employees in accordance with ASC 718, *Compensation—Stock Compensation*, by measuring the grant date fair value of the award and recognizing the resulting expense over the period during which the employee is required to perform service in exchange for the award.

The Company accounts for stock-based compensation arrangements issued to non-employees using the fair value approach prescribed by ASC 505-50, *Equity-Based Payments to Non-Employees*. The value of non-employee stock-based compensation is re-measured at the end of each reporting period until the award vests and is recognized as stock-based compensation expense over the period during which the non-employee provides the services.

Stock-based compensation expense for both employee and non-employee awards is recognized on a straight-line basis over the appropriate service period for awards that are only subject to service conditions and is recognized using the accelerated attribution method for awards that are subject to performance conditions. Stock-based compensation expense is only recognized for awards subject to performance conditions if it is probable that the performance condition will be achieved.

All excess tax benefits and tax deficiencies are recognized as income tax benefit or expense in the income statement as discrete items in the reporting period in which they occur, and such tax benefits and tax deficiencies are not included in the estimate of an entity's annual effective tax rate, applied on a prospective basis. The recognition of excess tax benefits is not deferred until the benefit is realized through a reduction to taxes payable. When the Company applies the treasury stock method, in calculating diluted earnings per share, excess tax benefits, if applicable, are excluded and deficiencies from the calculation of assumed proceeds since such amounts are recognized in the income statement. Excess tax benefits if applicable, are classified as operating activities in the same manner as other cash flows related to income taxes on the statement of cash flows.

The Company has elected to account for forfeitures when they occur. Cash paid by the Company when directly withholding shares for tax withholding purposes is classified as a financing activity in the Consolidated Statements of Cash Flows (see Note 14 and Note 16).

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Change in Fair Value of Derivative Liability

The Company has classified the interest make-whole provision of its convertible notes and related party convertible note due June 2021 and issued in December 2016 as a derivative liability as part of other liabilities and related party liabilities, respectively, in the Consolidated Balance Sheets and is recorded at fair value. This derivative liability is subject to re-measurement at each balance sheet date, and the Company recognizes any change in fair value in the Company's Consolidated Statements of Operations as a change in fair value of the derivative liability. The change in the fair value of this derivative liability is primarily due to the change in the value of the Company's common stock (see Note 13).

Change in Fair Value of Bookings Commitment

The Company has classified the Bookings Commitment assumed on the disposal of the provider/patient engagement solutions business described in Note 3 as part of other liabilities in the Consolidated Balance Sheets. This liability is subject to re-measurement at each balance sheet date, and the Company recognizes any changes in fair value within other expenses. The change in the fair value of this liability is primarily due to changes in management's estimates of performance against the Bookings Commitment.

Income Taxes

The Company records the federal and state tax provision of the consolidated group and foreign tax provision of its foreign subsidiaries.

ASC 740, *Income Taxes*, provides the accounting treatment for uncertainty in income taxes recognized in an enterprise's financial statements. ASC 740 prescribes a recognition threshold and measurement attribute for the financial statement recognition and measurement of a tax position taken or expected to be taken in a tax return. ASC 740 also provides guidance on derecognizing, classification, interest and penalties, accounting in interim periods, disclosure, and transition.

As part of the process of preparing our Consolidated Financial Statements, the Company is required to estimate its provision for income taxes in each of the tax jurisdictions in which the Company conducts business. This process involves estimating our actual current tax expense in conjunction with the evaluation and measurement of temporary differences resulting from differing treatment of certain items for tax and accounting purposes. These temporary differences result in the establishment of deferred tax assets and liabilities, which are recorded on a net basis and included in the Company's Consolidated Balance Sheets. The Company then evaluates on a periodic basis the probability that the net deferred tax assets will be recovered and therefore realized from future taxable income and to the extent the Company believes that recovery is not more likely than not, a valuation allowance is established to address such risk resulting in an additional related provision for income taxes during the period.

Significant management judgment is required in determining its provision for income taxes, its deferred tax assets and liabilities, tax contingencies, unrecognized tax benefits, and any required valuation allowance, including taking into consideration the probability of the tax contingencies being incurred. Management assesses this probability based upon information provided by its tax advisers, its legal advisers and similar tax cases. If at a later time its assessment of the probability of these tax contingencies changes, its accrual for such tax uncertainties may increase or decrease.

The Company has a valuation allowance due to management's overall assessment of risks and uncertainties related to its future ability to realize and, hence, utilize certain deferred tax assets, primarily consisting of net operating losses, carry forward temporary differences and future tax deductions.

The effective tax rate for annual and interim reporting periods could be impacted if uncertain tax positions that are not recognized are settled at an amount which differs from the Company's estimate. Finally, if the Company is impacted by a change in the valuation allowance resulting from a change in judgment regarding the realizability of deferred tax assets, such effect will be recognized in the interim period in which the change occurs.

Net Income (Loss) Per Share

Basic net income (loss) per share is computed by dividing the net income (loss) by the weighted-average number of shares of common stock outstanding during the period. Diluted net income (loss) per share is computed by dividing the net income (loss) by the weighted-average number of shares of common stock outstanding during the period, adjusted to give effect to potentially dilutive securities. However, potentially dilutive securities are excluded from the computation of diluted net income (loss) per share to the extent that their effect is anti-dilutive. The Company applies treasury method in calculating weighted average dilutive number of shares for its stock plans.

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Foreign Currency Translation

The Company has operations and holds assets in various foreign countries. The local currency is the functional currency for the Company's subsidiaries in the United Kingdom, Canada and Singapore. Assets and liabilities are translated at end-of-period exchange rates while revenues and expenses are translated at the average exchange rates in effect during the period. Equity is translated at historical rates and the resulting cumulative translation adjustments are included as a component of accumulated other comprehensive income until the translation adjustments are realized.

Segment Reporting

The chief operating decision maker for the Company is its Chief Executive Officer. The Chief Executive Officer reviews financial information presented on a consolidated basis for purposes of allocating resources and evaluating financial performance. The Company has one business activity and there are no segment managers who are held accountable for operations, operating results, or plans for levels or components below the consolidated unit level. Accordingly, management has determined that the Company operates in one reportable segment.

Business Combinations

Business combinations are accounted for using the acquisition method of accounting. Under the acquisition method, assets acquired and liabilities assumed are recorded at their respective fair values as of the acquisition date. Any excess of the purchase price over the estimated fair values of the net assets acquired is recorded as goodwill. Management routinely monitors the factors impacting the acquired assets and liabilities. Transaction related costs are expensed as incurred. The operating results of the acquired business are reflected in the Company's Consolidated Financial Statements as of the acquisition date.

Fair Value of Financial Instruments

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Fair value measurements are classified and disclosed in one of the following three categories:

- Level 1—Quoted prices for identical assets or liabilities in active markets;
- Level 2—Quoted prices for similar assets or liabilities in active markets or quoted prices for identical or similar assets or liabilities in markets that are not active or are directly or indirectly observable; and
- Level 3—Unobservable inputs that reflect estimates and assumptions.

The carrying amounts reported in the Consolidated Balance Sheets for cash and cash equivalents, accounts receivable, accounts payable, notes payable, deferred revenue, and other current monetary assets and liabilities approximate fair value because of the immediate or short-term maturity of these financial instruments.

In accordance with this guidance, the Company measures its cash equivalents and marketable securities at fair value. The Company's cash equivalents are classified within Level 1. Cash equivalents are valued primarily using quoted market prices utilizing market observable inputs.

The Company's investment securities as of December 31, 2018 include certificates of deposit that are classified by management as held-to-maturity since the Company has the positive intent and ability to hold to maturity. The fair value of these investments approximate carrying values, and the Company has classified these instruments as Level 2 in the fair value hierarchy.

The Company's fair value estimate of the Bookings Commitment and convertibles notes and interest make-whole provision of the convertible notes are based on Level 3 inputs.

Cash and Cash Equivalents

The Company considers all unrestricted, highly liquid investments with an initial maturity of three months or less to be cash equivalents. These amounts are stated at cost, which approximates fair value. At December 31, 2018 and 2017, cash equivalents were deposited in financial institutions and consisted of immediately available fund balances. Cash and cash equivalents are maintained at stable financial institutions, generally at amounts in excess of federally insured limits, which represents a concentration of credit risk. The Company has not experienced any losses on deposits of cash and cash equivalents to date.

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Accounts Receivable and Allowance for Doubtful Accounts

Accounts receivable are recorded at the invoiced amount, net of allowances for doubtful accounts. The allowance for doubtful accounts is based on management's assessment of the collectibility of accounts. The Company regularly reviews the adequacy of the allowance for doubtful accounts by considering the age of each outstanding invoice and the collection history of each client to determine whether a specific allowance is appropriate. Accounts receivable deemed uncollectible are charged against bad debt expense when identified.

Prior to the adoption of ASC 606, the Company reported accounts receivable net of amounts related to post contract client support ("PCS") and other services that were billed but not yet delivered at each period end.

Concentrations of Risk

The following table summarizes the number of customers that individually comprise greater than 10% of revenues and/or 10% of accounts receivable, and their aggregate percentages of total revenues and total billed and unbilled accounts receivable:

Period	Significant Customers	Percentage of Total Revenues					Percentage of Total Accounts Receivable				
		A	B	C	D	E	A	B	C	D	E
Year Ended December 31, 2018	4	15.2%	12.4%	11.6%	—%	—%	—%	—%	11.6%	10.8%	—%
Year Ended December 31, 2017	5	14.1%	11.0%	—%	—%	—%	—%	15.7%	18.1%	11.3%	10.1%

Inventories

Inventories are stated at the lower of cost (first-in, first out basis) and net realizable value at December 31, 2018 and 2017.

Insurance Recoveries

The Company records probable insurance recoveries gross of related liabilities. The income and expense related to these amounts are recorded net in selling, general and administrative expenses. If the recoveries exceed the loss recognized in the financial statements, such recoveries are recorded in other income, net once any contingencies relating to the insurance claim have been resolved.

Property, Plant and Equipment, net

Property, plant and equipment received in connection with business combinations are recorded at fair value. Property, plant and equipment acquired in the normal course of business are recorded at cost. Depreciation is computed on a straight line basis over the estimated useful lives of the related assets (see Note 7). Maintenance and repairs are charged to expense as incurred while expenditures for refurbishments and improvements that significantly add to the productive capacity or extend the useful life of an asset are capitalized.

The Company accounts for the costs of computer software obtained or developed for internal use in accordance with ASC 350, *Intangibles—Goodwill and Other*. Computer software development costs are expensed as incurred, except for internal use software costs that qualify for capitalization as described below, and include employee related expenses, including salaries, benefits and stock-based compensation expenses; costs of computer hardware and software; and costs incurred in developing features and functionality. These capitalized costs are included in property and equipment on the Consolidated Balance Sheets. The Company expenses costs incurred in the preliminary project and post implementation stages of software development and capitalizes costs incurred in the application development stage and costs associated with significant enhancements to existing internal use software applications. Software costs are amortized using the straight-line method commencing when the software project is ready for its intended use.

Deferred Implementation Costs

The Company provides SaaS and information technology management services under long-term arrangements which require the Company to perform system implementation activities. In some cases, the arrangements either contain provisions requiring customer acceptance of the setup activities prior to commencement of the ongoing services arrangement or the system implementation services do not have separate value from the service revenue. Up-front fees billed during the setup phase for these arrangements are deferred and setup costs that are direct and incremental to the contract are capitalized. The costs deferred consist of employee compensation (including stock-based compensation) and benefits for those employees directly involved with performing system implementation or deployment services, as well as other direct and incremental costs.

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The Company defers costs estimated to be realizable based on contracted implementation revenue and estimated margin from the service contract. The Company periodically reviews the deferred implementation contracts for recoverability. The costs are amortized to cost of revenue ratably over a period of time from when the system implementation or deployment services are completed and accepted to the end of the contract term or the expected customer life, whichever is longer.

Goodwill and Intangible Assets

Goodwill acquired in a business combination and determined to have an indefinite useful life is not amortized but is tested for impairment annually as of October 1 or between annual tests when an impairment indicator exists. In the event there is a change in reporting units or segments, the Company will test for impairment at the reporting unit. A component of an operating segment is a reporting unit if the component constitutes a business for which discrete financial information is available and segment management regularly reviews the operating results of that component.

As part of the annual impairment test, the Company may conduct an assessment of qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount. In a qualitative assessment, the Company would consider the macroeconomic conditions, including any deterioration of general conditions, industry and market conditions, including any deterioration in the environment where the reporting unit operates, increased competition, changes in the products/services and regulator and political developments; cost of doing business; overall financial performance, including any declining cash flows and performance in relation to planned revenues and earnings in past periods; other relevant reporting unit specific facts, such as changes in management or key personnel or pending litigation, and events affecting the reporting unit, including changes in the carrying value of net assets.

If an optional qualitative goodwill impairment assessment is not performed, the Company is required to determine the fair value of each reporting unit. If a reporting unit's fair value is lower than its carrying value, the Company must determine the amount of implied goodwill that would be established if the reporting unit was hypothetically acquired on the impairment test date. If the carrying amount of a reporting unit's goodwill exceeds the amount of implied goodwill, the Company would record an impairment loss equal to the excess (see Note 9).

The determination of fair value of a reporting unit is based on a combination of a market approach that considers the Company's market capitalization and an income approach that uses discounted cash flows for the Company's single reporting unit utilizing Level 3 inputs. Under the income approach, the Company determines the fair value based on the present value of the most recent income projections for its single reporting unit and calculates a terminal value utilizing a terminal growth rate. The significant assumptions under this approach include, among others: income projections, which are dependent on sales to new and existing clients, new solution introductions, client behavior, competitor pricing, operating expenses, the discount rate, and the terminal growth rate. The cash flows used to determine fair value are dependent on a number of significant management assumptions based on historical experience, expectations of future performance, and the expected economic environment. Estimates are subject to change given the inherent uncertainty in predicting future results. Additionally, the discount rate and the terminal growth rate are based on judgment of the rates that would be utilized by a hypothetical market participant.

Accounting guidance requires that definite-lived intangible assets be amortized over their respective estimated useful lives and reviewed for impairment whenever events or changes in circumstances indicate that their carrying amounts may not be recoverable. Amortization of finite-lived intangible assets is provided over their estimated useful lives on a straight-line basis or the pattern in which economic benefits are consumed, if reliably determinable. If the estimates of the useful lives change, the Company amortizes the remaining book value over the remaining useful lives or, if an asset is deemed to be impaired, a write-down of the value of the asset to its fair value may be required at such time. The Company reviews its finite-lived intangible assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable.

Investment in Related Party

Investment in and advances to related party in which the Company has a substantial ownership interest of approximately 20% to 50%, or for which the Company exercises significant influence but not control over policy decisions, are accounted for by the equity method. Investment in a limited liability company that is similar to a partnership is also accounted for under the equity method if more than minor influence over the operation of the investee exists (generally through more than 3-5% ownership). As part of that accounting, the Company recognizes gains and losses that arise from the issuance of stock by a related party that results in changes in the Company's proportionate share of the dollar amount of the related party's equity.

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Investment in related party is assessed for possible impairment when events indicate that the fair value of the investment may be below the Company's carrying value. When such a condition is deemed to be other than temporary, the carrying value of the investment is written down to its fair value, and the amount of the write-down is included in net loss. In making the determination as to whether a decline is other than temporary, the Company considers such factors as the duration and extent of the decline, the investee's financial performance, and the Company's ability and intention to retain its investment for a period that will be sufficient to allow for any anticipated recovery in the investment's market value. The new cost basis of investments in these equity investees is not changed for subsequent recoveries in fair value. The fair value of the related party equity method investment would be determined using the income approach. The income approach utilizes a discounted cash flow model incorporating management's expectations for future revenue, operating expenses, and earnings before interest, taxes, depreciation and amortization, capital expenditures and an anticipated tax rate. The related cash flow forecasts are discounted using an estimated weighted-average cost of capital at the date of valuation.

Differences between the Company's carrying value of an equity investment and its underlying equity in the net assets of the related party are assigned to the extent practicable to specific assets and liabilities based on the Company's analysis of the various factors giving rise to the difference. When appropriate, the Company's share of the related party's reported earnings is adjusted quarterly to reflect the difference between these allocated values and the related party's historical book values.

Deferred Revenue

The Company records deferred revenue when it receives cash from clients prior to meeting the applicable revenue recognition criteria. The Company uses judgment in determining the period over which the deliverables are recognized as revenue. As of December 31, 2018 and 2017, current and non-current deferred revenue are comprised of deferrals for fees related to software licenses, SaaS arrangements, PCS services, non-PCS services and other revenue. Non-current deferred revenue as of December 31, 2018 is expected to be recognized in a period more than 12 months after that date.

Recently Adopted Accounting Pronouncements

Effective January 1, 2018, the Company adopted Accounting Standard Update ("ASU") No. 2016-01, *Recognition and Measurement of Financial Assets and Financial Liabilities*, associated with the recognition and measurement of financial assets and liabilities. During the first quarter of 2018, the FASB issued further clarifications with the issuance of ASU No. 2018-03, effective for fiscal years beginning after December 15, 2017 and interim periods beginning after June 15, 2018, and ASU No. 2018-04, effective upon issuance. The Company adopted ASU No. 2018-03 and ASU No. 2018-04 effective January 1, 2018 concurrently with ASU No. 2016-01. ASU No. 2016-01 requires that equity investments, except those accounted for under the equity method of accounting, be measured at fair value and changes in fair value are recognized in net income. ASU No. 2016-01 also provides a new measurement alternative for equity investments that do not have a readily determinable fair value (cost method investments). These investments are measured at cost, less any impairment, adjusted for observable price changes. The amendments related to equity securities without readily determinable fair values (including disclosure requirements) are applied prospectively to equity investments that exist as of the date of adoption. Effective January 1, 2018, the Company elected to record its preferred stock equity investment in Innovative Oncology Business Solutions, Inc. ("IOBS"), which does not have a readily determinable fair value using the alternative method. Adoption of these ASUs did not have a material effect on the Company's accounting for equity investments, fair value disclosures and other disclosure requirements.

The Company owns non-marketable equity securities that are accounted for as an equity investment at cost minus impairment and plus or minus changes resulting from observable price changes because the preferred stock held by the Company is not considered in-substance common stock and such preferred stock does not have a readily determinable fair value. All investments are reviewed on a regular basis for possible impairment. If an investment's fair value is determined to be less than its net carrying value, the investment is written down to its fair value. Such an evaluation is judgmental and dependent on specific facts and circumstances. Factors considered in determining whether an impairment indicator is present include: the investees' earning performance, change in the investees' industry and geographic area in which it operates, offers to purchase or sell the security for a price less than the cost of the investment, issues that raise concerns about the investee's ability to continue as a going concern and any other information that the Company may be aware of related to the investment. Factors considered in determining whether an observable price change has occurred include: the price at which the investee issues equity instruments similar to those of the Company's investment and the rights and preferences of those equity instruments compared to the Company's.

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Effective January 1, 2018, the Company adopted ASU No. 2016-15, *Classification of Certain Cash Receipts and Cash Payments*. ASU No. 2016-15 adds or clarifies guidance on the classification of certain cash receipts and payments in the statement of cash flows. Also, effective January 1, 2018, the Company adopted ASU No. 2016-18, *Statement of Cash Flows: Restricted Cash, a consensus of the FASB's Emerging Issues Task Force*. ASU No. 2016-18 requires that the statement of cash flows explains the change during the period in the total of cash, cash equivalents, and amounts generally described as restricted cash or restricted cash equivalents. Entities are required to reconcile such total to amounts on the balance sheet and disclose the nature of the restrictions. Prior periods were retrospectively adjusted to conform to the current period's presentation. There was no material impact on the Company's Consolidated Statements of Cash Flows on adoption of these ASUs.

In May 2017, the FASB issued ASU No. 2017-09, *Compensation-Stock Compensation (Topic 718): Scope of Modification Accounting*. The amendments in ASU No. 2017-09 provide guidance about which changes to the terms or conditions of a share-based payment award require an entity to apply modification accounting. Pursuant to ASU No. 2017-09, an entity should account for the effects of a modification unless all of the following are met: (1) the fair value (or calculated value or intrinsic value, if such an alternative measurement method is used) of the modified award is the same as the fair value (or calculated value or intrinsic value, if such an alternative measurement method is used) of the original award immediately before the original award is modified; (2) the vesting conditions of the modified award are the same as the vesting conditions of the original award immediately before the original award is modified; and (3) the classification of the modified award as an equity instrument or a liability instrument is the same as the classification of the original award immediately before the original award date is modified. ASU No. 2017-09 became effective for all entities for annual periods, and interim periods within those annual periods, beginning after December 15, 2017. Early adoption was permitted, including adoption in any interim period for which financial statements had not yet been issued or made available for issuance. The amendments of this ASU should be applied prospectively to an award modified on or after the adoption date. The Company adopted ASU No. 2017-09 in the beginning in the first quarter of 2018. If the Company encounters a change to the terms or conditions of any of its share-based payment awards, the Company will evaluate the need to apply modification accounting based on the new guidance. The general treatment for modifications of share-based payment awards is to record the incremental value arising from the change as additional compensation cost. The adoption of this ASU did not result in a significant impact to the Company's Consolidated Financial Statements.

Other recent accounting pronouncements issued by the FASB (including its Emerging Issues Task Force), the American Institute of Certified Public Accountants, and the Securities and Exchange Commission ("SEC") did not have, nor are believed by management to have, a material impact on the Company's present or future Consolidated Financial Statements.

Upcoming Accounting Standard Pronouncements

In August 2018, the FASB issued ASU 2018-15, *Intangibles, Goodwill and Other, Internal-Use Software*, to provide guidance on customer's accounting for implementation costs incurred in a cloud computing arrangement that is a service contract. The standard provides guidance on a customer's accounting for implementation, set-up, and other upfront costs incurred in a cloud computing arrangement that is hosted by the vendor, i.e. a service contract. Under the new guidance, customers will apply the same criteria for capitalizing implementation costs as they would for an arrangement that has a software license. This updated will become effective for annual periods beginning January 1, 2020, early adoption is permitted and should be applied either retrospectively or prospectively to all implementation costs incurred after the date of adoption. The Company is still evaluating the impact of this ASU.

In June 2018, the FASB issued ASU No. 2018-07, *Stock Compensation (Topic 718): Improvements to Nonemployee Share-Based Payment Accounting*, to simplify accounting for non-employee stock-based compensation. Upon adoption of ASU No. 2018-07, in most cases expense recognition for non-employee stock compensation will be in line with employee stock compensation, using a grant date fair value, without periodic revaluation. This update will become effective beginning in the first quarter of 2019, and early adoption is permitted. The Company is still evaluating the impact of this ASU.

In January 2017, the FASB issued ASU No. 2017-04, *Intangibles-Goodwill and Other (Topic 350)*, to simplify the accounting for goodwill impairment. This guidance, among other things, removes step 2 of the goodwill impairment test thus eliminating the need to determine the fair value of individual assets and liabilities of the reporting unit. Upon adoption of ASU No. 2017-04, goodwill impairment will be the amount by which a reporting unit's carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. This may result in more or less impairment being recognized than under current guidance. This ASU will become effective for the Company's annual and interim goodwill impairment tests beginning in the first quarter of 2020, and early adoption is permitted. The Company is still evaluating the impact of this ASU.

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In June 2016, the FASB issued ASU No. 2016-13, *Measurement of Credit Losses on Financial Instruments*, which changes how companies measure credit losses on most financial instruments measured at amortized cost, such as loans, receivables and held-to-maturity debt securities. Rather than generally recognizing credit losses when it is probable that the loss has been incurred, the revised guidance requires companies to recognize an allowance for credit losses for the difference between the amortized cost basis of a financial instrument and the amount of amortized cost that the company expects to collect over the instrument's contractual life. ASU No. 2016-13 is effective for fiscal periods beginning after December 15, 2019 and must be adopted as a cumulative effect adjustment to retained earnings. Early adoption is permitted. The Company is evaluating the potential effects of the adoption of this guidance on the Company's Consolidated Financial Statements.

In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)*, which is aimed at making leasing activities more transparent and comparable and requires substantially all leases be recognized by lessees on their balance sheet as a right-of-use asset and corresponding lease liability, including leases currently accounted for as operating leases. This guidance will become effective for interim and annual reporting periods beginning with the year ending December 31, 2019. Early adoption is permitted.

The Company expects that this guidance will have a material impact on the Consolidated Balance Sheets when adopted at January 1, 2019. However, it is not expected to have a material impact on the Consolidated Statements of Operations. In July 2018, the FASB issued ASU No. 2018-11, *Leases (Topic 842): Targeted Improvements*, to provide a new transition method. Under this method, an entity initially applies the new leases standard at the adoption date and recognizes a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. The Company expects to use this transition method. On adoption, the Company will elect the package of transition practical expedients and therefore will not: reassess whether expired or existing contracts are or contain leases; reassess the lease classification of expired or existing leases; reassess initial direct costs for any existing leases. On adoption, the Company expects to make an accounting policy election to treat colocation facilities with lease terms of less than one year as short-term leases. The Company is implementing new business processes and controls around the review of lease agreements, including processes to track information relevant to new disclosures. The Company has analyzed its lease portfolio and prepared calculations of the modified retrospective impact to its Consolidated Financial Statements. The most significant impact of adoption will relate the recognition of right of use assets and lease liabilities, in relation to operating leases of office space, the Company expects to recognize material right of use assets and lease liabilities. There will be no impact on retained earnings or the Consolidated Statement of Operations upon adoption. The Company will update its accounting policies to comply with Topic 842 in the first quarter of 2019.

Note 3 Discontinued Operations

Sale to Allscripts

On August 3, 2017, the Company entered into an asset purchase agreement (the "APA") with Allscripts Healthcare Solutions, Inc. ("Allscripts"), pursuant to which the Company agreed to sell to Allscripts substantially all of the assets of the Company's provider/patient engagement solutions business, including the Company's FusionFX solution and components of its NantOS software connectivity solutions (the "Business"). On August 25, 2017, the Company and Allscripts completed the sale of the Business (the "Disposition") pursuant to the APA.

Allscripts conveyed to the Company 15,000,000 shares of Company's common stock at par value of \$0.0001 per share that were previously owned by Allscripts as consideration for the acquired Business upon Disposition. Allscripts paid the Company \$1,742 of cash consideration as an estimated working capital payment, and the Company recorded a receivable of \$1,021 related to final working capital adjustments. The Company is also responsible for paying Allscripts for fulfilling certain customer service obligations of the Business post-closing. As of December 31, 2018, the Company accrued \$1,372 in accrued and other current liabilities for these obligations, which includes estimates for certain unresolved items.

Concurrent with the closing of the Disposition and as contemplated by the APA, (a) the Company and Allscripts modified the amended and restated mutual license and reseller agreement dated June 26, 2015, which was further amended on December 30, 2017, such that, among other things, the Company committed to deliver a minimum of \$95,000 of total bookings over a ten-year period ("Bookings Commitment") from referral transactions and sales of certain Allscripts products; (b) the Company and Allscripts each licensed certain intellectual property to the other party pursuant to a cross license agreement; (c) the Company agreed to provide certain transition services to Allscripts pursuant to a transition services agreement; and (d) the Company licensed certain software and agreed to sell certain hardware to Allscripts pursuant to a software license and supply agreement. In the event of a Bookings Commitment shortfall at the end of the ten-year period, the Company may be obligated to pay 70% of the shortfall, subject to certain credits. The Company will earn 30% commission from Allscripts on each software referral transaction that results in a booking with Allscripts. The Company accounts for the Bookings Commitment at its estimated fair value over the life of the agreement and, as of December 31, 2018, the estimated fair value was \$16,947. The fair value was estimated not to be material as of December 31, 2017 (see Note 12).

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During the years ended December 31, 2018 and December 31, 2017, the Company recorded other income of \$465 and \$348, respectively, associated with the services under the transition services agreement.

The total loss on sale to Allscripts consisted of the following:

Cash received as consideration	\$	1,742
Deferred consideration related to working capital adjustments		1,021
Estimated costs to be incurred by the Company to fulfill certain customer service obligations of the Business post-closing		(883)
Fair value of common stock		42,750
Net consideration received		44,630
Less: Carrying value of net assets sold		(55,255)
Plus: Reclassification of cumulative translation adjustments of foreign subsidiaries		117
Loss from sale of Business	\$	<u>(10,508)</u>

The sale of the Business qualified as discontinued operations because it comprised operations and cash flows that could be distinguished, operationally and for financial reporting purposes, from the rest of the Company. The disposal of the Business represented a strategic shift in the Company's operations as the sale enables the Company to focus on genomic sequencing, clinical decision support, connected care and payer engagement.

The operating results of the Company's discontinued operations are as follows:

	Year Ended December 31,	
	2018	2017
Major line items constituting loss from discontinued operations		
Net revenue	—	7,619
Cost of revenue	—	16,318
Selling, general and administrative	1,719	8,891
Research and development	—	7,571
Amortization of software license and acquisition-related assets	—	1,978
Other expense (income)	—	134
Loss from sale of Business	—	10,508
Gain from dissolution of a business component	—	(860)
Loss from discontinued operations, before income taxes	(1,719)	(36,921)
Provision for income taxes	—	6,891
Loss from discontinued operations, net of income taxes	<u>(1,719)</u>	<u>(43,812)</u>

Cumulative translation adjustment gains or losses of foreign subsidiaries related to divested Business are reclassified into income once the liquidation of the respective foreign subsidiaries is substantially complete. At the completion of the sale of the Business, the Company reclassified \$117 of cumulative translation adjustment gains from accumulated comprehensive loss to the Company's loss from sale of the Business.

The significant operating and investing cash and noncash items of the discontinued operations included in the Consolidated Statements of Cash Flows for the years ended December 31, 2018 and 2017 were as follows:

	Year Ended December 31,	
	2018	2017
Depreciation and amortization from discontinued operations	\$ —	\$ 8,829
Loss from sale of Business	—	10,508
Proceeds from sale of Business	—	1,721
Capital expenditures	—	4,673

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Concurrent with the sale to Allscripts, the Company performed a reorganization of its operations intended to improve efficiency and better align the Company's costs and employment structure with its strategic plans. The reorganization includes a workforce reduction. Upon signing release agreements, impacted employees were eligible to receive severance payments in specified amounts and general benefits for specified periods in accordance with our policies and local requirements.

In the year ended December 31, 2017, the Company recorded restructuring charges of approximately \$2,422 associated with the termination of the employees. In connection with the termination, the Company reversed previously estimated bonus accrual of \$533 and stock-based compensation of \$1,549 as a result of the forfeiture of unvested awards. The Company recorded these charges in cost of revenue, general and administrative, and research and development from continuing operations expenses based on responsibilities of the impacted employees.

Dissolution of Net.Orange Ltd

On August 29, 2017, the Company dissolved its wholly owned U.K. subsidiary, Net.Orange Ltd. The Company reclassified \$ 860 of cumulative translation adjustment gains from accumulated comprehensive loss to the Company's results of discontinued operations.

Note 4 Accounts Receivable, net

Previously, accounts receivable, net excluded amounts related to post contract client support ("PCS") and other services that were billed but not yet delivered at each period end. These undelivered services were also excluded from the deferred revenue balances on the accompanying Consolidated Balance Sheets. The amount of outstanding and unpaid invoices excluded from both the accounts receivable and deferred revenue balances as of December 31, 2017 was \$6,198. Due to the implementation of ASC 606, outstanding and unpaid invoices for undelivered services are included in accounts receivable at December 31, 2018.

Accounts receivable are included on the Consolidated Balance Sheets net of the allowance for doubtful accounts. A summary of activity in the allowance for doubtful accounts for the years ended December 31, 2018 and 2017 is as follows:

	Balance at beginning of the period	Additions to expense	(Write offs) / Recoveries	Balance at end of the period
Year ended December 31, 2018	\$ 149	37	(23)	\$ 163
Year ended December 31, 2017	\$ 70	79	—	\$ 149

Note 5 Inventories

Inventories as of December 31, 2018 and 2017 consisted of the following:

	December 31,	
	2018	2017
Finished goods	\$ 496	\$ 839
Inventories	\$ 496	\$ 839

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Note 6 Prepaid Expenses and Other Current Assets and Accrued and Other Current Liabilities

Prepaid expenses and other current assets as of December 31, 2018 and 2017 consisted of the following:

	December 31,	
	2018	2017
Prepaid expenses	\$ 1,485	\$ 2,791
Restricted cash ⁽¹⁾	—	350
Other current assets	2,865	2,217
Prepaid expenses and other current assets	<u>\$ 4,350</u>	<u>\$ 5,358</u>

(1) Additional \$1,136 of non-current restricted cash as of December 31, 2018 is included in the Company's Consolidated Balance Sheets as part of Other assets. Restricted cash relates to compensating balances against letters of credit, with an equal maximum credit availability, provided to lessors under operating lease agreements.

Accrued and other current liabilities of December 31, 2018 and 2017 consisted of the following:

	December 31,	
	2018	2017
Payroll and related costs	\$ 5,803	\$ 7,051
NaviNet acquisition accrued earnout	1,700	5,408
Other accrued and other current liabilities	6,329	5,675
Accrued and other current liabilities	<u>\$ 13,832</u>	<u>\$ 18,134</u>

Note 7 Property, Plant and Equipment, net

Property, plant and equipment, net as of December 31, 2018 and 2017 consisted of the following:

	Useful life (in years)	December 31,	
		2018	2017
Computer equipment and software	3-5	\$ 14,058	\$ 13,998
Furniture and equipment	5-7	3,732	3,211
Leasehold and building improvements ⁽¹⁾		7,450	4,233
Property, plant, and equipment, excluding internal use software		25,240	21,442
Less: Accumulated depreciation and amortization		(17,884)	(15,248)
Property, plant and equipment, excluding internal use software, net		7,356	6,194
Construction in progress, internal use software		903	629
Internal use software	3	31,565	17,690
Less: Accumulated depreciation and amortization, internal use software		(16,846)	(5,996)
Internal use software, net		15,622	12,323
Property, plant and equipment, net		<u>\$ 22,978</u>	<u>\$ 18,517</u>

(1) Useful lives for leasehold and building improvements represent the term of the lease or the estimated life of the related improvements, whichever is shorter.

Depreciation expense from continuing and discontinued operations was \$12,643 and \$12,363 for the years ended December 31, 2018 and 2017, respectively, of which \$9,189 and \$5,792, respectively, related to internal use capitalized software development costs.

Amounts capitalized to internal use software related to continuing operations for the years ended December 31, 2018 and 2017 were \$6,690 and \$7,333, respectively.

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Note 8 Intangible Assets, net

The Company's definite-lived intangible assets as of December 31, 2018 and 2017 consisted of the following:

	December 31, 2018			
	Customer Relationships	Developed Technologies	Trade Name	Total
Gross carrying amount	\$ 52,000	\$ 36,700	\$ 3,000	\$ 91,700
Accumulated amortization	(10,400)	(14,347)	(2,250)	(26,997)
Intangible assets, net	\$ 41,600	\$ 22,353	\$ 750	\$ 64,703

	December 31, 2017			
	Customer Relationships	Developed Technologies	Trade Name	Total
Gross carrying amount	\$ 52,000	\$ 32,000	\$ 3,000	\$ 87,000
Accumulated amortization	(6,933)	(9,143)	(1,500)	(17,576)
Intangible assets, net	\$ 45,067	\$ 22,857	\$ 1,500	\$ 69,424

Amortization of definite-lived intangible assets is provided over their estimated useful lives on a straight-line basis or the pattern in which economic benefits are consumed, if reliably determinable. The Company reviews its definite-lived intangible assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Amortization expense from continuing and discontinued operations was \$9,150 and \$15,692 for the years ended December 31, 2018 and 2017, respectively.

The estimated future intangibles amortization expense over the next five years and thereafter for the intangible assets that exist as of December 31, 2018 is as follows:

	Amounts
2019	\$ 9,150
2020	8,400
2021	8,400
2022	8,400
2023	3,828
Thereafter	26,525
Total future intangibles amortization expense	\$ 64,703

Note 9 Goodwill

Goodwill as of December 31, 2018 and 2017 was \$115,930 and \$114,625, respectively, net of goodwill allocated to discontinued operations of \$16,444. The value of goodwill associated with the discontinued operations was based on the relative fair value of the Business disposed to the total reporting unit as of August 25, 2017 (see Note 3).

On February 28, 2018, the Company recognized \$1,305 of goodwill related to the assignment of NantHealth Labs (see Note 18).

Goodwill acquired in a business combination and determined to have an indefinite useful life is not amortized but is tested for impairment annually as of October 1 or between annual tests when an impairment indicator exists.

Note 10 Investments

Equity method investment

Investment in NantOmics

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In 2015, the Company purchased a total of 169,074,539 Series A-2 units of NantOmics, LLC ("NantOmics"), a related party of the Company, for an aggregate purchase price of \$250,774. The Series A-2 units do not have any voting rights and represent approximately 14.28% of NantOmics' issued and outstanding membership interests. NantOmics is majority owned by NantWorks and delivers molecular diagnostic capabilities with the intent of providing actionable intelligence and molecularly driven decision support for cancer patients and their providers at the point of care.

The Company applies the equity method to account for its investment in NantOmics as the interest in the equity is similar to a partnership interest. Further, the Company has the ability to exert significant influence over the operating and financial policies of the entity since NantWorks controls both NantHealth and NantOmics. The difference between the carrying amount of the investment in NantOmics and the Company's underlying equity in NantOmics' net assets relate to both definite and indefinite-lived intangible assets. The Company attributed \$28,195 and \$14,382 of these differences to NantOmics' developed technologies and its reseller agreement with the Company, respectively, prior to the application of developed technology intangibles included in NantOmics net assets, and the remaining basis differences were attributed to goodwill. The Company amortizes the basis differences related to the definite-lived intangible assets over the assets' estimated useful lives and records these amounts as a reduction in the carrying amount of its investment and an increase in its equity method loss.

The investment in related party is assessed for possible impairment when events indicate that the fair value of the investment may be below the carrying value. When such a condition is deemed to be other than temporary, the carrying value of the investment is written down to its fair value, and the amount of the write-down is included in net loss. In making the determination as to whether a decline is other than temporary, the Company considers such factors as the duration and extent of the decline, the investee's financial performance, and the Company's ability and intention to retain the investment for a period that will be sufficient to allow for any anticipated recovery in the investment's market value. The new cost basis of the investment is not changed for subsequent recoveries in fair value.

The fair value of the Company's equity method investment is determined using the income approach. The income approach utilizes a discounted cash flow model incorporating management's expectations for future revenue, operating expenses, and earnings before interest, taxes, depreciation and amortization, capital expenditures and an anticipated tax rate. The related cash flow forecasts are discounted using an estimated weighted-average cost of capital at the date of valuation. Differences between the carrying value of an equity investment and its underlying equity in the net assets of the related party are assigned to the extent practicable to specific assets and liabilities based on our analysis of the various factors giving rise to the difference. When appropriate, the Company's share of the related party's reported earnings is adjusted quarterly to reflect the difference between these allocated values and the related party's historical book values.

At December 31, 2018, September 30, 2018 and June 30, 2017, the Company determined that other-than-temporary-impairments of \$14,768, \$80,444 and \$35,991, respectively, in the value of the investment in NantOmics had occurred, predominantly attributed to declines in the value of goodwill and intangible assets. The decline in fair value at December 31, 2018 was primarily caused by altered pricing assumptions for the reseller agreement between the Company and NantOmics. The declines in fair value at September 30, 2018 and June 30, 2017 were primarily caused by changes in projected GPS Cancer revenue, due to delays in the Company's GPS Cancer revenue growth and changes in the risk profile of the financial projections for NantOmics. The Company based its financial projections on information that the Company believed was reasonable; however, actual results may differ materially from those projections. The other than temporary impairments were based on judgments and estimates that were forward looking in nature and it is reasonably possible that the estimate of the impairments of the equity method investment in NantOmics will change in the near term due to the following: actual NantOmics cash distribution is materially lower than expected, significant adverse changes in NantOmics' operating environment, increase in the discount rate, and changes in other key assumptions. Risks and uncertainties are related to assumptions regarding future financial performance, commercial acceptance of product and service offerings, risk of reimbursement for the Company's sequencing and molecular analysis solution, developments in the healthcare and molecular diagnostics industry, NantOmics' ability to integrate its business acquisitions, regulatory risks, and other general business risks including unanticipated adverse changes in NantOmics' operating environment.

On February 28, 2018, the Company transferred 9,088,362 of the Series A-2 units to NantOmics as consideration for the assignment of NantHealth Labs, Inc. (see Note 18). An additional 564,779 units were transferred from the Company to NantOmics by May 31, 2018. This reduced NantHealth's ownership of NantOmics to approximately 13.58%.

The Company reports its share of NantOmics' income or loss and the amortization of basis differences using a one quarter lag. For the years ended December 31, 2018 and 2017, the Company recognized losses of \$108,409 and \$50,334, respectively, related to this investment.

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The Company used the following summarized financial information for NantOmics for the trailing twelve months ended September 30, 2018 and September 30, 2017 to record its equity investment method losses for the years ended December 31, 2018 and 2017, respectively:

	Trailing Twelve Months Ended	
	September 30, 2018	September 30, 2017
Sales	5,817	7,103
Gross loss	(8,528)	(7,167)
Loss from operations	(45,481)	(48,989)
Impairments on equity	(19,976)	—
Net loss	(61,031)	(57,958)
Net loss attributable to NantOmics	(59,622)	(54,784)
Other comprehensive loss	(4,291)	—

Other investments

Investment in IOBS

On June 16, 2015, the Company invested \$1,750 in Innovative Oncology Business Solutions, Inc. (“IOBS”) in exchange for 1,750,000 shares of IOBS’s Series A preferred stock. IOBS offers community oncology practices an alternative medical home model for oncology patients that improves health outcomes, enhances patient care experiences and significantly reduces costs of care. The shares of preferred stock represent 35.0% of the outstanding equity of IOBS on an as-converted basis. The Company applied the cost method to account for its investment because the preferred stock is not considered in-substance common stock, is not considered a debt instrument as the Company cannot unilaterally demand redemption of the preferred stock and the preferred stock does not have a readily determinable fair value.

As of December 31, 2018 and 2017, IOBS was considered a variable interest entity. The Company is not the primary beneficiary of IOBS because it only has the right to elect two of five directors. All major decisions of IOBS require the majority vote by the members of the board of directors, including decisions made to manage the business including hiring and firing of officers and other critical management functions. Therefore, the Company does not consolidate IOBS.

During July 2018, the management of IOBS informed their board of directors that a transition plan had been agreed to migrate all current customers of the company to a business partner, as IOBS was unable to profitably serve those customers. The management of IOBS continues to seek ways to monetize the intellectual property held by the company, but future cash flows are uncertain. Therefore, the Company concluded that the investment in IOBS was impaired as of June 30, 2018. Given the level of uncertainty on future cash flows and the limited assets of IOBS available for distribution, the Company concluded the fair value of the investment was zero as of June 30, 2018 and recognized an impairment charge of \$1,750 in other expenses, net. No other arrangements exist that could require the Company to provide additional financial support or otherwise expose the Company to a loss.

Note 11 Convertible Notes

In December 2016, the Company entered into the Purchase Agreement with J.P. Morgan Securities LLC and Jefferies LLC, as representatives of the several initial purchasers named therein (collectively, the “Initial Purchasers”), to issue and sell \$90,000 in aggregate principal amount of its 5.50% senior convertible notes due 2021 (“Convertible Notes”) in a private placement to qualified institutional buyers pursuant to Rule 144A under the Securities Act of 1933, as amended (the “Securities Act”), and to non-U.S. persons pursuant to Regulation S under the Securities Act. In December 2016, the Company entered into a purchase agreement (the “Cambridge Purchase Agreement”) with Cambridge Equities, L.P. (“Cambridge”), an entity affiliated with Dr. Patrick Soon-Shiong, the Company’s Chairman and Chief Executive Officer, to issue and sell \$10,000 in aggregate principal amount of the Convertible Notes in a private placement pursuant to an exemption from the registration requirements of the Securities Act afforded by Section 4(a)(2) of the Securities Act. In December 2016, pursuant to the exercise of the over-allotment by the Initial Purchasers, the Company issued an additional \$7,000 principal amount of the Convertible Notes. The total net proceeds from this offering were approximately \$102,714, \$9,917 from Cambridge and \$92,797 from the Initial Purchasers, after deducting Initial Purchasers’ discount and debt issuance costs of \$4,286 in connection with the Convertible Notes offering.

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On December 21, 2016, the Company entered into an indenture, relating to the issuance of the Convertible Notes (the "Indenture"), by and between the Company and U.S. Bank National Association, as trustee (the "Trustee"). The interest rates are fixed at 5.50% per year, payable semi-annually on June 15 and December 15 of each year, beginning on June 15, 2017. The Convertible Notes will mature on December 15, 2021, unless earlier repurchased by the Company or converted pursuant to their terms.

In connection with the offering of the Convertible Notes, on December 15, 2016, the Company entered into a Second Amended and Restated Promissory Note which amends and restates the Amended and Restated Promissory Note, dated May 9, 2016, between the Company and NantCapital, to, among other things, extend the maturity date of the Promissory Note to June 30, 2022 and to subordinate the Promissory Note in right of payment to the Convertible Notes (See Note 19).

The initial conversion rate of the Convertible Notes is 82.3893 shares of common stock per \$1 principal amount of Convertible Notes (which is equivalent to an initial conversion price of approximately \$12.14 per share). Prior to the close of business on the business day immediately preceding September 15, 2021, the Convertible Notes will be convertible only under the following circumstances:

- (1) during any calendar quarter commencing after March 31, 2017 (and only during such calendar quarter), if, for at least 20 trading days (whether or not consecutive) during the 30 consecutive trading day period ending on the last trading day of the immediately preceding calendar quarter, the last reported sale price of the Company's common stock on such trading day is greater than or equal to 120% of the conversion price on such trading day;
- (2) during the five business day period after any five consecutive trading day period in which, for each day of that period, the trading price per \$1 principal amount of the Convertible Notes for such trading day was less than 98% of the product of the last reported sale price of the Company's common stock and the conversion rate on such trading day; or
- (3) upon the occurrence of specified corporate transactions as described in the Indenture agreement.

Upon conversion, the Convertible Notes will be settled in cash, shares of the Company's common stock or any combination thereof at the Company's option.

Upon the occurrence of a fundamental change (as defined in the Indenture), holders may require the Company to purchase all or a portion of the Convertible Notes in principal amounts of \$1 or an integral multiple thereof, for cash at a price equal to 100% of the principal amount of the Convertible Notes to be purchased plus any accrued and unpaid interest to, but excluding, the fundamental change purchase date. The conversion rate will be subject to adjustment upon the occurrence of certain specified events.

On or after the date that is one year after the last date of original issuance of the Convertible Notes, if the last reported sale price of the Company's common stock for at least 20 trading days (whether or not consecutive) during the period of 30 consecutive trading days ending within the five trading days immediately preceding a conversion date is greater than or equal to 120% of the conversion price on each applicable trading day, the Company will make an interest make-whole payment to a converting holder (other than a conversion in connection with a make-whole fundamental change in which the conversion rate is adjusted) equal to the sum of the present values of the scheduled payments of interest that would have been made on the Convertible Notes to be converted had such Convertible Notes remained outstanding from the conversion date through the earlier of (i) the date that is three years after the conversion date and (ii) the maturity date if the Convertible Notes had not been so converted. The present values of the remaining interest payments will be computed using a discount rate equal to 2.0%. The Company may pay any interest make-whole payment either in cash or in shares of its common stock, at the Company's election as described in the Indenture.

The Company accounts for convertible debt instruments that may be settled in cash upon conversion (including partial cash settlement) by recording the liability and equity components of the convertible debt separately. The liability component is computed based on the fair value of a similar liability that does not include the conversion option. The liability component includes both the value of the embedded interest make-whole derivative and the carrying value of the Convertible Notes. The equity component is computed based on the total debt proceeds less the fair value of the liability component. The equity component is also recorded as debt discount and amortized as interest expense over the expected term of the Convertible Notes.

The liability component of the Convertible Notes on the date of issuance was computed as \$83,079, consisting of the value of the embedded interest make-whole derivative of \$1,499 and the carrying value of the Convertible Notes of \$81,580. Accordingly, the equity component on the date of issuance was \$23,921. If the debt will be considered current at the balance sheet date, the liability component of the convertible notes will be classified as current liabilities and presented in current portion of convertible notes debt and the equity component of the convertible debt will be considered a redeemable security and presented as redeemable equity on the Company's Consolidated Balance Sheet.

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Offering costs of \$4,286 related to the issuance of the Convertible Notes are allocated to the liability and equity components in proportion to the allocation of the proceeds and accounted for as deferred financing offering costs and equity issuance costs, respectively. Approximately \$972 of this amount was allocated to equity and the remaining \$3,314 have been capitalized as deferred financing offering costs.

The debt discounts and deferred financing offering costs on the Convertible Notes are being amortized to interest expense over the contractual terms of the Convertible Notes, using the effective interest method at an effective interest rate of 12.82%.

As of December 31, 2018, the remaining life of the Convertible Notes is approximately 36 months.

The following table summarizes how the issuance of the Convertible Notes is reflected in the Company's Consolidated Balance Sheets as of December 31, 2018 and 2017:

	Related party	Others	Total
Balance as of December 31, 2018			
Gross proceeds	\$ 10,000	\$ 97,000	\$ 107,000
Unamortized debt discounts and deferred financing offering costs	(1,622)	(17,567)	(19,189)
Net carrying amount	<u>\$ 8,378</u>	<u>\$ 79,433</u>	<u>\$ 87,811</u>
Balance as of December 31, 2017			
Gross proceeds	\$ 10,000	\$ 97,000	\$ 107,000
Unamortized debt discounts and deferred financing offering costs	(2,053)	(22,155)	(24,208)
Net carrying amount	<u>\$ 7,947</u>	<u>\$ 74,845</u>	<u>\$ 82,792</u>

The following table sets forth the Company's interest expense incurred for the years ended December 31, 2018 and 2017:

	Year Ended December 31,					
	2018			2017		
	Related party	Others	Total	Related party	Others	Total
Coupon interest expense	\$ 550	\$ 5,335	\$ 5,885	\$ 550	\$ 5,335	\$ 5,885
Amortization of debt discounts	420	4,020	4,440	373	3,536	3,909
Amortization of deferred financing offering costs	11	568	579	10	499	509
Total convertible notes interest expense	<u>\$ 981</u>	<u>\$ 9,923</u>	<u>\$ 10,904</u>	<u>\$ 933</u>	<u>\$ 9,370</u>	<u>\$ 10,303</u>

Note 12 Fair Value Measurements

Assets and liabilities measured at fair value on a recurring basis as of December 31, 2018 and 2017 consisted of the following:

	December 31, 2018			
	Total fair value	Quoted price in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)
Assets - Cash equivalents	\$ 18,306	\$ 18,306	\$ —	\$ —
Assets - Held-to-maturity securities	1,136	—	1,136	—
Liabilities - Bookings Commitment	16,947	—	—	16,947
Liabilities - Interest make-whole derivative	—	—	—	—

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December 31, 2017

	Total fair value	Quoted price in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)
Assets - Cash equivalents	\$ 57,683	\$ 57,683	\$ —	\$ —
Assets - Held-to-maturity securities	361	—	361	—
Liabilities - Interest make-whole derivative	7	—	—	7
Liabilities - Bookings Commitment	—	—	—	—

The Company's intangible assets and goodwill are initially measured at fair value and any subsequent adjustment to the initial fair value occurs only if an impairment charge is recognized. The fair values of the Company's cash equivalents (consisting of mainly money market accounts) are based on quoted market prices in active markets with no valuation adjustment.

The Company's investment securities as of December 31, 2018, and 2017 include certificates of deposit. The fair value of these investments approximate carrying values, and the Company has classified these instruments as Level 2 in the fair value hierarchy.

Level 3 Inputs

Convertible Note derivative liability

In December 2016, the Company issued \$107,000 in aggregate principal amount of Convertible Notes due December 15, 2021, of which \$10,000 issued to a related party (see Note 11). The Convertible Notes include an interest make-whole feature whereby if a noteholder converts any of the Convertible Notes one year after the last date of original issuance of the Convertible Notes, they are entitled, in addition to the other consideration payable or deliverable in connection with such conversion, to an interest make-whole payment equal to the sum of the present values of the scheduled payments, computed using a discount rate equal to 2.0%, of interest that would have been made on the Convertible Notes to be converted had such Convertible Notes remained outstanding from the conversion date through the earlier of (i) the date that is three years after the conversion date and (ii) the maturity date if the Convertible Notes had not been so converted. The Company may pay any interest make-whole payment either in cash or in shares of its common stock, at the Company's election as described in the Indenture. The Company has determined that this feature is an embedded derivative and have recognized the fair value of this derivative as a liability in the Company's Consolidated Balance Sheet, with subsequent changes to fair value recorded through earnings at each reporting period on the Company's Consolidated Statements of Operations as change in fair value of derivative liability.

The fair value of the derivative liability includes the estimated volatility and risk free rate. The higher/lower the estimated volatility, the higher/lower the value of the liability. The higher/lower the risk free interest rate, the higher/lower the value of the liability.

Bookings Commitment

The Company values the Bookings Commitment, assumed upon the disposal of the provider/patient engagement solutions business (see Note 3), using a Monte Simulation model to calculate average payments due under the Bookings Commitment, based on management's estimate of its performance in securing bookings and resulting annual payments, discounted at the cost of debt in a range of 17% to 20% based on a yield curve, to calculate the fair value of the liability. The change in fair value is recorded as an unrealized gain or loss through earnings within other (loss) income, net, in the Company's Consolidated Statements of Operations.

The fair value of the Bookings Commitment is dependent on management's estimate of the probability of success on individual opportunities and the cost of debt applied in discounting the liability. The higher the probability of success on each opportunity, the lower the fair value of the Bookings Commitment liability. The lower the cost of debt applied, the higher the value of the liability.

The fair market value for level 3 securities may be highly sensitive to the use of unobservable inputs and subjective assumptions. Generally, changes in significant unobservable inputs may result in significantly lower or higher fair value measurements.

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The following tables set forth a summary of changes in the fair value of Level 3 liabilities for the years ended December 31, 2018 and 2017:

	December 31, 2017	Additions	Change in fair value	December 31, 2018
Interest make-whole derivative - related party and others	7	—	(7)	—
Bookings Commitment	—	—	16,947	16,947
	<u>\$ 7</u>	<u>\$ —</u>	<u>\$ 16,940</u>	<u>\$ 16,947</u>

	December 31, 2016	Additions	Change in fair value	December 31, 2017
Interest make-whole derivative liability:				
Related party	\$ 25	\$ —	\$ (25)	\$ —
Others	246	—	(239)	7
	<u>\$ 271</u>	<u>\$ —</u>	<u>\$ (264)</u>	<u>\$ 7</u>

As of December 31, 2018, the estimated fair value and carrying value of the Company's Convertible Notes were:

	Fair value	Carrying value	Face value
5.5% convertible senior notes due December 15, 2021:			
Balance as of December 31, 2018			
Related party	\$ 5,879	\$ 8,378	\$ 10,000
Others	57,031	79,433	97,000
	<u>\$ 62,910</u>	<u>\$ 87,811</u>	<u>\$ 107,000</u>
Balance as of December 31, 2017			
Related party	\$ 7,327	\$ 7,947	\$ 10,000
Others	71,076	74,845	97,000
	<u>\$ 78,403</u>	<u>\$ 82,792</u>	<u>\$ 107,000</u>

The fair value shown above represents the fair value of the debt instrument, inclusive of both the debt and equity components, but excluding the derivative liability. The carrying value represents only the carrying value of the debt component.

The fair value of the convertible notes is determined by unobservable inputs that are supported by minimal non-active market activity and that are significant to determining the fair value of the debt instrument.

Note 13 Commitments and Contingencies

The Company's principal commitments consist of obligations under its outstanding debt obligations, noncancelable leases for its office space and certain equipment and vendor contracts to provide research services, and purchase obligations under license agreements and reseller agreements.

Lease Arrangements

The Company leases both real estate and equipment used in its operations and classifies those leases as either operating or capital leases for accounting purposes. As of December 31, 2018 and 2017, the Company had no material capital leases and the remaining lives of its operating leases ranged from one to six years, certain operating leases include extension options at then current market rates.

Rental expense associated with operating leases is charged to expense on a straight-line basis and is included in the Consolidated Statements of Operations. For the years ended December 31, 2018 and 2017, the rental expense from continuing and discontinued operations was charged to selling, general and administrative expense in the amount of \$3,930 and \$4,513 respectively.

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As of December 31, 2018, the Company's future minimum rental commitments under its noncancelable operating leases are as follows:

	Amounts
2019	\$ 3,201
2020	3,292
2021	3,143
2022	3,184
2023	2,775
Thereafter	4,933
Total minimum rental commitments	\$ 20,528

Related Party Promissory Note

On January 4, 2016, the Company executed a \$112,666 demand promissory note in favor of NantCapital to fund the acquisition of NaviNet. On May 9, 2016 and December 15, 2016, the promissory note with NantCapital was amended to provide that all outstanding principal and accrued interest is due and payable on June 30, 2022, and not on demand and the Company subordinated the Promissory Note in right of payment to the Convertible Notes (see Note 11).

Indenture Obligations Under Convertible Notes

On December 21, 2016, the Company entered into the Indenture relating to the issuance of the \$107,000 Convertible Notes, by and between the Company and U.S. Bank National Association the Trustee. The interest rates are fixed at 5.50% per year, payable semi-annually on June 15 and December 15 of each year, beginning on June 15, 2017. The Convertible Notes will mature on December 15, 2021, unless earlier repurchased by the Company or converted pursuant to their terms (see Note 11).

Purchase Obligations Under License Agreements and Reseller Agreements

In September 2016, the Company entered into a Second Amended and Restated Reseller Agreement for genomic and proteomic sequencing services and related bioinformatics and analysis services with NantOmics, with an effective date of June 19, 2015 (see Note 18).

Regulatory Matters

The Company is subject to regulatory oversight by the U.S. Food and Drug Administration and other regulatory authorities with respect to the development, manufacturing, and sale of some of the solutions. In addition, the Company is subject to the Health Insurance Portability and Accountability Act ("HIPAA"), the Health Information Technology for Economic and Clinical Health Act and related patient confidentiality laws and regulations with respect to patient information. The Company reviews the applicable laws and regulations regarding effects of such laws and regulations on its operations on an on-going basis and modifies operations as appropriate. The Company believes it is in substantial compliance with all applicable laws and regulations. Failure to comply with regulatory requirements could have a significant adverse effect on the Company's business and operations.

Securities Litigation

In March 2017, a number of putative class action securities complaints were filed in U.S. District Court for the Central District of California, naming as defendants the Company and certain of our executive officers and directors. These complaints have been consolidated with the lead case captioned *Deora v. NantHealth, Inc.*, 2:17-cv-01825. In June 2017, the lead plaintiffs filed an amended consolidated complaint, which generally alleges that defendants violated federal securities laws by making material misrepresentations in NantHealth's initial public offering registration statement and in subsequent public statements. In particular, the complaint refers to various third-party articles in alleging that defendants misrepresented NantHealth's business with the University of Utah, donations to the university by non-profit entities associated with our founder Dr. Soon-Shiong, and orders for GPS Cancer. The lead plaintiffs seek unspecified damages and other relief on behalf of putative classes of persons who purchased or acquired NantHealth securities in the IPO or on the open market from June 1, 2016 through May 1, 2017. In March 2018, the court largely denied Defendants' motion to dismiss the consolidated amended complaint. In September 2018, the lead plaintiffs filed a motion for certification of two plaintiff classes. The Company believes that the claims lack merit and intend to vigorously defend the litigation.

In May 2017, a putative class action complaint was filed in California Superior Court, Los Angeles County, asserting claims for violations of the Securities Act based on allegations similar to those in *Deora*. That case is captioned *Bucks County Employees*

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Retirement Fund v. NantHealth, Inc., BC 662330. The parties have agreed to stay the case until the next case management conference, scheduled for September 17, 2019. The Company believes that the claims lack merit and intends to vigorously defend the litigation.

In April 2018, two putative shareholder derivative actions-captioned Engleman v. Soon-Shiong, Case No. 2018-0282-AGB, and Petersen v. Soon-Shiong, Case No. 2018-0302-AGB-were filed in the Delaware Court of Chancery. The plaintiff in the Engleman action previously filed a similar complaint in California Superior Court, Los Angeles County, which was dismissed based on a provision in the Company's charter requiring derivative actions to be brought in Delaware. The Engleman and Petersen complaints contain allegations similar to those in Deora, but assert causes of action on behalf of NantHealth against various of the Company's current or former executive officers and directors for alleged breaches of fiduciary duty, abuse of control, gross mismanagement, and unjust enrichment. The Company is named solely as a nominal defendant. In July 2018, the court issued an order consolidating the Engleman and Petersen actions as *In re NantHealth, Inc. Stockholder Litigation*, Lead C.A. No. 2018-0302-AGB, appointing Petersen as lead plaintiff, and designating the Petersen complaint as the operative complaint. On September 20, 2018, the defendants moved to dismiss the complaint. In October 2018, in response to the motion to dismiss, Petersen filed an amended complaint. In November 2018, the defendants moved to dismiss the amended complaint. In January 2019, the defendants filed their opening brief in support of the motion to dismiss the amended complaint. The Company believes that the claims lack merit and intends to vigorously defend the litigation.

In April 2018, a putative shareholder derivative action captioned Shen v. Soon-Shiong was filed in U.S. District Court for the District of Delaware. The complaint contains allegations similar to those in Deora, but asserts causes of action on behalf of NantHealth against various of the Company's current or former executive officers and directors for alleged breaches of fiduciary duty and unjust enrichment, as well as alleged violations of the federal securities laws based on alleged misstatements or omissions in the Company's 2017 proxy statement. The parties have agreed to stay the case pending a decision on defendants' motion to dismiss in the derivative action in the Delaware Court of Chancery.

The monetary and other impact of these actions may remain unknown for substantial periods of time. The cost to defend, settle or otherwise resolve these matters may be significant and divert management's attention. The Company cannot provide assurance that it will prevail in these lawsuits. If the Company is ultimately unsuccessful in these matters, the Company could be required to pay substantial amounts which might materially adversely affect its business, operating results and financial condition.

Real Estate Litigation

On March 9, 2018, PayPal, Inc. ("PayPal") commenced an action against the Company in the Superior Court Department of the Trial Court of the Commonwealth of Massachusetts, for Suffolk County. The action was originally captioned PayPal, Inc. v. NantHealth, Inc., Civil Action No. 18-0780-E. On April 10, 2018, the Superior Court transferred the case to its Business Litigation Section, where it is currently pending and captioned as PayPal, Inc. v. NantHealth, Inc., Civil Action No. 18-0780-BLS1. This action arises out of a Sublease Agreement that PayPal and the Company entered into on or about November 30, 2017. The Sublease Agreement pertained to commercial real estate that PayPal leased at One International Place in Boston, Massachusetts. On January 25, 2018, the Company notified PayPal that we were electing to terminate the Sublease Agreement.

In its Verified Complaint, and a contemporaneous notice of default that the Company disputed, PayPal alleges that the Company breached the Sublease Agreement. In addition, PayPal asserts claims for breach of the covenant of good faith and fair dealing, and violations of Massachusetts General Laws, Chapter 93A, sections 2 and 11, and seeks a declaratory judgment recognizing and enforcing the terms of the Sublease Agreement. Among other relief, PayPal seeks damages, treble damages, interest, costs, and attorneys' fees.

On April 12, 2018, the Company filed its answer and jury demand in the action. On August 2, 2018, PayPal requested a status conference with the court in order to discuss PayPal's potential filing of a motion for partial judgment on the pleadings pursuant to Mass. R. Civ. P. 12(c). A Rule 16 Litigation Control Conference ("Rule 16 Conference") was held on August 22, 2018. During the Rule 16 Conference, the court denied PayPal's request for leave to file a motion for partial judgment on the pleadings. Following the Rule 16 Conference, the court issued a tracking order setting deadlines and other procedures that would apply to this action.

On September 26, 2018, the Company filed its Assented to Motion for Leave to Amend Its Answer. The court granted the Company's motion on October 3, 2018. On October 9, 2018, the Company filed and served its amended answer and jury demand.

On January 8, 2019, the parties filed a joint motion to extend certain of the tracking order deadlines, which motion the court granted by endorsed order dated January 9, 2019.

The parties are currently engaged in discovery, including non-party discovery.

The Company denies any liability to PayPal and intend to vigorously defend the action.

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Note 14 Income Taxes

The components of the provision for income taxes are presented in the following table:

	Year Ended December 31,	
	2018	2017
Current:		
Federal	\$ 2	\$ (498)
State	42	17
Foreign	52	100
Total current provision	<u>96</u>	<u>(381)</u>
Deferred:		
Federal	(3,418)	(3,001)
State	(418)	1,179
Foreign	67	—
Total deferred benefit	<u>(3,769)</u>	<u>(1,822)</u>
Provision for (benefit from) income taxes, net	<u>\$ (3,673)</u>	<u>\$ (2,203)</u>

The provision for income taxes differs from the amount of income tax determined by applying the applicable U.S. statutory federal income tax rate to pretax loss as a result of the following differences:

	Year Ended December 31,	
	2018	2017
United States federal tax at statutory rate	21.00 %	34.00 %
Items affecting federal income tax rate:		
State tax rate, net of federal benefit	3.85 %	3.53 %
Valuation allowance	(22.00)%	1.41 %
Stock compensation	(0.62)%	(1.95)%
"Tax Act" 2017 impact	— %	(34.83)%
Other adjustments	(0.33)%	(0.51)%
Effective income tax rate	<u>1.90 %</u>	<u>1.65 %</u>

On December 22, 2017, the Tax Cuts and Jobs Act of 2017 (the "Act") was signed into law making significant changes to the Internal Revenue Code. Changes include, but are not limited to, a corporate tax rate decrease from 35% to 21% effective for tax years beginning after December 31, 2017, the transition of U.S. international taxation from a worldwide tax system to a territorial system, and a one-time transition tax on the mandatory deemed repatriation of cumulative foreign earnings as of December 31, 2017.

In December 2017, the SEC issued Staff Accounting Bulletin No. 118 ("SAB 118"), which provides guidance on accounting for the income tax effects of the TCJA. SAB 118 provides a measurement period that should not extend beyond one year from the TCJA enactment date for companies to complete the accounting relating to the TCJA under Accounting Standards Codification Topic 740, "Income Taxes" ("ASC 740"). In accordance with SAB 118, a company must reflect the income tax effects of those aspects of the TCJA for which the accounting under ASC 740 is complete. To the extent that a company's accounting for TCJA-related income tax effects is incomplete, but the company is able to determine a reasonable estimate, it must record a provisional estimate in its financial statements. If a company cannot determine a provisional estimate to be included in its financial statements, it should continue to apply ASC 740 on the basis of the provisions of the tax laws that were in effect immediately before the enactment of the TCJA. The Company has completed its evaluation of the potential impacts of the Act of 2017 on its December 31, 2018 financial statements under the one year measurement period provided under SAB 118. No adjustment has been recorded as there were no material changes between the provisional estimate and the final accounting for the Act.

The Act subjects a US shareholder to current tax on global intangible low-taxed income (GILTI) earned by certain foreign subsidiaries. The FASB Staff Q&A, Topic 740 No. 5 *Accounting for Global Intangible Low-Taxed Income*, states that an entity can make an accounting policy election to either recognize deferred taxes for temporary differences expected to

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reverse as GILTI in future years or provide for the tax expense related to GILTI in the year the tax is incurred. We have elected to recognize the tax on GILTI as a period expense in the period the tax is incurred.

As of December 31, 2018 and December 31, 2017, the Company had an immaterial amount of unremitted earnings related to certain foreign subsidiaries. The Company intends to continue to reinvest its foreign earnings indefinitely and do not expect to incur any significant taxes related to such amounts.

Significant components of the Company's deferred tax assets and liabilities as of December 31, 2018 and 2017 are as follows:

	December 31,	
	2018	2017
Deferred income tax assets:		
Accounts payable and accrued expenses	\$ 8,090	\$ 1,520
Inventory impairment	495	466
Deferred revenue	5,438	3,458
Allowance for doubtful accounts	546	178
Property, plant and equipment, net	691	1,098
Intangibles	3,409	4,865
Investments	48,836	22,404
Stock compensation	2,159	3,487
Other	1,321	32
Net operating loss carryforwards	104,404	93,689
Less: Valuation allowance	(140,788)	(97,324)
Total deferred income tax assets	<u>34,601</u>	<u>33,873</u>
Deferred income tax liabilities:		
State taxes	(5,339)	(3,397)
Intangible assets, net	(25,630)	(28,768)
Convertible notes	(4,241)	(5,437)
Deferred implementation cost	(1,633)	(1,960)
Other	(195)	(149)
Total deferred income tax liabilities	<u>(37,038)</u>	<u>(39,711)</u>
Deferred income taxes, net	<u>\$ (2,437)</u>	<u>\$ (5,838)</u>

The realization of deferred income tax assets may be dependent on the Company's ability to generate sufficient income in future years in the associated jurisdiction to which the deferred tax assets relate. The Company considers all available positive and negative evidence, including scheduled reversals of deferred income tax liabilities, projected future taxable income, tax planning strategies, and recent financial performance. Based on the review of all positive and negative evidence, including a three year cumulative pre-tax loss, the Company concluded that except for the deferred tax liability recorded on amortization of certain goodwill due to its indefinite life and deferred tax liability in excess of deferred tax asset for certain separate state and city jurisdictions, it should record a full valuation allowance against all other net deferred income tax assets at December 31, 2018 and 2017 as none of these deferred income tax assets were more likely than not to be realized as of the balance sheet dates. However, the amount of the deferred income tax assets considered realizable may be adjusted if estimates of future taxable income during the carryforward period are increased or if objective negative evidence in the form of cumulative losses is no longer present. In addition, at December 31, 2018, the position of the valuation allowance for deferred tax assets for which subsequently recognized tax benefits will be credited directly to contributed capital is \$350.

A summary of activity in the valuation reserve deducted from deferred tax assets for the years ended December 31, 2018 2017 is as follows:

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	Balance at beginning of the period	Additions (Adjustments)	Deductions	Balance at the end of the period
Year to Date December 31, 2018	\$ 97,323	43,464	—	\$ 140,787
Year to Date December 31, 2017	\$ 88,291	9,032	—	\$ 97,323

The Company records a tax benefit from uncertain tax positions only if it is more likely than not the tax position will be sustained with the taxing authority having full knowledge of all relevant information. The Company records a liability for unrecognized tax benefits from uncertain tax positions as discrete tax adjustments in the first period that the more-likely-than-not threshold is not met. As of December 31, 2018 and 2017, the Company had no unrecognized tax benefits. Unrecognized tax benefits are recorded consistent with ASU No. 2013-11, *Income Taxes (Topic 740):*

Presentation of an Unrecognized Tax Benefit When a Net Operating Loss Carryforward, a Similar Tax Loss, or a Tax Credit Carryforward Exists (a consensus of the FASB Emerging Issues Task Force), in two parts. In 2017, the Company filed the accounting method change on the account receivable, account payable and other liabilities; therefore, the Company more likely than not did not have any uncertain tax positions in at December 31, 2017. Therefore, the Company reversed the ASC 740 reserve on these items as well as any net operating loss associated with them.

	December 31,	
	2018	2017
Balance as of January 1	\$ —	\$ 977
Increases/(decreases) related to tax positions taken during the current year	—	(977)
Balance as of December 31	\$ —	\$ —

The Company's policy is to recognize interest and penalties related to uncertain tax positions in income tax expense. As of December 31, 2018 and 2017, there are no material interest and penalties associated with unrecognized tax benefits recorded in the Company's Consolidated Statements of Operations or Consolidated Balance Sheets. Any changes to unrecognized tax benefits recorded as of December 31, 2018 that are reasonably possible to occur within the next 12 months are not expected to be material.

The Company is no longer subject to income tax examination by the U.S. federal, state or local tax authorities for years ended December 31, 2012 or prior; however, its tax attributes, such as net operating loss ("NOL") carryforwards and tax credits, are still subject to examination in the year they are used. The Company is currently under an IRS audit for the tax year ended December 31, 2016.

As of December 31, 2018, the Company had federal, state and foreign NOL carryforwards of \$395,368, \$288,901 and \$0, respectively, expiring at various dates through 2038. Utilization of the NOL carryforwards is subject to annual limitations due to ownership change limitations that occurred or could occur in the future as provided by Section 382 of the Internal Revenue Code of 1986, as amended, as well as similar state and foreign provisions. These ownership changes may limit the amount of the NOL carryforwards that can be utilized annually to offset future taxable income. The total NOL amounts above do not include the NOLs expected to expire.

Note 15 Stockholders' Equity

Amended Certificate of Incorporation

In accordance with the Company's amended and restated certificate of incorporation, which was filed immediately following the closing of its IPO, the Company is authorized to issue 750,000,000 shares of common stock, with a par value of \$0.0001 per share, and 20,000,000 shares of undesignated preferred stock, with a par value of \$0.0001 per share. Holders of the Company's common stock are entitled to one vote for each share held on all matters submitted to a vote of its stockholders. Holders of the Company's common stock have no cumulative voting rights. Further, as of December 31, 2018 and 2017, holders of the Company's common stock have no preemptive, conversion, redemption or subscription rights and there are no sinking fund provisions applicable to the Company's common stock. Upon liquidation, dissolution or winding-up of the Company, holders of the Company's common stock are entitled to share ratably in all assets remaining after payment of all liabilities and the liquidation preferences of any outstanding shares of preferred stock. Subject to preferences that may be applicable to any outstanding shares of preferred stock, holders of the Company's common stock are entitled to receive dividends, if any, as may be declared from time to time by the Company's board of directors. As of December 31, 2018 and 2017, there were no outstanding shares of preferred stock.

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Other Equity Contributions

In December 2016, the Company entered into an agreement to provide genomic and proteomic sequencing and related bioinformatics services to an institution related to cancer research. The agreement provides that the institution pay the Company a fixed per-test fee in exchange for the services to be provided by the Company. A private charitable 501(c)(3) non-profit organization controlled by the Company's Chairman and CEO also made a charitable gift to the institution in December 2016. The gift does not contractually or otherwise require the institution to use the Company's molecular profiling solutions or any of the Company's other products or services. No amounts related to this arrangement have been recognized in the Company's Consolidated Balance Sheets or Consolidated Statements of Operations as of or for the years ended December 31, 2018 and 2017.

Note 16 Stock-Based Compensation

The following table reflects the components of stock-based compensation expense recognized in the Company's Consolidated Statements of Operations:

	Year Ended December 31,	
	2018	2017
Series C / Restricted Stock:		
Research and development	\$ 86	\$ 111
Phantom units:		
Cost of revenue	367	186
Selling, general and administrative	4	(341)
Research and development	347	144
Discontinued operations	—	(3,591)
Total phantom units stock-based compensation expense	718	(3,602)
Stock options:		
Selling, general and administrative	—	(49)
Restricted Stock Units:		
Cost of revenue	27	26
Selling, general and administrative	4,664	5,223
Research and development	162	2,802
Total restricted stock units stock-based compensation expense	4,853	8,051
Total stock-based compensation expense	5,657	4,511
Amount capitalized to internal-use software and deferred implementation costs	530	784
Total stock-based compensation cost	<u>\$ 6,187</u>	<u>\$ 5,295</u>

Retired Profits Interests Plan

On December 3, 2013, the Company adopted the Profits Interests Plan under which it had reserved an aggregate of 63,750,000 Series C units for issuance to associates, consultants and contractors of the Company in consideration for bona fide services provided to the Company.

The Series C units were considered profits interests of the Company and did not entitle their holders (the "Series C Members") to receive distributions if the Company were liquidated immediately after the grant. Instead, the Series C Members were entitled to receive an allocation of a portion of the profit and loss of the Company arising after the date of the grant and, subject to vesting conditions, distributions made out of a portion of the profits of the Company arising after the grant date of the Series C units. Grants of the Series C units were either fully vested, partially vested, or entirely unvested at the time of the grant as determined by the Board.

Series C Members were not entitled to receive any distributions until the aggregate distributions made by the Company exceeded a hurdle amount applicable to those Series C units. The hurdle amount for each grant was determined by the Board at the date of issuance of such units. After all other members received their applicable hurdle amount, the Series C Members were entitled to receive their percentage interest of such excess distributions.

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As of December 31, 2015 and through the date of the LLC Conversion, the Company had 3,470,254 Series C units outstanding.

Upon the LLC Conversion on June 1, 2016, the Company issued 28,973 shares of common stock to holders of vested Series C units and 10,462 shares of restricted stock to holders of unvested Series C units. The shares of restricted stock issued to holders of unvested profits interests are subject to forfeiture until becoming fully vested in accordance with the terms of the original Series C unit grant agreements (see Restricted Stock below).

Phantom Unit Plan

On March 31, 2015, the Company approved the Nant Health, LLC Phantom Unit Plan (the "Phantom Unit Plan"). The maximum number of phantom units that may be issued under the Phantom Unit Plan is equal to 11,590,909 minus the number of issued and outstanding Series C units of the Company. As of December 31, 2018, there were 588,852 phantom units outstanding under the Phantom Unit Plan, after giving effect to the 1-for-5.5 reverse stock split. Each grant of phantom units made to a participant under the Phantom Unit Plan vests over a defined service period, and the majority of grants are subject to completion of a liquidity event. The Company's IPO satisfied the liquidity event condition and the phantom units subject to completion of a liquidity event now entitle their holders to cash or noncash payments in an amount equal to the number of vested units held by that participant multiplied by the fair market value of one share of the Company's common stock at the Company's option on the date each phantom unit vests. After the Company's IPO, the Company will no longer issue any units under the Phantom Unit Plan.

The Company intends to settle all vested phantom unit payments held by United States-based participants in shares of the Company's common stock and classifies these awards as equity awards in its Consolidated Balance Sheets. Awards held by participants who are based outside of the United States are estimated to be settled in cash and are classified within accrued and other current liabilities on the Consolidated Balance Sheet as of December 31, 2018.

The following table summarizes the activity related to the unvested phantom units during the years ended December 31, 2018 and 2017:

	Number of Units	Weighted Average Grant Date Value per Phantom Unit
Unvested phantom units outstanding - December 31, 2016	4,322,081	\$ 14.95
Granted	113,656	\$ 4.75
Vested	(1,440,822)	\$ 14.14
Forfeited	(1,702,130)	\$ 15.31
Unvested phantom units outstanding - December 31, 2017	1,292,785	\$ 15.01
Vested	(518,373)	\$ 15.20
Forfeited	(185,560)	\$ 14.63
Unvested phantom units outstanding - December 31, 2018	588,852	\$ 14.95

The Company has previously granted phantom units to employees of related companies who are providing services to the Company under the shared services agreement with NantWorks (see Note 18) as well as certain consultants of the Company. No phantom units were granted during the years ended December 31, 2018 or 2017. Stock-based compensation expense for the phantom units issued to these participants is re-measured at the end of each reporting period until the awards vest. All other grants of phantom units have been made to employees of the Company. The Company uses the accelerated attribution method to recognize expense for phantom units with vesting that was subject to the completion of a liquidity event and the straight-line method for other phantom unit awards. The grant date fair value of the phantom units granted prior to LLC Conversion was estimated using both an option pricing method and a probability weighted expected return method.

As of December 31, 2018, the Company had \$687 of unrecognized stock-based compensation expense related to phantom units which will be recognized over a weighted-average period of 1.1 years. Of that amount, \$680 of unrecognized expense is related to employee grants with a weighted-average period of 1.1 years and \$7 of unrecognized expense is related to non-employee grants with a weighted-average period of 1.1 years.

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During the years ended December 31, 2018 and 2017, the Company issued 325,312 and 888,569 shares, respectively, of common stock to participants of the Phantom Unit Plan based in the United States, after withholding approximately 177,343 and 492,974 shares, respectively, to satisfy tax withholding obligations. The Company made a cash payment of \$569 and \$3,059 to cover employee withholding taxes upon the settlement of these vested phantom units during the years ended December 31, 2018 and 2017, respectively. During the years ended December 31, 2018 and 2017, the Company also paid \$55 and \$300 to cash-settle 15,717 and 59,279 vested phantom units, respectively, held by participants of the Phantom Unit Plan based outside of the United States and to pay cash in lieu of fractional shares for vested units held by participants based in the United States.

2016 Equity Incentive Plan

In May and June of 2016, the Company's Board of Directors adopted and the Company's stockholders approved the 2016 Equity Incentive Plan (the "2016 Plan") in connection with the Company's IPO. The 2016 Plan provides for the grant of incentive stock options, non-statutory stock options, restricted stock, restricted stock units, stock appreciation rights, performance units and performance shares to employees, directors and consultants. A total of 6,000,000 shares of common stock were reserved for issuance pursuant to the 2016 Plan.

In April 2018, the Company's Board of Directors adopted and, in June 2018, the Company's stockholders approved an amendment to the 2016 Plan, to reserve a further 6,800,000 shares of common stock for issuance pursuant to the 2016 Plan. Following the approval of the amendment, a total of 12,800,000 shares of common stock were reserved for issuance pursuant to the 2016 Plan.

Restricted Stock

The Company issued 10,462 shares of restricted stock under the 2016 Plan during the year ended December 31, 2016 in connection with the conversion of the Series C units, of which 3,490 and 3,486 were vested and converted into unrestricted common stock during 2018 and 2017, respectively, and as of December 31, 2018, there were no shares of restricted stock remaining to be vested and converted.

Stock compensation expense for the Series C units/restricted stock issued to the nonemployees is calculated based on the fair value of the award on each balance sheet date and the attribution of that cost is being recognized ratably over the vesting period.

Stock Options

During the year ended December 31, 2016, the Company issued 500,000 stock options under the 2016 Plan to Mark Burnett, who was a non-employee member of the Company's Board of Directors, with an exercise price of \$14.00. The award is being accounted for pursuant to ASC 505-50. Stock compensation expense issued to the non-employee is calculated based on the fair value of the award on each balance sheet date and the attribution of that cost is being recognized ratably over the vesting period. The Company has utilized the Black-Scholes option-pricing model to determine the fair value of the stock options.

Mark Burnett did not seek nomination for re-election at the Annual Meeting of Stockholders on June 8, 2018. As a result, 125,000 unvested options were terminated, and as of December 31, 2018, all previously vested options had expired unexercised.

Restricted Stock Units

The Company intends to settle all vested restricted stock unit payments held by United States-based participants, except for certain awards to the Chief Operating Officer, in shares of the Company's common stock and classifies these awards as equity awards in its Consolidated Balance Sheets. Awards held by participants who are based outside of the United States, and those awards agreed with participants to be settled in cash, will be settled in cash and are classified within accrued and other current liabilities on the Consolidated Balance Sheets as of December 31, 2018 and 2017.

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The following table summarizes the activity related to the unvested restricted stock units during the years ended December 31, 2018 and 2017:

	Number of Units	Weighted-Average Grant-Date Fair Value
Unvested restricted stock units outstanding - December 31, 2016	—	\$ —
Granted	5,147,190	\$ 3.43
Vested	(1,975,448)	\$ 3.43
Forfeited	(65,718)	\$ 3.39
Unvested restricted stock units outstanding - December 31, 2017	3,106,024	\$ 3.43
Granted	853,736	\$ 1.46
Vested	(1,583,399)	\$ 3.18
Forfeited	(563,400)	\$ 3.39
Unvested restricted stock units outstanding - December 31, 2018	<u>1,812,961</u>	<u>\$ 2.74</u>

Unrecognized compensation expense related to unvested restricted stock units was \$3,562 at December 31, 2018, which is expected to be recognized as expense over the weighted-average period of 1.5 years.

During the year ended December 31, 2018, the Company issued 782,364 shares of common stock to participants of the 2016 Plan based in the United States, after withholding approximately 472,965 shares to satisfy tax withholding obligations. During the year ended December 31, 2018, the Company made cash payments of \$1,495 to cover employee withholding taxes upon the settlement of these vested restricted stock units. During the year ended December 31, 2018, the Company also paid \$300 to cash-settle 100,025 vested restricted stock units by agreement with the Chief Operating Officer in relation to certain grants made to him and to pay cash in lieu of fractional shares for vested units held by participants based in the United States.

Note 17 Net Income (Loss) Per Share

The following table sets forth reconciliations of the numerators and denominators used to compute basic and diluted net income (loss) per share of common stock and redeemable common stock for the years ended December 31, 2018 and 2017:

	Year ended December 31,	
	2018	2017
	Common Stock	Common Stock
Income (loss) per share numerator:		
Net loss from continuing operations	\$ (190,433)	\$ (131,399)
Net loss from discontinued operations	(1,719)	(43,812)
Net loss for basic and diluted net loss per share	<u>\$ (192,152)</u>	<u>\$ (175,211)</u>
Income (loss) per share denominator:		
Weighted-average shares for basic net income (loss) per share	109,168,798	116,737,860
Effect of dilutive securities	—	—
Weighted-average shares for dilutive net income (loss) per share	<u>109,168,798</u>	<u>116,737,860</u>
Basic and diluted net loss per share from continuing operations	<u>\$ (1.74)</u>	<u>\$ (1.12)</u>
Basic and diluted net loss per share from discontinued operations	<u>\$ (0.02)</u>	<u>\$ (0.37)</u>
Basic and diluted net loss per share	<u>\$ (1.76)</u>	<u>\$ (1.49)</u>

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The following number of potential common shares at the end of each period were excluded from the calculation of diluted net loss per share attributable to common stockholders because their effect would have been anti-dilutive for the periods presented:

	Year Ended December 31,	
	2018	2017
Unvested restricted stock	—	3,490
Unvested phantom units	588,852	1,292,785
Unexercised stock options	—	500,000
Unvested restricted stock units	1,812,961	3,106,024
Convertible notes	8,815,655	8,815,655

Note 18 Related Party Transactions

NantWorks Shared Services Agreement

In October 2012, the Company entered into a shared services agreement with NantWorks that provides for ongoing services from NantWorks in areas such as public relations, information technology and cloud services, human resources and administration management, finance and risk management, environmental health and safety, sales and marketing services, facilities, procurement and travel, and corporate development and strategy (the "Shared Services Agreement"). The Company was billed quarterly for such services at cost, without mark-up or profit for NantWorks, but including reasonable allocations of employee benefits, facilities and other direct or fairly allocated indirect costs that relate to the associates providing the services. The Company incurred \$2,214 and \$5,174 of expenses during the years ended December 31, 2018 and 2017, respectively, related to selling, general and administrative services provided to the Company by NantWorks and affiliates, net of services provided to NantWorks and affiliates. Additionally, the Company incurred \$356 and \$239 of expenses during the years ended December 31, 2018 and 2017, respectively, related to research and development services provided by NantWorks and its subsidiaries.

Related Party Receivables and Payables

As of December 31, 2018 and 2017, the Company had related party receivables, net of payables of \$2,618 and \$2,312, respectively. The related party receivables, net as of December 31, 2018 and 2017 primarily consisted of a receivable from Ziosoft KK of \$1,915 and \$2,082, respectively, which was related to the sale of Qi Imaging. As of December 31, 2018 and 2017, the Company had related party payables, net of receivables balances including related party liabilities of \$22,499 and \$16,004, respectively, which primarily relate to amounts owed to NantWorks pursuant to the Shared Services Agreement, amounts owed to NantOmics under the Second Amended Reseller Agreement (defined below) and interest payable. The balance of the related party receivables and payables represent amounts paid by affiliates on behalf of the Company or vice versa.

Amended Reseller Agreement

On June 19, 2015, the Company entered into a five and a half year exclusive Reseller Agreement with NantOmics for sequencing and bioinformatics services (the "Original Reseller Agreement"). NantOmics is a majority owned subsidiary of NantWorks and is controlled by the Company's Chairman and CEO. On May 9, 2016, the Company and NantOmics executed an Amended and Restated Reseller Agreement (the "Amended Reseller Agreement"), pursuant to which the Company received the worldwide, exclusive right to resell NantOmics' quantitative proteomic analysis services, as well as related consulting and other professional services, to institutional customers (including insurers and self-insured healthcare providers) throughout the world. The Company retained its existing rights to resell NantOmics' genomic sequencing and bioinformatics services. Under the Amended Reseller Agreement, the Company is responsible for various aspects of delivering its sequencing and molecular analysis solutions, including patient engagement and communications with providers such as providing interpretations of the reports delivered to the physicians and resolving any disputes, ensuring customer satisfaction, and managing billing and collections. On September 20, 2016, the Company and NantOmics further amended the Reseller Agreement (the "Second Amended Reseller Agreement"). The Second Amended Reseller Agreement permits the Company to use vendors other than NantOmics to provide any or all of the services that are currently being provided by NantOmics and clarifies that the Company is responsible for order fulfillment and branding.

NantHealth, Inc.
Notes to Consolidated Financial Statements
(Dollars in thousands, except per share amounts)

The Second Amended Reseller Agreement grants to the Company the right to renew the agreement (with exclusivity) for up to three renewal terms, each lasting three years, if the Company achieves projected volume thresholds, as follows: (i) the first renewal option can be exercised if the Company completes at least 300,000 tests between June 19, 2015 and June 30, 2020; (ii) the second renewal option can be exercised if the Company completes at least 570,000 tests between July 1, 2020 and June 30, 2023; and (iii) the third renewal option can be exercised if the Company completes at least 760,000 tests between July 1, 2023 and June 30, 2026. If the Company does not meet the applicable volume threshold during the initial term or the first or second exclusive renewal terms, the Company can renew for a single additional three year term, but only on a non-exclusive basis.

The Company agreed to pay NantOmics noncancelable annual minimum fees of \$2,000 per year for each of the calendar years from 2016 through 2020 and, subject to the Company exercising at least one of its renewal options described above, the Company is required to pay annual minimum fees to NantOmics of at least \$25,000 per year for each of the calendar years from 2021 through 2023 and \$50,000 per year for each of the calendar years from 2024 through 2029.

On December 18, 2017, the Company and NantOmics executed Amendment No. 1 to the Second Amended Reseller Agreement. The Second Amended Reseller Agreement is amended to allow fee adjustments with respect to services completed by NantOmics between the amendment effective date of October 1, 2017 to June 30, 2018.

As of December 31, 2018 and 2017, the Company had \$394 and \$419, respectively, of outstanding related party payables under the Second Amended Reseller Agreement. During the years ended December 31, 2018 and 2017, direct costs of \$5,238 and \$4,891, respectively, were recorded as cost of revenue related to the Second Amended Reseller Agreement.

Cambridge Purchase Agreement

On December 15, 2016, the Company entered into a purchase agreement (the "Cambridge Purchase Agreement") with Cambridge Equities, L.P., an entity affiliated with the Company's Chairman and CEO Dr. Patrick Soon-Shiong ("Cambridge"), to issue and sell \$10,000 in aggregate principal amount of the Convertible Notes in a private placement pursuant to an exemption from the registration requirements of the Securities Act afforded by Section 4(a)(2) of the Securities Act. The Cambridge Purchase Agreement includes customary representations, warranties and covenants by the Company and customary closing conditions (See Note 12). The accrued and unpaid interest on the Convertible Notes was \$24 at both December 31, 2018 and 2017, as part of current related party liabilities on the Consolidated Balance Sheets.

Assignment of NantHealth Labs, Inc. (formerly Liquid Genomics, Inc.)

On July 5, 2018 Liquid Genomics, Inc. filed a certificate of amendment to its certificate of incorporation with the secretary of state for Delaware to change its name to NantHealth Labs, Inc. ("NantHealth Labs").

On February 28, 2018, the Company acquired 100% of the equity of NantHealth Labs, a company that provides liquid biopsy analysis of gene expressions and mutations using cell-free RNA and DNA, pursuant to an assignment agreement dated February 1, 2018 between the Company and NantOmics, a related party. The purchase price for the acquisition consisted of 9,088,362 Series A-2 units of NantOmics previously owned by the Company that were transferred at the closing plus 564,779 of Series A-2 units of NantOmics owned by the Company that were transferred to NantOmics during May 2018.

The Company and NantOmics are controlled by the Company's Chairman and CEO, therefore no gain or loss was recognized on the transaction. The difference in the purchase price and the historical cost of the assets and liabilities acquired was recorded as a distribution from equity at the assignment date. The transaction did not cause a material change in the reporting entity, and the Company has not retrospectively adjusted its previously issued financial statements. The consolidation of NantHealth Labs at February 28, 2018 added \$808 to the Company's sequencing and molecular analysis revenue for the year ended December 31, 2018. This revenue was substantially all earned from agreements with affiliates, described below. As a result of consolidating NantHealth Labs at February 28, 2018, the net loss of the Company increased by \$2,223 during the year ended December 31, 2018.

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The intangible assets acquired are amortized over the estimated useful life of 13 years.

	Amounts
NantOmics Series A-2 shares transferred, or to be transferred, to NantOmics	\$ 8,956
Assets and liabilities of NantHealth Labs at assignment:	
Goodwill	1,305
Intangible asset	4,429
Other assets	251
Liabilities assumed	(814)
Net assets acquired at assignment	5,171
Recorded as distribution from additional paid-in capital	\$ 3,785

Liquid Tumor Profiling Services Agreements

In March 2018, NantHealth Labs, a wholly-owned subsidiary of the Company, and NantKwest, Inc. ("NantKwest"), an affiliate, entered into agreements whereby NantHealth Labs is providing liquid tumor profiling services to NantKwest for clinical trials, on an annual, stand-ready, basis from the date of the first test of each participant, with revenues recognized ratably over time for the period of the stand-ready obligation.

In June 2018, NantHealth Labs entered into similar agreements to provide liquid tumor profiling services to Altor BioScience ("Altor"), NantCell, Inc. ("NantCell"), and NantBioScience, Inc. ("NantBio"), all affiliates of the Company.

Under these agreements, the Company recorded \$590 of revenue during the year ended December 31, 2018. As of December 31, 2018, the Company has \$540 of accounts receivable from related parties and \$375 of deferred revenue due to these agreements.

Related Party Promissory Notes

On January 4, 2016, the Company executed a \$112,666 demand promissory note in favor of NantCapital to fund the acquisition of NaviNet. The note bears interest at a per annum rate of 5.0%, compounded annually and computed on the basis of the actual number of days elapsed and a year of 365 or 366 days, as the case may be. The unpaid principal and any accrued and unpaid interest on the note was originally due and payable on demand in either (i) cash, (ii) shares of the Company's common stock based on per share price of \$18.6126, (iii) Series A-2 units of NantOmics based on a per unit price of \$1.484 to the extent such equity is owned by the Company or (iv) any combination of the foregoing, all at the option of NantCapital. Subject to the preceding sentence, the Company may prepay the outstanding amount at any time, either in whole or in part, without premium or penalty and without the prior consent of NantCapital. On May 9, 2016, the promissory note with NantCapital was amended to provide that all outstanding principal and accrued interest is due and payable on June 30, 2021, and not on demand. On December 15, 2016, in connection with the offering of the Convertible Notes, the Company entered into a Second Amended and Restated Promissory Note which amends and restates the Amended and Restated Promissory Note, dated May 9, 2016, between the Company and NantCapital, to, among other things, extend the maturity date of the Promissory Note to June 30, 2022 and to subordinate the Promissory Note in right of payment to the Convertible Notes (See Note 11). No other terms of the promissory note were changed. As of December 31, 2018 and 2017, the total principal and interest outstanding on the note amounted to \$130,374 and \$124,166, respectively. The accrued and unpaid interest on the note was \$17,708 and \$11,500 at December 31, 2018 and 2017, respectively, as part of noncurrent related party liabilities on the Consolidated Balance Sheet. The Company can request additional advances subject to NantCapital approval. The NantCapital Note bears interest at a per annum rate of 5.0% compounded annually and computed on the basis of the actual number of days in the year. NantCapital has the option, but not the obligation, to require us to repay any such amount in cash, Series A-2 units of NantOmics (based on a per unit price of \$1.484) held by us, shares of the Company's common stock based on a per share price of \$18.6126 (if such equity exists at the time of repayment), or any combination of the foregoing at the sole discretion of NantCapital.

On January 22, 2016, the Company executed a demand promissory note in favor of NantOmics. The principal amount of the initial advance totaled \$20,000. On March 8, 2016, NantOmics made a second advance to the Company for \$20,000. The note bears interest at a per annum rate is 5.0% and is compounded annually. In May and June of 2016, the Company executed amendments to the demand promissory note with NantOmics, which provide that all unpaid principal of each advance owed to NantOmics and any accrued and unpaid interest would convert automatically into shares of the Company's common stock after pricing of the Company's IPO and immediately after conversion of the Company from a limited liability company to a corporation. On June 1, 2016, approximately \$40,590 of principal and accrued interest under the promissory note with NantOmics was converted into 2,899,297 shares of the Company's common stock in connection with the IPO. The Company can request additional advances subject to NantOmics approval, and as of December 31, 2018 and 2017, there was no outstanding balance on the promissory note.

NantHealth, Inc.
Notes to Consolidated Financial Statements
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On August 8, 2018, the Company executed a promissory note in favor of NantCapital, with a maturity date of June 15, 2022. The note bears interest at a per annum rate of 9.75% and is compounded annually, with interest payments on outstanding amounts due on June 15 and December 15 of each calendar year. No advances have currently been made under the note. The note allows the Company to request advances, up to a maximum commitment of \$100,000. Advances can be requested of up to \$10,000 per calendar quarter until March 31, 2019 and, following that, up to \$20,000 per calendar quarter until December 31, 2020, after which no further advances can be requested. The promissory note is subordinated to the Convertible Notes (see Note 11). The promissory note includes customary negative covenants and a Performance to Plan - Adjusted EBITDA covenant that stipulates, in order for the Company to draw on the promissory note, the profit measure, as defined in the agreement, may not negatively deviate from board approved financial plans by more than 25%. At December 31, 2018, the Company was in compliance with the covenants.

Note 19 Employee Retirement Plan

The Company has a qualified defined contribution plan (the "NantHealth 401(k) Plan") under Section 401(k) of the Internal Revenue Code covering eligible associates, including associates at certain of its subsidiaries. Associate contributions to the NantHealth 401(k) Plan are voluntary. The Company contributes a 100% match up to 3.0% of the participant's eligible annual compensation, which contribution fully vests after three years of service. Participants' contributions are limited to their annual tax deferred contribution limit as allowed by the Internal Revenue Service. For the years ended December 31, 2018 and 2017, the Company's total matching contributions to the NantHealth 401(k) Plan were \$1,328 and \$2,050, respectively.

Note 20 Selected Quarterly Financial Information (Unaudited)

The following tables show a summary of the Company's quarterly financial information for each of the four quarters of the years ended December 31, 2018 and 2017 (Unaudited):

	Year Ended December 31, 2018			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Net revenue	\$ 22,263	\$ 22,047	\$ 22,292	\$ 22,862
Cost of revenue	11,068	10,582	11,226	11,393
Gross profit	11,195	11,465	11,066	11,469
Operating expenses	26,942	25,331	22,890	20,733
Loss from operations	(15,747)	(13,866)	(11,824)	(9,264)
Net loss from continuing operations	(21,975)	(21,806)	(97,432)	(49,220)
(Loss) gain from discontinued operations, net of tax	(193)	(1,591)	(32)	97
Net loss	(22,168)	(23,397)	(97,464)	(49,123)
Basic and diluted net loss per share:				
Continued operations - common stock	\$ (0.20)	\$ (0.20)	\$ (0.89)	\$ (0.45)
Discontinued operations - common stock	\$ —	\$ (0.01)	\$ —	\$ —
Total net loss per common stock	\$ (0.20)	\$ (0.21)	\$ (0.89)	\$ (0.45)
Basic and diluted net income per redeemable common stock	N/A	N/A	N/A	N/A

NantHealth, Inc.
Notes to Consolidated Financial Statements
(Dollars in thousands, except per share amounts)

Year Ended December 31, 2017

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Net revenue	\$ 19,104	\$ 23,514	\$ 21,760	\$ 22,298
Cost of revenue	11,518	9,652	11,472	8,880
Gross profit	7,586	13,862	10,288	13,418
Operating expenses	27,415	28,655	26,324	30,660
Loss from operations	(19,829)	(14,793)	(16,036)	(17,242)
Net loss from continuing operations	(28,126)	(57,696)	(23,015)	(22,562)
(Loss) income from discontinued operations, net of tax	(12,989)	(12,368)	(19,383)	928
Net loss	(41,115)	(70,064)	(42,398)	(21,634)
Basic and diluted net income (loss) per share:				
Continued operations - common stock	\$ (0.23)	\$ (0.48)	\$ (0.20)	\$ (0.21)
Discontinued operations - common stock	\$ (0.11)	\$ (0.10)	\$ (0.17)	\$ 0.01
Total net loss per common stock	\$ (0.34)	\$ (0.58)	\$ (0.37)	\$ (0.20)
Basic and diluted net income per redeemable common stock	N/A	N/A	N/A	N/A

Note 21 Subsequent Events

On March 21, 2019, we received a notice from Nasdaq stating that we had regained compliance with Nasdaq Listing Rule 5450(a) (1) (the "Minimum Bid Price Rule") because our common stock maintained a minimum closing bid price of \$1.00 for 10 consecutive business days. This followed the notice of January 16, 2019, stating that we were not in compliance the Minimum Bid Price Rule, because our common stock failed to maintain a minimum closing bid price of \$1.00 for 30 consecutive business days.

REPORT OF INDEPENDENT AUDITORS

To the Board of Directors and Members of
NantOmics, LLC and Subsidiaries

We have audited the accompanying consolidated financial statements of NantOmics, LLC and Subsidiaries, which comprise the consolidated balance sheet as of December 31, 2018, and the related consolidated statement of operations and comprehensive loss, changes in members' equity, and cash flows for the year ended December 31, 2018, and the related notes to the consolidated financial statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in conformity with U.S. generally accepted accounting principles; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of consolidated and combined financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated and combined financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditors consider internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of NantOmics, LLC and Subsidiaries as of December 31, 2018, and the consolidated results of their operations and their consolidated cash flows for the year ended December 31, 2018, in accordance with accounting principles generally accepted in the United States of America.

/s/ Ernst & Young LLP

Los Angeles, California
March 29, 2019

INDEPENDENT AUDITORS' REPORT

To the Board of Directors and Members of
NantOmics, LLC and Subsidiaries

We have audited the accompanying consolidated and combined financial statements of NantOmics, LLC and Subsidiaries, which comprise the consolidated balance sheets as of December 31, 2017 and 2016, and the related consolidated and combined statements of operations and comprehensive loss, changes in members' equity, and cash flows for the years ended December 31, 2017, 2016 and 2015, and the related notes to the consolidated and combined financial statements.

Management's Responsibility for the Consolidated and Combined Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated and combined financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of consolidated and combined financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these consolidated and combined financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated and combined financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated and combined financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the consolidated and combined financial statements, whether due to fraud or error. In making those risk assessments, the auditors consider internal control relevant to the entity's preparation and fair presentation of the consolidated and combined financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the consolidated and combined financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated and combined financial statements referred to above present fairly, in all material respects, the financial position of NantOmics, LLC and Subsidiaries as of December 31, 2017 and 2016, and the results of their operations and their cash flows for the years ended December 31, 2017, 2016 and 2015, in accordance with accounting principles generally accepted in the United States of America.

/s/ Mayer Hoffman McCann, P.C.
March 16, 2018
Los Angeles, California

Member of Kreston International - a global network of independent accounting firms

NantOmics, LLC and Subsidiaries
Consolidated Balance Sheets
(In thousands, except unit amounts)

	December 31,	
	2018	2017
Assets		
Current assets		
Cash and cash equivalents	\$ 7,367	\$ 5,925
Accounts receivable, net of allowance of \$0 and \$167 at December 31, 2018 and 2017, respectively	99	280
Related party accounts receivable, net of allowance of \$0 at December 31, 2018 and 2017	481	710
Related party notes receivable	167,045	158,320
Prepaid expenses and other current assets	693	1,697
Total current assets	175,685	166,932
Property and equipment, net	17,624	34,946
Marketable securities - available for sale	1,578	8,843
Cost method investments	—	5,000
Goodwill	7,623	8,928
Intangible assets, net	4,232	10,473
Other assets	71	225
Total assets	<u>\$ 206,813</u>	<u>\$ 235,347</u>
Liabilities and Members' Equity		
Current liabilities		
Accounts payable	\$ 3,155	\$ 12,036
Accrued expenses	1,585	3,203
Related party payables	12,848	7,783
Related party promissory notes payable	92,816	63,170
Deferred revenue, current	5,000	5,000
Other current liabilities	2,779	706
Total current liabilities	118,183	91,898
Deferred revenue, non-current	2,303	2,474
Other non-current liabilities	686	3,499
Total liabilities	<u>121,172</u>	<u>97,871</u>
Members' equity		
Series A-1 units: 1,008,412 and 1,008,105 units issued and outstanding at December 31, 2018 and 2017, respectively	31,896	27,585
Series A-2 units: 166,160 and 175,813 units issued and outstanding at December 31, 2018 and 2017, respectively	249,568	258,524
Series B units: 150,000 units authorized, 8,457 units issued and outstanding at December 31, 2018 and 2017 (excluding liability-classified units)	2,713	2,129
Accumulated deficit	(193,373)	(147,420)
Total NantOmics members' equity	90,804	140,818
Non-controlling interests	(5,163)	(3,342)
Total members' equity	85,641	137,476
Total liabilities and members' equity	<u>\$ 206,813</u>	<u>\$ 235,347</u>

The accompanying notes are an integral part of these Consolidated and Combined Financial Statements.

NantOmics, LLC and Subsidiaries
Consolidated and Combined Statements of Operations and Comprehensive Loss
(In thousands)

	Year Ended December 31,	
	2018	2017
Revenue:		
Related party revenue	\$ 5,632	\$ 5,126
Third party revenue	547	953
Net revenue	6,179	6,079
Cost of Revenue:		
Cost of revenue	10,734	14,274
Amortization of acquisition-related assets	224	1,059
Total cost of revenue	10,958	15,333
Gross loss	(4,779)	(9,254)
Operating Expenses:		
Selling, general and administrative (including related party shared service expenses of \$1,679 and \$2,230 for the years ended December 31, 2018 and 2017)	11,082	12,969
Research and development	23,050	26,952
Total operating expenses	34,132	39,921
Loss from operations	(38,911)	(49,175)
Impairments on equity investments	(12,265)	(19,976)
Interest income (expense), net	4,589	6,364
Other income (expense), net	(337)	134
Loss before income taxes	(46,924)	(62,653)
Provision for income taxes	—	—
Net loss and comprehensive loss	(46,924)	(62,653)
Less: Net loss attributable to non-controlling interests	(971)	(2,346)
Net loss attributable to NantOmics	<u>\$ (45,953)</u>	<u>\$ (60,307)</u>

The accompanying notes are an integral part of these Consolidated and Combined Financial Statements.

NantOmics, LLC and Subsidiaries
Consolidated and Combined Statements of Changes in Members' Equity
(In thousands, except per unit amounts)

	Series A-1 Units		Series A-2 Units		Series B Units		Accumulated Deficit	NantOmics, LLC Equity	Non- controlling Interests	Total Equity
	Units	Amount	Units	Amount	Units	Amount				
Balance at December 31, 2016	1,007,805	\$27,713	175,813	\$258,524	8,457	\$ 1,574	\$ (87,113)	\$ 200,698	\$ (542)	\$ 200,156
Non-cash contributions by Parent	—	402	—	—	—	—	—	402	—	402
Forgiveness of related party receivables	—	(452)	—	—	—	—	—	(452)	—	(452)
Acquisition of Liquid Genomics	—	(53)	—	—	—	—	—	(53)	—	(53)
Equity based compensation	—	(33)	—	—	—	555	—	522	—	522
Issuance of membership interests	300	295	—	—	—	—	—	295	(741)	(446)
Contribution of non-controlling interests by Parent	—	644	—	—	—	—	—	644	(644)	—
Forgiveness of TRM liabilities	—	(931)	—	—	—	—	—	(931)	931	—
Net loss	—	—	—	—	—	—	(60,307)	(60,307)	(2,346)	(62,653)
Balance at December 31, 2017	1,008,105	27,585	175,813	258,524	8,457	2,129	(147,420)	140,818	(3,342)	137,476
Non-cash contributions by Parent	—	177	—	—	—	—	—	177	—	177
Equity based compensation	—	28	—	—	—	584	—	612	—	612
Issuance of membership interests	307	296	—	—	—	—	—	296	(751)	(455)
Assignment of non-controlling interests	—	(23)	—	—	—	—	—	(23)	(99)	(122)
Assignment of Liquid Genomics	—	3,833	(9,653)	(8,956)	—	—	—	(5,123)	—	(5,123)
Net loss	—	—	—	—	—	—	(45,953)	(45,953)	(971)	(46,924)
Balance at December 31, 2018	<u>1,008,412</u>	<u>\$31,896</u>	<u>166,160</u>	<u>\$249,568</u>	<u>8,457</u>	<u>\$ 2,713</u>	<u>\$ (193,373)</u>	<u>\$ 90,804</u>	<u>\$ (5,163)</u>	<u>\$ 85,641</u>

The accompanying notes are an integral part of these Consolidated and Combined Financial Statements.

NantOmics, LLC and Subsidiaries
Consolidated and Combined Statements of Cash Flows
(In thousands)

	Year Ended December 31,	
	2018	2017
Cash flows from operating activities:		
Net loss	\$ (46,924)	\$ (62,653)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation	9,813	9,545
Amortization	1,872	2,473
Equity-based compensation	612	2,199
Impairments	12,265	19,976
Non-cash interest items, net	(8,725)	(8,264)
Non-cash contributions by Parent	177	402
Other	120	64
Net changes in operating assets and liabilities, net of business combinations:		
Accounts receivable, net	176	(12)
Related party accounts receivable, net	229	2,488
Prepaid and other current assets	(32)	814
Other assets	153	23
Accounts payable	(7,930)	1,806
Accrued expenses and other liabilities	(2,114)	(417)
Related party payables	4,947	2,430
Deferred revenue	(171)	(220)
Net cash used in operating activities	<u>(35,532)</u>	<u>(29,346)</u>
Cash flows from investing activities:		
Purchases of property and equipment	(794)	(5,865)
Proceeds from sale of fixed assets	8,626	—
Acquisition of businesses, net of cash acquired	—	(4,308)
Assignment of businesses, net of cash assigned	(68)	—
Purchases of marketable securities	—	(6)
Proceeds from sales of marketable securities	—	89
Investments in related party notes receivable	—	(1,175)
Purchase of non-controlling interests	(578)	(446)
Net cash provided by/(used in) investing activities	<u>7,186</u>	<u>(11,711)</u>
Cash flows from financing activities:		
Repayments of notes payable	—	(54)
Repayments of capital lease obligations	(108)	(330)
Proceeds from issuance of related party promissory notes payable	29,896	42,157
Net cash provided by financing activities	<u>29,788</u>	<u>41,773</u>
Net increase in cash and cash equivalents	1,442	716
Cash and cash equivalents, beginning of year	5,925	5,209
Cash and cash equivalents, end of year	<u>\$ 7,367</u>	<u>\$ 5,925</u>

The accompanying notes are an integral part of these Consolidated and Combined Financial Statements.

NantOmics, LLC and Subsidiaries
Consolidated and Combined Statements of Cash Flows
(In thousands)

	Year Ended December 31,	
	2018	2017
Supplemental disclosure of cash flow information:		
Non-cash transactions:		
Purchase of intangible assets in exchange for forgiveness of notes receivable	\$ —	\$ 1,193
Forgiveness of related party receivables	—	452
Forgiveness of TRM liabilities	—	931
Acquisition of assets included in accounts payable and related party payables	679	8,802
Contribution of non-controlling interests by parent	—	644
Supplemental cash flow information:		
Cash paid for interest	9	14
Cash paid for income taxes	—	—

The accompanying notes are an integral part of these Consolidated and Combined Financial Statements.

NantOmics, LLC and Subsidiaries
Notes to Consolidated and Combined Financial Statements
(In thousands, except per unit amounts)

1. Description of Business and Basis of Presentation

Nature of Business

NantOmics, LLC ("NantOmics"), a Delaware limited liability company, was formed on September 20, 2012. NantOmics, together with its subsidiaries (together, the "Company"), delivers molecular diagnostic capabilities with the intent of providing actionable intelligence and molecularly driven decision support for cancer patients and their providers at the point of care. It also has a highly scalable cloud-based infrastructure capable of storing and processing thousands of genomes a day, computing genomic variances in near real-time and correlating proteomic pathway analysis with quantitative multiplexed protein expression analysis from the same micro-dissected tumor sample used for genomic analysis. NantOmics is a majority-owned subsidiary of NantWorks, LLC ("NantWorks" or "Parent"), which is a subsidiary of California Capital Equity, LLC ("Cal Cap"). The three companies were founded and are led by Dr. Patrick Soon-Shiong.

NantOmics conducts its operations directly and through the following subsidiaries, all of which are based in the United States.

- *Expression Pathology, Inc. doing business as OncoPlex Diagnostics ("OncoPlex")* - formed under the laws of the State of Maryland on December 6, 2001, provides molecular diagnostics through a CAP-accredited, CLIA-certified oncology laboratory linking clinical proteomics and genomics to support personalized patient care.
- *Five3 Genomics, LLC ("Five3G")* - formed under the laws of the State of Delaware on May 20, 2010, to commercialize certain patent rights which were licensed from The Regents of the University of California on December 20, 2010. Five3G provides data processing and analysis services for personalized cancer therapy, matching treatments to specific genetic aberrations discovered in the cancer cells of individual patients.
- *NantCare, LLC, formerly known as NantCRO ("NantCare")* - formed under the laws of the State of Delaware on April 4, 2014, provides clinical research services to support the pharmaceutical, biotechnology, medical device and various other industries.

Basis of Presentation

The consolidated and combined financial statements and accompanying notes have been prepared in accordance with accounting principles generally accepted in the United States of America.

The accompanying consolidated and combined financial statements include the financial statements of entities in which the Company has a controlling financial interest. Equity interests of the Company's subsidiaries that are not owned by the Company are referred to as non-controlling interests. Intercompany balances and transactions between the consolidated entities have been eliminated.

On July 31, 2017, NantOmics acquired Liquid Genomics, Inc. ("Liquid Genomics") from NantCell, Inc. ("NantCell"), an entity controlled by the Company's Chairman and Chief Executive Officer ("CEO") (see Note 3). The assets and liabilities of Liquid Genomics were recorded at their carryover basis since NantOmics and NantCell are under common control. The results of operations, equity accounts and cash flows of Liquid Genomics have been combined with the Company beginning on March 31, 2017, the date of inception of common control, through July 31, 2017, the date of acquisition by NantOmics. On February 28, 2018, the Company sold its 100% interest in Liquid Genomics to NantHealth pursuant to an assignment agreement dated February 1, 2018 (see Note 3).

The accompanying consolidated and combined financial statements have been prepared assuming the Company will continue as a going concern, which contemplates the realization of assets and the satisfaction of liabilities in the normal course of business, and do not include any adjustments to reflect the possible future effects on the recoverability and classification of assets or amounts and classification of liabilities that may result from the outcome of this uncertainty. The Company believes its existing cash, cash equivalents, outstanding amounts of notes receivable and ability to borrow from affiliated entities will be sufficient to fund operations through at least 12 months following the issuance date of the financial statements based upon the Company's Chairman and CEO's intent and ability to support the Company's operations with additional funds as required. The Company may also seek to sell additional equity or sell additional debt securities or obtain a credit facility. However, the Company may not be able to secure such financing in a timely manner or on favorable terms. Without additional funds, the Company may choose to delay or reduce its operating or investment expenditures.

NantOmics, LLC and Subsidiaries
Notes to Consolidated and Combined Financial Statements
(In thousands, except per unit amounts)

2. Summary of Significant Accounting Policies

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America ("GAAP") requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. The estimates and assumptions used in the accompanying consolidated and combined financial statements are based upon management's evaluation of the relevant facts and circumstances at the balance sheet date. On an ongoing basis, the Company evaluates its estimates, including those related to revenue recognition, the accounts receivable allowance, useful lives of long-lived assets and intangible assets, and income taxes. The Company bases its estimates on historical experience and on various other assumptions that are believed to be reasonable, the results of which can affect the reported amounts of assets and liabilities as of the date of the consolidated and combined financial statements, as well as the reported amounts of revenue and expenses during the periods presented.

Variable Interest Entities

The Company evaluates its ownership interests, contractual rights and other interests in entities to determine if the entities are variable interest entities ("VIEs"), if it has a variable interest in those entities and the nature and extent of those interests. These evaluations are highly complex and involve judgment, the use of estimates and assumptions based on available historical information. In order for the Company to be the primary beneficiary of a VIE, it must have both (1) the power to direct the activities of a VIE that most significantly affect the VIE's economic performance and (2) the obligation to absorb losses or the right to receive benefits that, in either case, could potentially be significant to the VIE. The Company consolidates entities of which it is the primary beneficiary.

The Company determines whether it is the primary beneficiary of a VIE upon its initial involvement with the VIE and reassesses whether it is the primary beneficiary on an ongoing basis. This determination is based upon an analysis of the design of the VIE, including the VIE's structure and activities, the power to make significant economic decisions held by the Company and by other parties and the variable interests owned by the Company and other parties.

Non-controlling Interests

Non-controlling interests are classified as a separate component of equity in the consolidated balance sheets and consolidated and combined statements of changes in members' equity. Additionally, net loss attributable to non-controlling interests is reflected separately from consolidated net loss in the consolidated and combined statements of operations and comprehensive loss and changes in members' equity.

The Company records the non-controlling interests' share of income or loss based on the percentage of ownership interest retained by the respective non-controlling interest holders. The net loss attributable to the members of NantOmics is the total consolidated net loss less the net loss attributable to the non-controlling interests.

Revenue Recognition

Revenue represents the consideration received or receivable from customers for products and services provided by the Company. Revenues are generated from the following sources:

- *Genomic sequencing and bioinformatics services* - diagnostic services utilizing whole genome sequencing and RNA sequencing of a patient's tumor, with the patient's normal sample, to identify molecular alterations in the DNA and RNA of the patient's tumor.
- *Quantitative proteomics services* - proprietary clinical services that allow oncologists to determine the optimal treatment plan for oncology patients, based on a molecular analysis of both the mutant genes and dysfunctional proteins that drive the cellular biochemistry responsible for an individual's cancer.
- *Research services* - contract research services for bio-pharmaceutical companies related to cancer drug development generally sold under fixed price contracts.

NantOmics, LLC and Subsidiaries
Notes to Consolidated and Combined Financial Statements
(In thousands, except per unit amounts)

- *Other revenue* - includes translational research services, the commercial sale of gene mutation and protein expression panel testing kits and license revenues based on net sales of the licensees' use of the Company's patented process.

The Company recognizes revenue when (1) persuasive evidence of an arrangement exists, (2) delivery has occurred, (3) the fee is fixed or determinable, and (4) collectibility is reasonably assured. The Company recognizes revenue on a cash basis when it cannot conclude that criterion (3) and (4) have been met.

On June 19, 2015, the Company entered into an exclusive Reseller Agreement with NantHealth, pursuant to which the Company granted to NantHealth the worldwide, exclusive right to resell the Company's genomic sequencing and bioinformatics services to commercial third-party payors, self-insured health plans, hospitals and other provider networks ("Institutional Customers") (see Note 13). On May 9, 2016, the Company also granted to NantHealth the worldwide, exclusive right to resell the Company's quantitative proteomic analysis services to Institutional Customers. Unless first granted by the Company to NantHealth on a case-by-case basis, NantHealth does not have the right to resell the Company's genomic and proteomic sequencing and related bioinformatics services to research, academic or educational institutions, pharmaceutical or biotechnology companies or individual patients or consumers.

Revenue from the Company's genomic and proteomic sequencing and bioinformatics services sold by NantHealth under the Reseller Agreement is recognized when the Company delivers the completed genomic and proteomic reports which summarize the tests' results to NantHealth's customer and all other revenue recognition criteria have been met. The Company reports revenue from these arrangements based on the amount of fees owed by NantHealth to the Company.

The Company currently recognizes revenue on a cash basis from historical sales of its proteomics services for which the Company receives payments from third-party payors and from patients, who make co-payments, pay deductibles or from other amounts that the Company has been unable to collect from third-party payors. The Company granted NantHealth the right to sell to these customers and therefore the Company doesn't expect to sell to these customers directly in the future.

Research service revenue is recognized using the proportional performance method. Unless it is determined as part of the Company's regular contract performance review that overall progress on a contract is not consistent with costs expended to date, the Company recognizes revenue based on the percentage of costs incurred to date in relation to total estimated costs expected upon completion of the contract.

Revenue from product sales is recognized upon shipment or delivery, depending on terms of the arrangement. License and royalty revenue is recognized in the period in which the royalty is earned.

For arrangements that include multiple elements, the Company identifies the separate units of accounting and allocates the total arrangement consideration to the units of accounting on the basis of their relative selling price. The selling price used for each deliverable is based on vendor-specific objective evidence of fair value ("VSOE"), if available, third party evidence of fair value ("TPE") if VSOE is not available or the Company's best estimate of selling price if neither VSOE nor TPE is available. In determining the units of accounting for these arrangements, the Company evaluates whether each deliverable has value to the customer on a standalone basis.

Deferred Revenue

The Company recognizes deferred revenue for amounts it collects from its customers prior to satisfying the Company's revenue recognition policy. The Company uses judgment in determining the period over which the deliverables are recognized as revenue. Non-current deferred revenue is expected to be earned more than one year after the balance sheet date.

Fair Value Measurement

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Fair value measurements are classified and disclosed in one of the following three categories:

- Level 1 - Quoted prices for identical assets or liabilities in active markets;
- Level 2 - Quoted prices for similar assets or liabilities in active markets or quoted prices for identical or similar assets or liabilities in markets that are not active or are directly or indirectly observable; and
- Level 3 - Unobservable inputs that reflect estimates and assumptions.

NantOmics, LLC and Subsidiaries
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(In thousands, except per unit amounts)

The carrying amounts reported in the balance sheet for cash and cash equivalents, accounts receivable, accounts payable and other current monetary assets and liabilities approximate fair value because of the immediate or short-term maturity of these financial instruments.

The Company's goodwill and other intangible assets and its investments in non-marketable equity securities are measured at fair value on a non-recurring basis and are adjusted to fair value only if an impairment charge is recognized.

Cash and Cash Equivalents

The Company considers all unrestricted, highly liquid investments with an initial maturity of three months or less to be cash equivalents. These amounts are stated at cost, which approximates fair value. As of December 31, 2018 and 2017, cash equivalents were deposited in financial institutions and consisted of immediately available fund balances. Cash and cash equivalents were maintained at stable financial institutions, generally at amounts in excess of federally insured limits, which represent a concentration of credit risk. The Company has not experienced any losses on deposits of cash and cash equivalents to date.

Marketable Securities

The Company's marketable securities consist of an investment in NantHealth's common stock and are reported on the balance sheet at fair value based upon quoted market prices (see Note 7).

The Company classifies its investment in NantHealth as an available-for-sale equity security. Any unrealized gains and losses on the NantHealth investment, which are deemed to be temporary, are reported as a separate component of members' equity. A decline in the market value of any available-for-sale security below its carrying value that is determined to be other-than-temporary would result in a charge to earnings and decrease in the security's carrying value down to its newly established fair value. Factors evaluated to determine if an investment is other-than-temporarily impaired include significant deterioration in earnings performance, credit rating, asset quality or business prospects of the issuer, adverse changes in the general market condition in which the issuer operates, the Company's intent to hold to maturity and an evaluation as to whether it is more likely than not that the Company will not have to sell the investment before recovery of its cost basis and issues that raise concerns about the issuer's ability to continue as a going concern.

Accounts Receivable and Allowance for Doubtful Accounts

Accounts receivable and related party accounts receivable are generated from genomic sequencing services, research services, licenses and royalties and product sales to various commercial entities. The Company does not record accounts receivable associated with amounts billed to third-party payors and directly to patients for proteomics services because this revenue is recognized on a cash basis. Management determines the allowance for doubtful accounts by regularly evaluating the age of individual customer receivables and considering a customer's financial condition, credit history and current economic conditions. Management has recorded an allowance for doubtful accounts for those amounts that it has determined may not be collectible.

Property and Equipment, net

Property and equipment received in connection with business combinations are recorded at fair value. Property and equipment acquired in the normal course of business are recorded at cost. Depreciation is computed on a straight line basis over the estimated useful lives of the related assets (see Note 4). Maintenance and repairs are charged to expense as incurred while expenditures for refurbishments and improvements that significantly add to the productive capacity or extend the useful life of an asset are capitalized. The estimated useful lives of the assets are as follows:

Equipment acquired under capital lease	3 to 5 years
Equipment and other	3 to 10 years
Computer equipment and software	3 to 4 years

NantOmics, LLC and Subsidiaries
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Business Combinations

Business combinations are accounted for using the acquisition method of accounting. Under the acquisition method, assets acquired and liabilities assumed are recorded at their respective fair values as of the acquisition date. Any excess of the purchase price over the estimated fair values of the net assets acquired is recorded as goodwill. Management routinely monitors the factors impacting the acquired assets and liabilities. Transaction related costs are expensed as incurred. The operating results of the acquired business are reflected in the Company's consolidated and combined financial statements as of the acquisition date.

Goodwill and Intangible Assets

Goodwill acquired in a business combination and determined to have an indefinite useful life is not amortized but is tested for impairment annually or between annual tests when an impairment indicator exists. The Company evaluates goodwill based upon its reporting units, which are defined as operating segments or, in certain situations, one level below the operating segment. If an optional qualitative goodwill impairment assessment is not performed, the Company is required to determine the fair value of each reporting unit using a quantitative test. If a reporting unit's fair value is lower than its carrying value, the Company must determine the amount of implied goodwill that would be established if the reporting unit was hypothetically acquired on the impairment test date. If the carrying amount of a reporting unit's goodwill exceeds the amount of implied goodwill, an impairment loss equal to the excess would be recorded.

The determination of fair value of a reporting unit is based on a combination of a market approach that considers benchmark company market multiples and an income approach that uses discounted cash flows for each reporting unit utilizing Level 3 inputs. Under the income approach, the Company determines the fair value based on the present value of the most recent income projections for each reporting unit and calculates a terminal value utilizing a terminal growth rate. The significant assumptions under this approach include, among others: income projections, which are dependent on sales to new and existing customers, new product introductions, customer behavior, competitor pricing, operating expenses, the discount rate, and the terminal growth rate. The cash flows used to determine fair value are dependent on a number of significant management assumptions based on historical experience, expectations of future performance and the expected economic environment. Estimates are subject to change given the inherent uncertainty in predicting future results. Additionally, the discount rate and the terminal growth rate are based on judgment of the rates that would be utilized by a hypothetical market participant.

Accounting guidance requires that definite-lived intangible assets be amortized over their respective estimated useful lives and reviewed for impairment whenever events or changes in circumstances indicate that their carrying amounts may not be recoverable. The Company estimates the useful lives of the intangible assets and ratably amortizes the value over the estimated useful lives of those assets. If the estimates of the useful lives change, the Company will amortize the remaining book value over the remaining useful lives or, if an asset is deemed to be impaired, a write-down of the value of the asset to its fair value may be required at such time.

Cost Method Investments

The Company owns non-marketable equity securities that are accounted for under the cost method because the investments are not in the form of common stock or in-substance common stock. All investments are reviewed on a regular basis for possible impairment. If an investment's fair value is determined to be less than its net carrying value and the decline is determined to be other-than-temporary, the investment is written down to its fair value. Such an evaluation is judgmental and dependent on specific facts and circumstances. Factors considered in determining whether an other-than-temporary decline in value has occurred include: market value of the investment based on most recent rounds of financing by the investee; length of time that the market value was below its cost basis; financial condition and business prospects of the investee; the Company's intent and ability to retain the investment for a sufficient period of time to allow for recovery in market value of the investment; issues that raise concerns about the investee's ability to continue as a going concern; any other information that the Company may be aware of related to the investment.

Research and Development Expenses

Research and development ("R&D") costs are expensed as incurred and include salary and benefits, professional fees, laboratory supplies, depreciation on laboratory and computer equipment, and allocated shared service expenses.

NantOmics, LLC and Subsidiaries
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Equity Based Compensation

The Company accounts for equity based compensation awards by expensing the estimated grant date fair value of the award over the requisite service period. The Company records stock-based compensation expense on a straight-line basis over the requisite service period of the grant and in accordance with Accounting Standard Update (“ASU”) No. 2016-09, *Compensation—Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting* (“ASU 2016-09”), made an accounting policy election to account for forfeitures as they occur rather than by applying an estimated forfeiture rate at the time of grant.

Income Taxes

The Company is a limited liability company that has subsidiaries that are limited liability companies and one subsidiary that is a corporation. The loss of the entities classified as pass-through entities for tax purposes flow directly through to the members of the Company.

The net loss of the corporations are accounted under the asset and liability method. Deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases using enacted tax rates in effect for the year in which the differences are expected to affect taxable income. Tax benefits are recognized when it is more likely than not that a tax position will be sustained during an audit. Deferred tax assets are reduced by a valuation allowance if current evidence indicates that it is considered more likely than not that these benefits will not be realized. Management has evaluated the Company’s tax positions and has concluded that the Company has taken no uncertain tax positions that require adjustment to the financial statements. The Company is no longer subject to income tax examination by the U.S. federal, state or local tax authorities for years ended December 31, 2014 and prior.

Concentrations of Risk

For the years ended December 31, 2018 and 2017, one related party customer accounted for 89% and 82% of the Company’s revenue, respectively.

Recent Accounting Pronouncements

In August 2018, FASB issued ASU 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework—Changes to the Disclosure Requirements for Value Measurement* (“ASU 2018-13”) which modifies the disclosure requirements on fair value measurements. This ASU is effective for fiscal years beginning after December 15, 2019. The Company is currently evaluating the impact that ASU 2018-13 will have on its consolidated and combined financial statements and related disclosures.

In June 2018, FASB issued ASU 2018-07, *Compensation - Stock Compensation (Topic 718): Improvements to Nonemployee Share Based Payment Accounting* (“ASU 2018-07”). Under this ASU, the accounting for share-based payments to nonemployees and employees will be substantially aligned, primarily by permitting the measurement of nonemployee awards to be fixed at the grant date. The amendments in this ASU are effective for fiscal years beginning after December 15, 2018. The Company is currently evaluating the impact that ASU 2018-07 will have on its consolidated and combined financial statements and related disclosures.

In January 2017, the Financial Accounting Standards Board (“FASB”) issued ASU 2017-04, *Intangibles-Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment* (“ASU 2017-04”), a standard which simplifies the accounting for goodwill impairment. The guidance removes Step 2 of the goodwill impairment test, which requires a hypothetical purchase price allocation. Goodwill impairment will now be the amount by which a reporting unit’s carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. The revised guidance will be applied prospectively, and is effective for the Company’s annual goodwill impairment tests in fiscal years beginning after December 15, 2020. Early adoption is permitted for goodwill impairment tests performed on testing dates after January 1, 2017. The Company is currently evaluating the effect that ASU 2017-04 will have on its consolidated and combined financial statements and related disclosures.

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In January 2017, the FASB issued ASU 2017-01, *Business Combinations (Topic 805): Clarifying the Definition of a Business* ("ASU 2017-01"). The amendments in this update clarify the definition of a business with the objective of adding guidance to assist entities with evaluating whether transactions should be accounted for as acquisitions or disposals of assets or businesses. The definition of a business affects many areas of accounting including acquisitions, disposals, goodwill and consolidation. The guidance is effective for the Company for annual periods beginning after December 15, 2017 and should be applied prospectively on or after the effective date. The Company adopted ASU 2017-01 on January 1, 2018 and the adoption did not have any impact on its consolidated financial statements.

In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers (Topic 606)* ("ASU 2014-09") and issued subsequent amendments to the initial guidance in August 2015, March 2016, April 2016, May 2016 and December 2016 within ASU 2015-14, ASU 2016-08, ASU 2016-10, ASU 2016-12 and ASU 2016-20, respectively, which amend the guidance in former Accounting Standards Codification ("ASC") Topic 605, *Revenue Recognition*. This guidance requires that entities recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. In July 2015, the FASB decided to delay the effective date of ASU 2014-09 by one year. Additionally, in September 2017, the FASB issued ASU 2017-13, *Revenue Recognition (Topic 605), Revenue from Contracts with Customers (Topic 606), Leases (Topic 840), and Leases (Topic 842)* ("ASU 2017-13"), which delayed the effective date of ASU 2014-09 for the Company to align with the effective date of non-public companies. As a result, the Company is required to apply the new standard beginning January 1, 2019. The Company is currently evaluating the effect that the new revenue standard will have on its consolidated and combined financial statements and related disclosures.

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments - Credit Losses*. The amendment updates the guidance for measuring and recording credit losses on financial assets measured at amortized cost by replacing the incurred-loss model with an expected-loss model. Accordingly, these financial assets will be presented at the net amount expected to be collected. This new standard also requires that credit losses related to available-for-sale debt securities be recorded as an allowance through net income rather than reducing the carrying amount under the current, other-than-temporary-impairment model. The new standard is effective for interim and annual periods beginning on December 15, 2020, but may be adopted earlier, as of the fiscal years beginning after December 15, 2018. With certain exceptions, adjustments are to be applied using a modified-retrospective approach by reflecting adjustments through a cumulative-effect impact on retained earnings as of the beginning of the fiscal year of adoption. The Company is currently evaluating the effect that ASU 2016-13 will have on its consolidated and combined financial statements and related disclosures.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)* ("ASU 2016-02"), to increase transparency and comparability among organizations by recognizing lease assets and lease liabilities, including for operating leases, on the balance sheet and disclosing key information about leasing arrangements. As a result of the guidance in ASU 2017-13, this guidance is effective for the Company's financial statement periods beginning January 1, 2020 and after. Additionally, the FASB issued ASU 2018-11, *Leases (Topic 842): Targeted Improvements* ("ASU 2018-11"), which offers an additional transition method whereby entities may apply the new leases standard at the adoption date and recognize a cumulative-effect adjustment to the opening balance of retained earnings rather than application of the new leases standard at the beginning of the earliest period presented in the financial statements. The Company is currently evaluating the effect that ASU 2016-02 and ASU 2018-11 will have on its consolidated and combined financial statements and related disclosures.

3. Business Combinations

2017 Acquisitions

Liquid Genomics

On July 31, 2017, the Company acquired 100% of the outstanding equity interests in Liquid Genomics from NantCell, a related party, in exchange for \$7,241. The purchase price consisted of \$5,000 to reimburse NantCell for the approximate \$5,000 worth of NantCell's common stock that was issued to the former Liquid Genomics stockholders at the time of NantCell's merger with Liquid Genomics on March 31, 2017 plus an additional \$2,241 which represented the amount of funding provided by NantCell to Liquid Genomics between March 31 and July 31, 2017.

NantOmics, LLC and Subsidiaries
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(In thousands, except per unit amounts)

The value of the identifiable assets acquired for the Liquid Genomics acquisition is shown in the table below:

Cash and cash equivalents	\$	152
Developed technology		4,579
Goodwill		1,305
Property and equipment, net		357
Other assets		166
Accounts payable		(234)
Accrued expenses		(144)
Capital lease obligations		(197)
Other current liabilities		(24)
Related party payables		(31)
Related party promissory note payables		(250)
Total assets acquired and liabilities assumed	\$	<u>5,679</u>

The Company accounted for the transaction as the acquisition of a business between entities under common control since both NantCell and the Company are controlled by the Company's Chairman and CEO. Therefore, the Company recognized the assets and liabilities of Liquid Genomics at historical cost. The Company recorded the difference between the \$7,241 cash paid to NantCell and the historical cost of Liquid Genomics' net assets as an equity transaction with its Parent.

The estimated useful life of the acquired developed technology intangible is thirteen years.

On February 28, 2018, the Company sold 100% of the equity of Liquid Genomics, pursuant to an assignment agreement dated February 1, 2018 between the Company and NantHealth, a related party. The purchase price for the acquisition consisted of 9,088,362 Series A-2 units of NantOmics previously owned by NantHealth that were transferred at the closing plus 564,779 of Series A-2 units of NantOmics owned by NantHealth that were transferred to the Company during May 2018. The Company and NantHealth are controlled by the Company's Chairman and CEO, therefore no gain or loss was recognized on the transaction. The transaction did not cause a material change in the reporting entity, and the Company has not retrospectively adjusted its previously issued financial statements.

Genos

On January 24 and February 15, 2017, the Company purchased convertible notes under a secured note purchase agreement with Genos Research, Inc. ("Genos") with a principal amount of \$675 and \$500, respectively. On April 13, 2017, NantOmics paid \$30 in cash and forgave \$1,193 of principal and interest outstanding under the convertible notes in exchange for certain of Genos' assets, including its proprietary technology platform (see Note 5). The Company accounted for the transaction as a business combination and attributed the consideration transferred of \$1,223 to Genos' developed technology. The estimated useful life of the acquired developed technology is seven years.

4. Property and Equipment, net

Property and equipment as of December 31, 2018 and 2017 consisted of the following:

	December 31,	
	2018	2017
Equipment and other	\$ 32,967	\$ 47,204
Equipment acquired under capital leases	—	1,856
Computer equipment and software	5,727	6,610
	38,694	55,670
Less: accumulated depreciation	(21,070)	(20,724)
Property and equipment, net	<u>\$ 17,624</u>	<u>\$ 34,946</u>

Depreciation expense was \$9,813 and \$9,545 for the years ended December 31, 2018 and 2017, respectively.

NantOmics, LLC and Subsidiaries
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5. Intangible Assets and Goodwill

Intangible Assets

As of December 31, 2018 and 2017, definite-lived intangible assets consisted of the following:

	December 31, 2018	
	Developed Technologies	Total
Gross carrying amount	\$ 15,823	\$ 15,823
Accumulated amortization	(11,591)	(11,591)
Intangible assets, net	\$ 4,232	\$ 4,232

	December 31, 2017	
	Developed Technologies	Total
Gross carrying amount	\$ 20,523	\$ 20,523
Accumulated amortization	(10,050)	(10,050)
Intangible assets, net	\$ 10,473	\$ 10,473

During the year ended December 31, 2017, the Company recorded \$1,223 and \$4,700 of intangible assets related to developed technologies as a result of the Genos asset purchase and Liquid Genomics acquisitions, respectively (see Note 3). The developed technologies are amortized over a period of seven and thirteen years, respectively. During the year ended December 31, 2018, the Company wrote off \$4,700 of intangible assets derived from the Liquid Genomics acquisition as a result of the subsequent assignment of Liquid Genomics to NantHealth (see Note 3).

Amortization expense was \$1,872 and \$2,473 for the years ended December 31, 2018 and 2017, respectively.

The estimated future amortization expense for the intangible assets that exist as of December 31, 2018 is as follows:

For the year ended December 31,	Amounts
2019	\$ 1,589
2020	1,589
2021	646
2022	175
2023	175
Thereafter	58
	\$ 4,232

Goodwill

The change in the net carrying amount of goodwill for the years ended December 31, 2018 and 2017 is provided below.

	Amounts
Balance at December 31, 2016	\$ 7,623
Activity during the year:	
Acquisitions (see Note 3)	1,305
Balance at December 31, 2017	8,928
Activity during the year:	
Assignment (see Note 3)	(1,305)
Balance at December 31, 2018	\$ 7,623

During the year ended December 31, 2017, the Company added \$1,305 of goodwill related to the acquisition of Liquid Genomics (See Note 3). During the year ended December 31, 2018, the \$1,305 of goodwill related to the acquisition of Liquid Genomics was subsequently written off as a result of the Company's assignment of Liquid Genomics to NantHealth (see Note 3).

NantOmics, LLC and Subsidiaries
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6. Cost Method Investments

OptraSCAN, Inc.

On October 14, 2016, the Company purchased 4,900 shares of Series A preferred stock from OptraSCAN, Inc. (“OptraSCAN”) at a cash purchase price of \$5,000. OptraSCAN is an on-demand digital pathology company that was formed shortly before the Company’s initial investment and is considered by the Company to be a variable interest entity (see Note 13 for the disclosures related to the Company’s involvement with other variable interest entities). The Company uses the cost method to account for this investment because the shares of the investee’s preferred stock are not voting common stock, were not considered in-substance common stock and do not have readily determinable fair values.

The shares of preferred stock owned by the Company as of December 31, 2016 represented 49.0% of the outstanding equity of OptraSCAN on an as-converted, non-diluted basis and entitled the Company to appoint two directors to OptraSCAN’s five-person Board of Directors. Since all significant decisions of OptraSCAN require a majority vote by the members of its Board of Directors, including decisions related to the hiring, firing and setting the compensation levels of all key executives and the approval of the annual operating budget, the Company does not have the power over the activities that most significantly impact the economic performance of OptraSCAN. Therefore, the Company is not considered the primary beneficiary and does not have a controlling interest in OptraSCAN as of December 31, 2016.

The \$5,000 carrying amount of this investment represents the Company’s maximum exposure to loss as of December 31, 2017 as the Company has not committed to providing additional financial support to OptraSCAN. As of December 31, 2018, certain factors arose that raised doubts about OptraSCAN’s ability to continue operating as a going concern. As a result, the Company qualitatively determined that the investment was not recoverable and recognized other-than-temporary impairment for the full investment of \$5,000 during the year ended December 31, 2018. This amount is classified within impairments on equity investments on the consolidated and combined statement of operations and comprehensive loss.

7. Fair Value Measurements

Assets and liabilities measured at fair value on a recurring basis as of December 31, 2018 and 2017 consisted of the following:

	December 31, 2018			
	Total fair value	Quoted price in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)
Assets:				
Cash equivalents	\$ 5,121	\$ 5,121	\$ —	\$ —
Marketable securities - available for sale	1,578	1,578	—	—
Total assets	\$ 6,699	\$ 6,699	\$ —	\$ —
Liabilities:				
Other current liabilities (see Note 11)	\$ 2,711	\$ —	\$ —	\$ 2,711
Total liabilities	\$ 2,711	\$ —	\$ —	\$ 2,711

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	December 31, 2017			
	Total fair value	Quoted price in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)
Assets:				
Cash equivalents	\$ 5,039	\$ 5,039	\$ —	\$ —
Marketable securities - available for sale	8,843	8,843	—	—
Total assets	\$ 13,882	\$ 13,882	\$ —	\$ —
Liabilities:				
Other non-current liabilities (see Note 11)	\$ 2,739	\$ —	\$ —	\$ 2,739
Total liabilities	\$ 2,739	\$ —	\$ —	\$ 2,739

The Company's goodwill and other intangible assets and its investments in non-marketable equity securities are measured at fair value on a non-recurring basis and are adjusted to fair value only if an impairment charge is recognized. No impairments were recorded for these assets during the years ended December 31, 2018 and 2017.

8. Commitments and Contingencies

Lease Arrangements

The Company leases equipment under various non-cancellable capital leases and office space under various operating leases, which expire at various dates through March 2026. Rental expense associated with operating leases is charged to expense in the year incurred and is included in the consolidated and combined statements of operations and comprehensive loss. Rent expense totaled \$2,336 and \$2,215 for the years ended December 31, 2018 and December 31, 2017, respectively.

The following is a schedule of the future minimum lease payments required under these leases as of December 31, 2018:

	Operating Leases
<i>For the year end December 31,</i>	
2019	\$ 1,181
2020	891
2021	521
2022	1,015
2023	1,045
Thereafter	2,464
Total minimum lease payments	\$ 7,117

The Company classifies the current portion of capital lease obligations within other current liabilities and the non-current portion within other non-current liabilities. The Company is recognizing the total cost of its office leases ratably over the lease period. The difference between rent paid and rent expense is reflected as deferred rent and is classified within other non-current liabilities in the accompanying consolidated balance sheets.

Regulatory Matters

The Company is subject to regulatory oversight by the U.S. Food and Drug Administration and other regulatory authorities with respect to the development, manufacturing, and sale of some of the products. In addition, the Company is subject to the Health Insurance Portability and Accountability Act ("HIPAA"), the Health Information Technology for Economic and Clinical Health Act and related patient confidentiality laws and regulations with respect to patient information. The Company reviews the applicable laws and regulations regarding effects of such laws and regulations on its operations on an ongoing basis and modifies operations as appropriate. The Company believes it is in substantial compliance with all applicable laws and regulations. Failure to comply with regulatory requirements could have a significant adverse effect on the Company's business and operations.

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Legal Matters

The Company is, from time to time, subject to claims and litigation arising in the ordinary course of business. The Company intends to defend vigorously any such litigation that may arise under all defenses that would be available to it. In the opinion of management, the ultimate outcome of proceedings of which management is aware, even if adverse to the Company, would not have a material adverse effect on the consolidated and combined financial statements. As legal proceedings are inherently unpredictable, the Company's assessments involve significant judgment regarding future events.

9. Income Tax

The components of the Company's provision (benefit) for income taxes are presented in the following tables:

	Year Ended December 31,	
	2018	2017
Current:		
Federal	\$ —	\$ —
State	—	—
Total current provision	—	—
Deferred:		
Federal	3,501	(4,359)
State	1,138	1,758
Less: valuation allowance	(4,639)	2,601
Total deferred benefit	—	—
Provision for income taxes	\$ —	\$ —

The Company's provision for income taxes differs from the amount of income tax determined by applying the applicable federal and state statutory income tax rates to the loss before income taxes due to the valuation allowance for the full amount of the net deferred tax assets.

Since the losses of the pass-through entities flow directly to the members of the Company for tax purposes, no provision for income taxes has been reflected in the consolidated and combined financial statements for these entities.

Deferred income taxes reflect temporary differences in the recognition of revenue and expenses for income tax reporting and financial statement purposes. Significant components of the Company's deferred tax assets as of December 31, 2018 and 2017 are as follows:

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	December 31,	
	2018	2017
Deferred tax assets		
Net operating loss carryforwards	\$ 18,719	\$ 20,235
Charitable contributions	—	13
Equity Compensation	21	6
Accrual to cash differences	308	478
Depreciation and amortization	792	553
Compensation accrual	—	22
Bad debt	—	47
	19,840	21,354
Less: Valuation allowance	(19,840)	(21,305)
Net deferred tax assets	\$ —	\$ 49
Deferred tax liabilities		
Depreciation and amortization	—	(29)
Capital lease	—	(20)
Net deferred tax liabilities	—	(49)
Deferred Tax Assets/(Liabilities)	\$ —	\$ —

The realization of deferred tax assets may be dependent on the Company's ability to generate sufficient income in future years in the associated jurisdiction to which the deferred tax assets relate. The Company considers all available positive and negative evidence, including scheduled reversals of deferred tax liabilities, projected future taxable income, tax planning strategies, and recent financial performance. Based on the review of all positive and negative evidence, including a three year cumulative pre-tax loss, it was concluded that a full valuation allowance should be recorded against all net deferred tax assets at December 31, 2018 and 2017 as none of the deferred tax assets were more likely than not to be realized as of the balance sheet dates. As a result of the assignment of Liquid Genomics to NantHealth on February 28, 2018 (see Note 3), there was a decrease of \$3,051 to the total valuation allowance during the year ended December 31, 2018 and as of December 31, 2018, deferred tax assets and liabilities related to Liquid Genomics are not included in the consolidated balances.

The Company paid no income taxes during the years ended December 31, 2018 and 2017. The Company has net operating loss ("NOL") carryforwards as of December 31, 2018 of approximately \$68,027, which may be available to offset future taxable income. The Tax Cuts and Jobs Act of 2018, which was enacted on December 22, 2017, significantly reforms the Internal Revenue Code (the "Code"), including changes to the rules governing net operating loss carryforwards. For net operating loss carryforwards arising in tax years beginning after December 31, 2017, the Tax Act limits a taxpayer's ability to utilize such carryforwards to 80% of taxable income. In addition, net operating loss carryforwards arising in tax years ending after December 31, 2017 can be carried forward indefinitely, but carryback is generally prohibited. Net operating loss carryforwards generated before January 1, 2018 will not be subject to the taxable income limitation and will continue to have a twenty-year carryforward period. However, the changes in the carryforward and carryback periods as well as the new limitation on use of net operating losses may significantly impact our ability to use net operating loss carryforwards generated after December 31, 2017.

Under Sections 382 and 383 of the Code, NOL carryforwards may become subject to annual limitations due to ownership changes that could occur in the future. The Company has not performed a comprehensive Section 382 study to determine any potential loss limitation resulting from past changes in ownership of its corporate subsidiary, and therefore it cannot be certain it will be able to fully utilize the NOL carryforwards to offset future taxable income.

10. Members' Equity

As of December 31, 2018 and 2017, the Company had three series of outstanding membership interests: Series A-1, Series A-2 and Series B units.

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Rights and Preferences

Series A-1 and A-2 Units

Each holder of the outstanding Series A-1 units is entitled to one vote on each matter submitted to a vote of the members. The members vote together as a single class on all matters on which they are entitled to vote and all actions taken by the members will be deemed approved upon consent by the members representing a majority of the outstanding Series A-1 units. Except for the initial capital contributions, no members are obligated to make additional contributions. Series A-2 units do not have any voting rights. The Series A-1 and A-2 units have the characteristics noted below.

Non-liquidating distributions - Holders of the Series A-1 and A-2 units are entitled to receive distributions from the Company as determined by its board of directors (the "Board"). Any non-liquidating distributions will be made to all members based on their respective percentage interests as of the distribution date.

Capital proceeds and liquidating distributions - The Board may make distributions of cash proceeds arising from the sale or other disposition of assets ("Capital Proceeds") or upon liquidation, dissolution, or winding up of the Company ("Liquidating Distributions"). Prior to a qualified initial public offering ("IPO"), distributions of Capital Proceeds and Liquidating Distributions are made in the following order: first to the holders of the Series A-1 and A-2 units on a pro rata basis in proportion to the number of their Series A-1 and A-2 units, until their "Unreturned Capital" has been reduced to zero; second to the holders of Series B units (the "Series B Members") on a pro rata basis in proportion to the number of their Series B units until their "Unreturned Capital", if any, has been reduced to zero; and thereafter, to all members based on their respective percentage interests as of the distribution date. Each member's "Unreturned Capital" is the difference between (1) the aggregate capital contributions by that member and (2) any Capital Proceeds or Liquidating Distributions previously distributed to that member. As of December 31, 2018 and 2017, the holders of the Series A-1 and A-2 units had cumulative Unreturned Capital balances of \$1,260,656 and \$1,269,157, respectively.

Upon a qualified IPO, the priority rights of the holders of the Series A-1, A-2 and B units will immediately terminate and distributions of Capital Proceeds or Liquidating Distributions will be made to the holders of the Series A-1, A-2 and B units based on their respective percentage interests as of the distribution date, subject to the applicable hurdle amount for the Series B units.

Series B Non-Voting Units

The Company has reserved an aggregate of 150,000 Series B units for issuance to employees, consultants, contractors and other service providers of the Company and its subsidiaries in consideration for bona fide services provided to the Company. Series B units do not have any voting or information rights.

The Series B units are considered profits interests of the Company and do not represent an interest in the capital of the Company, and would not entitle the Series B Members to receive distributions if the Company were liquidated immediately after the grant. Instead, the Series B Members are entitled to receive a pro rata allocation of a portion of the profit and loss of the Company arising after the date of the grant and distributions made out of a portion of the profits of the Company arising after the grant date of the Series B units.

Series B Members will not be entitled to receive any distributions until the aggregate distributions made by the Company exceed a hurdle amount applicable to those Series B units. The hurdle amount is determined by the Board at the date of issuance of such units. After all other members have received distributions equal to the hurdle amount, the Series B Members will be entitled to receive their percentage interest of such excess distributions.

11. Equity Based Compensation

NantOmics Profits Interests Plan

The Company has reserved 150,000 Series B units for issuance to employees, consultants, contractors and other service providers of the Company pursuant to the Profits Interests Plan. As of December 31, 2018 and 2017, there were 11,205 and 11,362 of outstanding Series B units, respectively.

As of December 31, 2018 and 2017, there were 2,748 and 2,905 outstanding Series B units, respectively, which provide their holders with the option to require the Company to purchase all of their vested Series B units at \$1.484 per unit if the Company has not completed an initial public offering or a sale prior to June 30, 2019. These awards are measured at fair value at the end of each reporting period until settlement using both an option pricing method and a geometric Brownian motion and are classified within other current liabilities and other non-current liabilities on the consolidated balance sheets as of December 31, 2018 and 2017, respectively.

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The remaining Series B units do not provide the holders with an option to require the Company to purchase their vested units and are therefore classified as a component of members' equity in the consolidated balance sheets. The fair value of the equity-classified Series B units was estimated at the date of grant using both an option pricing method and a probability weighted expected return method.

The primary inputs used to estimate the fair values of the Series B units are presented below:

	December 31,	
	2018	2017
Risk-free interest rate	2.53-2.56%	1.75-1.93%
Expected dividend yield	0.0%	0.0%
Expected volatility	45%	45%
Expected life in years	0.5-1.6	1-2.6

The estimated volatility was based on the historical equity volatility of comparable companies.

A summary of the Company's outstanding, nonvested, liability-classified Series B units and changes during the year ended December 31, 2018 is presented below:

Liability Classified Awards	Number of Series B Units Outstanding	Weighted Average Grant Date Fair Value
Nonvested outstanding, beginning of year	699	\$ 0.45
Granted	—	\$ 0.45
Vested	(542)	\$ 0.45
Forfeited	(157)	\$ 0.45
Nonvested outstanding, end of year	—	\$ 0.45

A summary of the Company's outstanding, nonvested, equity-classified Series B units and changes during the year ended December 31, 2018 is presented below:

Equity Classified Awards	Number of Series B Units Outstanding	Weighted Average Grant Date Fair Value
Nonvested outstanding, beginning of year	2,512	\$ 0.34
Vested	(1,004)	\$ 0.34
Nonvested outstanding, end of year	1,508	\$ 0.34

During the years ended December 31, 2018 and December 31, 2017, the Company recognized total equity based compensation expense for the Series B units, including both the equity- and liability-classified awards, of \$612 and \$2,199, respectively. As of December 31, 2018, total unrecognized equity based compensation expense of approximately \$224 is expected to be recognized over a weighted average period of 0.2 years.

12. Employee Retirement Plan

The Company has various employee retirement plans that it accounted for during the years ended December 31, 2018 and 2017.

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NantOmics and Five3G

The Company has a qualified defined contribution plan through a NantWorks Retirement Plan (the "NantWorks 401(k) Plan") under Section 401(k) of the Internal Revenue Code covering eligible employees, including employees at certain of its subsidiaries, who have completed 30 days of service. Employee contributions to the NantWorks 401(k) Plan are voluntary. The Company contributes a 100% match up to 3.0% of the participant's eligible annual compensation, which contribution fully vests after three years of service. Participants' contributions are limited to their annual tax deferred contribution limit as allowed by the Internal Revenue Service. For the years ended December 31, 2018 and December 31, 2017, the Company's total matching contributions to the 401(k) Plan were \$243 and \$272, respectively.

13. Related Party Transactions

Investment by NantHealth and Exclusive Reseller Agreement

On June 19 and June 30, 2015, the Company issued a total of 168,464 of Series A-2 units to NantHealth in exchange for \$250,000. Additionally, on September 8, 2015, the Company acquired a 54.0% equity interest in TRM, which was later dissolved in 2017, from NantHealth in exchange for \$250 in cash and 611 of NantOmics' Series A-2 units. During February and May 2018, NantHealth transferred a total of 9,653,141 Series A-2 units of NantOmics previously owned by NantHealth back to NantOmics as part of the Liquid Genomics sale (see Note 3). The Series A-2 units owned by NantHealth represent approximately 13.6% and 14.3% of the Company's total issued and outstanding membership interests as of December 31, 2018 and December 31, 2017, respectively. NantHealth is majority owned by NantWorks and is a transformational healthcare cloud-based IT company converging science and technology through a single integrated clinical platform, to provide actionable health information at the point of care.

In conjunction with NantHealth's original investment in NantOmics, the Company entered into an exclusive Reseller Agreement with NantHealth on June 19, 2015 and subsequently amended this agreement on May 9, 2016 (the "First Amended Reseller Agreement"). Under the First Amended Reseller Agreement, the Company granted to NantHealth the worldwide, exclusive rights to resell the Company's genomic sequencing, quantitative proteomic analysis services and bioinformatics services, as well as related consulting and other professional services, to Institutional Customers. NantHealth does not have the right to resell such services for research or educational purposes, for consumer applications, for the development, evaluation, trial, analysis or regulatory approval of any pharmaceutical product or treatment or to individual patients or consumers, unless the Company grants such right to NantHealth on a case-by-case basis. Under the First Amended Reseller Agreement, NantHealth is responsible for various aspects of delivering its sequencing and molecular analysis solutions, including patient engagement and communications with providers such as providing interpretations of the reports delivered to the physicians and resolving any disputes, ensuring customer satisfaction and managing billing and collections. On September 20, 2016, the Company and NantHealth further amended the First Amended Reseller Agreement (the "Second Amended Reseller Agreement"), which permits NantHealth to use vendors other than the Company to provide any or all of the services and clarifies that NantHealth is responsible for order fulfillment and branding.

The Second Amended Reseller Agreement grants to NantHealth the right to renew the agreement with exclusivity for up to three renewal terms, each lasting three years, if NantHealth achieves projected volume thresholds, as follows: (i) the first renewal option can be exercised if NantHealth sells at least 300 tests between June 19, 2015 and June 30, 2020; (ii) the second renewal option can be exercised if NantHealth sells at least 570 tests between July 1, 2020 and June 30, 2023; and (iii) the third renewal option can be exercised if NantHealth sells at least 760 tests between July 1, 2023 and June 30, 2026. If NantHealth does not meet the applicable volume threshold during the initial term or the first or second exclusive renewal terms, NantHealth has the right to renew for a single additional three year term, but only on a non-exclusive basis.

Under the Second Amended Reseller Agreement, the Company is entitled to a variable, per-service fee, depending on the net amount billed by NantHealth to its customer. NantHealth is obligated to pay to NantOmics non-cancellable annual minimum fees of at least \$2,000 per year for each of the calendar years from 2016 through 2020 and, subject to NantHealth exercising at least one of its renewal options described above, at least \$25,000 per year for each of the calendar years from 2021 through 2023 and at least \$50,000 per year for each of the calendar years from 2024 through 2029. The Company invoices for its services on a monthly basis and such invoices are due and payable within 45 days of receipt. NantHealth has the right to terminate the agreement for convenience on six months' prior written notice, and each party has the right to terminate the agreement in the event there is a material, uncured breach or ineligibility for federal healthcare programming by the other party.

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On June 30, 2017, NantHealth and NantOmics executed a letter in which NantOmics agreed to forgive certain receivables from NantHealth under the Second Amended and Restated Exclusive Reseller Agreement. As a result of the execution of this letter, the Company determined that \$452 in revenue previously recorded during the year ended December 31, 2016 was no longer collectible. Due to the fact that NantOmics and NantHealth are under common control, the Company recorded the forgiveness of the receivable as an equity transaction with its Parent as of December 31, 2017.

For the years ended December 31, 2018 and December 31, 2017, the Company recognized \$5,497 and \$5,013, respectively, of revenue and had \$465 and \$503 of outstanding related party accounts receivable as of December 31, 2018 and 2017 related to the Reseller Agreement with NantHealth.

Sequencing Agreement with NantKwest, Inc.

On June 18, 2015, the Company entered into a genomic and proteomic sequencing agreement with NantKwest, Inc. ("NantKwest"), a company that is controlled by NantOmics' Chairman and CEO. The Company is entitled to receive from NantKwest a fixed, per-sample fee, determined based on the type of services being provided. The Company invoices NantKwest on a monthly basis for services performed in the preceding month and invoices are payable within 30 days of receipt. The agreement has an initial term of five years and renews automatically for successive one year periods, unless terminated earlier. For the years ended December 31, 2018 and December 31, 2017, the Company recognized related party revenue of \$135 and \$113, respectively, under this arrangement in the consolidated and combined statements of operations and comprehensive loss. The Company had \$16 and \$100 of outstanding related party accounts receivable as of December 31, 2018 and 2017 related to the sequencing services agreement.

Master Services Agreement with Altor BioScience Corporation

On October 10, 2016, the Company entered into a master services agreement ("MSA") with Altor BioScience Corporation ("Altor") for the provision of certain laboratory services by the Company to Altor, a subsidiary of NantCell. The MSA has an initial term of five years or until termination or expiration without renewal of the last work order still in effect at the end of five years after the effective date, whichever is longer and unless terminated sooner. All amounts invoiced to Altor by the Company are payable within 30 days of receipt. Under the MSA, Altor has granted to the Company an exclusive, perpetual and royalty free license to any and all rights, including intellectual property rights, arising in the performance of the services in certain diagnostic fields. The Company has not recognized any amounts related to the MSA in the consolidated and combined financial statements as of December 31, 2018 and December 31, 2017.

NantWorks Shared Service Agreement

The consolidated and combined financial statements include significant transactions with NantWorks involving services provided to the Company pursuant to a Shared Services Agreement, such as public relations, information technology and cloud services, human resources and administration management, finance and risk management, facilities, procurement and travel, and corporate development and strategy. The costs of services have been directly charged or allocated to the Company by NantWorks using methods management believes are reasonable. These methods include reasonable estimates of percentages of NantWorks' employees' time or specific man hours, square footage percentage of shared facilities and infrastructure costs dedicated to the Company activities and specific reimbursement for services performed by third parties for NantWorks for the direct benefit of the Company. The Company was billed for such services at cost, without mark-up or profit for NantWorks, but including reasonable allocations of employee benefits, facilities and other direct or fairly allocated indirect costs that relate to the employees providing the services. The Company incurred \$1,679 and \$2,230 of expenses during the years ended December 31, 2018 and December 31, 2017, respectively, related to general and administrative services provided by NantWorks and its affiliates under this agreement. Such charges and allocations are not necessarily indicative of what would have been incurred if the Company had hired a third party to perform these services.

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Purchase of Property and Equipment

On June 24, 2016, the Company entered into an agreement with NantHealth UK, Ltd. ("NantHealth UK"), a wholly owned subsidiary of NantHealth, whereby the Company purchased storage and other computer equipment from NantHealth UK in exchange for a cash payment of \$144. The purchase price represented the net book value of the equipment as of the effective date. The Company accounted for the asset acquisition at carryover basis because NantHealth UK and the Company are under common control. The amount owed to NantHealth UK is classified within related party payables on the consolidated balance sheet as of December 31, 2018 and December 31, 2017, respectively.

Sale of Fixed Assets

On April 30, 2018 and May 31, 2018 OncoPlex and NantOmics entered into an agreement and subsequent amendment whereby OncoPlex and NantOmics sold various fixed assets to an affiliate of the Company. The purchase price of \$8,363 represented the net book value of the fixed assets as of the transaction date. The Company accounted for the asset sale at carryover basis because the affiliate to which the fixed assets were sold and the Company are under common control.

Related Party Notes Receivable

On September 4, 2015, Mox Networks, LLC ("Mox"), an affiliate of the Company, executed a demand promissory note in favor of the Company. The principal amount of the initial advance made by the Company to Mox totaled \$10,000. On February 24 and March 8, 2016, the Company advanced an additional \$5,559 and \$14,000, respectively, to Mox under the demand promissory note executed on September 4, 2015. The note receivable bears interest at a per annum rate of 8.0%, compounded annually and computed on the basis of the actual number of days elapsed and a year of 365 or 366 days, as the case may be. As of December 31, 2018, and December 31, 2017, the total interest receivable on this note was \$7,112 and \$4,595, respectively, and is included in related party notes receivable on the consolidated balance sheet. The unpaid principal and any accrued and unpaid interest on the note receivable are due and payable by Mox on demand by the Company. Mox may prepay the outstanding amount at any time, either in whole or in part, without premium or penalty and without the prior consent of the Company.

The Company does not have any representation on Mox's Board of Directors and does not otherwise have the power over the activities that most significantly impact its economic performance. As a result, while Mox is a variable interest entity, the Company is not considered the primary beneficiary of Mox. The unpaid principal and accrued and unpaid interest on the note receivable represents the Company's maximum exposure to loss as of December 31, 2018 and December 31, 2017 as the Company had not committed to providing additional financial support to Mox. See Note 6 for disclosures related to the Company's involvement with other variable interest entities.

On January 4, 2016, Nant Capital, LLC ("NantCapital"), an affiliate of the Company, executed a demand promissory note in favor of the Company. The principal amount of the advance made by the Company to NantCapital totaled \$112,666. The note receivable bears interest at a per annum rate of 5.0%, compounded annually and computed on the basis of the actual number of days elapsed and a year of 365 or 366 days, as the case may be. As of December 31, 2018 and 2017, the total interest receivable on this note was \$17,708 and \$11,500, respectively, and is included in related party notes receivable on the consolidated balance sheet. The unpaid principal and any accrued and unpaid interest on the note receivable are due and payable by NantCapital on demand by the Company in either (i) cash, (ii) equity of NantHealth, to the extent such equity is owned by NantCapital, (iii) Series A-2 units of the Company or (iv) any combination of the foregoing, all at the option of the Company. Subject to the preceding sentence, NantCapital may prepay the outstanding amount at any time, either in whole or in part, without premium or penalty and without the prior consent of the Company.

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Investment in NantHealth

On January 22, 2016, NantHealth executed a demand promissory note in favor of the Company. The principal amount of the initial advance made by the Company to NantHealth totaled \$20,000. On March 8, 2016, the Company made a second advance to NantHealth for \$20,000. Prior to the note converting into shares of NantHealth's common stock as discussed below, the note receivable bore interest at a per annum rate of 5.0%. In May and June of 2016, NantHealth executed amendments to the demand promissory note in favor of the Company which provide that all unpaid principal of each advance owed to the Company and any accrued and unpaid interest would convert automatically into shares of NantHealth's common stock after pricing of NantHealth's initial public offering and immediately after conversion of NantHealth from a limited liability company to a corporation, based on the initial public offering price of NantHealth's common stock. On June 1, 2016, approximately \$40,590 of principal and accrued interest on the note was converted into approximately 2,899 shares of NantHealth's common stock, representing approximately 2.4% of NantHealth's common stock then outstanding.

As of December 31, 2017, the Company's investment in NantHealth had a cost basis of \$28,819 and a fair value of \$8,843. The Company concluded that the unrealized \$19,976 loss was other-than-temporary based on the decline in the fair value of NantHealth's common stock since the investment was previously impaired as of December 31, 2016. As of December 31, 2018, the Company's investment in NantHealth had a cost basis of \$8,843 and a fair value of \$1,578. The Company concluded that the unrealized \$7,265 loss was other-than-temporary based on the decline in the fair value of NantHealth's common stock since the investment was previously impaired as of December 31, 2017. The Company currently does not intend to dispose of its NantHealth common stock. The other-than-temporary impairments of \$7,265 and \$19,976 are classified within impairments on equity investments in the consolidated and combined statement of operations and comprehensive loss for the years ended December 31, 2018 and December 31, 2017, respectively.

Related Party Payables

As of December 31, 2018 and 2017, the Company had related party payables of \$12,848 and \$7,783, respectively. The related party payables balance at December 31, 2018 primarily consisted of \$3,026 of borrowings from an affiliate, \$2,729 owed to NantWorks pursuant to the Shared Services Agreement, and \$6,733 for accrued and unpaid interest on the related party promissory notes. The related party payables balance at December 31, 2017 primarily consisted of \$3,026 of borrowings from an affiliate, \$1,826 owed to NantWorks pursuant to the Shared Services Agreement, and \$2,322 for accrued and unpaid interest on the related party promissory notes.

Related Party Promissory Notes Payable

On May 1, 2014, the Company executed a convertible demand promissory note with NantWorks. The outstanding principal amount of advances made by the related party to the Company pursuant to these notes totaled \$296 and \$296 as of December 31, 2018 and 2017, respectively. On January 22 and March 30, 2016, the Company transferred to NantWorks marketable securities having a fair value of \$8,730 and made a cash payment of \$1,236 as a partial repayment of multiple advances made pursuant to the convertible demand promissory note in favor of NantWorks. The repayment amounts consisted of \$9,483 of principal and \$483 of accrued interest. The note bears interest at a per annum rate of 3.0%, compounded annually and computed on the basis of the actual number of days in a year. NantWorks may, at its sole discretion, and at any time, convert the aggregate amount of the unpaid principal and any accrued and unpaid interest on the convertible promissory note into equity securities of the Company. As of December 31, 2018 and 2017, the total interest outstanding on this note amounted to \$25 and \$16, respectively, and is included in related party payables in the consolidated balance sheets.

On September 14, 2016, the Company executed a demand promissory note with NantCapital. The principal amount of advances made by NantCapital to the Company pursuant to these notes totaled \$86,349 and \$61,388 as of December 31, 2018 and 2017, respectively. The note bears interest at a per annum rate of 5.0%, compounded annually and computed on the basis of 365 or 366 days, as the case may be. As of December 31, 2018 and 2017, the total interest outstanding on this note amounted to \$6,484 and \$2,213, respectively, and is included in related party payables on the consolidated balance sheet.

On April 27, 2011, TRM executed a demand promissory note with an affiliate. The principal amount of the advance made by the related party to TRM totaled \$75 as of December 31, 2018 and December 31, 2017. The note bears interest at a per annum rate of 5.0%, compounded annually. In December 2017, this note was assigned to NantOmics as part of the dissolution of TRM (see Note 5). As of December 31, 2018 and 2017, the total interest outstanding on this note amounted to \$34 and \$29, respectively, and is included in related party payables on the consolidated balance sheet.

NantOmics, LLC and Subsidiaries
Notes to Consolidated and Combined Financial Statements
(In thousands, except per unit amounts)

On January 24, 2017, the Company executed a demand promissory note with an affiliate. The principal amount of advances made by the affiliate to the Company pursuant to these notes totaled \$1,160 as of December 31, 2018 and December 31, 2017. The note bears interest at a per annum rate of 5.0%, compounded annually and computed on the basis of 365 or 366 days, as the case may be. As of December 31, 2018 and December 31, 2017, the total interest outstanding on this note amounted to \$114 and \$54 respectively, and is included in related party payables on the consolidated balance sheet.

On March 1, 2017, Liquid Genomics executed a promissory note with NantWorks. The principal amount of the advance made by the related party to Liquid Genomics totaled \$250 as of December 31, 2017. The note bears interest at a per annum rate of 5.0%, compounded annually. As of December 31, 2017, the total interest outstanding on this note amounted to \$10 and is included in related party payables on the consolidated balance sheet. On February 28, 2018, the Company sold its 100% interest in Liquid Genomics to NantHealth pursuant to an assignment agreement dated February 1, 2018 (see Note 3).

On September 1, 2018, NantOmics executed a demand promissory note with an affiliate. The principal amount of advances made by the affiliate to NantOmics pursuant to this note totaled \$4,936 as of December 31, 2018. The note bears interest at a per annum rate of 5%, compounded annually and computed on the basis of 365 or 366 days, as the case may be. As of December 31, 2018, the total interest outstanding on this note amounted to \$75, and is included in related party payables on the consolidated balance sheet.

The unpaid principal and any accrued and unpaid interest on the convertible promissory note and all of the promissory notes with the related parties are due and payable on demand. The Company and its subsidiaries may prepay the outstanding amounts at any time, either in whole or in part, without premium or penalty.

Deemed Capital Contribution by Parent

In 2018 and 2017, the Company benefited from the use of certain equipment owned by an entity controlled by NantWorks. The Company recorded a non-cash expense of \$177 and \$402 and a corresponding capital contribution on behalf of NantWorks in the consolidated and combined financial statements for the year ended December 31, 2018 and 2017, respectively. The amount of the expense represents the depreciation expense that the Company would have recognized had it owned such assets during the period of use.

Related Party Sublease Income

In January 2017, OncoPlex entered into a sublease agreement with Precision Biologics, Inc. ("Precision Biologics"), a related party, related to its Rockville, Maryland, laboratory and office space, with an initial lease from November 1, 2016 through March 31, 2022. The sublease includes a portion of the premises consisting of approximately 3,758 rentable square feet of space. The monthly base rent is \$7 per month, with an annual 3% increase. The lease was subsequently terminated on April 10, 2018. For the year ended December 31, 2018 and December 31, 2017, the Company recognized \$28 and \$97 in other income on the consolidated statement of operations under the sublease agreement.

14. Subsequent Events

The Company has evaluated subsequent events through March 29, 2019, the date on which the consolidated and combined financial statements were available to be issued. There are no significant events that require disclosure in these consolidated and combined financial statements.

Item 9. Changes in and Disagreements With Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our disclosure controls and procedures are designed to ensure that information required to be disclosed in the reports we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and that such information is accumulated and communicated to management, including the Chief Executive Officer and Chief Financial Officer, to allow timely decisions regarding required disclosure.

Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our disclosure controls and procedures (as such term is defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) as of the end of the period covered by this report. Based on this evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were not effective as of such date due to a material weakness in our internal control over financial reporting related to our valuations of the Bookings Commitment liability and our related party equity method investment in NantOmics. As described below, we are implementing procedures to ensure that our disclosure controls and procedures are effective in the future.

Management's Annual Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with U.S. generally accepted accounting principles ("GAAP"). Internal control over financial reporting includes policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the Company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that receipts and expenditures of the Company are transacted in accordance with authorizations of management and directors of the Company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the Company's assets that could have a material effect on the financial statements.

Our management, under the supervision of our Chief Executive Officer and Chief Financial Officer, conducted an assessment of the effectiveness of its internal control over financial reporting as of December 31, 2018 based on the criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). Based on this assessment, management concluded that our internal control over financial reporting was not effective as of December 31, 2018 because of the material weakness described below.

A material weakness is defined as "a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the Company's annual or interim financial statements will not be prevented or detected on a timely basis."

Management identified the following material weakness related to its valuations of the Bookings Commitment liability and the Company's related party equity method investment in NantOmics that has caused management to conclude that as of December 31, 2018, our internal control over financial reporting was not effective:

- Management failed to design internal controls surrounding certain complex and non-recurring transactions that would support the identification of and consideration of all evidence in reaching certain accounting conclusions. Accordingly, management's control activities did not effectively i) consider all required elements needed to support the measurement of fair value of a liability or ii) assess the reasonableness of assumptions underlying prospective financial information used in the fair value measurement of the Company's investment in a related party.

Remediation Actions

The Company has implemented an agenda-driven meeting between Sales and Accounting leadership wherein specific elements of the Bookings Commitment (potential customers, amounts, expected dates and market factors) are discussed. This will allow for supporting evidence to be reviewed and the key unobservable inputs for management's fair value measurement of the liability to be

quantified. This new control will be performed at least quarterly and will engage key Company personnel to obtain measurement inputs as well as to integrate external economic data which impact the valuation.

The Company has implemented a control whereby the best available input assumptions and financial forecasts relative to NantOmics will be obtained timely so that detailed analyses of the Company's investment in NantOmics can be assessed for impairment. Such analyses will require review and approval.

Changes in Internal Control Over Financial Reporting

Except for the identification of the material weakness described above, there were no changes to our internal control over financial reporting identified in connection with the evaluation required by Rule 13a-15(d) and 15d-15(d) of the Exchange Act that occurred during the quarter ended December 31, 2018 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Inherent Limitations in the Effectiveness of Controls

Management recognizes that a control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints and that management is required to apply its judgment in evaluating the benefits of possible controls and procedures relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud or error, if any, have been detected. These inherent limitations include the realities that judgments in decision making can be faulty, and that breakdowns can occur because of a simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people, or by management override of the controls. The design of any system of controls also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions; over time, controls may become inadequate because of changes in conditions, or the degree of compliance with policies or procedures may deteriorate. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

Item 9B. Other Information

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required by this item will be contained in our definitive proxy statement to be filed with the Securities and Exchange Commission on Schedule 14A in connection with our 2019 Annual Meeting of Stockholders "Proxy Statement", which is expected to be filed not later than 120 days after the end of our fiscal year ended December 31, 2018, and is incorporated herein by reference.

Item 11. Executive Compensation

The information required by this item will be contained in the Proxy Statement under the heading "Executive Compensation" and "Director Compensation," and is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required by this item will be contained in the Proxy Statement under the headings "Security Ownership of Certain Beneficial Owners and Management" and "Equity Compensation Plan Information," and is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this item will be contained in the Proxy Statement under the headings "Security Ownership of Certain Beneficial Owners and Management" and "Equity Compensation Plan Information," and is incorporated herein by reference.

Item 14. Principal Accounting Fees and Services

The information required by this item will be contained in the Proxy Statement under the heading "Principal Accounting Fees and Services" and is incorporated herein by reference.

PART IV

Item 15. Exhibits, Financial Statement Schedules

(a) The consolidated financial statements schedules and exhibits filed as part of this Annual Report on Form 10-K are as follows:

(1) Consolidated financial statements

Reference is made to the consolidated financial statements identified in the "Index to Financial Statements" under Part II, Item 8 of this Annual Report.

(2) Financial Statement Schedules

All other schedules not listed above have been omitted because the information required to be set forth therein is not applicable or is otherwise in the consolidated financial statements or notes thereto.

(3) Exhibits

The documents listed in the Exhibit Index of this Annual Report are incorporated by reference or are filed with this Annual Report, in each case as indicated therein (numbered in accordance with Item 601 of Regulation S-K).

Exhibits Index

The exhibits listed in the accompanying index to exhibits are filed as part of, or incorporated by reference into, this Annual Report on Form 10-K.

Number	Exhibit Title	Incorporated by Reference			Filing Date	Filed Herewith
		Form	File No.	Exhibit		
3.1	Amended and Restated Certificate of Incorporation.	10-Q	001-37792	3.1	August 15, 2016	
3.2	Amended and Restated Bylaws.	10-Q	001-37792	3.2	August 15, 2016	
10.1.1+	Second Amended and Restated NantOmics Exclusive Reseller Agreement, dated as of September 20, 2016, by and between the Registrant and NantOmics, LLC.	10-Q	001-37792	10.1	November 10, 2016	
10.1.2+	Amended and Restated NantOmics Exclusive Reseller Agreement, dated as of May 9, 2016, by and between the Registrant and NantOmics, LLC.	S-1/A	333-211196	10.1	June 1, 2016	
10.2+	NantHealth License Agreement, dated June 19, 2015, by and between the Registrant and NantOmics, LLC, as amended.	S-1/A	333-211196	10.2	June 1, 2016	
10.3#	2016 Equity Incentive Plan and form of agreement thereunder.	8-K	001-37792	10.1	June 11, 2018	
10.4#	2016 Executive Incentive Compensation Plan.	S-1	333-211196	10.13	May 6, 2016	
10.5	Amended and Restated Promissory Note, between Registrant and NantCapital LLC, dated May 9, 2016.	S-1/A	333-211196	10.18	May 11, 2016	
10.6	Amended and Restated Promissory Note, between Registrant and NantOmics, LLC, dated May 23, 2016.	S-1/A	333-211196	10.19	May 24, 2016	
10.7	Side Letter Agreement, between Registrant and NantWorks, LLC, dated May 22, 2016.	S-1/A	333-211196	10.21	May 23, 2016	
10.8	Indenture, dated December 21, 2016, between NantHealth, Inc. and U.S. Bank National Association.	8-K	001-37792	10.2	December 21, 2016	
10.9	Form of 5.50% Convertible Senior Note due 2021 (included in Exhibit 4.1).	8-K	001-37792	4.1	December 21, 2016	
10.10	Purchase Agreement, dated December 15, 2016, by and among NantHealth, Inc. and J.P. Morgan Securities LLC and Jefferies LLC, as representative of the initial purchasers named therein.	8-K	001-37792	10.1	December 21, 2016	
10.11	Purchase Agreement, dated December 15, 2016, by and between NantHealth, Inc. and Cambridge Equities, L.P..	8-K	001-37792	10.2	December 21, 2016	
10.12	Second Amended and Restated Promissory Note, dated December 15, 2016, by and between NantHealth, Inc. and NantCapital LLC.	8-K	001-37792	10.3	December 21, 2016	
10.13	Asset Purchase Agreement dated as of August 3, 2017, between Allscripts Healthcare Solutions, Inc. and NantHealth Inc.	8-K	001-37792	2.1	August 31, 2017	
10.14+	Amendment No.1 to Second Amended and Restated Reseller Agreement, dated December 18, 2017, by and between NantHealth, Inc. and NantOmics, LLC.	10-K	001-37792	10.14	March 16, 2018	
10.15	Assignment Agreement, dated February 1, 2018, by and between the Company and NantOmics, LLC.	10-Q/A	001-37792	10.1	July 11, 2018	

Incorporated by Reference

Number	Exhibit Title	Incorporated by Reference			Filed Date	Filed Herewith
		Form	File No.	Exhibit		
10.16	Promissory note dated August 8, 2018, by the Company to the benefit of Nant Capital, LLC.	10-Q	001-37792	10.1	August 9, 2018	
10.17#	Amended and Restated Consulting Agreement dated September 12, 2018, between the Company and Mr. Bob Petrou	10-Q	001-37792	10.2	November 21, 2018	
10.18#	Transition Agreement and Release dated September 11, 2018, between the Company and Mr. Paul Holt	10-Q	001-37792	10.3	November 21, 2018	
21.1	Subsidiaries					X
23.1	Consent of Ernst & Young LLP					X
23.2	Consent of Mayer Hoffman McCann, P.C.					X
23.3	Consent of Ernst & Young LLP					X
24.1	Power of Attorney (Contained on Signature Page to this Annual Report on Form 10-K).					X
31.1	Certification of Principal Executive Officer required by Rule 13a-14(a) or Rule 15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.					X
31.2	Certification of Principal Financial Officer required by Rule 13a-14(a) or Rule 15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.					X
32.1 *	Certification of Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.					X
32.2 *	Certification of Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.					X
101.INS**	XBRL Instance Document.					X
101.SCH**	XBRL Taxonomy Extension Schema Document.					X
101.CAL**	XBRL Taxonomy Extension Calculation Linkbase Document.					X
101.DEF**	XBRL Taxonomy Extension Definition Linkbase Document.					X
101.LAB**	XBRL Taxonomy Extension Label Linkbase Document.					X
101.PRE**	XBRL Taxonomy Extension Presentation Linkbase Document.					X

Represents a management contract or compensatory plan.

+ Confidential treatment granted with respect to certain portions of this exhibit. Omitted portions filed separately with the Securities and Exchange Commission.

* As contemplated by SEC Release No. 33-8212, these exhibits are furnished with this Annual Report on Form 10-K and are not deemed filed with the Securities and Exchange Commission and are not incorporated by reference in any filing of NantHealth, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date hereof and irrespective of any general incorporation language contained in such filings.

** XBRL (eXtensible Business Reporting Language) information is furnished and not filed or a part of a registration statement or prospectus for purposes of sections 11 or 12 of the Securities Act of 1933, as amended, is deemed not filed for purposes of section 18 of the Securities Exchange Act of 1934, as amended, and is otherwise not subject to liability under these sections.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, the Registrant has duly caused this Annual Report on Form 10-K to be signed on its behalf by the undersigned, thereunto duly authorized.

NantHealth, Inc.

Date: March 29, 2019

By: /s/ Patrick Soon-Shiong
Name: Patrick Soon-Shiong
Its: Chairman, Chief Executive Officer and Director
(Principal Executive Officer)

By: /s/ Bob Petrou
Name: Bob Petrou
Its: Chief Financial Officer
(Principal Financial and Accounting Officer)

POWER OF ATTORNEY

Each person whose signature appears below constitutes and appoints Patrick Soon-Shiong and Bob Petrou, and each of them, as his or her true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or his substitutes, may lawfully do or cause to be done by virtue thereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, this Annual Report on Form 10-K has been signed below by the following persons on behalf of the Registrant in the capacities and on the dates indicated.

Signature	Title	Date
<u>/s/ Patrick Soon-Shiong</u> Patrick Soon-Shiong	Chairman, Chief Executive Officer and Director (Principal Executive Officer)	March 29, 2019
<u>/s/ Bob Petrou</u> Bob Petrou	Chief Financial Officer (Principal Financial and Accounting Officer)	March 29, 2019
<u>/s/ Ron Louks</u> Ron Louks	Chief Operating Office and Director	March 29, 2019
<u>/s/ Michael S. Sitrick</u> Michael S. Sitrick	Director	March 29, 2019
<u>/s/ Kirk K. Calhoun</u> Kirk K. Calhoun	Director	March 29, 2019
<u>/s/ Michael Blaszyk</u> Michael Blaszyk	Director	March 29, 2019

NantHealth, Inc.**Subsidiaries**

<u>Name of Subsidiary</u>	<u>Jurisdiction of Organization</u>
NaviNet, Inc.	Delaware
NaviNet Limited	United Kingdom
Assisteo Holding, Inc.	Delaware
AZ Home Health, LLC	Delaware
NantHealth Labs, Inc.	Delaware
NantHealth Singapore Pte Ltd	Singapore
New Nant Health Canada, Inc.	Canada

Note: Subsidiary companies excluded from the above listing, if considered in the aggregate, would not constitute a significant subsidiary.

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

- (1) Registration Statement (Form S-3 No. 333-223744) of NantHealth, Inc., and
- (2) Registration Statement (Form S-8 Nos. 333-211886 and 333-225670) pertaining to the 2016 Equity Incentive Plan and Phantom Unit Plan of NantHealth, Inc.

of our report dated March 29, 2019, with respect to the consolidated financial statements of NantHealth, Inc., included in this Annual Report (Form 10-K) of NantHealth, Inc. for the year ended December 31, 2018.

/s/ Ernst & Young LLP

Los Angeles, California

March 29, 2019

Consent of Independent Auditors

We hereby consent to the incorporation by reference in the registration statements (Nos. 333-211886 and 333-225670) on Form S-8 and (No. 333-223744) on Form S-3 of NantHealth, Inc. of our report dated March 16, 2018, with respect to the consolidated and combined financial statements of NantOmics, LLC and subsidiaries, which comprise the consolidated balance sheet as of December 31, 2017, and the related consolidated and combined statements of operations and comprehensive loss, changes in members' equity, and cash flows for the year ended December 31, 2017, and the related notes to the consolidated and combined financial statements, which report appears in the Annual Report on Form 10-K of NantHealth, Inc. for the year ended December 31, 2018.

/s/ Mayer Hoffman McCann, P.C.

Los Angeles, California

March 29, 2019

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

- (1) Registration Statement (Form S-3 No. 333-223744) of NantHealth, Inc., and
- (2) Registration Statement (Form S-8 Nos. 333-211886 and 333-225670) pertaining to the 2016 Equity Incentive Plan and Phantom Unit Plan of NantHealth, Inc.

of our report dated March 29, 2019 with respect to the consolidated financial statements of NantOmics, LLC and subsidiaries, which comprise the consolidated balance sheet as of December 31, 2018, and the related consolidated statements of operations and comprehensive loss, changes in members' equity, and cash flow for the year ended December 31, 2018, and the related notes to the consolidated financial statements.

/s/ Ernst & Young LLP

Los Angeles, California

March 29, 2019

POWER OF ATTORNEY

Each person whose signature appears below constitutes and appoints Patrick Soon-Shiong and Bob Petrou, and each of them, as his or her true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or his substitutes, may lawfully do or cause to be done by virtue thereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, this Annual Report on Form 10-K has been signed below by the following persons on behalf of the Registrant in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Patrick Soon-Shiong</u> Patrick Soon-Shiong	Chairman, Chief Executive Officer and Director (Principal Executive Officer)	March 29, 2019
<u>/s/ Bob Petrou</u> Bob Petrou	Chief Financial Officer (Principal Financial and Accounting Officer)	March 29, 2019
<u>/s/ Ron Louks</u> Ron Louks	Chief Operating Officer and Director	March 29, 2019
<u>/s/ Michael S. Sitrick</u> Michael S. Sitrick	Director	March 29, 2019
<u>/s/ Kirk K. Calhoun</u> Kirk K. Calhoun	Director	March 29, 2019
<u>/s/ Mark Burnett</u> Mark Burnett	Director	March 29, 2019
<u>/s/ Michael Blaszyk</u> Michael Blaszyk	Director	March 29, 2019

**CERTIFICATION OF CHIEF EXECUTIVE OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Patrick Soon-Shiong, certify that:

1. I have reviewed this Annual Report on Form 10-K of NantHealth, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 29, 2019

By: /s/ Patrick Soon-Shiong

Dr. Patrick Soon-Shiong
Chairman, Chief Executive Officer and Director
(Principal Executive Officer)

**CERTIFICATION OF CHIEF FINANCIAL OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Bob Petrou, certify that:

1. I have reviewed this Annual Report on Form 10-K of NantHealth, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 29, 2019

By: /s/ Bob Petrou

Bob Petrou

Chief Financial Officer

(Principal Financial and Accounting Officer)

**CERTIFICATION OF CHIEF EXECUTIVE OFFICER
PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

Pursuant to the requirement set forth in Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. §1350), I, Patrick Soon-Shiong, hereby certify that, to my knowledge:

- (i) the Company's Annual Report on Form 10-K for the year ended December 31, 2018 to which this Certification is attached as Exhibit 32.1 (the "Report") fully complies with the requirements of section 13(a) or 15(d) of the Exchange Act, and
- (ii) that the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of NantHealth, Inc.

Date: March 29, 2019

By: /s/ Patrick Soon-Shiong

Dr. Patrick Soon-Shiong

Chairman, Chief Executive Officer and Director

(Principal Executive Officer)

This certification accompanies the Annual Report on Form 10-K to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of NantHealth, Inc. under the Securities Act of 1933, as amended, or the Exchange Act (whether made before or after the date of the Form 10-K), irrespective of any general incorporation language contained in such filing.

**CERTIFICATION OF CHIEF FINANCIAL OFFICER
PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

Pursuant to the requirement set forth in Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. §1350), I, Bob Petrou, hereby certify that, to my knowledge:

- (i) the Company's Annual Report on Form 10-K for the year ended December 31, 2018 to which this Certification is attached as Exhibit 32.2 (the "Report") fully complies with the requirements of section 13(a) or 15(d) of the Exchange Act, and
- (ii) that the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of NantHealth, Inc.

Date: March 29, 2019

By: /s/ Bob Petrou

Chief Financial Officer

(Principal Financial and Accounting Officer)

This certification accompanies the Annual Report on Form 10-K to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of NantHealth, Inc. under the Securities Act of 1933, as amended, or the Exchange Act (whether made before or after the date of the Form 10-K), irrespective of any general incorporation language contained in such filing.