MODEL N, INC.
Form 10-K
November 16, 2018

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 September 30, 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 001-35840

Model N, Inc.
(Exact name of Registrant as specified in its Charter)

Delaware	77-0528806
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
777 Mariners Island Boulevard, Suite 300 San Mateo, California	94404
(Address of principal executive offices)	(Zip Code)

Registrant’s telephone number, including area code: (650) 610-4600

Securities registered pursuant to Section 12(b) of the Act: Common Stock, Par Value $0.00015 Per Share; Common stock traded on the New York Stock Exchange stock 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 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 such files). YES NO
Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405) 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, 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.
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 equity held by non-affiliates of the Registrant, based on the closing price of the shares of common stock on The New York Stock Exchange Stock Market on March 31, 2018, was approximately $471 million.
The number of shares of Registrant's Common Stock outstanding as of November 2, 2018 was 31,447,507. Portions of the Registrant's Definitive Proxy Statement relating to the Annual Meeting of Shareholders, scheduled to be held on February 15, 2019, are incorporated by reference into Part III of this Report.

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PART I.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This report contains forward-looking statements regarding future events and our future results that are subject to the safe harbors created under the Securities Act of 1933 (Securities Act) and the Securities Exchange Act of 1934 (Exchange Act). All statements contained in this report other than statements of historical fact, including statements regarding our future results of operations and financial position, our business strategy and plans, and our objectives for future operations, are forward-looking statements. The words “believe,” “may,” “will,” “estimate,” “continue,” “anticipate,” “g “plan,” “intend,” “expect,” “seek”, and similar expressions are intended to identify forward-looking statements. We have based these forward-looking statements largely on our current expectations and projections about future events and trends. These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including those described under “Part I, Item 1A. Risk Factors,” and elsewhere in this report. Moreover, we operate in a very competitive and rapidly changing environment. New risks emerge from time to time. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. In light of these risks, uncertainties and assumptions, the future events and trends discussed in this report may not occur and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements.

You should not rely upon forward-looking statements as predictions of future events. The events and circumstances reflected in the forward-looking statements may not be achieved or occur. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee future results, levels of activity, performance, or achievements. We are under no duty to update any of these forward-looking statements after the date of this report or to conform these statements to actual results or revised expectations.

As used in this report, the terms “Model N,” “we,” “us,” “our,” and “the Company” mean Model N, Inc. and its subsidiaries unless the context indicates otherwise.

ITEM 1. Business

Overview

Model N is a leader in Revenue Management solutions. Our solutions transform the revenue lifecycle from a series of disjointed operations into a strategic end-to-end process. With deep industry expertise, we support the complex business needs of the world's leading brands in life sciences and technology across more than 120 countries, including Pfizer, AstraZeneca, Sanofi, Gilead, Abbott, Stryker, AMD, Micron, Seagate, STMicroelectronics, NXP, Sesotec, and Southern States.

Many companies, in particular in the life sciences and technology industries, experience a gap between the strategic importance of revenue management and the current state of their revenue management processes. Historically, companies tended to rely on a disjointed patchwork of manual processes, spreadsheets, point applications and legacy systems to manage their revenue processes. These processes and systems operated in isolation from one another and were labor intensive, error prone, inflexible and costly, often resulting in missed revenue opportunities, suboptimal margins and increased revenue compliance risk. Current industry trends, which include shortening product lifecycles, tightening compliance and regulatory controls, increasing channel complexity and growing volumes of transactional data are causing these outdated processes and legacy systems to become increasingly ineffective.

Our expertise in cloud-based revenue management solutions and knowledge of the life sciences and technology industries has enabled us to develop software designed to meet the unique, strategic needs of these industries, such as managed care and government pricing for life sciences companies and channel incentives for technology companies.

Model N Revenue Cloud transforms the revenue lifecycle into a strategic, end-to-end process aligned across the enterprise. Our industry specific solution suites – Revenue Cloud for Pharma, Revenue Cloud for Med Tech, Revenue Cloud for Semiconductors and High Tech Manufacturing – offer a range of solutions from individual products to complete product suites. Deployments may vary from specific divisions or territories to enterprise-wide implementations.

Overview of the Life Sciences and Technology Industries

The life sciences and technology industries are large and highly fragmented. Companies in both industries market their products to a global customer base through diverse channels. Significant costs are required to launch a drug to the global market. Regulatory pressures, consolidation, and other factors in these industries continue to drive a significant focus on revenue management.

Management of the revenue lifecycle is a strategic imperative and source of competitive advantage for life sciences and technology companies as they address increasingly globalized markets, sophisticated buyers, complex channels and expanding volumes of data from internal and market sources. Emerging business models like outcome based pricing, service bundles, further complicate the revenue management processes, which increases the need for effective solution.

Several trends specific to these industries further complicate revenue management.

Life sciences:

- the emergence of large group purchasing, managed care organizations and integrated healthcare delivery networks drive increased pricing pressure, contract volume and complexity;
- increased customer and channel incentives and rebates result in the increased risk of extending unearned discounts and the overpayment of rebates;
- shift of purchasing influence from physicians to economic buyers makes price and commercial terms key decision making factors;
- increased spending on healthcare by governments instead of commercial entities adds further regulatory oversight to transactions; and
- increased scope of government mandates, frequency of regulatory reporting and audits, and fines, all of which increase administrative burden and monitoring costs.

Technology:

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shortened product lifecycles drive rapid pricing changes and require quick responses to quotes and competitive bidding;
- increased number of core technology products sold into different end markets with segment-specific pricing;
- cyclicality and rising R&D costs contributing to a focus on maximizing sell time, margins and revenues;

- increased complexity of multi-tiered global distribution channels which intensify channel conflict and price erosion;
- changing financial reporting requirements due to channel complexity; and
- increased use of off-invoice discounting to offset upfront discounts and mask end-customer pricing result in a lack of price transparency that can erode gross margins.

Challenges to Effective Revenue Management

Traditionally, companies addressed revenue management through a patchwork of manual processes and inflexible and costly custom solutions. This outdated approach to revenue management impedes the ability of companies to respond to changing market conditions, preventing them from maximizing revenue and increasing their revenue compliance risk. Critical challenges include:

- Incomplete and unreliable information for key strategic decisions. Legacy manual processes and systems used to manage the revenue lifecycle creates silos of data causing companies to make strategic marketing, pricing and resource allocation decisions that are often based on incomplete or inaccurate information. As a result, revenue strategies can be suboptimal, budgets may be misallocated, and sales and marketing efforts can fail to positively impact revenues.
- Revenue leakage due to inadequate contract management and enforcement. Customer-specific contracts with complex pricing and commercial terms are common in many industries, in particular life sciences and technology. When the commercial terms of these contracts are not automated and monitored systematically, deviations from contract pricing can occur, volume commitments can be missed, unearned discounts may be given, and revenue can be lost.
- Revenue leakage due to overpayment of incentives. Life sciences and technology companies process massive volumes of rebates and incentives. A lack of centralized, automated and enforceable processes can result in overpayment of incentives. Revenue leakage is also driven by inconsistent global pricing, poor price concession controls, and unmet contractual volume commitments.
- Ineffective pricing across geographies and complex channels. Sophisticated buyers deploy global procurement strategies to discover and exploit regional and channel differences in pricing and contracting. The inability to enforce a single price for a specific sales opportunity across regions and channels can result in channel conflicts, which result in price and revenue erosion.
- Inaccurate financial reporting. Complex contracts and distribution channels have made it more difficult to obtain and process financial information, which can result in inaccurate financial reporting. For example, technology companies face significant complexity in financial reporting and revenue recognition at the point of sale in their distribution channels. Life sciences companies have significant challenges correctly accruing their massive rebate and incentive claim volumes.
- Difficulty complying with complicated government regulations. Satisfying the regulatory requirements of numerous federal and state programs is increasingly complex for life sciences companies. For example, government-driven programs require complex monitoring and reporting to compute and pay mandated rebates and fees under numerous federal and state programs. Government audits can expose ineffective management of these regulatory requirements and can result in penalties or program ineligibility.

Our Solutions

Our solutions enable customers to achieve significant returns on investment through increased revenues and gross margins while addressing vital business objectives:

- Driving optimal pricing and contracting strategies. Our customers use our solutions to develop, deploy, monitor and drive optimal pricing and contracting strategies. Our solutions consolidate information across the revenue lifecycle and provide visibility into historical volume, price and contract performance trends. Our pricing analytics enable our customers to identify untapped revenue opportunities across customers or products and make better pricing and contracting decisions.
- Realizing greater value from contracts. Our solutions enable customers to codify and automate complex pricing, incentives and financial and fulfillment terms that previously resided mainly on paper contracts. Our customers are able to maximize the value of contracts and realize additional revenue by tracking their customers' performance and enforcing contract terms. Our solutions automatically price orders in real-time and enforce contract pricing and commercial terms. Our solutions also enable customers to track and

execute other revenue-enhancing financial terms, such as negotiated price increases.

- Maximizing revenue by standardizing and enforcing pricing and discounting policies. Our solutions allow customers to standardize pricing policies that can be enforced automatically across the enterprise and the channels to restrict unauthorized sales practices and discounting by sales personnel. By raising the visibility of, requiring authorization of, and enabling rapid resolution of, non-standard pricing, our customers can use our solutions to reduce unauthorized discounting. Through our channel solutions, our customers can gain visibility into and enforce channel pricing, and reduce price erosion caused by different price quotes for the same end customer.
- Executing and optimizing channel incentives. Our solutions enable customers to manage the entire incentive lifecycle, from contracting to recognition and payment. Accurate management allows our customers to eliminate unearned discounts and overpayment of incentives. Our solutions also provide our customers with greater cross channel visibility to manage the effectiveness of their channel incentive programs. With this insight, our customers can better utilize their channel incentives to positively influence channel behavior and thus increase revenue.
- Achieving accurate financial reporting. With our solutions, customers can manage all aspects of the contract-to-payment process related to calculating, monitoring, processing and triggering payments to end customers and channel intermediaries. For example, by automating all rebates, these liabilities can be accurately accrued, enabling our customers to consistently record accruals in compliance with financial accounting requirements, while ensuring customers and channels are credited on a timely basis.
- Automating government regulatory compliance to reduce revenue risk. Our solutions enable customers to comply systematically with government regulations, policies, procedures, and pricing and reporting requirements. Further, by automating and integrating contract terms, incentives and pricing into mandated price and payment calculations, our life sciences customers are better able to manage compliance with the terms of critical government programs that provide significant sources of revenue.

Our Competitive Strengths

We believe our key competitive strengths include:

- Comprehensive approach to revenue management. Our solutions address the end-to-end revenue management lifecycle. Our integrated, end-to-end application suites enable our customers to transform their revenue management processes from disjointed tactical operations into a cohesive, strategic, end-to-end process. Providing suites of cloud-based solutions is an advantage that enables us to address both decision making and process automation.
- Deep domain knowledge. Our expertise in the revenue management needs of life sciences and technology companies enables us to develop solutions that address the unique demands of these industries. By incorporating best practices into our industry-specific solutions, implementation methodologies and support programs, our customers can experience significantly accelerated time to value. Our team possesses the deep industry expertise in life sciences and technology to enable our customers to maximize and accelerate the transformational benefits of our solutions.
- Strong installed customer base. We have established a reputation for delivering revenue management solutions to leading life sciences and technology customers. Our close customer relationships provide us with insight into how these companies use our solutions and help us to maintain a competitive advantage by anticipating their future requirements. We also believe that the use of our products by respected industry leaders also increases the value of our brand in these industries.
- Talented team focused on customer success. We employ experts from the life sciences and technology industries in key customer-facing and development roles. Additionally, we have established strong core values that start with a focus on customer success. Our customer focus has resulted in close relationships with our customers and a strong reference base for sales opportunities.

Products

We provide solutions that span the organizational and operational boundaries of functions such as sales, marketing and finance, and serve as a system of record for key revenue management processes including pricing, contracts, rebates, incentives, channel management, and regulatory compliance. Our solutions are purpose-built for the life sciences and technology industries and are designed to work with enterprise resource planning (ERP) and customer relationship management (CRM) applications that do not typically provide revenue management capabilities. Our solutions enable real-time pricing, contract management, vertical sales management (such as for the semiconductor industry), and channel incentives management, including rebates, incentives and regulatory compliance. Our Revenue

Cloud suites are comprised of multiple applications, which are integrated to work together but which may be deployed individually. For example, when deployed as an interconnected suite, our solutions

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allow prices that are set up in the price management process to flow into the quoting process. Similarly, closed deals are captured in contract management and can be synchronized with ERP systems and into regulatory reporting as required by government agencies. Our solutions provide critical data that is typically not available in either CRM or ERP systems, such as prices, quotes, contracts, incentives and rebate claims. Our solutions can also provide customers predictive revenue insight optimization of sales and marketing investments and offers, as well as customer profitability intelligence.

Revenue Clouds for Pharma and Med Tech – These Revenue Clouds help life science companies optimize revenue throughout the commercialization process and reduces revenue leakage, while adhering to government regulations.

- Government Pricing. Helps customers optimize revenue and reduces risk of fines and other penalties due to non-compliance with regulatory pricing requirements.
- Medicaid. Helps customers comply with regulatory requirements and pay rebate claims timely and at correct rates for government Medicaid programs.
- Global Pricing Management. Enables a streamlined pricing process by consolidating information into a single system of record, which provides users' access to accurate and up-to-date information.
- Global Tender Management. Optimizes revenue regionally and globally by enabling opportunity segmentation and targeting, optimal bid pricing and post-award tracking to manage the contract lifecycle and award value.
- Provider Management. Reduces the risk of non-compliance with regulatory requirements throughout the institutional contracting process.
- Payer Management. Reduces the risk of non-compliance with regulatory requirements throughout the pharmacy benefit manager and payer contracting process.
- Pricing Intelligence. Helps customers to quickly identify margin and revenue issues, and disaggregate their data to identify root causes.
- Configure Price Quote. Streamlines the quote to contract process by enabling the configuration of complex services, bundles and solutions into a single interface. This application provides integration with the SAP ERP system and SAP Variant Configurator.
- Contract Lifecycle Management. Enables organizations to create and manage all types of sell-side contracts in one place including service contracts, sales contracts, NDAs, statements of work, and more. The solution enables users to create and manage contracts directly.

Revenue Cloud for Semiconductors and High Tech Manufacturing- These Revenue Clouds enable customers to modernize their sales processes by adopting a strategic approach to manage the revenue lifecycle by planned revenue.

- Deal Management. This subscription increases deal conversion and pricing consistency with pricing, quotes and contracts natively supporting the High Tech Channel end-to-end.
- Deal Intelligence. This subscription controls price concessions and determines ideal prices using in context analytics.
- Channel Management. This subscription provides manufacturers a clearer view of inventory, including the ability to evaluate and perform actions, such as price protection and stock rotation and match available inventory to quotes.
- Market Development Fund Management. This subscription allows companies to streamline their MDF process and reduce revenue leakage by increasing partner participation.
- Sales Conductor. This subscription extends Salesforce Sales Cloud with purpose-built capabilities for the semiconductor and electronic component industries.
- Rebates Management. This subscription centralizes control of rebate programs to reduce upfront discounts and effective management of all rebate programs.
- Channel Data Management. This subscription automates the process of collection, cleansing, validation and standardization of channel partner data, such as POS, inventory, and claims.
- Configure Price Quote. Streamlines the quote to contract process by enabling the configuration of complex services, bundles and solutions into a single interface. This application provides integration with the SAP ERP system and SAP Variant Configurator.

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- Contract Lifecycle Management. Enables organizations to create and manage all types of sell-side contracts in one place including service contracts, sales contracts, NDAs, statements of work, and more. The solution enables users to create and manage contracts directly.

Technology

Our Revenue Cloud solution is architected in layers. The first layer is composed of end-user operational and analysis solutions. The middle layer is comprised of supporting services and business engines. The lowest layer is comprised of a unified technology platform used to construct and support all modules in higher layers. The platform also provides access to the normalized operational database where the transactional revenue management data used by the operational solutions are stored. It also provides access and facilitates the synchronization with the de-normalized analytics database where the revenue management data used by the analytics solutions are stored.

Our Revenue Cloud solutions are built on a variety of industry standards, depending on the solution, such as Java EE, HTML5, Amazon Web Service and Force.com, which give the end-users an intuitive and familiar browsing experience. These standard technologies enable us to offer our customers a familiar technology environment that is widely understood and utilized, as well as the ability to use certain solutions on a tablet and other mobile devices, including smart phones running iOS and Android.

Our technology platform has allowed us to quickly develop new solutions, features and functionalities. We believe the platform is configured to meet the needs of broad horizontal markets as well as specific vertical markets and, within each instance, to meet the specific needs of each of our customers. The flexibility of the technology platform has also allowed us to add mobile device support and deploy cloud-based solutions in a rapid and efficient manner, and we believe it will enable us to continue to add new capabilities in the future.

Our technology is designed specifically to handle the complex calculations and massive data sets associated with revenue management processes typical in the life sciences and technology industries. With the expansion of global deployments, scalability has also been a key requirement of our customers and has been a focus for us across all of the layers of our application suites.

Our solutions have been designed to ensure high reliability, strong security and the technology platform includes a comprehensive set of built-in features and management tools to allow optimal and continuous operation. The Revenue Cloud for Pharma, Revenue Cloud for Med Tech, Revenue Cloud for Semiconductors and High Tech Manufacturing suites are only offered to our customers through the cloud. We operate a reliable architecture designed to reduce the risk associated with infrastructure outages, improve system scalability and security, and allow for flexibility in deployment. The environment for our cloud-based solutions is designed to be secure and provide high availability with disaster recovery capabilities.

Services and Customer Support

We offer a comprehensive set of services to assist our customers through the full lifecycle of new business transformations or upgrades of existing solutions. We help our customers define, implement and support or manage our solutions. We provide implementation services, managed services and strategic services both on and off-shore, as described below.

- Implementation services. We assist our customers in the implementation or upgrade of our Revenue Cloud, including project management, design and solution blueprint, process improvement, application configuration or customization, systems integration, data cleansing and migration, testing and performance tuning, production cutover and post go-live support.
- Managed services. We offer managed services for customers using our solutions either on-premise through a legacy contract or in the cloud, which include systems administration and infrastructure management, application support, custom feature support and education services, including process, application and end-user training.
- Strategic services. We assist our customers in defining best practices and strategies in revenue management, assessing the capability of existing transaction and decision support solutions, developing business cases for change and transformation plans and answering strategic questions.
- Customer support. We deliver customer support from support centers located in United States, as well as at our offices in India. We offer a range of support offerings, including 24x7x365, packaged into varying levels of access to our support resources.

For project delivery, we use a standard implementation methodology incorporating lessons learned from past work to ensure the success of our current projects. This methodology enables us to predictably estimate project costs and schedule, and proactively mitigate most implementation challenges.

In addition, we have cultivated relationships to promote and assist with the implementation of our solutions with consulting firms. While we do not maintain formal contractual relationships with these firms that require them to promote our solutions to their clients, we work with them for implementation and other professional services projects. As a result, these firms have expertise in our technologies and best practices and have invested in building out their practice areas with our revenue management solutions.

We deploy our resources globally through offices located in the United States, India, and Switzerland.

Customers

As of September 30, 2018, we had 154 direct customers which includes two channel partners. These channel partners use our cloud-based software to serve over 20 end customers in life sciences. We often sell to multiple divisions within our customers' organizations, which have the ability to independently purchase solutions and services directly; however, we treat multiple divisions as a single customer to the extent they are part of a consolidated corporation. For the fiscal year ended September 30, 2018, revenues from our life sciences and technology customers accounted for approximately 83% and 17% of our total revenues, respectively. Our customers range in size from the largest multi-national corporations to smaller, emerging companies. Our customers represent a range of sub-verticals within the larger life sciences and technology industries, including biotechnology, pharmaceutical, medical device, generics, semiconductor, electronic component, consumer electronics and software. During the fiscal years ended September 30, 2018 and 2017, one customer, Johnson & Johnson, accounted for approximately 15% and 11% of our total revenues, respectively. However, during the fiscal year ended September 30, 2018 and 2017, no customer represented more than 10% of our subscription revenues. During the fiscal year ended September 30, 2016, no customer accounted for more than 10% of our total revenues.

We pursue close, long-term relationships with our customers because we believe strong customer relationships are the key to our success. Many of these relationships date back to our original on-premise, perpetual license business model. Customers maintaining on-premise implementations under legacy perpetual license contracts may purchase, at their discretion, maintenance and support services and in some cases managed services on an annual basis. For the last several years, we have been transitioning our business model to software as a service. New customers as well as customers who originally purchased a perpetual license now enter into a software as a service agreement that provides for a subscription to our solutions as well as implementation services.

Sales and Marketing

We primarily target large and mid-sized organizations worldwide through our direct sales force. Our sales and marketing programs are also organized by geographic region. We augment our sales professionals with solutions engineers and industry domain experts via our Center of Excellence. These professionals work closely with prospective customers during the sales process. Our marketing team supports sales with demand generation, competitive analysis and sales tools, and contributes to the sales process through lead generation, brand building, industry analyst relations, public relations and industry research.

We host an annual customer conference, Rainmaker, which plays a significant role in driving sales of our solutions. Customers are invited both as attendees and participants to deliver sessions relevant to the interests and practices of the life sciences and technology industries. We also invite potential customers to this conference in order to leverage our strong customer relationships to accelerate sales cycles. In addition, Rainmaker provides a forum to build our eco-system of strategic partner relationships, offering partners the opportunity to work closely with our sales force on joint sales pursuits.

Research and Development

Our research and development organization is responsible for the definition, design, development, testing, certification and ongoing maintenance of our solutions. Our efforts are focused on developing new solutions and technologies and further enhancing the functionality, reliability, performance and flexibility of existing solutions. When considering improvements and enhancements to our solutions, we communicate with our customers and partners who provide significant feedback for product development and innovation. We focus our efforts on anticipating customer demand and bringing our new solutions and enhancements of existing solutions to market through a seasonal release schedule (Spring, Summer, and Winter) in order to remain competitive in the marketplace. We also closely monitor the changes in business environment and regulations in our target industries, particularly in life sciences, where quick deliveries of updates to our solutions are critical to allowing our customers to remain in compliance with government regulations. Because our solutions often serve as a system-of-record for our customers' revenue management processes, our research and development efforts reflect the extensive IT needs of our customers in both life sciences and technology. Our research and development efforts continue to focus on enhancing our solutions to meet the increasingly complex

infrastructure requirements of our customers in these industries.
Our product development process is based on deep industry knowledge and familiarity with the specific requirements of individual customers, combined with continued innovation using state of the art software development processes and tools. We follow an “agile” development process, which helps us clarify requirements and receive feedback early, accommodate changes and deliver products that better match the overall needs of our customers with higher quality. As of September 30, 2018, our research and development team consisted of 232 full-time employees globally.

Competition

The market for revenue management solutions is highly competitive, fragmented and subject to rapid changes in technology. We face competition from spreadsheet-assisted manual processes, internally developed solutions, large integrated systems vendors, providers of business process outsourcing services, horizontal revenue management solutions and smaller companies that offer point solutions. Companies lacking information technology (IT) resources often resort to spreadsheet-assisted manual processes or personal database applications. In addition, some potential customers, particularly large enterprises, may elect to develop their own internal solutions, including custom-built solutions that are designed to support the needs of a single organization. Companies with large investments in ERP or CRM applications, which do not typically provide revenue management capabilities, may extend these horizontal applications with customizations or point solution applications in order to address single or a small set of revenue management sub processes or drivers. Common horizontal applications that customers attempt to configure for this purpose in the life sciences and technology industries include large integrated systems vendors like SAP AG and Oracle Corporation. We also encounter competition from small independent companies, which compete on the basis of price, unique product features or functions and custom developments.

We believe we compete based primarily on the following factors:

- industry expertise;
- comprehensiveness of solution;
- reliability, scalability and performance;
- access to prospective customers through strategic partnerships;
- global system and support capabilities; and
- industry brand, reputation and customer base.

While we believe that we compete favorably on the basis of each of the factors listed above, many of our competitors have greater name recognition, larger sales and marketing budgets and greater resources than we do and may have pre-existing relationships with our potential customers, including relationships with, and access to, key decision makers within these organizations, and major distribution agreements with consultants and system integrators. Moreover, many software vendors could bundle solutions or offer them at a low price as part of a larger product sale.

With the introduction of new technologies and market entrants, we expect competition to intensify in the future. We also expect enterprise software vendors that focus on enterprise resource planning or back-office applications to enter our market with competing products. In addition, we expect sales force automation vendors to acquire or develop additional solutions that may compete with our solutions.

Intellectual Property

We rely upon a combination of copyright, trade secret, trademark and, to a lesser extent, patent laws, and we also rely on contractual restrictions, such as confidentiality agreements and licenses, to establish and protect our proprietary rights. As of September 30, 2018, we had ten patent applications pending and five issued patents expiring between 2023 and 2034. We have a number of registered and unregistered trademarks. We maintain a policy requiring our employees, consultants and other third parties to enter into confidentiality and proprietary rights agreements and to control access to our software, documentation and other proprietary information. We also believe that factors resulting from our length of presence in the market and significant research and development investments, such as our deep expertise in life sciences and technology revenue management practices, the ability of our solutions to handle the complexities of revenue management processes, the technological and creative skills of our personnel, the creation of new features and functionality and frequent enhancements to our solutions are essential to establishing and maintaining our technology leadership position.

Despite our efforts to protect our proprietary rights, unauthorized parties may attempt to copy or obtain and use our technology to develop products with the same functionality as our solutions. Policing unauthorized use of our technology is difficult. The laws of other countries in which we market our application suite may offer little or no effective protection of our proprietary technology. Our competitors could also independently develop technologies equivalent to ours, and our intellectual property rights may not be broad enough for us to prevent competitors from selling products incorporating those technologies. Reverse engineering, unauthorized copying or other misappropriation of our proprietary technology could enable third parties to benefit from our technology without paying us for it, which would significantly harm our business.

Employees

As of September 30, 2018, we employed 782 people, including 400 in services and customer support, 232 in research and development, 86 in sales and marketing and 64 in a general and administrative capacity. As of such date, we had 411 employees in the United States and 371 employees in international locations. We also engage temporary employees and consultants. None of our employees are represented by a labor union with respect to his or her employment with us. We have not experienced any work stoppages and we consider our relations with our employees to be good.

Corporate Information

We were incorporated in Delaware on December 14, 1999. Our principal offices are located at 777 Mariners Island Boulevard, Suite 300, San Mateo, CA 94404, and our telephone number is (650) 610-4600. Our website address is www.modeln.com. The information contained on, or that can be accessed through, our website is not part of this report. Model N is our registered trademark in the United States and in various international jurisdictions. Model N, the Model N logo and all of our product names appearing in this report are our trademarks. Other trademarks appearing in this report are the property of their respective holders.

Available Information

We file annual, quarterly and other reports, proxy statements and other information with the Securities and Exchange Commission (SEC) under the Securities Exchange Act of 1934, as amended (Exchange Act). We also make available, free of charge on the investor relations portion of our website at investor.modeln.com, our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after they are filed electronically with the SEC. You can also view these reports on the SEC's website at http://www.sec.gov/ where you can obtain most of our SEC filings. You can also obtain paper copies of these reports, without charge, by contacting Investor Relations at (650) 610-4600.

ITEM 1A. Risk Factors

Our operating and financial results are subject to various risks and uncertainties. You should carefully consider the risks and uncertainties described below, together with all of the other information in this report, including the Consolidated Financial Statements and the related notes included elsewhere in this report, before deciding whether to invest in shares of our common stock. 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 adversely affect our business. If any of the following risks or others not specified below actually occurs, our business, financial condition, results of operations, and future prospects could be materially and adversely affected. In that event, the market price of our common stock could decline, and you could lose part or all of your investment.

Risks Related to Our Business

We have incurred losses in the past, and we may not be profitable in the future.

We have incurred net losses of $28.2 million and $39.5 million for the fiscal years ended September 30, 2018 and 2017, respectively. As of September 30, 2018, we had an accumulated deficit of $203.5 million. Our expenses may increase in future periods as we implement additional initiatives designed to grow our business, including, among other things, increasing sales to existing customers, expanding our customer base, introducing new applications, enhancing existing solutions, extending into the mid-market, and continuing to penetrate the technology industry. Increased operating expenses related to personnel costs such as salary, bonus, commissions and stock-based compensation as well as third-party contractors, travel-related expenses and marketing programs may also increase our expenses in future periods. In the near-term, our revenues may not be sufficient to offset increases in operating expenses, and we expect that we will incur losses. Additionally, we may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may result in losses in future periods. We cannot assure you that we will again obtain and maintain profitability in the future. Any failure to return to profitability may materially and adversely affect our business, results of operations and financial condition.

Our operating results are likely to vary significantly from period to period and be unpredictable, which could cause the trading price of our common stock to decline.

Our operating results have historically varied from period to period, and we expect that this trend will continue as a result of a number of factors, many of which are outside of our control and may be difficult to predict, including:

- our ability to increase sales to and renew agreements with our existing customers;

- our ability to expand and improve the productivity of our direct sales force;
- our ability to attract and retain new customers and to improve sales execution;
- the continued ability to transition from an on-premise to a cloud-based business model;
- our ability to transition effectively to new leadership under a new Chief Executive Officer;
- the timing and volume of incremental customer purchases of our cloud-based solutions, which may vary from period to period based on a customer’s needs at a particular time;
- our ability to successfully expand our business domestically and internationally;
- disruptions in our relationships with partners;
- the timing of new orders and revenue recognition for new and prior period orders;
- changes in the competitive landscape of our industry, including mergers or consolidation among our customers or competitors;
- the complexity of implementations and the scheduling and staffing of the related personnel, each of which can affect the timing and duration of revenue recognition;
- issues related to changes in customers’ business requirements, project scope, implementations or market needs;
- the mix of revenues in any particular period between license and implementation, and SaaS and maintenance;
- the timing of upfront recognition of sales commission expense relative to the deferred recognition of our revenues;
- the timing of recognition of payment of royalties;
- the timing of our annual payment and recognition of employee non-equity incentive and bonus payments;
- the budgeting cycles and purchasing practices of customers;
- changes in customer requirements or market needs;
- delays or reductions in information technology spending and resulting variability in customer orders from quarter to quarter;
- delays or difficulties encountered during customer implementations, including customer requests for changes to the implementation schedule;
- the timing and success of new product or service introductions by us or our competitors;
- the amount and timing of any customer refunds or credits;
- our ability to accurately estimate the costs associated with any fixed bid projects;
- deferral of orders from customers in anticipation of new solutions or solution enhancements announced by us or our competitors;
- the length of time for the sale and implementation of our solutions to be complete, and our level of upfront investments prior to the period we begin generating revenues associated with such investments;
- the amount and timing of our operating expenses and capital expenditures, and our ability to timely repay our debt;
- price competition;
- the rate of expansion and productivity of our direct sales force;
- regulatory compliance costs;
- sales commissions expenses related to large transactions;
- technical difficulties or interruptions in the delivery of our cloud-based solutions;
- seasonality or cyclical fluctuations in our industries;
- future accounting pronouncements or changes in our accounting policies;
- increases or decreases in our expenses caused by fluctuations in foreign currency exchange rates, as a significant portion of our expenses are incurred and paid in currencies other than the U.S. dollar;
- general economic conditions, both domestically and in our foreign markets; and

- entry of new competitors into our market.

Any one of the factors above or discussed elsewhere in this report or the cumulative effect of some of the factors referred to above may result in significant fluctuations in our financial and other operating results. This variability and unpredictability could result in our failure to meet expectations of investors for our revenues or other operating results for a particular period. If we fail to meet or exceed such expectations for these or any other reasons, the market price of our common stock could decrease.

We depend on our management team and our key sales and development and services personnel, and the loss of one or more key employees or groups could harm our business and prevent us from implementing our business plan in a timely manner.

Our success depends on the expertise, efficacy and continued services of our executive officers, who are geographically dispersed. We have in the past and may in the future continue to experience changes in our executive management team resulting from the departure of executives or subsequent hiring of new executives, which may be disruptive to our business. For example, in May, 2018, Jason Blessing assumed the role of Chief Executive Officer and Zack Rinat, our interim Chief Executive Officer resigned from his position as Chief Executive Officer and Chairman of the Board. We anticipate that we will experience a transitional period as Mr. Blessing becomes fully integrated into his new role, and such transition may have a disruptive impact on our ability to implement our business strategy and could have a material adverse effect on our business. Any changes in business strategies can create uncertainty, may negatively impact our ability to execute our business strategy quickly and effectively and may ultimately be unsuccessful. The impact of hiring new executives may not be immediately realized. We are also substantially dependent on the continued service of our existing development and services personnel because of their familiarity with the inherent complexities of our solutions.

Our personnel do not have employment arrangements that require them to continue to work for us for any specified period and, therefore, they could terminate their employment with us at any time. We do not maintain key person life insurance policies on any of our employees. The loss of one or more of our key employees or groups could seriously harm our business.

We must improve our sales execution and increase our sales channels and opportunities in order to grow our revenues, and if we are unsuccessful, our operating results may be adversely affected.

We must improve our sales execution in order to, among other things, increase the number of our sales opportunities and grow our revenue. We must improve the market awareness of our solutions and expand our relationships with our channel partners in order to increase our revenues. Further, we believe that we must continue to develop our relationships with new and existing customers and partners, and create additional sales opportunities to effectively and efficiently extend our geographic reach and market penetration. Our efforts to improve our sales execution could result in a material increase in our sales and marketing expense and general and administrative expense, and there can be no assurance that such efforts will be successful. We have experienced challenges in sales execution in the past, and if we are unable to significantly improve our sales execution, increase the awareness of our solutions, create additional sales opportunities, expand our relationships with channel partners, leverage our relationship with strategic partners, such as Cumberland and High Point, or effectively manage the costs associated with these efforts, our operating results and financial condition could be materially and adversely affected.

Our transition from an on-premise to a cloud-based business model is subject to numerous risks and uncertainties.

Our business model has shifted away from sales of on premise software licenses to focus on sales of subscriptions for our cloud-based solutions, which provide our customers the right to access certain of our software in a hosted environment for a specified subscription period. This cloud-based strategy may give rise to a number of risks, including the following:

- if customers are uncomfortable with cloud-based solutions and desire only perpetual licenses, we may experience longer than anticipated sales cycles and sales of our cloud-based solutions may lag behind our expectations;
- our cloud-based strategy may raise concerns among our customer base, including concerns regarding changes to pricing over time, service availability, information security of a cloud-based solution and access to files while offline or once a subscription has expired;

- we may be unsuccessful in maintaining our target pricing, adoption and projected renewal rates;
- we may select a target price that is not optimal and could negatively affect our sales or earnings; and
- we may incur costs at a higher than forecasted rate as we expand our cloud-based solutions.

Our cloud-based strategy also requires a considerable investment of technical, financial, legal and sales resources, and a scalable organization. Market acceptance of such offerings is affected by a variety of factors, including but not limited to: security, reliability, scalability, customization, performance, current license terms, customer preference, customer concerns with entrusting a third party to store and manage their data, public concerns regarding privacy and the enactment of restrictive laws or regulations. Whether our business model transition will prove successful and will accomplish our business and financial objectives is subject to numerous uncertainties, including but not limited to: customer demand, renewal rates, channel acceptance, our ability to further develop and scale infrastructure, our ability to include functionality and usability in such solutions that address customer requirements, tax and accounting implications, pricing and our costs. In addition, the metrics we use to gauge the status of our business may evolve over the course of the transition as significant trends emerge.

If we are unable to successfully execute our cloud-based strategy and navigate our business model transition in light of the foregoing risks and uncertainties, our results of operations could be negatively impacted.

Failure to adequately expand and train our direct sales force will impede our growth.
We rely almost exclusively on our direct sales force to sell our solutions. We believe that our future growth will depend, to a significant extent, on the continued development of our direct sales force and its ability to manage and retain our existing customer base, expand the sales of our solutions to existing customers and obtain new customers. Because our software is complex and often must interoperate with complex computing requirements, it can take longer for our sales personnel to become fully productive compared to other software companies. Our ability to achieve significant growth in revenues in the future will depend, in large part, on our success in recruiting, training and retaining a sufficient number of direct sales personnel. New hires require significant training and may, in some cases, take more than a year before becoming fully productive, if at all. If we are unable to hire and develop sufficient numbers of productive direct sales personnel, and if these sales personnel are unable to achieve full productivity, sales of our solutions will suffer and our growth will be impeded.
Our sales cycles are time-consuming, and it is difficult for us to predict when or if sales will occur.
Our sales efforts are often targeted at larger enterprise customers, and as a result, we face greater costs, must devote greater sales support to individual customers, have longer sales cycles and have less predictability in completing some of our sales. Also, sales to large enterprises often require us to provide greater levels of education regarding the use and benefits of our solutions. We believe that our customers view the purchase of our solutions as a significant and strategic decision. As a result, customers carefully evaluate our solutions, often over long periods with a variety of internal constituencies. In addition, the sales of our solutions may be subject to delays if the customer has lengthy internal budgeting, approval and evaluation processes, which are quite common in the context of introducing large enterprise-wide technology solutions. As a result, it is difficult to predict the timing of our future sales.

Our revenues are dependent on our ability to maintain and expand existing customer relationships and our ability to attract new customers.
The continued growth of our revenues is dependent in part on our ability to expand the use of our solutions by existing customers and attract new customers. Likewise, it is also important that customers using our on-premise solutions renew their maintenance agreements and that customers using our cloud-based solutions renew their subscription agreements with us. Our customers have no obligation to renew their agreements after the expiration of the initial term, and there can be no assurance that they will do so. We have had in the past and may in the future have disputes with customers regarding our solutions, which may impact such customers' decisions to continue to use our solutions and pay for maintenance and support in the future.
If we are unable to expand our customers' use of our solutions, sell additional solutions to our customers, maintain our renewal rates for maintenance and subscription agreements and expand our customer base, our revenues may decline or fail to increase at historical growth rates, which could adversely affect our business and operating results. In addition, if we experience customer dissatisfaction with customers in the future, we may find it more difficult to increase use of our solutions within our existing customer base and it may be more difficult to attract new customers, or we may be required to grant credits or refunds, any of which could negatively impact our operating results and materially harm our business.

The loss of one or more of our key customers could slow our revenue growth or cause our revenues to decline.
A substantial portion of our total revenues in any given period may come from a relatively small number of customers. As of September 30, 2018, we had 154 customers. Although our largest customers typically change from period to period, for the fiscal year ended September 30, 2018, our 15 largest customers accounted for more than 57% of our total revenues, and one customer, Johnson & Johnson, accounted for approximately 15% of our total revenues in fiscal year 2018. However, during the fiscal year ended September 30, 2018, no customer represented more than 10% of our subscription revenues. We expect that we will continue to depend upon a relatively small number of customers for a significant portion of our total revenues for the foreseeable

future. The loss of any of our significant customers or groups of customers for any reason, or a change of relationship with any of our key customers may cause a significant decrease in our total revenues.

Additionally, mergers or consolidations among our customers in the life sciences and semiconductor industries, both of which are currently undergoing significant consolidation, could reduce the number of our customers and could adversely affect our revenues and sales. In particular, if our customers are acquired by entities that are not also our customers, that do not use our solutions or that have more favorable contract terms and choose to discontinue, reduce or change the terms of their use of our solutions, our business and operating results could be materially and adversely affected.

If our solutions experience data security breaches, and there is unauthorized access to our customers' data, we may lose current or future customers, our reputation and business may be harmed and we may incur significant liabilities.

Our solutions are used by our customers to manage and store personally identifiable information, proprietary information and sensitive or confidential data relating to their business. Although we maintain security features in our solutions, our security measures may not detect or prevent hacker interceptions, break-ins, security breaches, the introduction of viruses or malicious code, such as "ransomware," and other disruptions that may jeopardize the security of information stored in and transmitted by our solutions. Cyber-attacks and other malicious Internet-based activity continue to increase generally. A party that is able to circumvent our security measures in our solutions could misappropriate our or our customers' proprietary or confidential information, cause interruption in their operations, damage or misuse their computer systems and misuse any information that they misappropriate. Because techniques used to obtain unauthorized access or sabotage systems change frequently and generally are not identified until they are launched against a target, we may be unable to anticipate these techniques or to implement adequate preventative measures.

There can be no assurance that limitation of liability, indemnification or other protective provisions in our contracts would be applicable, enforceable or adequate in connection with a security breach, or would otherwise protect us from any such liabilities or damages with respect to any particular claim. We also cannot be sure that our existing general liability insurance coverage and coverage for errors or omissions will continue to be available on acceptable terms or will be available in sufficient amounts to cover one or more large claims, or that the insurer will not deny coverage as to any future claim. One or more large claims may be asserted against us that exceed our available insurance coverage, or changes in our insurance policies may occur, including premium increases or the imposition of large deductible or co-insurance requirements. If any compromise of the security of our solutions were to occur, we may be subject to litigation, indemnity obligations and other possible liabilities, and we may lose existing customers and the ability to attract future customers, any of which could harm our reputation, business, financial condition and results of operations and result in significant liability.

Changes in privacy laws, regulations and standards may cause our business to suffer.

Personal privacy and data security have become significant issues in the United States, Europe and in many other jurisdictions where we offer our solutions. The regulatory framework for privacy and security issues worldwide is rapidly evolving and is likely to remain uncertain for the foreseeable future. For example, the Court of Justice of the European Union ruled in October 2015 that the US-EU Safe Harbor framework was invalid, and the framework's successor, the US-EU Privacy Shield, while adopted, has been criticized and challenged by multiple privacy advocacy groups. Furthermore, federal, state or foreign government bodies or agencies have in the past adopted, and may in the future adopt, laws and regulations affecting data privacy. Industry organizations also regularly adopt and advocate for new standards in this area. In the United States, these include rules and regulations promulgated under the authority of federal agencies and state attorneys general and legislatures and consumer protection agencies. Internationally, many jurisdictions in which we operate have established their own data security and privacy legal framework with which we or our customers must comply, including but not limited to, the European General Data Protection Regulation, which imposes additional obligations and risks upon our business. In many jurisdictions, enforcement actions and consequences for noncompliance are also rising. In addition to government regulation, privacy advocates and industry groups may propose new and different self-regulatory standards that either legally or contractually applies to us.

Any inability to adequately address privacy and security concerns, even if unfounded, or comply with applicable privacy and data security laws, regulations and policies, could result in additional cost and liability to us, damage our reputation, inhibit sales and adversely affect our business. Furthermore, the costs of compliance with, and other burdens imposed by, the laws, regulations, and policies that are applicable to the businesses of our customers may limit the use and adoption of, and reduce the overall demand for, our solutions. Privacy and data security concerns, whether valid or not valid, may inhibit market adoption of our solutions, particularly in foreign countries. If we are not able to adjust to changing laws, regulations and standards related to privacy or security, our business may be harmed.

Our acquisition of other companies could require significant management attention, disrupt our business, dilute stockholder value and adversely affect our operating results.

As part of our business strategy, we have in the past and may in the future make investments in other companies, solutions or technologies to, among other reasons, expand or enhance our product offerings. In the future, any significant acquisition would require the consent of our lenders. Any failure to receive such consent could delay or prohibit us from acquiring companies that we believe could enhance our business.

We may not ultimately strengthen our competitive position or achieve our goals from any future acquisition, and any acquisitions we complete could be viewed negatively by users, customers, partners or investors. In addition, if we fail to integrate successfully such acquisitions, or the technologies associated with such acquisitions, into our company, the revenues and operating results of the combined company could be adversely affected. In addition, we may not be able to successfully retain the customers and key personnel of such acquisitions over the longer term, which could also adversely affect our business. The integration of any future-acquired business will require significant time and resources, and we may not be able to manage the process successfully. We may not successfully evaluate or utilize the acquired technology and accurately forecast the financial impact of the acquisition, including accounting charges.

It is also possible that a governmental entity could initiate an antitrust investigation at any time. Among other things, an investigation that is resolved unfavorably to us could delay or prevent the completion of a transaction, require us to divest or sell the assets or businesses we acquired, limit the ability to realize the expected financial or strategic benefits of a transaction or have other adverse effects on our current business and operations.

We may have to pay cash, incur debt or issue equity securities to pay for any acquisition, each of which could affect our financial condition or the value of our capital stock. To fund any future acquisition, we may issue equity, which would result in dilution to our stockholders, or incur more debt, which would result in increased fixed obligations and could subject us to additional covenants or other restrictions that would impede our ability to manage our operations.

Because we recognize a majority of our SaaS and maintenance revenues from our customers over the term of their agreements, downturns or upturns in sales of our cloud-based solutions may not be immediately reflected in our operating results.

SaaS and maintenance revenues primarily include subscription and related implementation fees from customers accessing our cloud-based solutions and revenues associated with maintenance agreements from license customers. We recognize a majority of our SaaS and maintenance revenues over the term of our customer agreements, which are typically one year or longer in some cases. As a result, most of our quarterly SaaS and maintenance revenues result from agreements entered into during previous quarters. Consequently, a shortfall in sales of our cloud-based solutions or renewal of maintenance and support agreements in any quarter may not significantly reduce our SaaS and maintenance revenues for that quarter but would negatively affect SaaS and maintenance revenues in future quarters. Accordingly, the effect of significant downturns in sales of our cloud-based solutions or renewals of our maintenance and support agreements may not be fully reflected in our results of operations until future periods. We may be unable to adjust our cost structure to compensate for this potential shortfall in SaaS and maintenance revenues. Our revenue recognition model for our cloud-based solutions and maintenance and support agreements also makes it difficult for us to rapidly increase our revenues through additional sales in any period, as a significant amount of our revenues are recognized over the applicable agreement term. As a result, changes in the volume of sales of our cloud-based solutions or the renewals of our maintenance and support agreements in a particular period would not be fully reflected in our revenues until future periods.

Our indebtedness could adversely affect our business and limit our ability to expand our business or respond to changes, and we may be unable to generate sufficient cash flow to satisfy our debt service obligations.

In May 2018, we entered into a credit agreement with Wells Fargo under which we incurred $50 million of indebtedness to refinance indebtedness that we incurred in January 2017 to fund the cash portion of our Revitas acquisition, and established a revolving credit facility of $5.0 million. This term loan is secured by substantially all of our assets and matures in May 2023. We also issued two promissory notes for an aggregate of $10 million in January 2017 to the sellers of Revitas, one of which was repaid in full in May 2018. The incurrence of significant indebtedness could have adverse consequences, including the following:

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reducing the availability of our cash flow for our operations, capital expenditures, future business opportunities and other purposes;

- limiting our flexibility in planning for, or reacting to, changes in our business and the industries in which we operate;
- increasing our vulnerability to general adverse economic and industry conditions; and
- lengthening our sales process as customers evaluate our financial viability.

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We must repay the $50 million term loan in quarterly installments of $250,000 each from September 30, 2018 through June 30, 2019, $625,000 each from September 30, 2019 through June 30, 2020, and $937,500 each from September 30, 2020 through March 31, 2023, and must repay the remaining principal amount at maturity in May 2023. Additionally, our remaining promissory note to the sellers of Revitas will mature in January 2020. Our ability to generate cash to repay our indebtedness is subject to the performance of our business, as well as general economic, financial, competitive and other factors that are beyond our control. If our business does not generate sufficient cash flow from operating activities or if future borrowings are not available to us in amounts sufficient to enable us to fund our liquidity needs, our operating results, financial condition and ability to expand our business may be adversely affected.

The term loan bear interest at a variable rate of either a base rate plus a margin ranging from 2.0% to 3.5%, or LIBOR plus a margin ranging from 3.0% to 4.5%, which exposes us to interest rate risk. Changes in economic conditions outside of our control could result in higher interest rates, thereby increasing our interest expense even though the amount borrowed remained the same.

Additionally, the credit agreement governing our term loans with Wells Fargo contains various restrictive covenants, including maintaining consolidated liquidity (cash in the United States plus revolving credit line availability) of at least $15.0 million, minimum levels of maintenance and subscription fee revenue and, if liquidity is less than $30 million for 90 consecutive days, a leverage ratio not greater than 3.50 to 1.00. The credit agreement also requires us and our guarantors to maintain certain non-financial covenants, including covenants restricting our ability to dispose of assets, changing our organizational documents, merging with or acquiring other entities, incurring other indebtedness and making investments. Our ability to comply with some of these restrictive covenants can be affected by events beyond our control, and we may be unable to do so. Upon the occurrence of an event of default, our lenders could elect to declare all amounts outstanding under our financing agreement to be immediately due and payable. If we are unable to repay that amount, our lenders could seize our assets securing the loans and our financial condition could be adversely affected.

We may face risks related to securities litigation that could result in significant legal expenses and settlement or damage awards.

We have been in the past and may in the future become subject to claims and litigation alleging violations of the securities laws or other related claims, which could harm our business and require us to incur significant costs. Significant litigation costs could impact our ability to comply with certain financial covenants under our credit agreement. We are generally obliged, to the extent permitted by law, to indemnify our current and former directors and officers who are named as defendants in these types of lawsuits. Regardless of the outcome, litigation may require significant attention from management and could result in significant legal expenses, settlement costs or damage awards that could have a material impact on our financial position, results of operations and cash flows.

Our implementation cycle is lengthy and variable, depends upon factors outside our control and could cause us to expend significant time and resources prior to earning associated revenues.

The implementation and testing of our solutions typically range from a few months to up to twelve months, and unexpected implementation delays and difficulties can occur. Implementing our solutions typically involves integration with our customers' systems, as well as adding their data to our system. This can be complex, time-consuming and expensive for our customers and can result in delays in the implementation and deployment of our solutions. The lengthy and variable implementation cycle may also have a negative impact on the timing of our revenues, causing our revenues and results of operations to vary significantly from period to period.

A substantial majority of our total revenues have come from sales of our enterprise application suite, and decreases in demand for our enterprise application suite could adversely affect our results of operations and financial condition.

Historically, a substantial majority of our total revenues has been associated with our enterprise application suite, whether deployed as individual solutions or as a complete suite. We expect our enterprise application suite to continue to generate a substantial majority of our total revenues for the foreseeable future. Declines and variability in demand for our enterprise application suite could occur for a number of reasons, including improved products or product versions being offered by competitors, competitive pricing pressures, failure to release new or enhanced versions on a timely basis, technological changes that we are unable to address or that change the way our customers utilize our solutions, reductions in technology spending, export restrictions or other regulatory or legislative actions that could limit our ability to sell those products to key customer or market segments. Our business, results of operations, financial condition and cash flows would be adversely affected by a decline in demand for our enterprise application suite.

Our customers often require significant configuration efforts to match their complex business processes. The failure to meet their requirements could result in customer disputes, loss of anticipated revenues and additional costs, which could harm our business.

Our customers often require significant configuration services to address their unique business processes. Supporting such a diversity of configured settings and implementations could become difficult as the number of customers we serve grows. In addition, supporting our customers could require us to devote significant development services and support personnel and strain our personnel resources and infrastructure. We have had in the past and may in the future have disputes with customers regarding the performance and implementation of our solutions. If we are unable to address the needs of our customers in a timely fashion, our customers may decide to seek to terminate their relationship, renew on less favorable terms, not renew their maintenance agreements or subscriptions, fail to purchase additional solutions or services, assert legal claims against us or cease to be a reference. If any of these were to occur, our revenues may decline or we may be required to refund amounts to customers and our operating results may be harmed.

Our future growth is, in large part, dependent upon the increasing adoption of revenue management solutions.

Revenue management is at an early stage of market development and adoption, and the extent to which revenue management solutions will become widely adopted remains uncertain. It is difficult to predict customer adoption rates, customer demand for revenue management solutions, including our solutions in particular, the future growth rate and size of this market and the timing of the introduction of additional competitive solutions. Any expansion of the revenue management market depends on a number of factors, including the cost, performance and perceived value associated with revenue management solutions. For example, many companies have invested substantial personnel, infrastructure and financial resources in other revenue management infrastructure and therefore may be reluctant to implement solutions such as ours. Additionally, organizations that use legacy revenue management products may believe that these products sufficiently address their revenue management needs. Because this market is relatively undeveloped, we must spend considerable time educating customers as to the benefits of our solutions. If revenue management solutions do not achieve widespread adoption, or if there is a reduction in demand for revenue management solutions caused by a lack of customer acceptance, technological challenges, competing technologies and products, decreases in corporate spending or otherwise, it could result in lower sales, reduced renewal and upsell rates and decreased revenues and our business could be adversely affected.

If we are unable to enhance existing solutions and develop new solutions that achieve market acceptance or that keep pace with technological developments, our business could be harmed.

Our ability to increase revenues from existing customers and attract new customers depends in large part on our ability to enhance and improve our existing solutions and to develop and introduce new solutions. The success of any enhancement or new solutions depends on several factors, including timely completion, adequate quality testing, introduction and market acceptance. Any enhancement or new solutions that we develop (such as our Revenue Cloud and Revenue Management as a Service) or acquire may not be introduced in a timely or cost-effective manner, may contain defects or may not achieve the broad market acceptance necessary to generate significant revenues. If we are unable to successfully enhance our existing solutions and develop new solutions to meet customer requirements, our business and operating results will be adversely affected.

Because we designed our solutions to operate on a variety of network, hardware and software platforms, we will need to continuously modify and enhance our solutions to keep pace with changes in networking, internet-related hardware, and software, communication, browser and database technologies. If we are unable to respond in a timely manner to these rapid technological developments in a cost-effective manner, our solutions may become less marketable and less competitive or obsolete and our operating results may be negatively impacted.

We are highly dependent upon the life sciences industry, and factors that adversely affect this industry could also adversely affect us.

Our future growth depends, in large part, upon continued sales to companies in the life sciences industry. Demand for our solutions could be affected by factors that adversely affect demand for the underlying life sciences products and services that are purchased and sold pursuant to contracts managed through our solutions. The life sciences industry is affected by certain factors, including the emergence of large group purchasing and managed care organizations and integrated healthcare delivery networks, increased customer and channel incentives and rebates, the shift of purchasing influence from physicians to economic buyers, increased spending on healthcare by governments instead of commercial entities and increased scope of government mandates, frequency of regulatory reporting and audits, and fines. Accordingly, our future operating results could be materially and adversely affected as a result of factors that affect the life sciences industry generally.

Our efforts to expand the adoption of our solutions in the technology industry will be affected by our ability to provide solutions that adequately address trends in that industry.

We are attempting to expand the use of our solutions by companies in the technology industry, and our future growth depends in part on our ability to increase sales of solutions to customers in this industry and potentially other industries. The technology industry is affected by many factors, including shortening of product lifecycles, core technology products being sold into different end markets with distinct pricing, increasing complexity of multi-tiered global distribution channels, changing financial reporting requirements due to channel complexity and increasing use of off-invoice discounting. If our solutions are not perceived by existing or potential customers in the technology industry as capable of providing revenue management tools that will assist them in adequately addressing these trends, then our efforts to expand the adoption of our solutions in this industry may not be successful, which would adversely impact our business and operating results.

Most of our implementation contracts are on a time and materials basis and may be terminated by the customer.

The contracts under which we perform most of our implementation services may have a term typically ranging between a few months to up to twelve months and are on a time and materials basis and may be terminated by the customer at any time. If an implementation project is terminated sooner than we anticipated or a portion of the implementation is delayed, we would lose the anticipated revenues that we might not be able to replace or it may take significant time to replace the lost revenues with other work or we may be unable to eliminate the associated costs. Consequently, we may recognize fewer revenues than we anticipated or incur unnecessary costs, and our results of operations in subsequent periods could be materially lower than expected.

Our efforts to expand our solutions into other verticals within the life sciences and technology industries or other industries may not succeed and may reduce our revenue growth rate. Even if we are successful in doing so, such efforts may be costly and may impact our ability to achieve profitability.

Our solutions are currently designed primarily for customers in certain verticals of the life sciences and technology industries and potentially into other industries. Our ability to attract new customers and increase our revenues depends in part on our ability to enter into new industries and verticals. Developing and marketing new solutions to serve other industries and verticals will require us to devote substantial additional resources in advance of consummating new sales or realizing additional revenues. Our ability to leverage the expertise we have developed in the life sciences and technology industries into new industries is unproven and it is likely that we will be required to hire additional personnel, partner with additional third parties and incur considerable research and development expense in order to gain and develop additional expertise for new industries where we lack experience and expertise.

Our efforts to expand our solutions beyond the verticals within the life sciences and technology industries in which we have already developed expertise may not be successful and may reduce our revenue growth rate. Any early stage interest in our solutions in areas beyond the industries we already address may not result in long term success or significant revenues for us. Even if we achieve long-term success in expanding our solutions into other industries and verticals, the costs associated with such expansion may be high, which may impact our ability to achieve profitability.

The market for cloud-based solutions is at an early stage of acceptance relative to on-premise solutions, and if it does not develop or develops more slowly than we expect, our business could be harmed.

Although gaining wider acceptance, the market for cloud-based solutions is at an early stage relative to on-premise solutions, and these types of deployments may not achieve and sustain high levels of demand and market acceptance. We plan to accelerate the shift in our business model to recurring revenues, including revenues derived from our cloud-based solutions, by continuing to expand the implementation of our cloud-based solutions both within our current installed base of customers as well as new customers and additional markets in the future. Many companies have invested substantial personnel and financial resources to integrate traditional enterprise software into their businesses, and therefore may be reluctant or unwilling to migrate to a cloud-based solution. Other factors that may affect the market acceptance of cloud-based solutions include:

- perceived security capabilities and reliability;
- perceived concerns about ability to scale operations for large enterprise customers;
- concerns with entrusting a third party to store and manage critical data;

- the level of configurability or customizability of the solutions; and
- ability to perform at or near the capabilities of our on-premise solutions.

If organizations do not perceive the benefits of our cloud-based solutions, or if our competitors or new market entrants are able to develop cloud-based solutions that are or are perceived to be more effective than ours, our plan to accelerate the shift in our business model to recurring revenues may not succeed or may develop more slowly than we expect, if at all, or may result in short-term declines in recognized revenue, any of which would adversely affect our business.

We rely on a small number of third-party service providers to host and deliver our cloud-based solutions, and any interruptions or delays in services from these third parties could impair the delivery of our cloud-based solutions and harm our business.

We currently operate our cloud-based solutions primarily through third party data centers. We do not control the operation of these facilities. These facilities are vulnerable to damage or interruption from natural disasters, fires, power loss, telecommunications failures and similar events. They are also subject to break-ins, computer viruses, sabotage, intentional acts of vandalism and other misconduct. The occurrence of a natural disaster or an act of terrorism, a decision to close the facilities without adequate notice or other unanticipated problems could result in lengthy interruptions, which would have a serious adverse impact on our business. Additionally, our data center agreements are of limited duration, subject to early termination rights in certain circumstances, may include inadequate indemnification and liability provisions, and the providers of our data centers have no obligation to renew their agreements with us on commercially reasonable terms, or at all.

If we continue to add data centers and add capacity in our existing data centers, we may transfer data to other locations. Despite precautions taken during this process, any unsuccessful data transfers may impair the delivery of our service. Interruptions in our service, data loss or corruption may subject us to liability to our customers, cause customers to terminate their agreements and adversely affect our renewal rates and our ability to attract new customers. Data transfers may also subject us to regional privacy and data protection laws that apply to the transmission of customer data across international borders.

We also depend on access to the Internet through third-party bandwidth providers to operate our cloud-based solution. If we lose the services of one or more of our bandwidth providers, or if these providers experience outages, for any reason, we could experience disruption in delivering our cloud-based solutions or we could be required to retain the services of a replacement bandwidth provider. Any Internet outages or delays could adversely affect our ability to provide our solutions to our customers. Our data center operations also rely heavily on the availability of electricity, which also comes from third-party providers. If we or the third-party data center facilities that we use to deliver our services were to experience a major power outage or if the cost of electricity were to increase significantly, our operations and financial results could be harmed. If we or our third-party data centers were to experience a major power outage, we or they would have to rely on back-up generators, which might not work properly or might not provide an adequate supply during a major power outage. Such a power outage could result in a significant disruption of our business.

We license technology from third parties, and our inability to maintain those licenses could harm our business. Certain third-party technology that we use may be difficult to replace or could cause errors or failures of our service.

We incorporate technology that we purchase or license from third parties, including hardware and software, into our solutions. We cannot be certain that this technology will continue to be available on commercially reasonable terms, or at all. We cannot be certain that our licensors are not infringing the intellectual property rights of third parties or that our licensors have sufficient rights to the licensed intellectual property in all jurisdictions in which we may sell our solutions. Some of our agreements with our licensors may be terminated for convenience by them. If we are unable to continue to license any of this technology because of intellectual property infringement claims brought by third parties against our licensors or against us, or if we are unable to continue our license agreements or enter into new licenses on commercially reasonable terms, our ability to develop and sell solutions containing that technology would be severely limited and our business could be harmed. Additionally, if we are unable to license or obtain the necessary technology from third parties, we may be forced to acquire or develop alternative technology of lower quality or performance standards. This would limit and delay our ability to offer new or competitive solutions and increase our costs of production. In addition, errors or defects in third-party hardware or software used in our cloud-based solutions could result in errors or a failure of our cloud-based solutions, which could harm our business.

If we or our solutions fail to perform properly, our reputation and customer relationships could be harmed, our market share could decline and we could be subject to liability claims.

Our solutions are inherently complex and may contain material defects or errors. Any defects in solution functionality or that cause interruptions in availability could result in:

- lost or delayed market acceptance and sales;
- reductions in current-period total revenues;

- breach of warranty or other contract breach or misrepresentation claims;
- sales credits or refunds to our customers;
- loss of customers;
- diversion of development and customer service resources; and
- injury to our reputation.

The costs incurred in correcting any material defects or errors might be substantial and could adversely affect our operating results. Because our customers often use our solutions as a system of record and many of our customers are subject to regulation of pricing of their products or otherwise have complex pricing commitments and revenue recognition policies, errors could result in an inability to process sales or lead to a violation of pricing requirements or misreporting of revenues by our customers that could potentially expose them to fines or other substantial claims or penalties. Accordingly, we could face increased exposure to product liability and warranty claims, litigation and other disputes and claims, resulting in potentially material losses and costs. Our limitation of liability provisions in our customer agreements may not be sufficient to protect us against any such claims.

Given the large amount of data that our solutions collect and manage, it is possible that failures or errors in our software could result in data loss or corruption, or cause the information that we collect to be incomplete or contain inaccuracies that our customers regard as significant. We may be required to issue credits or refunds or indemnify or otherwise be liable to our customers or third parties for damages they may incur resulting from certain of these events.

Our insurance may be inadequate or may not be available in the future on acceptable terms, or at all. In addition, our policy may not cover any claim against us for claims related to any product defects or errors or other indirect or consequential damages and defending a suit, regardless of its merit, could be costly and divert management’s attention.

The market in which we participate is highly competitive, and if we do not compete effectively, our operating results could be harmed.

The market for revenue management solutions is highly competitive, fragmented and subject to rapid changes in technology. We face competition from spreadsheet-assisted manual processes, internally developed solutions, large integrated systems vendors, providers of business process outsourcing services and smaller companies that offer point solutions.

Companies lacking IT resources often resort to spreadsheet-assisted manual processes or personal database applications. In addition, some potential customers, particularly large enterprises, may elect to develop their own internal solutions, including custom-built solutions that are designed to support the needs of a single organization. Companies with large investments in packaged ERP or CRM applications, which do not typically provide revenue management capabilities, may extend these horizontal applications with configurations or point solution applications in order to address one or a small set of revenue management sub processes or drivers. Common horizontal applications that customers attempt to configure for this purpose in the life sciences and technology industries include large integrated systems vendors like SAP AG and Oracle Corporation. We also encounter competition from small independent companies, which compete on the basis of price, unique product features or functions and custom developments.

Many of our competitors have greater name recognition, larger sales and marketing budgets and greater resources than we do and may have pre-existing relationships with our potential customers, including relationships with, and access to, key decision makers within these organizations, and major distribution agreements with consultants and system integrators. Moreover, many software vendors could bundle solutions or offer them at a low price as part of a larger product sale.

With the introduction of new technologies and market entrants, we expect competition to intensify in the future. We also expect enterprise software vendors that focus on enterprise resource planning or back-office applications to enter our market with competing products. In addition, we expect sales force automation vendors to acquire or develop additional solutions that may compete with our solutions. If we fail to compete effectively, our business will be harmed. In addition, pricing pressures and increased competition generally could result in reduced sales, reduced margins, losses or the failure of our solutions to achieve or maintain more widespread market acceptance, any of which could harm our business.

If we are not able to maintain and enhance our brand, our business and operating results may be adversely affected.

We believe that maintaining and enhancing the "Model N" brand identity is critical to our relationships with our customers and partners and to our ability to attract new customers and partners. The successful promotion of our brand will depend largely upon our marketing efforts, our ability to continue to offer high-quality solutions and our ability to successfully differentiate our solutions from those of our competitors. Our brand promotion activities may not be successful or yield increased revenues. In addition, independent industry analysts often provide reviews of our solution, as well as those of our competitors, and perception of our solution in the marketplace may be significantly influenced by these reviews. If these reviews are negative, or less positive as compared to those of our competitors' products and services, our brand may be adversely affected.

The promotion of our brand requires us to make substantial expenditures, and we anticipate that the expenditures will increase as our market becomes more competitive and as we expand into new verticals within the life sciences and technology industries. To the extent that these activities yield increased revenues, these revenues may not offset the increased expenses we incur. If we do not successfully maintain and enhance our brand, our business may not grow, we may have reduced pricing power relative to competitors with stronger brands and we could lose customers and partners, all of which would adversely affect our business operations and financial results.

If we are unable to maintain successful relationships with system integrators, our business operations, financial results and growth prospects could be adversely affected.

Our relationships with system integrators are generally non-exclusive, which means they may recommend to their customers the solutions of several different companies, including solutions that compete with ours, and they may also assist in the implementation of software or systems that compete with ours. If our system integrators do not choose to continue to refer our solutions, assist in implementing our solutions, choose to use greater efforts to market and sell their own solutions or those of our competitors, or fail to meet the needs of our customers, our ability to grow our business and sell our solutions may be adversely affected. The loss of a substantial number of our system integrators, our possible inability to replace them or the failure to recruit additional system integrators could harm our business.

Our ability to achieve revenue growth in the future will depend in part on our success in maintaining successful relationships with our system integrators and in helping our system integrators enhance their ability to independently market and implement our solutions. Our growth in revenues, particularly in international markets, will be influenced by the development and maintenance of relationships with these companies. Although we have established relationships with some of the leading system integrators, our solutions compete directly against the solutions of other leading system integrators. We are unable to control the resources that our system integrators commit to implementing our solutions or the quality of such implementation. If they do not commit sufficient resources to these activities, or if we are unable to maintain our relationships with these system integrators or otherwise develop and expand our indirect distribution channel, our business, results of operations, financial condition or cash flows could be adversely affected.

Any failure to offer high-quality customer support cloud platform services may adversely affect our relationships with our customers and harm our financial results.

Once our solutions are implemented, our customers use our support organization to resolve technical issues relating to our solutions. In addition, we also believe that our success in selling our solutions is highly dependent on our business reputation and on favorable recommendations from our existing customers. Any failure to maintain high-quality customer support, or a market perception that we do not maintain high-quality support, could harm our reputation, adversely affect our ability to maintain existing customers or sell our solutions to existing and prospective customers, and harm our business, operating results and financial condition.

We may be unable to respond quickly enough to accommodate short-term increases in customer demand for support services. Increased customer demand for these services, without corresponding revenues, could also increase costs and adversely affect our operating results.

If our solutions do not interoperate with our customers' IT infrastructure, sales of our solutions could be negatively affected, which would harm our business.

Our solutions must interoperate with our customers' existing IT infrastructure, which often have different specifications, complex configuration, utilize multiple protocol standards, deploy products from multiple vendors and contain multiple generations of products that have been added over time. As a result, when problems occur in a network, it may be difficult to identify the sources of these problems. If we find errors in the existing products or defects in the hardware used in our customers' IT infrastructure or problematic network configurations or settings, we may have to modify our solutions or platform so that our solutions will interoperate with our customers' IT infrastructure. Any delays in identifying the sources of problems or in providing necessary modifications to our solutions could have a negative impact on our reputation and our customers' satisfaction with our solutions, and our ability to sell solutions could be adversely affected.

Incorrect or improper implementation or use of our solutions could result in customer dissatisfaction and negatively affect our business, operations, financial results and growth prospects.

Our customers and third-party partners may need training in the proper use of and the variety of benefits that can be derived from our solutions to maximize their potential. We have implemented the Model N Align Program, which gives our customers full access to expert knowledge through a portal for easy and fast access to information, experienced customer success managers and defined customer success plans, in order to help our customers maximize the value of our solutions. However, our customers may choose not to use such programs or may not use such programs efficiently or effectively and as a result may become dissatisfied with our solutions. If our solutions are not implemented or used correctly or as intended, inadequate performance may result. Since our customers rely on our solutions and customer support to manage key areas of their businesses, the incorrect or improper implementation or use of our solutions, our failure to train customers on how to efficiently and effectively use our solutions or our failure to provide services to our customers, may result in negative publicity, failure of customers to renew their SaaS maintenance agreements or subscriptions or potentially make legal claims against us. Also, as we continue to expand our customer base, any failure by us to properly provide these services will likely result in lost opportunities for follow-on sales of our solutions.

Competition for our target employees is intense, and we may not be able to attract and retain the quality employees we need to support our planned growth.

Our future success depends, in part, upon our ability to recruit and retain key management, technical, sales, marketing, finance, and other critical personnel. Competition for qualified management, technical and other personnel is intense, and we may not be successful in attracting and retaining such personnel. If we fail to attract and retain qualified employees, including internationally, our ability to grow our business could be harmed. Competition for people with the specific skills that we require is significant. In order to attract and retain personnel in a competitive marketplace, we believe that we must provide a competitive compensation package, including cash and equity-based compensation. Volatility in our stock price may from time to time adversely affect our ability to recruit or retain employees. If we are unable to hire and retain qualified employees, or conversely, if we fail to manage employee performance or reduce staffing levels when required by market conditions, our business and operating results could be adversely affected.

Our significant international operations subject us to additional risks that can adversely affect our business, results of operations and financial condition.

We have significant international operations, including in emerging markets such as India, and we are continuing to expand our international operations as part of our growth strategy. As of September 30, 2018, approximately 47% of our total employees were located in India, where we conduct a portion of our development activities, implementation services and support services. Our current international operations and our plans to expand our international operations have placed, and will continue to place, a strain on our employees, management systems and other resources.

Operating in international markets requires significant resources and management attention and will subject us to regulatory, economic and political risks and competition that are different from those in the United States. Because of our limited experience with international operations, we cannot assure you that our international expansion efforts will be successful or that returns on such investments will be achieved in the future. In addition, our international operations may fail to succeed due to other risks inherent in operating businesses internationally, including:

- our lack of familiarity with commercial and social norms and customs in countries which may adversely affect our ability to recruit, retain and manage employees in these countries;
- difficulties and costs associated with staffing and managing foreign operations;
- the potential diversion of management’s attention to oversee and direct operations that are geographically distant from our U.S. headquarters;
- compliance with multiple, conflicting and changing governmental laws and regulations, including employment, tax, privacy and data protection laws and regulations;
- legal systems in which our ability to enforce and protect our rights may be different or less effective than in the United States and in which the ultimate result of dispute resolution is more difficult to predict;
- greater difficulty collecting accounts receivable and longer payment cycles;

- higher employee costs and difficulty in terminating non-performing employees;
- differences in workplace cultures;
- unexpected changes in regulatory requirements;

- the need to adapt our solutions for specific countries;
- our ability to comply with differing technical and certification requirements outside the United States;
- tariffs, export controls and other non-tariff barriers such as quotas and local content rules;
- more limited protection for intellectual property rights in some countries;
- adverse tax consequences, including as a result of transfer pricing adjustments involving our foreign operations;
- fluctuations in currency exchange rates;
- anti-bribery compliance by us or our partners;
- restrictions on the transfer of funds; and
- new and different sources of competition.

Our failure to manage any of these risks successfully could harm our existing and future international operations and seriously impair our overall business.

We are exposed to fluctuations in currency exchange rates, which could negatively affect our financial condition and operating results.

Our sales contracts are primarily denominated in U.S. dollars, and therefore, substantially all of our revenues are not subject to foreign currency risk. However, a strengthening of the U.S. dollar could increase the real cost of our solutions to our customers outside of the United States, which could adversely affect our financial condition and operating results. In addition, an increasing portion of our operating expenses are incurred in India, are denominated in Indian Rupees and are subject to fluctuations due to changes in foreign currency exchange rates.

We may be sued by third parties for alleged infringement of their proprietary rights which could result in significant costs and harm our business.

There is considerable patent and other intellectual property development activity in our industry. Our success depends upon us not infringing upon the intellectual property rights of others. Companies in the software and technology industries, including some of our current and potential competitors, own large numbers of patents, copyrights, trademarks and trade secrets and frequently enter into litigation based on allegations of infringement, misappropriation or other violations of intellectual property rights. In addition, many of these companies have the capability to dedicate substantially greater resources to enforce their intellectual property rights and to defend claims that may be brought against them. The litigation may involve patent holding companies or other adverse patent owners who have no relevant product revenue and against whom our potential patents may provide little or no deterrence. We have received, and may in the future receive, notices that claim we have infringed, misappropriated or otherwise violated other parties' intellectual property rights. To the extent we gain greater visibility, we face a higher risk of being the subject of intellectual property infringement claims, which is not uncommon with respect to software technologies in general and information security technology in particular. There may be third-party intellectual property rights, including issued or pending patents that cover significant aspects of our technologies or business methods. Any intellectual property claims, with or without merit, could be very time consuming, could be expensive to settle or litigate and could divert our management's attention and other resources. These claims could also subject us to significant liability for damages, potentially including treble damages if we are found to have willfully infringed patents or copyrights. These claims could also result in our having to stop using technology found to be in violation of a third party's rights. We might be required to seek a license for the intellectual property, which may not be available on reasonable terms or at all. Even if a license were available, we could be required to pay significant royalties, which would increase our operating expenses. As a result, we may be required to develop alternative non-infringing technology, which could require significant effort and expense. If we cannot license or develop technology for any infringing aspect of our business, we would be forced to limit or stop sales of one or more of our solutions or features of our solutions and may be unable to compete effectively. Any of these results would harm our business, operating results and financial condition.

In addition, our agreements with customers and partners include indemnification provisions under which we agree to indemnify them for losses suffered or incurred as a result of claims of intellectual property infringement and, in some cases, for damages caused by us to property or persons. Large indemnity payments could harm our business, operating results and financial condition.

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Our use of open source and third-party technology could impose limitations on our ability to commercialize our solutions.

We use open source software in our solutions and in our services engagements on behalf of customers. As we increasingly handle configured implementation of our solutions on behalf of customers, we use additional open source software that we obtain from all over the world. Although we try to monitor our use of open source software, the terms of many open source licenses have not been interpreted by U.S. courts, and 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 solutions. In such event, we could be required to seek licenses from third parties in order to continue offering our solutions, to re-engineer our technology or to discontinue offering our solutions in the event re-engineering cannot be accomplished on a timely basis, any of which could cause us to breach contracts, harm our reputation, result in customer losses or claims, increase our costs or otherwise adversely affect our business, operating results and financial condition.

Some open source licenses contain requirements that we make available source code for modifications or derivative works we create based upon the type of open source software we use. If we combine our proprietary software with open source software in a certain manner, we could, under certain open source licenses, be required to release the source code of our proprietary software to the public. This would allow our competitors to create similar solutions with lower development effort and time and ultimately could result in a loss of product sales for us.

Any failure to protect our intellectual property rights could impair our ability to protect our proprietary technology and our brand, which would substantially harm our business and operating results.

The success of our business and the ability to compete depend in part upon our ability to protect and enforce our patents, trade secrets, trademarks, copyrights and other intellectual property rights. We primarily rely on patent, copyright, trade secret and trademark laws, trade secret protection and confidentiality or license agreements with our employees, customers, partners and others to protect our intellectual property rights. However, the steps we take to protect our intellectual property rights may be inadequate or we may be unable to secure intellectual property protection for all of our solutions. Any of our copyrights, trademarks or other intellectual property rights may be challenged by others or invalidated through administrative process or litigation. Competitors may independently develop technologies or solutions that are substantially equivalent or superior to our solutions or that inappropriately incorporate our proprietary technology into their solutions. Competitors may hire our former employees who may misappropriate our proprietary technology or misuse our confidential information. Although we rely in part upon confidentiality agreements with our employees, consultants and other third parties to protect our trade secrets and other confidential information, those agreements may not effectively prevent disclosure of trade secrets and other confidential information and may not provide an adequate remedy in the event of misappropriation of trade secrets or unauthorized disclosure of confidential information. In addition, others may independently discover our trade secrets and confidential information, and in such cases we could not assert any trade secret rights against such parties.

In order to protect our intellectual property rights, we may be required to spend significant resources to monitor and protect these rights. Litigation to protect and enforce our intellectual property rights could be costly, time-consuming and distracting to management and could result in the impairment or loss of portions of our intellectual property. Furthermore, our efforts to enforce our intellectual property rights may be met with defenses, counterclaims and countersuits attacking the validity and enforceability of our intellectual property rights. Any litigation, whether or not it is resolved in our favor, could result in significant expense to us and divert the efforts of our technical and management personnel, which may adversely affect our business, operating results and financial condition. Certain jurisdictions may not provide adequate legal infrastructure for effective protection of our intellectual property rights. Changing legal interpretations of liability for unauthorized use of our solutions or lessened sensitivity by corporate, government or institutional users to refraining from intellectual property piracy or other infringements of intellectual property could also harm our business.

It is possible that innovations for which we seek patent protection may not be protectable. Additionally, the process of obtaining patent protection is expensive and time consuming, and we may not be able to prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner. Given the cost, effort, risks and downside of obtaining patent protection, including the requirement to ultimately disclose the invention to the public, we may not choose to seek patent protection for certain innovations. However, such patent protection could later prove to be important to our business. Even if issued, there can be no assurance that any patents will have the coverage originally sought or adequately protect our intellectual property, as the legal standards relating to the validity, enforceability and scope of protection of patent and other intellectual property rights are uncertain. Any patents that are issued may be invalidated or otherwise limited, or may lapse or may be abandoned, enabling other companies to better develop products that compete with our solutions, which could adversely affect our competitive business position, business prospects and financial condition.

We cannot assure you that the measures we have taken to protect our intellectual property will adequately protect us, and any failure to protect our intellectual property could harm our business.

We may not be able to enforce our intellectual property rights throughout the world, which could adversely impact our international operations and business.

The laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the United States. Many companies have encountered significant problems in protecting and enforcing intellectual property rights in certain foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents and other intellectual property protection. This could make it difficult for us to stop the infringement or misappropriation of our intellectual property rights. Proceedings to enforce our proprietary rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business. Accordingly, our efforts to enforce our intellectual property rights in such countries may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop, which could have a material adverse effect on our business, financial condition and results of operations.

Changes to government regulations may reduce the size of the market for our solutions, harm demand for our solutions, force us to update our solutions or implement changes in our services and increase our costs of doing business.

Any changes in government regulations that impact our customers or their end customers could have a harmful effect on our business by reducing the size of our addressable market, forcing us to update the solutions we offer or otherwise increasing our costs. For example, with respect to our life sciences customers, regulatory developments related to government-sponsored entitlement programs or U.S. Food and Drug Administration or foreign equivalent regulation of, or denial, withholding or withdrawal of approval of, our customers' products could lead to a lack of demand for our solutions. Other changes in government regulations, in areas such as privacy, export compliance or anti-bribery statutes, such as the U.S. Foreign Corrupt Practices Act, could require us to implement changes in our solutions, services or operations that increase our cost of doing business and thereby adversely affecting our financial performance.

Failure to comply with certain certifications and standards pertaining to our solutions, as may be required by governmental authorities or other standards-setting bodies could harm our business. Additionally, failure to comply with governmental laws and regulations could harm our business.

Customers may require our solutions to comply with certain security or other certifications and standards, which are promulgated by governmental authorities or other standards-setting bodies. The requirements necessary to comply with these certifications and standards are complex and often change significantly. If our solutions are late in achieving or fail to achieve compliance with these certifications and standards, including when they are revised or otherwise change, or our competitors achieve compliance with these certifications and standards, we may be disqualified from selling our solutions to such customers, or at a competitive disadvantage, which would harm our business, operating results and financial condition.

We are subject to governmental export and import controls that could subject us to liability or impair our ability to compete in international markets.

Certain of our solutions are subject to U.S. export controls and may be exported outside the United States only with the required export license or through an export license exception. Additionally, we incorporate encryption technology into our solutions, which may require additional filings prior to export. If we were to fail to comply with U.S. export licensing requirements, U.S. customs regulations, U.S. economic sanctions or other laws, we could be subject to substantial civil and criminal penalties, including fines, incarceration for responsible employees and managers, and the possible loss of export or import privileges. Obtaining the necessary export license for a particular sale may be time-consuming and may result in the delay or loss of sales opportunities. Furthermore, U.S. export control laws and economic sanctions prohibit the shipment of certain products to U.S. embargoed or sanctioned countries, governments and persons. Even though we take precautions to ensure that our channel partners comply with all relevant regulations, any failure by our channel partners to comply with such regulations could have negative consequences, including reputational harm, government investigations and penalties.

In addition, various countries regulate the import of certain encryption technology, including through import permit and license requirements, and have enacted laws that could limit our ability to distribute our solutions or could limit our customers' ability to implement our solutions in those countries. Changes in our solutions or changes in export and import regulations may create delays in the introduction of our solutions into international markets, prevent our customers with international operations from deploying our solutions globally or, in some cases, prevent the export or import of our solutions to certain countries, governments or person's altogether. Any change in export or import regulations, economic sanctions or related legislation, shift in the enforcement or scope of existing regulations, or change in the countries, governments, persons or technologies targeted by such regulations, could result in decreased use of our solutions by, or in our decreased ability to export or sell our solutions to, existing or potential customers with international operations. Any decreased use of our solutions or limitation on our ability to export or sell our solutions would likely adversely affect our business, financial condition, and operating results.

If we are required to collect sales and use taxes on the solutions we sell, we may be subject to liability for past sales and our future sales may decrease.

State and local taxing jurisdictions have differing rules and regulations governing sales and use taxes, and these rules and regulations are subject to varying interpretations that may change over time. In particular, the applicability of sales taxes to our subscription services in various jurisdictions is unclear. Although we have historically collected and remitted sales tax in certain circumstances, it is possible that we could face sales tax audits and that our liability for these taxes could exceed our estimates as state tax authorities could still assert that we are obligated to collect additional amounts as taxes from our customers and remit those taxes to those authorities. We could also be subject to audits with respect to state and international jurisdictions for which we have not accrued tax liabilities. A successful assertion that we should be collecting additional sales or other taxes on our services in jurisdictions where we have not historically done so and do not accrue for sales taxes could result in substantial tax liabilities for past sales, discourage customers from purchasing our solutions or otherwise harm our business and operating results.

Uncertainty in global economic conditions may adversely affect our business, operating results or financial condition.

Our operations and performance depend on global economic conditions. Challenging or uncertain economic conditions make it difficult for our customers and potential customers to accurately forecast and plan future business activities, and may cause our customers and potential customers to slow or reduce spending, or vary order frequency, on our solutions. Furthermore, during challenging or uncertain economic times, our customers may face difficulties gaining timely access to sufficient credit and experience decreasing cash flow, which could impact their willingness to make purchases and their ability to make timely payments to us. Global economic conditions have in the past and could continue to have an adverse effect on demand for our solutions, including new bookings and renewal and upsell rates, on our ability to predict future operating results and on our financial condition and operating results. If global economic conditions remain uncertain or deteriorate, it may materially impact our business, operating results and financial condition.

Our business is subject to the risks of earthquakes, fire, power outages, floods and other catastrophic events, and to interruption by manmade problems such as terrorism.

Our corporate headquarters and facilities are located near known earthquake fault zones and are vulnerable to significant damage from earthquakes. The corporate headquarters and facilities are also vulnerable to damage or interruption from human error, intentional bad acts, earthquakes, hurricanes, floods, fires, war, terrorist attacks, power losses, hardware failures, systems failures, telecommunications failures and similar events. The occurrence of a natural disaster or an act of terrorism or vandalism or other misconduct or other unanticipated problems with our facilities could result in lengthy interruptions to our services. If any disaster were to occur, our ability to operate our business at our facilities could be seriously or completely impaired or destroyed. The insurance we maintain may not be adequate to cover our losses resulting from disasters or other business interruptions.

Our financial results may be adversely affected by changes in accounting principles generally accepted in the United States.

Generally accepted accounting principles in the United States (U.S. GAAP) is subject to interpretation by the Financial Accounting Standards Board (FASB), the American Institute of Certified Public Accountants, the SEC and various bodies formed to promulgate and interpret appropriate accounting principles. For example, in May 2014, the FASB issued accounting standards update No. 2014-09 (Topic 606), Revenue from Contracts with Customers, which supersedes nearly all existing revenue recognition guidance under U.S. GAAP. We will be required to implement this guidance in the first quarter of our fiscal year 2019. Any difficulties in implementing this guidance could cause us to fail to meet our financial reporting obligations, which could result in regulatory discipline and harm investors' confidence in us. Additionally, the implementation of this guidance or a change in other principles or interpretations could have a significant effect on our financial results, and could affect the reporting of transactions completed before the announcement of a change. Furthermore, we will be adopting Topic 606 through the modified retrospective method. This will impact the comparability of our financial results which might lead investors to draw incorrect conclusions which could harm investor interest in holding or purchasing our equity.

If our estimates or judgments relating to our critical accounting policies are based on assumptions that change or prove to be incorrect, our operating results could fall below expectations of securities analysts and investors, resulting in a decline in our stock price.
The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the amounts reported in the Consolidated Financial Statements and accompanying notes. For example, our revenue recognition policy is complex and we often must make estimates and assumptions that could prove to be inaccurate. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about revenue recognition, capitalized software, the carrying values of assets, taxes, liabilities, equity, revenues and expenses that are not readily apparent from other sources. Our operating results may be adversely affected if our assumptions change or if actual circumstances differ from those in our assumptions, which could cause our operating results to fall below the expectations of securities analysts and investors, resulting in a decline in our stock price. Significant assumptions and estimates used in preparing our Consolidated Financial Statements include those related to revenue recognition, share-based compensation and income taxes.
We incur significant costs and devote substantial management time as a result of operating as a public company.
As a public company, we incur significant legal, accounting and other expenses. For example, we are required to comply with the requirements of the Sarbanes-Oxley Act of 2002 (Sarbanes-Oxley Act) and the Dodd Frank Wall Street Reform and Consumer Protection Act, as well as rules and regulations subsequently implemented by the Securities and Exchange Commission (SEC) and the New York Stock Exchange, including the establishment and maintenance of effective disclosure and financial controls and changes in corporate governance practices. Compliance with these requirements results in legal and financial compliance costs and make some activities more time consuming.
Additionally, as of September 30, 2018, we were no longer an "emerging growth company" and are now required to comply with additional disclosure and reporting requirements, including an attestation report on internal control over financial reporting as of September 30, 2018 issued by our independent registered public accounting firm. We are also required to include additional information regarding executive compensation in our 2019 proxy statement and hold a nonbinding advisory vote on executive compensation at our 2019 annual meeting of stockholders. These additional reporting requirements may increase our legal and financial compliance costs and cause management and other personnel to divert attention from operational and other business matters to devote substantial time to these public company requirements.
If we fail to maintain an effective system of internal controls, our ability to produce timely and accurate financial statements or comply with applicable regulations could be impaired.
As a public company, we are subject to the reporting requirements of the Securities Exchange Act of 1934 (Exchange Act), the Sarbanes-Oxley Act and the rules and regulations of the applicable listing exchange. We expect that the requirements of these rules and regulations will continue to increase our legal, accounting and financial compliance costs, make some activities more difficult, time consuming and costly, and place significant strain on our personnel, systems and resources.
The Sarbanes-Oxley Act requires, among other things, 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 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 because of changes in conditions in our business. Further, weaknesses in our internal controls may be discovered in the future. Any failure to develop or maintain effective controls, or any difficulties encountered in their implementation or improvement, could harm our operating results or cause us to fail to meet our reporting obligations and may result in a restatement of our financial statements for prior periods. Any failure to implement and maintain effective internal controls also could adversely affect the results of periodic management evaluations and annual independent registered public accounting firm

attestation reports regarding the effectiveness of our internal control over financial reporting that we are required to include in our periodic reports we file with the SEC under Section 404 of the Sarbanes-Oxley Act. For example, our independent registered public accounting firm may issue a report that is adverse in the event it is not satisfied with the level at which our controls are documented, designed or operating. Ineffective disclosure controls and procedures and internal control over financial reporting could also cause investors to lose confidence in our reported financial and other information, which would likely have a negative effect on the trading price of our common stock.

In order to maintain and improve the effectiveness of our disclosure controls and procedures and internal control over financial reporting, we have expended, and anticipate that we will continue to expend, significant resources, including accounting-related costs, and provide significant management oversight. Any failure to maintain the adequacy of our internal controls, or consequent inability to produce accurate financial statements on a timely basis, could increase our operating costs and could materially impair our ability to operate our business. In the event that our internal controls are perceived as inadequate or that we are unable to produce timely or accurate financial statements, investors may lose confidence in our operating results and our stock price could decline. In addition, if we are unable to continue to meet these requirements, we may not be able to remain listed on the New York Stock Exchange.

We may need additional capital, and we cannot be certain that additional financing will be available.

We may require additional financing in the future to operate or expand our business, acquire assets or repay or refinance our existing debt. Our ability to obtain financing will depend, among other things, on our development efforts, business plans, operating performance and condition of the capital markets at the time we seek financing. We cannot assure you that additional financing will be available to us on favorable terms when required, or at all. Additionally, under our credit agreement, we are restricted from incurring additional debt, subject to certain exceptions. If we raise additional funds through the issuance of equity, equity-linked or debt securities, those securities may have rights, preferences or privileges senior to the rights of our common stock or preferred stock, and our stockholders may experience dilution.

If we need additional capital and cannot raise it on acceptable terms, we may not be able to, among other things:

- develop or enhance our solutions;
- continue to expand our sales and marketing and research and development organizations;
- repay or refinance our existing debt;
- acquire complementary technologies, solutions or businesses;
- expand operations, in the United States or internationally;
- hire, train and retain employees; or
- respond to competitive pressures or unanticipated working capital requirements.

Our failure to do any of these things could seriously harm our business, financial condition, and operating results.

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

In general, under Section 382 of the U.S. Internal Revenue Code of 1986, as amended (Code), and similar state law provisions, a corporation that undergoes an “ownership change” is subject to limitations on its ability to utilize its pre-change net operating losses (NOLs) to offset future taxable income. If our existing NOLs are subject to limitations arising from ownership changes, our ability to utilize NOLs could be limited by Section 382 of the Code. Future changes in our stock ownership, some of which are outside of our control, also could result in an ownership change under Section 382 of the Code. There is also a risk that our NOLs could expire, or otherwise be unavailable to offset future income tax liabilities due to changes in the law, including regulatory changes, such as suspensions on the use of NOLs or other unforeseen reasons. For these reasons, we may not be able to utilize a material portion of the NOLs, even if we attain profitability. For example, certain of our NOLs started expiring in 2016.

Risks Related to the Ownership of Our Common Stock

Our stock price may be volatile, and you may be unable to sell your shares at or above your purchase price.

The market price of our common stock could be subject to wide fluctuations in response to, among other things, the factors described in this “Risk Factors” section or otherwise and other factors beyond our control, such as fluctuations in the valuations of companies perceived by investors to be comparable to us.

Furthermore, the stock markets have experienced price and volume fluctuations that have affected and continue to affect the market prices of equity securities of many companies. These fluctuations often have been unrelated or disproportionate to the operating performance of those companies. These broad market fluctuations, as well as general economic, systemic, political and market conditions, such as recessions, interest rate changes or international currency fluctuations, may negatively affect the market price of our common stock.

In the past, many companies that have experienced volatility in the market price of their stock have become subject to securities class action litigation. We may be the target of this type of litigation in the future. Securities litigation against us could result in substantial costs and divert our management's attention, which could harm our business.

If securities analysts do not publish research or reports or if they publish unfavorable or inaccurate research about our business and our stock, the price of our stock and the trading volume could decline.

We expect that the trading market for our common stock will be affected by research or reports that industry or financial analysts publish about us or our business. There are many large, well-established companies active in our industry and portions of the markets in which we compete, which may mean that we receive less widespread analyst coverage than our competitors. If one or more of the analysts who covers us downgrades their evaluations of our company or our stock, the price of our stock could decline. If one or more of these analysts cease coverage of our company, our stock may lose visibility in the market, which in turn could cause our stock price to decline.

Our restated certificate of incorporation and restated bylaws and Delaware law could prevent a takeover that stockholders consider favorable and could also reduce the market price of our stock.

Our restated certificate of incorporation and restated bylaws contain provisions that could delay or prevent a change in control of us. These provisions could also make it more difficult for stockholders to elect directors and take other corporate actions. These provisions include:

- providing for a classified board of directors with staggered, three-year terms;
- authorizing the board of directors to issue, without stockholder approval, preferred stock with rights senior to those of our common stock;
- providing that vacancies on our board of directors be filled by appointment by the board of directors;
- prohibiting stockholder action by written consent;
- requiring that certain litigation must be brought in Delaware;
- limiting the persons who may call special meetings of stockholders; and
- requiring advance notification of stockholder nominations and proposals.

In addition, we are subject to Section 203 of the Delaware General Corporation Law which may prohibit large stockholders, in particular those owning fifteen percent or more of our outstanding voting stock, from merging or combining with us for a certain period of time without the consent of our board of directors.

These and other provisions in our restated certificate of incorporation and our restated bylaws and under the Delaware General Corporation Law could discourage potential takeover attempts, reduce the price that investors might be willing to pay in the future for shares of our common stock and result in the market price of our common stock being lower than it would be without these provisions.

We do not anticipate paying any dividends on our common stock.

We do not anticipate paying any cash dividends on our common stock in the foreseeable future. If we do not pay cash dividends, you would receive a return on your investment in our common stock only if the market price of our common stock is greater at the time you sell your shares than the market price at the time you bought your shares.

ITEM 1B. Unresolved Staff Comments

None.

ITEM 2. Properties

Our corporate headquarters are located in San Mateo, California, and consist of approximately 35,000 square feet of space under a lease that expires on November 30, 2020.

We have additional U.S. offices in Colorado, Illinois, Maine, Massachusetts and New Jersey. We also have international office locations in India and Switzerland. We believe our facilities are adequate for our current needs and for the foreseeable future; however, we will continue to seek additional space as needed. See Note 8 to the Consolidated Financial Statements and "Management's Discussion and Analysis of Financial Condition and Results of Operations—Contractual Payment Obligations" for information regarding our lease obligations.

ITEM 3. Legal Proceedings

We are not currently a party to any pending material legal proceedings. From time to time, we may become involved in legal proceedings arising in the ordinary course of our business. Regardless of outcome, litigation can have an adverse impact on us due to defense and settlement costs, diversion of management resources, negative publicity and reputational harm and other factors.

ITEM 4. Mine Safety Disclosure

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

Model N common stock is traded on the New York Stock Exchange under the symbol "MODN".

Dividend Policy

We have never declared or paid, and do not anticipate declaring or paying in the foreseeable future, any cash dividends on our capital stock. Any future determination as to the declaration and payment of dividends, if any, will be at the discretion of our board of directors, subject to applicable laws and will depend on then existing conditions, including our financial condition, operating results, contractual restrictions, capital requirements, business prospects, and other factors our board of directors may deem relevant.

Stockholders

As of November 2, 2018, there were 54 holders of record of our common stock, including The Depository Trust Company, which holds shares of our common stock on behalf of an indeterminate number of beneficial owners.

Securities Authorized for Issuance under Equity Compensation Plans

The information called for by this item is incorporated by reference to our Proxy Statement for the Annual Meeting of Stockholders to be held in 2019 (Proxy Statement). See Part III, Item 12 "Security Ownership of Certain Beneficial Owners and Management" and "Equity Compensation Plan Information."

Stock Performance Graph

The following shall not be deemed "filed" for purposes of Section 18 of the Exchange Act, or incorporated by reference into any of our other filings under the Exchange Act or the Securities Act of 1933, as amended, except to the extent we specifically incorporate it by reference into such filing.

This chart compares the cumulative total return on our common stock with that of the NASDAQ Composite Index and the NASDAQ Computer Index. The chart assumes $100 was invested at the close of market on September 30, 2013, in our common stock, the NASDAQ Composite Index and the NASDAQ Computer Index, and assumes the reinvestment of any dividends.

	9/30/2014	9/30/2015	9/30/2016	9/30/2017	9/30/2018
Model N	$ 99.60	$ 101.11	$ 112.22	$ 151.01	$ 160.10
NASDAQ Composite Index	$ 119.14	$ 122.50	$ 140.85	$ 172.24	$ 213.35
NASDAQ Computer Index	$ 131.47	$ 131.82	$ 161.25	$ 208.61	$ 267.67

ITEM 6. Selected Consolidated Financial Data

The consolidated statement of operations data for the fiscal years ended September 30, 2018, 2017 and 2016 and the selected consolidated balance sheet data as of September 30, 2018 and 2017 are derived from our audited consolidated financial statements included in this Form 10-K. The consolidated statement of operations data for fiscal years ended September 30, 2015 and 2014, and the selected consolidated balance sheet data as of September 30, 2016, 2015 and 2014 are derived from audited consolidated financial statements that are not included in the Form 10-K. The information set forth below is not necessarily indicative of results of future operations, and should be read in conjunction with Item 7, “Management's Discussion and Analysis of Financial Condition and Results of Operations” and the consolidated financial statements and related notes included in Part II, Item 8, "Consolidated Financial Statements and Supplementary Data" in this Annual Report on Form 10-K.

	Fiscal Years Ended September 30,				
	2018	2017(1)	2016	2015	2014
	(in thousands, except per share data)				
Consolidated Statements of Operations Data:					
Revenues:					
SaaS and maintenance	$135,927	$108,055	$86,392	$57,596	$46,423
License and implementation	18,705	23,114	20,579	36,172	35,333
Total revenues	154,632	131,169	106,971	93,768	81,756
Cost of Revenues:					
SaaS and maintenance	53,903	46,872	40,717	26,014	21,092
License and implementation	11,431	14,224	12,976	15,555	16,652
Total cost of revenues	65,334	61,096	53,693	41,569	37,744
Gross profit	89,298	70,073	53,278	52,199	44,012
Operating Expenses:					
Research and development	32,416	31,064	23,706	17,906	18,710
Sales and marketing	35,482	41,339	32,261	30,300	25,998
General and administrative	42,178	36,281	30,051	23,132	19,671
Restructuring	—	—	—	—	26
Total operating expenses	110,076	108,684	86,018	71,338	64,405
(Loss) income from operations	(20,778)	(38,611)	(32,740)	(19,139)	(20,393)
Interest (income) expense, net	8,178	4,159	(50)	(6)	(12)
Other (income) expenses, net	(722)	62	86	(22)	116
Loss before income taxes	(28,234)	(42,832)	(32,776)	(19,111)	(20,497)
(Benefit) provision for income taxes	(27)	(3,285)	335	528	384
Net loss	$(28,207)	$(39,547)	$(33,111)	$(19,639)	$(20,881)
Net loss per share attributable to common stockholders (2):					
Basic and diluted	$(0.93)	$(1.38)	$(1.21)	$(0.76)	$(0.86)
Weighted average number of shares used in computing net loss per share attributable to common stockholders (2):					
Basic and diluted	30,370	28,649	27,379	26,015	24,399
Other Financial Data:					
Adjusted EBITDA (3)	$11,472	$(8,269)	$(12,571)	$(3,332)	N/A

(1) On January 5, 2017, we completed the Revitas acquisition. See Note 3 to our consolidated financial statements for more information.

(2) See Note 11 to our consolidated financial statements for a description of the method used to compute basic and diluted net loss per share attributable to common stockholders.

(3) See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Non-GAAP Financial Measure" in Item 7 for more information and a reconciliation of adjusted EBITDA to net loss, the most directly comparable financial measure calculated and presented in accordance with generally accepted accounting principles in the United States.

	As of September 30,				
	2018	2017(1)	2016	2015	2014
	(in thousands)				
Consolidated Balance Sheet Data					
Cash and cash equivalents	$56,704	$57,558	$66,149	$91,019	$101,006
Working capital	16,455	10,172	48,588	74,814	82,370
Total assets	166,153	171,936	112,967	121,970	129,131
Loan obligations, current and long-term	53,704	57,205	—	—	—
Total liabilities	126,119	130,675	46,765	38,908	40,167
Total stockholders' equity	40,034	41,261	66,202	83,062	88,964

(1) On January 5, 2017, we completed the Revitas acquisition. See Note 3 to our consolidated financial statements for more information.

ITEM 7. Management's Discussion and Analysis of Financial Condition and Results of Operations
You should read the following discussion and analysis of our financial condition and results of operations together with the consolidated financial statements and related notes that are included elsewhere in this report. This discussion contains forward-looking statements based upon current expectations that involve risks and uncertainties. Our actual results may differ materially from those anticipated in these forward-looking statements as a result of various factors, including those set forth under "Risk Factors" or in other parts of this report.
Overview
We are a leader in Revenue Management solutions for life sciences and technology companies. Our solutions enable customers to transform the revenue lifecycle from a series of disjointed operations into a strategic end-to-end process. With deep industry expertise, we support the complex business needs of the world's leading brands in life sciences and technology across tens of thousands of users in more than 120 countries.
Our industry specific clouds offer a range of solutions from individual products to complete suites and deployments may vary from specific divisions or territories to enterprise-wide implementations.
We derive revenues primarily from the sale of subscriptions to our Revenue Cloud solutions and implementation services, as well as maintenance and support and managed support services for our legacy on premise customers. We price our cloud solutions based on a number of factors, including revenues under management and number of users. We also derive revenues from selling professional services related to past sales of perpetual licenses. Maintenance and support revenues are recognized ratably over the support period, which is typically one year. SaaS revenues for cloud-based solutions are derived from subscription fees from customers accessing our cloud-based solutions, as well as from associated professional services related to the implementation and set up. The actual timing of revenue recognition may vary based on our customers' implementation requirements and availability of our services personnel.
We market and sell our solutions to customers in the life sciences and technology industries. While we have historically generated the substantial majority of our revenues from companies in the life sciences industry, we have also grown our base of technology customers. Our most significant customers in any given period generally vary from period to period due to the timing in the delivery of our professional services and related revenue recognition. During the fiscal years ended September 30, 2018 and 2017, one customer, Johnson & Johnson, accounted for approximately 15% and 11% of our total revenues. However, during the fiscal year ended September 30, 2018 and 2017, no customer represented more than 10% of our subscription revenues. No customer accounted for more than 10% of total revenues during the fiscal year ended September 30, 2016. For the fiscal year ended September 30, 2018, approximately 12% of our total revenues were derived from customers located outside the United States.
For the fiscal years ended September 30, 2018, 2017 and 2016, our total revenues were $154.6 million, $131.2 million and $107.0 million, respectively, representing a year-over-year increase of approximately 18% from 2017 to 2018 and year-over-over increase of approximately 23% from 2016 to 2017. Revenues increased in the 2018 fiscal year primarily due to improvement in sales execution and the full year effect of acquisition of Revitas.

Significant Transactions

On May 4, 2018, we entered into a Credit Agreement (the "Credit Agreement") with Wells Fargo Bank, National Association. The Credit Agreement provides for a term loan in the amount of $50.0 million and an additional revolving line of credit up to an aggregate amount of $5.0 million. The loans will bear interest, at a rate of: (i) when we have a leverage ratio of more than 3.5:1.0, either the Base Rate plus 3.50% or the LIBOR Rate plus 4.50%, as selected by us; (ii) when we have a leverage ratio between 2.0:1.0 and 3.5:1.0, either the Base Rate plus 2.50% or the LIBOR Rate plus 3.50%; or (iii) when we have a leverage ratio of less than 2.0:1.0, either the Base Rate plus 2.00% or the LIBOR Rate plus 3.00%. In conjunction with this refinancing, we repaid in full the existing term loan related to Revitas acquisition under a financing agreement, dated January 5, 2017.

Key Business Metrics
In addition to the measures of financial performance presented in our Consolidated Financial Statements, we use adjusted EBITDA to evaluate and manage our business We use adjusted EBITDA internally to manage the business,

and we believe it is useful for investors to compare key financial data from various periods. See "—Non-GAAP Financial Measure" below.

Key Components of Results of Operations
Revenues
Revenues are comprised of SaaS and maintenance revenues and license and implementation revenues.
SaaS and Maintenance
SaaS and maintenance revenues primarily include SaaS subscription fees and related implementation services from customers setting up and implementing our cloud-based solutions. Also included in SaaS and maintenance revenues are revenues related to maintenance and support, managed support services, training and customer-reimbursed expenses. The SaaS model is the primary way we sell to our customers in our vertical markets. Accordingly, we expect that subscription related revenues for the fiscal year 2019 will be higher both in absolute dollars and as a percentage of total revenues, as we continue to acquire new SaaS customers and expand our SaaS offerings within our existing customers base.
License and Implementation
License and implementation revenues are generated from the sale of software licenses for our on-premise solutions and related implementation and professional services. We no longer sell perpetual licenses and have not recorded any license revenue in fiscal year 2018. We expect our associated implementation revenues for the fiscal year 2019 to be lower both in absolute dollars and as a percentage of total revenue from those recorded in the fiscal year ended on September 30, 2018, as we are only helping customers implement perpetual licenses purchased in prior fiscal years.
Deferred revenue on our consolidated balance sheet does not represent the total contract value of annual or multi-year, noncancelable subscription agreements. Backlog represents expected future billings which are contractually committed under our existing subscription agreements that have not been invoiced. Backlog was approximately $25.7 million, $37.4 million and $16.0 as of September 30, 2018, 2017 and 2016, respectively. The decrease in our backlog was primarily attributable to our efforts and the contractual rights associated with transitioning customers to cloud based solutions. Out of backlog as of September 30, 2018, 2017 and 2016, approximately $13.2 million, $20.2 million and $6.3 million was long-term backlog and $12.5 million, $17.2 million and $9.7 million was short-term backlog, respectively. We expect that the amount of backlog may change from year-to-year for several reasons, including billing cycles, timing of customer renewals, remaining duration of arrangement, and the timing of when unbilled deferred revenue is to be recognized as revenues. For multi-year subscription agreements, the associated backlog is typically high at the beginning of the contract period, zero immediately prior to expiration and increases if the agreement is renewed. Low backlog attributable to a particular subscription agreement is typically associated with an impending renewal and is not an indicator of the likelihood of renewal or future revenue of that customer. Accordingly, we expect that the amount of backlog may change from year to year depending in part upon the number of subscription agreements in particular stages in their renewal cycle. Such fluctuations are not reliable indicators of future revenues.
Cost of Revenues
Our total cost of revenues is comprised of the following:
SaaS and Maintenance
Cost of SaaS and maintenance revenues includes costs related to our cloud operations, the implementation of our cloud-based solutions, maintenance and support for our on-premise solutions and managed support services for our on premise solutions, training and customer reimbursed expenses. Cost of SaaS and maintenance revenues primarily consists of personnel-related costs including salary, bonus, stock-based compensation, royalties, facility expense, amortization of capitalized software and acquired technologies, depreciation related to server equipment, reimbursable expenses, third-party contractors and cloud hosting costs. We believe that cost of SaaS and maintenance revenues will continue to increase in absolute dollars as we continue to sell more cloud-based products and subscriptions.
License and Implementation
Cost of license and implementation revenues includes costs related to the implementation of our on-premise solutions. Cost of license and implementation revenues primarily consists of personnel-related costs including salary, bonus, stock-based compensation, third-party contractor costs and royalty fees paid to third parties for rights to their intellectual property. Cost of license and implementation revenues may vary from period to period depending on a number of factors, including the amount of implementation services required to deploy our solutions and the level of

involvement of third-party contractors providing implementation services. We believe that cost of license and implementation revenues will continue to decrease in absolute dollars as we no longer sell perpetual licenses.

Operating Expenses

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Our operating expenses consist of research and development, sales and marketing and general and administrative expenses.

Research and Development

Our research and development expenses consist primarily of personnel-related costs including salary, bonus, stock-based compensation and third-party contractors and travel-related expenses. Our software development costs are generally expensed as incurred. In the past, we capitalized development costs in connection with the development of new cloud-based application. As of September 30, 2018, the net book value of capitalized software development costs was $0.7 million. We expect our research and development expenses to be marginally lower in fiscal year 2019 from those recorded in fiscal year 2018.

Sales and Marketing

Our sales and marketing expenses consist primarily of personnel-related costs including salary, bonus, commissions, stock-based compensation, amortization of intangibles, travel-related expenses and marketing programs. We recognize sales commission expense upon the booking of a contract, while we recognize revenue over the period services were provided. We expect our sales and marketing expenses to be flat to marginally lower in fiscal year 2019 from those recorded in fiscal year 2018.

General and Administrative

Our general and administrative expenses consist primarily of personnel-related costs including salary, bonus, stock-based compensation, audit and legal fees as well as third-party contractors, facilities , costs associated with corporate transactions and travel-related expenses. We expect our general and administrative expense to be substantively lower in fiscal year 2019 from those recorded in fiscal year 2018. It primarily related to the stock issued in connection with our former Chief Executive Officer’s departure in fiscal year 2018.

Results of Operations

The following tables set forth our consolidated results of operations for the periods presented and as a percentage of our total revenues for those periods. The period-to-period comparison of financial results is not necessarily indicative of financial results to be achieved in future periods.

	Fiscal Years Ended September 30,		
	2018	2017	2016
	(in thousands)		
Consolidated Statements of Operations Data:			
Revenues:			
SaaS and maintenance	$135,927	$108,055	$86,392
License and implementation	18,705	23,114	20,579
Total revenues	154,632	131,169	106,971
Cost of Revenues:			
SaaS and maintenance	53,903	46,872	40,717
License and implementation	11,431	14,224	12,976
Total cost of revenues	65,334	61,096	53,693
Gross profit	89,298	70,073	53,278
Operating Expenses:			
Research and development	32,416	31,064	23,706
Sales and marketing	35,482	41,339	32,261
General and administrative	42,178	36,281	30,051
Total operating expenses	110,076	108,684	86,018
Loss from operations	(20,778)	(38,611)	(32,740)
Interest (expense) income, net	8,178	4,159	(50)
Other (income) expenses, net	(722)	62	86

Loss before income taxes	(28,234)	(42,832)	(32,776)
(Benefit) provision for income taxes	(27)	(3,285)	335
Net loss	$(28,207)	$(39,547)	$(33,111)

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Comparison of the Fiscal Years Ended September 30, 2018 and 2017

Revenues

	Fiscal Years Ended September 30,					
	2018		2017			
	Amount	% of Total Revenues	Amount	% of Total Revenues	Change ($)	(%)
	(in thousands, except percentages)					
Revenues:						
SaaS and maintenance	$135,927	88 %	$108,055	82 %	$27,872	26 %
License and implementation	18,705	12	23,114	18	(4,409)	(19)
Total revenues	$154,632	100 %	$131,169	100 %	$23,463	18 %

SaaS and Maintenance

SaaS and maintenance revenues increased $27.9 million, or 26%, to $135.9 million for the fiscal year ended September 30, 2018 from $108.1 million for the fiscal year ended September 30, 2017. The increase in our SaaS and maintenance revenues included a $20.5 million increase in our SaaS offering revenues, a $6.0 million increase in our maintenance and support and managed support services revenues, and $1.4 million in our training and customer reimbursable expense. The increase in these revenues was partially due to the revenue attributable from the acquisition of Revitas in the second quarter of fiscal year 2017. We intend to focus on growing our recurring revenue from SaaS offering in future periods and also as a percentage of total revenues.

License and Implementation

License and implementation revenues decreased $4.4 million, or 19%, to $18.7 million for the fiscal year ended September 30, 2018 from $23.1 million for the fiscal year ended September 30, 2017. As a percentage of total revenues, license and implementation revenue decreased from 18% to 12%. The decrease in these revenues in absolute dollars and as a percentage of total revenues was primarily due to fewer sales of software licenses for our on-premise solutions and related implementation services as our business model has shifted to cloud-based solutions and no longer sell perpetual licenses.

Cost of Revenues

	Fiscal Years Ended September 30,					
	2018		2017			
	Amount	% of Revenues	Amount	% of Revenues	Change ($)	(%)
	(in thousands, except percentages)					
Cost of revenues						
SaaS and maintenance	$53,903	40 %	$46,872	43 %	$7,031	15 %
License and implementation	11,431	61	14,224	62	(2,793)	(20)
Total cost of revenues	$65,334	42 %	$61,096	47 %	4,238	7 %
Gross profit						
SaaS and maintenance	$82,024	60 %	$61,183	57 %	$20,841	34 %
License and implementation	7,274	39	8,890	38	(1,616)	(18)
Total gross profit	$89,298	58 %	$70,073	53 %	$19,225	27 %

SaaS and Maintenance

Cost of SaaS and maintenance revenues increased $7.0 million, or 15%, to $53.9 million during the fiscal year ended September 30, 2018 from $46.9 million for the fiscal year ended September 30, 2017. As a percentage of SaaS and maintenance revenues, cost of SaaS and maintenance revenues decreased from 43% to 40% in fiscal year 2018, as we continued to improve gross margins due to increased efficiencies in our business, full year effect of the synergies related to our acquisition of Revitas in the second quarter of fiscal year 2017, and as we optimized our cloud platform.

License and Implementation

Cost of license and implementation revenues decreased $2.8 million, or 20%, to $11.4 million during the fiscal year ended September 30, 2018 from $14.2 million for the fiscal year ended September 30, 2017. As a percentage of revenue, cost of license and implementation revenues decreased to 61% in fiscal year 2018 from 62% in fiscal year 2017. The decrease in these costs as a percentage of total revenues was primarily due to an increase of professional services with higher profit margins in the overall mix of sales associated with license and implementation.

	Fiscal Years Ended September 30,			
	2018 Amount	2017 Amount	Change ($)	(%)
	(in thousands, except percentages)			
Operating expenses:				
Research and development	$32,416	$31,064	$1,352	4 %
Sales and marketing	35,482	41,339	(5,857)	(14)
General and administrative	42,178	36,281	5,897	16
Total operating expenses	$110,076	$108,684	$1,392	1 %

Research and Development

Research and development expenses increased by $1.4 million, or 4%, to $32.4 million during the fiscal year ended September 30, 2018 from $31.1 million for the fiscal year ended September 30, 2017. Employee-related expenses increased $1.4 million. We also had a $0.5 million increase in consulting costs, offset by a $0.5 million decreased in travel and other costs.

Sales and Marketing

Sales and marketing expenses decreased by $5.9 million, or 14%, to $35.5 million during the fiscal year ended September 30, 2018 from $41.3 million for the fiscal year ended September 30, 2017. Employee related expenses decreased $5.9 million in part due to headcount reduction and a $1.7 million decrease in marketing and travel costs, which were partially offset by an $0.8 million increase of intangible amortization expense related to the acquisition of Revitas in the second quarter of fiscal year 2017 and a $1.0 million increase in consulting and other costs.

General and Administrative

General and administrative expenses increased by $5.9 million, or 16%, to $42.2 million during the fiscal year ended September 30, 2018 from $36.3 million for the fiscal year ended September 30, 2017. The increase was primarily due to a $7.9 million increase in employee-related costs, which primarily reflects the impact of the common stock issued in connection with our former Chief Executive Officer's departure, which was partially offset by a $2.0 million decrease in other costs such as facility, travel, third-party data center and other costs.

Interest and Other (Income) Expense, Net

	Fiscal Years Ended September 30,			
	2018 Amount	2017 Amount	Change ($)	(%)
	(in thousands, except percentages)			
Interest expense, net	$8,178	$4,159	$4,019	97 %
Other (income) expenses, net	$(722)	$62	$(784)	(1,265)%

In May 2018, we refinanced the term loan related to the Revitas acquisition. The increase of $4.0 million during fiscal year 2018 was driven by approximately $3.1 million of loss on extinguishment in connection with the refinancing.

Change in other (income) expense, net was primarily due to currency fluctuation.

Provision (Benefit) for Income Taxes

	Fiscal Years Ended September 30,			
	2018	2017	Change	
	Amount	Amount	($)	(%)
	(in thousands, except percentages)			
Provision (benefit) for income taxes	$(27)	$(3,285)	$3,258	(99)%

The change in income tax provision is primarily due to a discrete tax benefit of $4.2 million recorded in the second quarter of fiscal year 2017. The discrete item is a result of releasing a portion of our valuation allowance in connection with the acquisition of Revitas.

Provision for (benefit from) income taxes was primarily related to the state minimum tax and foreign tax on our profitable foreign operations offset by discrete tax benefit recorded as a result of a reduction in deferred tax liabilities from the reduced corporate tax rate and valuation allowance release. This is in addition to a reversal of certain foreign unrecognized tax benefits.

Comparison of the Fiscal Years Ended September 30, 2017 and 2016

Revenues

	Fiscal Years Ended September 30,					
	2017		2016			
	Amount	% of Total Revenues	Amount	% of Total Revenues	Change ($)	(%)
	(in thousands, except percentages)					
Revenues:						
SaaS and maintenance	$108,055	82	$86,392	81	$21,663	25%
License and implementation	23,114	18	20,579	19	2,535	12
Total revenues	$131,169	100	$106,971	100	$24,198	23%

SaaS and Maintenance

SaaS and maintenance revenues increased $21.7 million, or 25%, to $108.1 million for the fiscal year ended September 30, 2017 from $86.4 million for the fiscal year ended September 30, 2016. The increase in these revenues was primarily due to the revenue attributable from the acquisition of Revitas on January 5, 2017 as well as continued growth in our SaaS business. The increase in our SaaS and maintenance revenues included a $12.5 million increase in our SaaS subscription revenues, a $8.8 million increase in our maintenance and support and managed support services revenues, and $0.4 million in our training and customer reimbursable expense. We intend to focus on growing our recurring revenue from SaaS and maintenance in future periods and also as a percentage of total revenues.

License and Implementation

License and implementation revenues increased $2.5 million, or 12%, to $23.1 million for the fiscal year ended September 30, 2017 from $20.6 million for the fiscal year ended September 30, 2016. As a percentage to total revenues, license and implementation revenue decreased from 19% to 18%. The decrease in these revenues as a percentage of total revenue was primarily due to fewer sales of perpetual licenses and related implementation services as we shifted our business model towards cloud-based solutions and stopped selling perpetual licenses. The increase in revenue in absolute dollars was primarily due to the revenue attributable from the acquisition of Revitas, which historically prior to our acquisition derived a greater portion of their business from perpetual license related contracts.

Cost of Revenues

	Fiscal Years Ended September 30,					
	2017		2016			
	Amount	% of Revenues	Amount	% of Revenues	Change ($)	(%)
	(in thousands, except percentages)					
Cost of revenues						
SaaS and maintenance	$46,872	43	$40,717	47	$6,155	15%
License and implementation	14,224	62	12,976	63	1,248	10
Total cost of revenues	$61,096	47	$53,693	50	$7,403	14%
Gross profit						
SaaS and maintenance	$61,183	57 %	$45,675	53	$15,508	34%
License and implementation	8,890	38 %	7,603	37	1,287	17
Total gross profit	$70,073	53 %	$53,278	50	$16,795	32%

SaaS and Maintenance

Cost of SaaS and maintenance revenues increased $6.2 million, or 15%, to $46.9 million during the fiscal year ended September 30, 2017 from $40.7 million for the fiscal year ended September 30, 2016. As a percentage of SaaS and maintenance revenues, cost of SaaS and maintenance revenues decreased from 47% to 43% in fiscal year 2017. The decreases in costs as a percentage of revenue were driven by our increased ability to drive efficiencies and synergies associated with the acquisition of Revitas and the increase in efficiencies as we continuously modernize our cloud platform.

License and Implementation

Cost of license and implementation revenues increased $1.2 million, or 10%, to $14.2 million during the fiscal year ended September 30, 2017 from $13.0 million for the fiscal year ended September 30, 2016 due to the increase in related revenue. As a percentage of revenue, cost of license and implementation revenues decreased to 62% in fiscal year 2017 from 63% in fiscal year 2016. The decrease in these costs as a percentage of total revenues was primarily due to a more favorable mix of services engagements, partially offset by an increase in the accelerated amortization of a prepaid royalty agreement resulting from a shift to cloud-based solutions.

Operating Expenses

	Fiscal Years Ended September 30,			
	2017 Amount	2016 Amount	Change ($)	(%)
	(in thousands, except percentages)			
Operating expenses:				
Research and development	$31,064	$23,706	$7,358	31%
Sales and marketing	41,339	32,261	9,078	28
General and administrative	36,281	30,051	6,230	21
Total operating expenses	$108,684	$86,018	$22,666	26%

Research and Development

Research and development expenses increased by $7.4 million, or 31%, to $31.1 million during the fiscal year ended September 30, 2017 from $23.7 million for the fiscal year ended September 30, 2016. Employee related expenses increased $4.1 million due to severance, salaries, bonus and stock-based compensation. We also had a $0.9 million increase in consulting costs, $0.8 million increases software-related costs, an $1.3 million increase in costs that had been previously capitalized, and a $0.3 million increase in travel and entertainment expense and other costs.

Sales and Marketing

Sales and marketing expenses increased by $9.1 million, or 28%, to $41.3 million during the fiscal year ended September 30, 2017 from $32.3 million for the fiscal year ended September 30, 2016. Employee-related expenses increased $6.4 million due to severance and commissions, bonus and salaries as a result of increased headcount. We also had a $2.5 million increase of amortization expense related to intangible assets and an $0.7 million increase in marketing program, facility and equipment related expense, partially offset by decrease in $0.5 million consulting cost, travel and entertainment expense and other costs.

General and Administrative

General and administrative expenses increased by $6.2 million, or 21%, to $36.3 million during the fiscal year ended September 30, 2017 from $30.1 million for the fiscal year ended September 30, 2016. Employee-related costs increased $3.2 million dues to severance and increased headcount, inclusive of transitional employees, related to our acquisition of Revitas. We also had an $1.0 million increased in facility costs, $0.6 million increased in consulting costs and a $1.4 million increase in depreciation and other expenses.

Interest and Other Expense, Net

	Fiscal Years Ended September 30,			
	2017	2016	Change	
	Amount	Amount	($)	(%)
	(in thousands, except percentages)			
Interest expense (income), net	$4,159	$ (50)	$4,209	(8,418)%
Other expenses (income), net	$62	$ 86	$(24)	(39)%

Interest expense increased $4.4 million during fiscal year 2017 primarily due to borrowings in January 2017 in connection with the acquisition of Revitas as described in the Notes to the Consolidated Financial Statement, partially offset by $0.2 million interest income.

Change in other (income) expenses, net was immaterial and primarily related to currency fluctuation.

Provision for Income Taxes

	Fiscal Years Ended September 30,			
	2017	2016	Change	
	Amount	Amount	($)	(%)
	(in thousands, except percentages)			
Provision for income taxes	$(3,285)	$ 335	$(3,620)	(1,081)%

The change in income tax provision is primarily due to a discrete tax benefit of $4.2 million recorded in the second quarter of fiscal 2017. The discrete item is a result of releasing a portion of our valuation allowance resulting from the acquisition of Revitas.

Quarterly Results of Operations (Unaudited)

The following table sets forth our unaudited quarterly statements of operations data for the last eight fiscal quarters. The information for each of these quarters has been prepared on the same basis as the audited annual financial statements included elsewhere in this annual report and, in the opinion of management, includes all adjustments, which includes only normal recurring adjustments, necessary for the fair presentation of the results of operations for these periods. This data should be read in conjunction with our audited consolidated financial statements and related notes included elsewhere in this annual report. These quarterly operating results are not necessarily indicative of our operating results for any future period.

	Three Months Ended							
	Sep 30, 2018	Jun 30, 2018	Mar 31, 2018	Dec 31, 2017	Sep 30, 2017	Jun 30, 2017	Mar 31, 2017	Dec 31, 2016
	(in thousands, except per share amounts)							
Revenues:								
SaaS and maintenance	$34,984	$35,623	$32,997	$32,323	$29,628	$28,530	$27,257	$22,640
License and implementation	1,730	3,994	6,237	6,744	5,977	5,714	6,000	5,423
Total revenues	36,714	39,617	39,234	39,067	35,605	34,244	33,257	28,063
Cost of Revenues:								
SaaS and maintenance	13,414	14,599	12,866	13,024	12,345	12,439	11,880	10,208
License and implementation	1,413	1,846	4,387	3,785	3,118	3,333	4,159	3,614
Total cost of revenues	14,827	16,445	17,253	16,809	15,463	15,772	16,039	13,822
Gross profit	21,887	23,172	21,981	22,258	20,142	18,472	17,218	14,241
Operating Expenses:								
Research and development	7,555	7,746	8,047	9,068	7,762	8,393	8,934	5,975
Sales and marketing	8,637	9,338	9,015	8,492	10,258	10,739	11,608	8,734
General and administrative	9,079	17,044	7,324	8,731	9,332	8,096	11,668	7,185
Total operating expenses	25,271	34,128	24,386	26,291	27,352	27,228	32,210	21,894
Loss from operations	(3,384)	(10,956)	(2,405)	(4,033)	(7,210)	(8,756)	(14,992)	(7,653)
Interest (income) expense, net	828	4,478	1,449	1,423	1,370	1,442	1,380	(33)
Other (income) expenses, net	(416)	(344)	(87)	125	(15)	3	228	(154)
Loss before income taxes	(3,796)	(15,090)	(3,767)	(5,581)	(8,565)	(10,201)	(16,600)	(7,466)
Provision (benefit) for income taxes	(177)	345	129	(324)	457	234	(4,110)	134
Net loss	$(3,619)	$(15,435)	$(3,896)	$(5,257)	$(9,022)	$(10,435)	$(12,490)	$(7,600)

Liquidity and Capital Resources

Our principal sources of liquidity are our cash and cash equivalents. As of September 30, 2018, we had cash and cash equivalents of $56.7 million.

We expect that our operating losses will continue through at least the foreseeable future. Based on our future expectations and historical usage, we believe our current cash and cash equivalents are sufficient to meet our operating needs for at least the next 12 months. Our future capital requirements will depend on many factors, including our rate of revenue growth, the expansion of our sales and marketing activities, and the timing and extent of spending to support research and development efforts and expansion of our business and capital expenditures for the purchase of computer hardware and software. To the extent that existing cash and cash equivalents and cash from operations are insufficient to fund our future activities, we may elect to raise additional capital through the sale of additional equity or debt securities, obtain a credit facility or sell certain assets. If additional funds are raised through the issuance of debt securities, these securities could have rights, preferences and privileges senior to holders of common stock, and terms of any debt could impose restrictions on our operations. The sale of additional equity or convertible debt securities could result in additional dilution to our stockholders and additional financing may not be available in amounts or on terms acceptable to us. We may also seek to invest in or acquire complementary businesses or technologies, any of which could also require us to seek additional equity or debt financing. Additional funds may not be available on terms favorable to us or at all.

Term Loan

In January 2017, we entered into a financing agreement (Financing Agreement) pursuant to which we borrowed an aggregate principal amount of $50 million, which was used to fund part of the cash portion of the Revitas acquisition. The term loan bore interest at a rate of either (i) the Base Rate (as defined in the Financing Agreement) plus 9.25% or (ii) the LIBOR Rate (as defined in the Financing Agreement) plus 8.25%, as selected by us. From April 1, 2018 though the payoff the loan in May 2018, we selected Base Rate plus 9.25%. The term loan would have matured on January 5, 2022.

The Financing Agreement required us to maintain certain financial covenants and also contained certain non-financial covenants, including restricting our ability to dispose of assets, changing our organizational documents or amending our material agreements in a manner adverse to the lender, changing a method of accounting, merging with or acquiring other entities, incurring other indebtedness and making certain investments. We were in compliance with all the covenants described in the Financing Agreement through the payoff in conjunction with the new term loan with Wells Fargo Bank entered into in May 2018, discussed below.

In May 2018, this term loan was extinguished and repaid in full, in connection with a new facility with Wells Fargo Bank, N.A. (Wells Fargo), as discussed below.

Term Loan Refinancing

On May 4, 2018, we entered into Credit Agreement (the “Credit Agreement”) with Wells Fargo for a term loan in the amount of $50.0 million and up to a $5.0 million revolving line of credit. In conjunction with this refinancing, we repaid in full the existing term loan under the Financing Agreement, dated as January 5, 2017. The results of this action will allow us to obtain a more favorable interest rate.

The loans made pursuant to the Credit Agreement will bear interest at a rate of: (i) when we have a leverage ratio of more than 3.5:1.0, either the Base Rate plus 3.50% or the LIBOR Rate plus 4.50%, as selected by us; (ii) when we have a leverage ratio between 2.0:1.0 and 3.5:1.0, either the Base Rate plus 2.50% or the LIBOR Rate plus 3.50%; or (iii) when we have a leverage ratio of less than 2.0:1.0, either the Base Rate plus 2.00% or the LIBOR Rate plus 3.00%. The term loan will mature on May 4, 2023. We are required to repay the principal of the term loan in quarterly installments of $250,000 each from September 30, 2018 through June 30, 2019, $625,000 each from September 30, 2019 through June 30, 2020, and $937,500 each from September 30, 2020 through March 31, 2023, and to repay the remaining principal amount at maturity. We may voluntarily prepay the term loan, with any such prepayment applied against the remaining installments of principal of the term loan on a pro rata basis; provided, that at our election, one such prepayment made during the fiscal quarter ending December 31, 2018 in an amount not to exceed $5 million may be applied against the remaining installments of principal in the direct order of maturity. We are required to repay the term loan with proceeds from the sale of assets, the receipt of certain insurance proceeds, litigation proceeds or indemnity payments, or the incurrence of debt (in each case subject to certain exceptions).

Certain United States subsidiaries of ours (Guarantors) and the Company have entered into a guaranty and security agreement pursuant to which the Guarantors have agreed to guarantee our payment of obligations under the Credit Agreement, and pursuant to which we and Guarantors’ obligations under the Credit Agreement and the guaranty and security agreement are secured by substantially all of their assets.

The Credit Agreement requires us and our subsidiaries to maintain certain financial covenants, including maintaining consolidated liquidity (cash in the United States plus revolving credit line availability) of at least $15 million, minimum levels of maintenance and subscription fee revenue and, if liquidity is less than $30 million for 90 consecutive days, leverage ratio not greater than 3.50 to 1.00. The Credit Agreement also requires us and Guarantors to maintain certain non-financial covenants, including covenants restricting our ability to dispose of assets, changing our organizational documents, merging with or acquiring other entities, incurring other indebtedness and making investments. The Credit Agreement also provides for customary events of default, including failure to pay amounts due or to comply with covenants, default on other indebtedness, or a change of control with respect to us.

In the third quarter of fiscal 2018, we recorded approximately $3.1 million of expense in connection with the repayment of our first term loan, of which approximately $1.6 million is non-cash unamortized discounts and deferred financing costs and $1.5 million in prepayment penalty.

Promissory Notes

Also, in connection with the Revitas acquisition, the Company incurred $10.0 million in debt in the form of two promissory notes with the sellers, one which matured on July 5, 2018 and the other which will mature on January 5, 2020. The Company paid the first promissory note of $5.0 million on July 5, 2018. The remaining promissory note bears interest at the rate of 3% per annum, and is subject to a right of set-off as partial security for the indemnification obligations of the target's stockholders under the Merger Agreement. The remaining promissory notes is subordinate to the term loan with Wells Fargo.

Cash Flows

	Fiscal Years Ended September 30,		
	2018	2017	2016
	(in thousands)		
Cash flows provided by (used in) operating activities	$2,523	$(11,965)	$(12,324)
Cash flows used in investing activities	(252)	(48,501)	(15,789)
Cash flows (used in) provided by financing activities	(3,003)	51,866	3,279

Cash Flows from Operating Activities

Net cash provided by operating activities during the fiscal year ended September 30, 2018 was primarily the result of our net loss of $28.2 million and an $4.6 million change in operating assets and liabilities, partially offset by $32.2 million of non-cash adjustments of deferred income taxes benefits, stock-based compensation, and depreciation and amortization and $3.1 million in loss on extinguishment of debt. The $4.6 million net change in operating assets and liabilities consisted of a $3.6 million increase in accounts receivable, primarily reflective of invoicing in excess of collection during the period, a $1.0 million increase in prepaid expense and other assets, a $0.5 million decrease in deferred cost of implementation services, an $3.2 million increase in deferred revenue primarily due to timing of amount invoiced and revenue recognized, a $0.7 million decrease in accrued employee compensation primarily due to payment of bonuses and other employee benefits, and $1.6 million decrease in other accrued and long term liabilities and a $1.4 million decrease in accounts payable.

Net cash used in operating activities during the fiscal year ended September 30, 2017 was primarily the result of our net loss of $39.5 million and an $11.9 million change in operating assets and liabilities, partially offset by $15.7 million of non-cash adjustments of deferred income taxes benefits, stock-based compensation and depreciation and amortization. The $11.9 million net change in operating assets and liabilities consisted of a $1.4 million decrease in accounts receivable, primarily reflective of collections in excess of invoicing during the period, a $2.1 million decrease in prepaid expense and other assets, a $1.5 million decrease in deferred cost of implementation services, an $5.8 million increase in deferred revenue primarily due to timing of amount invoiced and revenue recognized, a $2.6 million increase in accrued employee compensation primarily due to accrual of bonuses and other employee benefits, and a $1.6 million decrease in accounts payable.

Net cash used in operating activities was $12.3 million during fiscal year ended September 30, 2016 was primarily the result of our net loss of $33.1 million and $1.6 million change in operating assets and liabilities, partially offset by $19.1 million of non-cash adjustments comprised of $13.1 million in stock-based compensation, $6.0 million in depreciation and amortization and $0.2 million in other non-cash charges. The net change in operating assets and liabilities consisted of a $2.9 million increase in accounts receivable primarily reflective of invoicing in excess of collection during the year, a $1.0 million increase in deferred cost of implementation services, a $5.9 million increase in deferred revenue primarily due to timing of amount invoiced and revenue recognized, a $1.5 million increase in prepaid expenses and other assets, a $1.5 million increase in accounts payable, a $0.7 million decrease in accrued employee compensation primarily due to payment of bonuses and other employee benefits and a $0.3 million increase in other accrued and long term liabilities.

Cash Flows from Investing Activities

Net cash used in investing activities for fiscal year ended September 30, 2018 was primarily due to purchases of property and equipment.

Net cash used in investing activities for fiscal year ended September 30, 2017 was primarily due to $47.8 million net cash paid for the acquisition of Revitas, $0.4 million associated with capitalization of software development costs and purchases of property and equipment of $0.4 million.

Net cash used in investing activities for the fiscal year ended September 30, 2016 was primarily due to cash paid for the acquisition of a business of $12.6 million, $1.1 million associated with capitalization of software development costs and purchases of property and equipment of $2.1 million.

Cash Flows from Financing Activities

Net cash used in financing activities for fiscal year ended September 30, 2018 was driven by $4.4 million from the exercises of stock options and purchases made under our employee stock purchase plan offset by $2.2 million net cash used in extinguishing our term loan and new borrowing arrangement with Wells Fargo, as well as the $5.2 million principal related to promissory note and Wells Fargo's quarterly principal.

Net cash provided by financing activities for fiscal year ended September 30, 2017 was primarily related to our borrowing activities related to the Revitas transaction, for which we received net cash proceeds of $47.9 million during fiscal year 2017, as well as $4.0 million from the exercises of stock options and purchase made under our employee stock purchase plan.

Net cash provided by financing activities for the fiscal year ended September 30, 2016 was from the exercises of stock options and purchases made under our employee stock purchase plan.

Contractual Obligations

The following summarizes our contractual obligations as of September 30, 2018:

	Contractual Payment Obligations Due by Period				
	Total	Less than 1 Year	1 to 3 Years	3 to 5 Years	More than 5 Years
Operating lease obligations(1)	$8,900	$3,200	$4,600	$1,100	$ —

(1) Operating lease obligations represent our obligations to make payments under the lease agreements for our facilities leases.

Off-Balance Sheet Arrangements

As of September 30, 2018, we did not have any relationships with unconsolidated entities or financial partnerships, such as entities often referred to as structured finance or special purpose entities, which would have been established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes.

Critical Accounting Policies and Estimates
Our consolidated financial statements have been prepared in conformity with generally accepted accounting principles in the United States (U.S. GAAP). The preparation of the accompanying consolidated financial statements in conformity with U.S. GAAP requires our management to make certain estimates and assumptions that affect the amounts of assets and liabilities reported disclosures about contingent assets and liabilities and reported amounts of revenues and expenses during the reporting periods. Significant items subject to such estimates include revenue recognition, legal contingencies, income taxes, stock-based compensation, and valuation of goodwill and intangibles. These estimates and assumptions are based on our management's best estimates and judgment. Our management regularly evaluates these estimates and assumptions using historical experience and other factors; however, actual results could differ significantly from these estimates.
We believe that the assumptions and estimates associated with revenue recognition, share-based compensation, business combinations and income taxes have the greatest potential impact on our consolidated financial statements. Therefore, we consider these to be our critical accounting policies and estimates. Accordingly, we believe these are the most critical to fully understand and evaluate our financial condition and results of operations.

Revenue recognition
We generate revenue from two sources: SaaS and maintenance and License and implementation.
License and implementation revenues include revenues from the sale of perpetual software licenses for our solutions and the related implementation services. SaaS and maintenance revenues primarily include subscription and the related implementation fees from customers accessing our cloud-based solutions and revenues associated with maintenance and support contracts from customers using on-premise solutions. Also included in SaaS and maintenance revenues are other revenues, such as managed support services, training and customer-reimbursed expenses. We commence revenue recognition when all of the following conditions are satisfied:

- there is persuasive evidence of an arrangement exists,
- delivery has occurred or services have been rendered,
- the price is fixed or determinable and
- the collection of the fees is probable or reasonably estimable.

However, determining whether and when some of these criteria have been satisfied often involves assumptions and judgments that can have a significant impact on the timing and amount of revenues we report.
For SaaS arrangements related to Revenue Cloud for Life Sciences and High Tech companies we historically concluded that the SaaS deliverable did not have standalone value without the implementation services primarily because other vendors could not perform the services, and in some cases the complexity of the customer environment in which the SaaS deliverable was deployed.
Prior to fiscal year 2016, for SaaS arrangements related to Revenue Cloud for Life Sciences and High Tech companies we treated the entire arrangement consideration, including subscription fees and related implementation services fees, as a single unit of accounting and recognized the revenues ratably beginning the day the customer was provided access to the subscription service through the end of contractual period. During fiscal year 2016, we concluded that a sufficient number of implementation projects had been completed with several third-party consulting companies participating in either a primary or sub-contractor role, such that the third-party vendors have the requisite know-how to complete, and, have completed the implementation services independently. Therefore, the Company concluded that the SaaS deliverable has standalone value to the customer without the implementation services. The total arrangement fee for a multiple-element arrangement is allocated based on the relative selling price method. The consideration allocated to subscription fees is recognized as revenue ratably over the contract period. The consideration allocated to implementation services is recognized as revenue as services are performed, in accordance with the provisions of Financial Accounting Standards Board (FASB) Accounting Standards Update (ASU) No. 2009-13, Revenue Recognition (Accounting Standards Codification (ASC) Topic 605)—Multiple-Deliverable Revenue Arrangements."
For the remaining SaaS arrangements subscription fees and implementation services continue to have standalone value and we allocate revenue to each element in the arrangement based on a selling price hierarchy. The selling price for a deliverable is based on its vendor-specific objective evidence (VSOE), if available, third-party evidence (TPE), if

VSOE is not available, or best estimated selling price (BESP), if neither VSOE nor TPE is available. For SaaS arrangements, where we utilize BESP, we established the BESP for each element by considering specific factors such as existing pricing and discounting. The total arrangement fee for a multiple element arrangement is allocated based on the relative BESP of each element. The consideration allocated to subscription fees is recognized as revenue ratably over the contract period. The consideration allocated to services is recognized as revenue as services are performed.

Revenue related to up-front fees are deferred and recognized ratably over the estimated period that the customer benefits from the related service.

Maintenance and support revenue include post-contract customer support and the right to unspecified software updates and enhancements on a when and if available basis. Managed support services revenue includes supporting, managing and administering our software solutions, and providing additional end user support. Maintenance and support revenue and managed support services revenue are recognized ratably over the period in which the services are provided. The revenue from training and customer-reimbursed expenses is recognized as we deliver services.

Arrangements that include term-based licenses for current products with the right to use unspecified future versions of the software during the coverage period, are also accounted for as subscriptions, with revenue recognized ratably over the coverage period.

License and implementation revenue is recognized based on the nature and scope of the implementation services, we have concluded that generally the implementation services are essential to our customers' use of the on-premise solutions, and therefore, we recognize revenues from the sale of software licenses for our on-premise solutions and the related implementation services on a percentage-of-completion basis over the expected implementation period which is estimated at a few months to three years. The percentage-of-completion computation is measured as the hours expended on the implementation during the reporting period as a percentage of the total estimated hours needed to complete the implementation.

Stock-based compensation

We recognize compensation expense for stock option, restricted stock units, employee stock purchase plan ("ESPP") and performance based restricted stock units. We use the Black-Scholes-Merton valuation model to estimate the fair value of stock option awards and ESPP shares. However, we have not granted stock options since fiscal year 2013. The fair value of restricted stock units is determined based on the intrinsic value of the award on the grant date. Our performance share unit grants included market condition performance criteria so we used a Monte Carlo simulation model to determine their fair value on the grant date. The fair value of these grants with a market condition is recognized using the graded-vesting attribution method over the requisite service period. The Monte-Carlo simulation model takes into account the same input assumptions as the Black-Scholes model; however, it also further incorporates into the fair value determination the possibility that the performance criteria may not be satisfied. The weighted-average assumptions used to estimate the fair values of these awards were determined using the following assumptions:

	Fiscal Year Ended 9/30/2018
Risk-free interest rate	2.42%-2.57%
Dividend yield	—
Volatility	39%-40%

Changes in the estimates used to determine the fair value of share-based equity compensation instruments could result in changes to our compensation charges.

Business Combinations

We use all available information to estimate fair values. We typically engage outside appraisal firms to assist in the fair value determination of identifiable assets such as customer contracts and any other significant assets or liabilities and contingent consideration. We adjust the preliminary purchase price allocation, as necessary, up to one year after the acquisition closing date if we obtain more information regarding asset valuation and liabilities assumed.

Our purchase price allocation methodology contains uncertainties because it requires assumptions and management's judgment to estimate the fair value of assets acquired and liabilities assumed at the acquisition date. Management estimates the fair value of assets and liabilities based upon quoted market prices, the carrying value of the acquired assets and widely accepted valuation techniques, including discounted cash flows and market multiple analyses. Our estimates are inherently uncertain and subject to refinement. Unanticipated events or circumstances may occur which could affect the accuracy of our fair value estimates, including assumptions regarding industry economic factors and business strategies.

During the last three years, we have completed two business combinations, including the Revitas acquisition in January 2017 and the Channelinsight acquisition in October 2015. We do not believe there is a reasonable likelihood that there will be a material change in the estimates or assumptions we used for the purchase price allocations and the fair value of assets acquired and liabilities assumed. However, if actual results are not consistent with our estimates or assumptions, we may be exposed to losses that could be material.

Income Taxes
We account for income taxes in accordance with the FASB ASC No. 740—Accounting for Income Taxes (ASC 740). We make certain estimates and judgments in determining income tax expense for financial statement purposes. These estimates and judgments occur in the calculation of tax credits, tax benefits and deductions and in the calculation of certain tax assets and liabilities, which arise from differences in the timing of recognition of revenue and expense for tax and financial statement purposes. Significant changes to these estimates may result in an increase or decrease to our tax provision in the subsequent period when such a change in estimate occurs.
We regularly assess the likelihood that our deferred income tax assets will be realized from future taxable income based on the realization criteria set forth in ASC 740. To the extent that we believe any amounts are not more likely than not to be realized, we record a valuation allowance to reduce the deferred income tax assets. In assessing the need for a valuation allowance, we consider all available evidence, including past operating results, estimates of future taxable income and the feasibility of tax planning strategies. In the event we determine that all or part of the net deferred tax assets are not realizable in the future, an adjustment to the valuation allowance would be charged to earnings in the period such determination is made. Similarly, if we subsequently realize deferred income tax assets that were previously determined to be unrealizable, the respective valuation allowance would be reversed, resulting in an adjustment to earnings in the period such determination is made.
On December 22, 2017, tax reform legislation known as the Tax Cuts and Jobs Act (the Tax Legislation) was enacted in the United States (U.S.). The Tax Legislation significantly revises the U.S. corporate income tax by, among other things, lowering the corporate income tax rate to 21%, implementing a modified territorial tax system and imposing a one-time repatriation tax on deemed repatriated earnings and profits of U.S.-owned foreign subsidiaries (the Toll Charge), and limiting the deductibility of certain expenses, such as interest expense. As a fiscal-year taxpayer, certain provisions of the Tax Legislation impact us in fiscal year 2018, including the change in the corporate income tax rate and the Toll Charge, while other provisions will be effective starting at the beginning of fiscal year 2019. The U.S. federal income tax rate reduction was effective as of January 1, 2018. Accordingly, our federal statutory income tax rate for fiscal year 2018 reflects a blended rate of approximately 24.3%.
On December 22, 2017, the SEC issued Staff Accounting Bulletin No.118 (SAB 118), which addresses how a company recognizes provisional estimates when a company does not have the necessary information available, prepared or analyzed (including computations) in reasonable detail to complete its accounting for the effect of the changes in the Tax Legislation. The measurement period ends when a company has obtained, prepared, and analyzed the information necessary to finalize its accounting, but cannot extend beyond one year. The final impact of the Tax Legislation may differ from the above provisional estimates due to changes in interpretations of the Tax Legislation, any legislative action to address questions that arise because of the Tax Legislation, by changes in accounting standard for income taxes and related interpretations in response to the Tax Legislation, and any updates or changes to estimates used in the provisional amounts.
As of September 30, 2018, we had gross deferred income tax assets, related primarily to net operating loss (NOL) carry forward, deferred revenues, stock compensation, accruals and reserves that are not currently deductible, depreciation and amortization and research and development tax credits of $77.2 million, which have been fully offset by deferred tax liabilities and valuation allowance. Utilization of these net loss carry forwards is subject to the limitations of IRC Section 382. A Section 382 study was performed when we went IPO and subsequent Section 382 analysis have been performed. It is determined that there is no material limitation of IRC Section 382. However, in the future, some portion or all of these carry forwards may not be available to offset any future taxable income. The federal and state net operating losses will begin expiring in 2021 and 2019, respectively.
We account for uncertainty in income taxes using a two-step approach to recognizing and measuring uncertain tax positions. The first step is to evaluate the tax position for recognition by determining if the weight of available evidence indicates that it is more likely than not that the position will be sustained on audit, including resolution of related appeals or litigation processes, if any. The second step is to measure the tax benefit as the largest amount that is more than 50% likely of being realized upon settlement. We classify the liability for unrecognized tax benefits as current to the extent that our anticipate payment (or receipt) of cash within one year. Interest and penalties related to uncertain tax positions are recognized in the provision for income taxes.

Recent Accounting Pronouncements

Recent Adopted Accounting Guidance

In March 2016, Financial Accounting Standard Board (“FASB”) issued Accounting Standard Update ("ASU") 2016-09, Compensation – Stock Compensation (Topic 718), which simplifies several aspects of the accounting for share-based payment transactions, including the income tax consequences, classification of awards as either equity or liabilities, and classification on the statement of cash flows. For public companies, the guidance is effective for financial statements issued for annual periods beginning after December 15, 2016 and interim periods within those annual periods. Early adoption is permitted for all companies in any interim or annual period. Forfeitures can be estimated, as required today, or recognized when they occur. Estimates of forfeitures will still be required in certain circumstances, such as at the time of modification of an award or issuance of a replacement award in a business combination. We adopted this guidance in the first quarter of fiscal year 2018 and have elected to continue to estimate our forfeiture rate. In the year of adoption, the ASU requires that the cumulative effect adjustment be recorded to retained earnings. Due to a full valuation allowance, there is no cumulative effect adjustment to record and the adoption of this guidance had no material impact on our consolidated financial statements.

In November 2015, the FASB issued ASU 2015-17, Balance Sheet Classification of Deferred Taxes (Topic 740), which amended the existing accounting standards for income taxes. The amendments require companies to report their deferred tax liabilities and deferred tax assets each as a single non-current item on their classified balance sheets. We have adopted this guidance. The adoption of this guidance had no material impact on our consolidated financial statements.

Recently Enacted Accounting Pronouncements

In May 2017, the FASB issued ASU 2017-09, Compensation-Stock Compensation (Topic 718): providing clarification on when modification accounting should be used for changes to the terms or conditions of a share-based payment award. This ASU does not change the accounting for modifications but clarifies that modification accounting guidance should only be applied if there is a change to the value, vesting conditions or award classification and would not be required if the changes are considered non-substantive. The amendments of this ASU are effective for reporting periods beginning after December 15, 2017, with early adoption permitted. We do not believe this will have a material impact on our consolidated financial statements.

In January 2017, the FASB issued ASU 2017-04, Intangibles—Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment. This new accounting standard update simplifies the measurement of goodwill by eliminating the Step two impairment test. Step two measures a goodwill impairment loss by comparing the implied fair value of goodwill with the carrying amount of that goodwill. The new guidance requires a comparison of our fair value with the carrying amount and we are required to recognize an impairment charge for the amount by which the carrying amount exceeds the fair value. Additionally, we should consider income tax effects from any tax deductible goodwill on the carrying amount when measuring the goodwill impairment loss, if applicable. The new guidance becomes effective for goodwill impairment tests in fiscal years beginning after December 15, 2019, though early adoption is permitted. We are currently evaluating the impact this standard will have on our consolidated financial statements.

In January 2017, the FASB issued ASU 2017-01, Business Combination (Topic 805): clarifying the definition of a business. The amendments in this guidance change the definition of a business to assist with evaluating when a set of transferred assets and activities is a business. The guidance becomes effective for us at the beginning of our first quarter of fiscal year 2019. Early adoption is permitted. We do not believe this will have a material impact on our consolidated financial statements.

In November 2016, the FASB issued ASU 2016-18, Restricted Cash (Topic 230), clarifying the classification and presentation of restricted cash in the statement of cash flows. The standard requires that restricted cash and restricted cash equivalents are included in the cash and cash equivalent balance in the statement of cash flows. Further, reconciliation between the balance sheet and statement of cash flows is required when the balance sheet includes more than one line item for cash, cash equivalents, restricted cash, and restricted cash equivalents. Therefore, transfers between these balances should no longer be presented as a cash flow activity. The guidance become effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2017, with early adoption permitted. We do not plan to early adopt, and accordingly we will adopt the new standard at the beginning of our first quarter of fiscal year 2019. We do not believe this will have material impact on our consolidated financial statements. In August 2016, the FASB issued ASU 2016-15, Statement of Cash Flow (Topic 230), amended the existing accounting standards for the statement of cash flows. The amendments provide guidance on how companies present and classify certain cash receipts and cash payments in the statement of cash flows. The guidance becomes effective for us at the beginning of its first quarter of fiscal year 2019. Early adoption is permitted, including adoption in an interim period. We do not believe this will have a material impact on our consolidated financial statements.

In February 2016, the FASB issued ASU 2016-02, Lease (Topic 842), guidance on the recognition and measurement of leases. Under the new guidance, lessees are required to recognize a lease liability, which represents the discounted obligation to make future minimum lease payments, and a corresponding right-of-use asset on the balance sheet for most leases. The guidance retains the current accounting for lessors and does not make significant changes to the recognition, measurement, and presentation of expenses and cash flows by a lessee. Enhanced disclosures will also be required to give financial statement users the ability to assess the amount, timing and uncertainty of cash flows arising from leases. The guidance will require modified retrospective application at the beginning of October 1, 2019 for us, with optional practical expedients, but permits adoption in an earlier period. We are currently evaluating the impact this standard will have on our consolidated financial statements.

In May 2014, the FASB issued ASU 2014-09, Revenue from Contracts with Customers (ASC 606), as amended, which will supersede nearly all existing revenue recognition guidance. The underlying principle of ASC 606 is to recognize revenue when a customer obtains control of promised goods or services at an amount that reflects the consideration that we expect to be entitled to in exchange for those goods or services. To achieve this, the Company should apply the five-step revenue recognition model, which may require the use of judgments and estimates, also requires expanded qualitative and quantitative disclosures relating to the nature, amount, timing and uncertainty of revenue and cash flows arising from contracts with customers, including significant judgments and estimates used. ASC 606 also includes Subtopic 340-40, Other Assets and Deferred Costs - Contracts with Customers, which requires the deferral of incremental costs of obtaining a contract with a customer. Subsequently, the FASB issued several amendments to the new standard, which clarified or affected certain aspects of ASC 606 but did not change the core principle of the guidance.

The new standard permits two methods of adoption: (i) retrospectively to each prior period presented (full retrospective method), or ii) retrospectively with the cumulative effect recognized in retained earnings as of the date of adoption (modified retrospective method). We will adopt the new standard using the modified retrospective method at the beginning of our first quarter of fiscal year 2019.

We are in process of finalizing our new accounting policies, processes, and internal controls necessary to support the requirements of ASC 606. We have substantially completed our assessment of the financial statement impact of ASC 606, the impact of which are as discussed below.

ASC 606 will primarily impact our revenue recognition for on-premises offerings, which contained deliverables within the scope of ASC 985-605, Software-Revenue Recognition, by eliminating the requirement to have VSOE for undelivered elements, which accelerates the timing of revenue recognition. In addition, ASC 606 requires incremental contract acquisition costs (such as sales commissions) for customer contracts to be capitalized and amortized on a systematic basis that is consistent with the transfer to the customer of the goods or services to which the capitalized cost relates. Currently, these costs are expensed as incurred.

Upon adopting ASC 606 at the beginning of fiscal year 2019, our cumulative effect adjustment will decrease accumulated deficit by approximately $10.3 million. This cumulative effect adjustment is primarily driven by a reduction to our deferred subscription revenues of approximately $3.2 million and deferred license and implementation revenues of approximately $3.9 million. Further, refundable amounts associated with customer contracts of approximately $0.6 million will be reclassified from deferred subscription revenues to customer deposit. In addition to the adjustment to deferred revenue, other adjustments at transition include adjustments to other current and noncurrent assets. The adjustment to other current and noncurrent assets is primarily for capitalized incremental contract acquisitions costs of approximately $3.2 million. We do not expect that this accounting standard update will have a material impact our tax provision.

Non-GAAP Financial Measure

Adjusted EBITDA

Adjusted EBITDA is a financial measure that is not calculated in accordance with generally accepted accounting principles in U.S. GAAP. We define adjusted EBITDA as net loss before items discussed below, including: stock-based compensation expense, depreciation and amortization, acquisition and integration related expense, deferred revenue adjustment related to the acquisition of Revitas, interest (income) expenses, net, other (income) expenses, net, certain legal expenses and provision (benefit) for income taxes. We believe adjusted EBITDA provides investors with consistency and comparability with our past financial performance and facilitates period-to-period comparisons of our operating results and our competitors' operating results. We also use this measure internally to establish budgets and operational goals to manage our business and evaluate our performance.

We understand that, although adjusted EBITDA is frequently used by investors and securities analysts in their evaluations of companies, adjusted EBITDA has limitations as an analytical tool, and it should not be considered in isolation or as a substitute for analysis of our results of operations as reported under U.S. GAAP. These limitations include:

- adjusted EBITDA does not include deferred revenue adjustment, integration, and expense related Revitas acquisition;
- adjusted EBITDA does not reflect stock-based compensation expense;
- depreciation and amortization are non-cash charges, and the assets being depreciated or amortized will often have to be replaced in the future; adjusted EBITDA does not reflect any cash requirements for these replacements;
- adjusted EBITDA does not reflect legal expense related to class action lawsuits;
- adjusted EBITDA does not reflect cash requirements for income taxes and the cash impact of interest income or expense and other income or expense; and
- other companies in our industry may calculate adjusted EBITDA differently than we do, limiting its usefulness as a comparative measure.

	Fiscal Years Ended September 30,		
	2018	2017	2016
	(in thousands)		
Reconciliation of Adjusted EBITDA:			
Net loss	$(28,207)	$(39,547)	(33,111)
Adjustments:			
Stock-based compensation expense	23,324	10,560	13,068
Depreciation and amortization	8,299	8,185	5,929
Deferred revenue adjustments	627	5,151	—
Acquisition and integration related expense	—	6,446	867
Interest (income) expense, net	8,178	4,159	(50)
Other (income) expenses, net	(722)	62	86
Legal expenses	—	—	305
(Benefit) provision for income taxes	(27)	(3,285)	335
Adjusted EBITDA	$11,472	$(8,269)	$(12,571)

Adjusted EBITDA was $11.5 million, $(8.3) million and $(12.6) million for the fiscal years ended September 30, 2018, 2017 and 2016, respectively. The increase in our adjusted EBITDA for the fiscal year ended September 30, 2018 as compared to fiscal year ended September 30, 2017, was primarily due to an increase in our revenues from our SaaS and maintenance business as we acquired new customers, the full year effect of the Revitas acquisition and synergies associated with the acquisition.

Item 7A. Quantitative and Qualitative Disclosures about Market Risk

We are exposed to market risks in the ordinary course of our business. Market risk represents the risk of loss that may impact our financial position due to adverse changes in financial market prices and rates. Our market risk exposure is primarily a result of fluctuations in interest rates and foreign currency exchange rates. We do not hold or issue financial instruments for trading purposes.

Interest Rate Sensitivity

Our exposure to market risk for changes in interest rates relates primarily to our cash and cash equivalents, which bear interest at a fixed interest rate. Our primary exposure to market risk is interest income and expense sensitivity, which is affected by changes in the general level of the interest rates in the United States. However, because of the short-term nature of our interest-bearing securities, a 10% change in market interest rates would not be expected to have a material impact on our consolidated financial condition or results of operations. In addition, as of September 30, 2018, we had approximately $49.8 million, respectively, in short-term and long-term debt with variable interest components. With respect to our interest expense for the fiscal year ended September 30, 2018, a 10% hypothetical change in interest rates would have resulted in an increase of $0.3 million, respectively, in our interest expense for such period.

Foreign Currency Exchange Risk

Our customers typically pay us in U.S. dollars; however, in foreign jurisdictions, our expenses are typically denominated in local currency. Our expenses and cash flows are subject to fluctuations due to changes in foreign currency exchange rates, particularly changes in the Indian Rupee. The volatility of exchange rates depends on many factors that we cannot forecast with reliable accuracy. As of September 30, 2018, we have not entered into foreign currency hedging contracts. During fiscal year 2018, the effect of a hypothetical 10% change in foreign currency exchange rates applicable to our business would have had an impact of approximately $3.3 million on our Consolidated Financial Statements. As our international operations grow, we will continue to reassess our approach to manage our risk relating to fluctuations in currency rates.

Item 8. Financial Statements and Supplementary Data
MODEL N, INC.
Index to Consolidated Financial Statements

The supplementary financial information required by this Item 8 is included in Item 7 under the caption "Quarterly Results of Operations (Unaudited)".

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Model N, Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Model N, Inc. and its subsidiaries (the “Company”) as of September 30, 2018 and 2017, and the related consolidated statements of operations, comprehensive loss, stockholders’ equity and cash flows for each of the three years in the period ended September 30, 2018, including the related notes and schedule of valuation and qualifying accounts for each of the three years in the period ended September 30, 2018 appearing under Item 15(a)(2) (collectively referred to as the “consolidated financial statements”). We also have audited the Company's internal control over financial reporting as of September 30, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of September 30, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended September 30, 2018 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of September 30, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the COSO.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Annual Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company’s consolidated financial statements and on the Company's internal control over financial reporting 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 audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated 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 consolidated 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 consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company’s 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 generally accepted accounting principles. A company’s internal control over financial reporting includes those 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 generally accepted accounting principles, and that receipts and expenditures of the company are being made only 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.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ PricewaterhouseCoopers LLP
San Jose, California
November 16, 2018

We have served as the Company’s auditor since 2007.

MODEL N, INC.
Consolidated Balance Sheets
(in thousands, except per share data)

	As of September 30,	
	2018	2017
Assets		
Current assets:		
Cash and cash equivalents	$56,704	$57,558
Accounts receivable, net of allowance for doubtful accounts of $172 and $85 at September 30, 2018 and 2017	28,273	24,784
Prepaid expenses	3,631	3,733
Other current assets	455	1,013
Total current assets	89,063	87,088
Property and equipment, net	2,146	4,611
Goodwill	39,283	39,283
Intangible assets, net	34,597	40,156
Other assets	1,064	798
Total assets	$166,153	$171,936
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	$1,664	$3,002
Accrued employee compensation	14,211	14,996
Accrued liabilities	3,182	4,979
Deferred revenue, current portion	52,176	49,186
Long term debt, current portion	1,375	4,753
Total current liabilities	72,608	76,916
Long-term debt	52,329	52,452
Other long-term liabilities	1,182	1,307
Total liabilities	126,119	130,675
Commitments and contingencies (Note 8)		
Convertible preferred stock:		
Convertible preferred stock, $0.0005 par value; no shares authorized, issued and outstanding at September 30, 2018 and 2017, respectively	—	—
Stockholders' equity:		
Common Stock, $0.00015 par value; 200,000 shares authorized; 31,444 and 29,323 shares issued and outstanding at September 30, 2018 and September 30, 2017, respectively	5	4
Preferred Stock, $0.00015 par value; 5,000 shares authorized; no shares issued and outstanding	—	—
Additional paid-in capital	244,814	217,052
Accumulated other comprehensive loss	(1,285)	(502)
Accumulated deficit	(203,500)	(175,293)
Total stockholders' equity	40,034	41,261
Total liabilities and stockholders' equity	$166,153	$171,936

The accompanying notes are an integral part of these consolidated financial statements.

MODEL N, INC.
Consolidated Statements of Operations
(in thousands, except per share data)

	Fiscal Years Ended September 30,		
	2018	2017	2016
Revenues:			
SaaS and maintenance	$135,927	$108,055	$86,392
License and implementation	18,705	23,114	20,579
Total revenues	154,632	131,169	106,971
Cost of revenues:			
SaaS and maintenance	53,903	46,872	40,717
License and implementation	11,431	14,224	12,976
Total cost of revenues	65,334	61,096	53,693
Gross profit	89,298	70,073	53,278
Operating expenses:			
Research and development	32,416	31,064	23,706
Sales and marketing	35,482	41,339	32,261
General and administrative	42,178	36,281	30,051
Total operating expenses	110,076	108,684	86,018
Loss from operations	(20,778)	(38,611)	(32,740)
Interest expense (income), net	8,178	4,159	(50)
Other expenses (income), net	(722)	62	86
Loss before income taxes	(28,234)	(42,832)	(32,776)
(Benefit) provision for income taxes	(27)	(3,285)	335
Net loss	$(28,207)	$(39,547)	$(33,111)
Net loss per share attributable to common stockholders:			
Basic and diluted	$(0.93)	$(1.38)	$(1.21)
Weighted average number of shares used in computing net loss per share attributable to common stockholders:			
Basic and diluted	30,370	28,649	27,379

The accompanying notes are an integral part of these consolidated financial statements.

MODEL N, INC.
Consolidated Statements of Comprehensive Loss
(in thousands)

	Fiscal Years Ended September 30,		
	2018	2017	2016
Net loss	$(28,207)	$(39,547)	$(33,111)
Other comprehensive income (loss), net:			
Change in foreign currency translation adjustment	(783)	60	(96)
Total comprehensive loss	$(28,990)	$(39,487)	$(33,207)

The accompanying notes are an integral part of these consolidated financial statements.

MODEL N, INC.
Consolidated Statements of Stockholders’ Equity
(in thousands)

	Common Stock Shares	Amount	Additional Paid-In Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Equity
Balance at September 30, 2015	26,666	$ 4	$ 186,159	$ (466)	$ (102,635)	$ 83,062
Issuance of common stock upon exercise of stock options	233	—	923	—	—	923
Issuance of common stock upon release of restricted stock units	719	—	—	—	—	—
Issuance of common stock under stock purchase plans	273	—	2,356	—	—	2,356
Stock-based compensation	—	—	13,068	—	—	13,068
Other comprehensive loss	—	—	—	(96)	—	(96)
Net loss	—	—	—	—	(33,111)	(33,111)
Balance at September 30, 2016	27,891	4	202,506	(562)	(135,746)	66,202
Issuance of common stock upon exercise of stock options	329	—	1,339	—	—	1,339
Issuance of common stock upon release of restricted stock units	813	—	—	—	—	—
Issuance of common stock under stock purchase plans	290	—	2,647	—	—	2,647
Stock-based compensation	—	—	10,560	—	—	10,560
Other comprehensive income	—	—	—	60	—	60
Net loss	—	—	—	—	(39,547)	(39,547)
Balance at September 30, 2017	29,323	4	217,052	(502)	(175,293)	41,261
Issuance of common stock upon exercise of stock options	180	—	1,546	—	—	1,546
Issuance of common stock upon release of restricted stock units	1,709	1	(1)	—	—	—
Issuance of common stock under stock purchase plans	232	—	2,893	—	—	2,893
Stock-based compensation	—	—	23,324	—	—	23,324
Other comprehensive income	—	—	—	(783)	—	(783)
Net loss	—	—	—	—	(28,207)	(28,207)
Balance at September 30, 2018	31,444	$ 5	$ 244,814	$ (1,285)	$ (203,500)	$ 40,034

The accompanying notes are an integral part of these consolidated financial statements.

MODEL N, INC.
Consolidated Statements of Cash Flows
(in thousands)

	Fiscal Years Ended September 30,		
	2018	2017	2016
Cash flows from operating activities:			
Net loss	$(28,207)	$(39,547)	$(33,111)
Adjustments to reconcile net loss to net cash used in operating activities			
Depreciation and amortization	8,299	8,185	5,929
Stock-based compensation	23,324	10,560	13,068
Amortization of debt discount and issuance costs	800	683	—
Deferred income taxes	(392)	(3,952)	172
Other non-cash charges	137	216	(94)
Loss on extinguishment	3,142	—	—
Changes in assets and liabilities, net of acquisition:			
Accounts receivable	(3,555)	1,420	(2,850)
Prepaid expenses and other assets	(960)	2,117	(1,458)
Deferred cost of implementation services	486	1,502	(996)
Accounts payable	(1,434)	(1,558)	1,494
Accrued employee compensation	(687)	2,626	(677)
Other accrued and long-term liabilities	(1,622)	13	253
Deferred revenue	3,192	5,770	5,946
Net cash provided by (used in) operating activities	2,523	(11,965)	(12,324)
Cash flows from investing activities:			
Purchases of property and equipment	(252)	(359)	(2,102)
Acquisition of business, net of cash acquired	—	(47,773)	(12,615)
Capitalization of software development costs	—	(369)	(1,072)
Net cash used in investing activities	(252)	(48,501)	(15,789)
Cash flows from financing activities:			
Proceeds from exercise of stock options and issuance of employee stock purchase plan	4,439	3,986	3,279
Proceeds from term loan	49,588	48,686	—
Debt issuance costs	(280)	(806)	—
Principal payment on loan	(55,250)	—	—
Early payment penalty	(1,500)	—	—
Net cash (used in) provided by financing activities	(3,003)	51,866	3,279
Effect of exchange rate changes on cash and cash equivalents	(122)	9	(36)
Net decrease in cash and cash equivalents	(854)	(8,591)	(24,870)
Cash and cash equivalents			
Beginning of period	57,558	66,149	91,019
End of period	$56,704	$57,558	$66,149
Supplemental Disclosure of Cash Flow Data:			
Cash paid for income taxes	$622	$677	$233
Cash paid for interest	4,181	3,462	—
Noncash Investing and Financing Activities:			
Promissory notes issued for acquisition	$—	$8,643	$—

The accompanying notes are an integral part of these consolidated financial statements.

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Notes to Consolidated Financial Statements

1. The Company

Model N, Inc. (Company) was incorporated in Delaware on December 14, 1999. The Company is a provider of cloud revenue management solutions for the life sciences and technology industries. The Company's solutions enable its customers to maximize revenues and reduce revenue compliance risk by transforming their revenue life cycle from a series of tactical, disjointed operations into a strategic end-to-end process, which enables them to manage the strategy and execution of pricing, contracting, incentives and rebates. The Company's corporate headquarters are located in San Mateo, California, with additional offices in the United States, India and Switzerland.

Fiscal Year

The Company's fiscal year ends on September 30. References to fiscal year 2018, for example, refer to the fiscal year ended September 30, 2018.

2. Summary of Significant Accounting Policies and Estimates

Basis for Presentation

The Company's consolidated financial statements and accompanying notes are prepared in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP") and include the accounts of the Company and its wholly owned subsidiaries. All significant intercompany balances and transactions have been eliminated upon consolidation. The Company has evaluated subsequent events through the date that the financial statements were issued.

Use of Estimates

The preparation of the accompanying consolidated financial statements in conformity with U.S. GAAP requires management to make certain estimates and assumptions that affect the amounts of assets and liabilities reported, disclosures about contingent assets and liabilities, and reported amounts of revenues and expenses during the reporting periods. Significant items subject to such estimates include revenue recognition, legal contingencies, income taxes, stock-based compensation and valuation of goodwill and intangibles. These estimates and assumptions are based on management's best estimates and judgment. Management regularly evaluates its estimates and assumptions using historical experience and other factors; however, actual results could differ significantly from these estimates.

Revenue Recognition

Revenues are comprised of Software as a Service ("SaaS") and maintenance revenues and license and implementation revenues.

SaaS and Maintenance

SaaS and maintenance revenues primarily include subscription and the related implementation fees from customers accessing the Company's cloud-based solutions and revenues associated with maintenance and support contracts from customers using on-premise solutions. Also included in SaaS and maintenance revenues are other revenues, including revenues related to managed support services, training and customer-reimbursed expenses.

The Company has determined that its subscriptions have standalone value without the implementation services and allocates revenue to each deliverable in the arrangement based on a selling price hierarchy. The selling price for a deliverable is based on its vendor-specific objective evidence (VSOE), if available, third-party evidence (TPE), if VSOE is not available, or best estimated selling price (BESP), if neither VSOE nor TPE are available. As the Company has been unable to establish VSOE or TPE for the elements of its SaaS arrangements, the Company established the BESP for each element by considering company-specific factors such as existing pricing and discounting. The total arrangement fee for a multiple element arrangement is allocated based on the relative selling price method, taking into consideration contingent revenue restraints. The consideration allocated to subscription fees is recognized as revenue ratably over the contract period. The consideration allocated to implementation services is recognized as revenue as services are performed.

Prior to fiscal year 2016, for SaaS arrangements related to Revenue Cloud for Life Science and High Tech companies the Company treated the entire arrangement consideration, including subscription fees and related implementation services fees, as a single unit of accounting and recognized the revenues ratably beginning the day the customer was provided access to the subscription service through the end of contractual period. During fiscal year 2016, the Company concluded that the SaaS deliverable has standalone value to the customer without the implementation services, primarily due to the number of third-party consulting companies that have the know-how to be able to independently perform the implementation services.

Revenue related to up-front fees are deferred and recognized ratably over the estimated period that the customer benefits from the related service.

Maintenance and support revenue include post-contract customer support and the right to unspecified software updates and enhancements on a when and if available basis. Managed support services revenue includes supporting, managing and administering our software solutions, and providing additional end user support. Maintenance and support revenue and managed support services revenue are recognized ratably over the period in which the services are provided. The revenue from training and customer-reimbursed expenses is recognized as the Company delivers these services.

Arrangements that include term-based licenses for current products with the right to use unspecified future versions of the software and maintenance and support during the coverage period, are also accounted for as subscriptions, with revenue recognized ratably over the coverage period.

License and Implementation

License and implementation revenues include revenues from the sale of perpetual software licenses for the Company's solutions and the related implementation services. Based on the nature and scope of the implementation services, the Company has concluded that generally the implementation services are essential to its customers' use of the on-premise solutions, and therefore, the Company recognizes revenues from the sale of software licenses for its on-premise solutions and the related implementation services on a percentage-of-completion basis over the expected implementation period. The Company estimates the length of this period based on a number of factors, including the number of licensed applications and the scope and complexity of the customer's deployment requirements. The percentage-of-completion computation is measured as the hours expended on the implementation during the reporting period as a percentage of the total estimated hours needed to complete the implementation.

Revenue Recognition

The Company commences revenue recognition when all of the following conditions are satisfied: persuasive evidence of an arrangement exists, delivery has occurred or services have been rendered, the price is fixed or determinable and collection of the fees is probable or reasonably estimable. However, determining whether and when some of these criteria have been satisfied often involves assumptions and judgments that can have a significant impact on the timing and amount of revenues the Company reports.

For multiple software element arrangements, the Company allocates the sales price among each of the deliverables using the residual method, under which revenue is allocated to undelivered elements based on their VSOE of fair value. VSOE is the price charged when an element is sold separately or a price set by management with the relevant authority. The Company has established VSOE for maintenance and support and training.

The Company does not offer any contractual rights of return or concessions. The Company's implementation projects generally have a term ranging from a few months to twelve months and may be terminated by the customer at any time. Should a loss be anticipated on a contract, the full amount of the loss is recorded when the loss is determinable. The Company updates its estimates regarding the completion of implementations based on changes to the expected contract value and revisions to its estimates of time required to complete each implementation project. Amounts that may be payable to customers to settle customer disputes are recorded as a reduction in revenues or reclassified from deferred revenue to customer payables in accrued liabilities and other long-term liabilities.

Costs of Revenues

Cost of SaaS and maintenance revenues consists primarily of personnel-related costs including salary, bonus, stock-based compensation, royalties, facility expense, amortization, depreciation related to server equipment and capitalized software, reimbursable expenses, third-party contractors and cloud hosting costs. Cost of license and implementation revenues consists primarily of personnel-related costs including salary, bonus, stock-based compensation, third-party contractor costs and other related expenses.

Deferred cost of implementation services consists of costs related to implementation services that were provided to the customer but the revenues for the services have not yet been recognized, provided however that the customer is contractually required to pay for the services. These costs primarily consist of personnel costs. As of September 30, 2018 and 2017, the deferred cost of implementation services totaled $0.1 million and $0.6 million, respectively.

Warranty

The Company provides limited warranties on all sales and provides for the estimated cost of warranties at the date of sale. The estimated cost of warranties has not been material to date.

Foreign Currency Translation

The functional currency of the Company's foreign subsidiaries is their respective local currency. The Company translates all assets and liabilities of foreign subsidiaries to U.S. dollars at the current exchange rate as of the applicable consolidated balance sheet date. Revenues and expenses are translated at the average exchange rate prevailing during the period. The effects of foreign

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currency translations are recorded in accumulated other comprehensive loss as a separate component of stockholders' equity in the accompanying consolidated statements of stockholders' equity. Realized gains and losses from foreign currency transactions are included in other expenses, net in the consolidated statements of operations and have not been material for all periods presented.

Cash and Cash Equivalents

The Company considers all highly liquid investments with an original or remaining maturity of three months at date of purchase to be cash equivalents. The Company's cash equivalents are comprised of money market funds, and are maintained with financial institutions with high credit ratings.

Concentration of Credit Risk and Significant Customers

The Company maintains cash and cash equivalents with major financial institutions. The Company's cash and cash equivalents consist of bank deposits held with banks, money market funds that, at times, exceed federally insured limits. The Company limits its credit risk by dealing with counterparties that are considered to be of high credit quality and by performing periodic evaluations of its investments and of the relative credit standing of these financial institutions.

Credit risk is the risk of loss from amounts owed by financial counterparties. Credit risk can occur at multiple levels; as a result of broad economic conditions, challenges within specific sectors of the economy, or from issues affecting individual companies. Financial instruments that potentially subject the Company to credit risk consist of cash equivalents and accounts receivable.

In the normal course of business, the Company is exposed to credit risk from its customers. To reduce credit risk, the Company performs ongoing credit evaluations of its customers.

The following customers comprised 10% or more of the Company's accounts receivable at September 30, 2018 and 2017 and of the Company's total revenues for the fiscal years ended September 30, 2018, 2017 and 2016, respectively:

	As of September 30,	
Accounts Receivable	2018	2017
Company A	10%	N/A

	Fiscal Years Ended September 30,		
Revenue	2018	2017	2016
Company B	15%	11%	N/A

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 collectability of accounts. The Company regularly reviews the adequacy of this allowance for doubtful accounts by considering historical experience, the age of the accounts receivable balances, the credit quality of the customers, current economic conditions, and other factors that may affect customers' ability to pay to determine whether a specific allowance is appropriate. Accounts receivable deemed uncollectable are charged against the allowance for doubtful accounts when identified.

Revenue that has been recognized, but for which the Company has not invoiced the customer, amounting to $3.6 million and $4.6 million is recorded as unbilled receivables and is included in accounts receivables in the consolidated balance sheets as of September 30, 2018 and 2017, respectively. Invoices that have been issued before revenue has been recognized are recorded as deferred revenue in the consolidated balance sheets.

Property and Equipment, Net

Property and equipment are recorded at cost less accumulated depreciation. Depreciation of property and equipment is calculated using on a straight-line basis over the estimated useful lives of the assets. Leasehold improvements are

amortized on a straight-line basis over the shorter of lease term or estimated useful lives of the assets.
The estimated useful lives of property and equipment are as follows:

Computer software and equipment	2-5 years
Furniture and fixtures	2-5 years
Leasehold improvements	Shorter of the lease term or estimated useful life
Software development costs	3 years

Costs of maintenance and repairs that do not improve or extend the lives of the respective assets are charged to expense as incurred. Upon retirement or sale of property and equipment, the cost and related accumulated depreciation are removed from the balance sheet and the resulting gain or loss is reflected in statement of operations.

Long-lived Assets

The Company continually monitors events and changes in circumstances that could indicate that carrying amounts of its long-lived assets, including property and equipment and intangible assets may not be recoverable. When such events or changes in circumstances occur, the Company assesses the recoverability of long-lived assets by determining whether the carrying value of such assets will be recovered through their undiscounted expected future cash flows. If the future undiscounted cash flows are less than the carrying amount of these assets, the Company recognizes an impairment loss based on the excess of the carrying amount over the fair value of the assets. The Company did not recognize any impairment charges on its long-lived assets during any periods presented.

Goodwill and Intangible Assets

The Company records goodwill when consideration paid in an acquisition exceeds the fair value of the net tangible assets and the identified intangible assets acquired. Goodwill is not amortized, but rather is tested for impairment annually or more frequently if events or changes in circumstances indicate that the carrying value may not be recoverable. We conducted our annual impairment test of goodwill as of September 30, 2018 and 2017. We have elected to first assess the qualitative factors to determine whether it is more likely than not that the fair value of our single reporting unit is less than its carrying amount as a basis for determining whether it is necessary to perform the two-step goodwill impairment under Accounting Standards Update (ASU) No. 2011-08, Goodwill and Other (Topic 350): Testing Goodwill for Impairment, issued by the Financial Accounting Standards Board (FASB). If we determine that it is more likely than not that its fair value is less than its carrying amount, then the two-step goodwill impairment test is performed. The first step, identifying a potential impairment, compares the fair value of the reporting unit with its carrying amount. If the carrying amount exceeds its fair value, the second step would need to be performed; otherwise, no further step is required. The second step, measuring the impairment loss, compares the implied fair value of the goodwill with the carrying amount of the goodwill. Any excess of the goodwill carrying amount over the applied fair value is recognized as an impairment loss, and the carrying value of goodwill is written down to fair value.

Intangible assets, consisting of developed technology, backlog, non-competition agreements customer relationships and trade name, are stated at fair value less accumulated amortization. All intangible assets have been determined to have finite lives and are amortized on a straight-line basis over their estimated remaining economic lives, ranging from three to ten years. Amortization expense related to developed technology is included in cost of SaaS and maintenance revenue while amortization expense related to backlog, non-competition agreements, trade name and customer relationships is included in sales and marketing expense. No goodwill or intangible assets impairment has been identified in any of the years presented.

Research and Development and Capitalization of Software Development Costs

The Company generally expenses costs related to research and development, including those activities related to software solutions to be sold, leased or otherwise marketed. As such development work is essentially completed concurrently with the establishment of technological feasibility, and accordingly, the Company has not capitalized any such development costs.

The Company capitalizes certain software development costs incurred in connection with its cloud-based software platform for internal use. The Company capitalizes software development costs when application development begins, it is probable that the project will be completed, and the software will be used as intended. When development becomes substantially complete and ready for its intended use, such capitalized costs are amortized on a straight-line basis over the estimated useful life of the related asset, which is generally three years. Costs associated with preliminary project stage activities, training, maintenance and all post implementation stage activities are expensed as incurred. The Company capitalized software development costs of zero, $0.4 million and $1.1 million during the fiscal

years ended September 30, 2018, 2017 and 2016, respectively.
Fair Value of Financial Instruments
The financial instruments of the Company consist primarily of cash and cash equivalents, accounts receivable, accounts payable and certain accrued liabilities. The Company regularly reviews its financial instruments portfolio to identify and evaluate such instruments that have indications of possible impairment. When there is no readily available market data, fair value estimates are made by the Company, which involves some level of management estimation and judgment and may not necessarily represent the amounts that could be realized in a current or future sale of these assets.
Based on borrowing rates currently available to the Company for financing obligations with similar terms and considering the Company's credit risks, the carrying value of the financing obligation approximates fair value.
Fair value is defined as the exchange price that would be received for an asset or an exit price paid to transfer a liability in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the

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measurement date. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. The current accounting guidance for fair value instruments defines a three-level valuation hierarchy for disclosures as follows:

Level 1—Unadjusted quoted prices in active markets for identical assets or liabilities;

Level 2—Input other than quoted prices included in Level I that are observable, unadjusted quoted prices in markets that are not active, or other inputs for similar assets and liabilities that are observable or can be corroborated by observable market data; and

Level 3—Unobservable inputs that are supported by little or no market activity, which requires the Company to develop its own models and involves some level of management estimation and judgment.

The Company's Level 1 assets consist of cash equivalent. These instruments are classified within Level 1 of the fair value hierarchy because they are valued based on quoted market prices in active markets.

Sales Commissions

Sales commissions are recognized as an expense upon booking the contract. Substantially all of the compensation due to the sales force is earned at the time of the contract signing, with limited ability to recover any commissions paid if a contract is terminated.

Advertising and Promotion Costs

Advertising and promotion costs are expensed as incurred. The Company incurred $0.4 million, $0.3 million and $0.3 million in advertising and promotions costs during the fiscal years ended September 30, 2018, 2017, and 2016, respectively.

Employee Benefit Plan

The Company has a savings plan that qualifies under Section 401(k) of the Internal Revenue Code (IRC). Under these 401(k) Plans, matching contributions are based upon the amount of the employees' contributions subject to certain limitations. We contributed approximately $0.6 million, $0.7 million and $0.6 million for the years ended September 30, 2018, 2017 and 2016.

Stock-Based Compensation

Stock-based compensation expense for all share-based payment awards granted to our employees and directors including stock options and restricted stock units ("RSUs") is measured and recognized based on the fair value of the awards on the grant date. The fair value is recognized as expense, net of estimated forfeitures on a ratable basis, over the requisite service period, which is generally the vesting period of the respective award. The Company uses a Monte Carlo simulation model to determine the fair value of its performance-based restricted stock units ("PB-RSUs") on the grant date. The fair value of these grants with a market condition is recognized using the graded-vesting attribution method over the requisite service period. As the PB-RSUs are only granted to executives and leadership team, the Company has determined no forfeiture rate would be applied to the PB-RSUs. The Company uses the Black-Scholes-Merton valuation model to estimate the fair value of stock option awards and employee stock purchase plan ("ESPP"). The Black-Scholes-Merton valuation model requires the use of subjective assumptions to determine the fair value of stock option awards, including the expected stock price volatility over the expected term of the options, stock option exercise and cancellation behaviors, risk-free interest rates and expected dividends. The Company periodically estimates the portion of awards which will ultimately vest based on its historical forfeiture experience. These estimates are adjusted over the requisite service period to the extent that actual forfeitures differ, or are expected to differ, from the prior estimates.

Income Taxes

The Company accounts for income taxes in accordance with the FASB ASC No. 740—Accounting for Income Taxes (ASC 740). The Company makes certain estimates and judgments in determining income tax expense for financial statement purposes. These estimates and judgments occur in the calculation of tax credits, tax benefits and deductions and in the calculation of certain tax assets and liabilities, which arise from differences in the timing of recognition of revenue and expense for tax and financial statement purposes. Significant changes to these estimates may result in an increase or decrease to our tax provision in the subsequent period when such a change in estimate occurs.The Company regularly assesses the likelihood that its deferred income tax assets will be realized from future taxable income based on the realization criteria set forth in ASC 740. To the extent that the Company believes any amounts are not more likely than not to be realized, the Company records a valuation allowance to reduce the deferred income tax assets. In assessing the need for a valuation allowance, the Company considers all available evidence, including past operating results, estimates of future taxable income and the feasibility of tax planning strategies. In the event the Company determines that all or part of the net deferred tax assets are not realizable in the future, an adjustment to the valuation allowance would be charged to earnings in the period such determination is made. Similarly, if the Company subsequently realizes deferred income tax assets that were previously determined to be unrealizable, the respective valuation allowance would be reversed, resulting in an adjustment to earnings in the period such determination is made.

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As of September 30, 2018 and 2017, the Company had gross deferred income tax assets, related primarily to net operating loss (NOL) carry forwards, deferred revenues, accruals and reserves that are not currently deductible and depreciable and amortizable items of $77.2 million and $92.5 million, respectively, which have been fully offset by a valuation allowance. Utilization of these net loss carry forwards is subject to the limitations of IRC Section 382 (Section 382 Limitations). A Section 382 study was performed when the Company went IPO and subsequent Section 382 analysis have been performed. It is determined that there are no material limitations of IRC Section 382. However, in the future, some portion or all of these carry forwards may not be available to offset any future taxable income.

We account for uncertainty in income taxes using a two-step approach to recognizing and measuring uncertain tax positions. The first step is to evaluate the tax position for recognition by determining if the weight of available evidence indicates that it is more likely than not that the position will be sustained on audit, including resolution of related appeals or litigation processes, if any. The second step is to measure the tax benefit as the largest amount that is more than 50% likely of being realized upon settlement. We classify the liability for unrecognized tax benefits as current to the extent that we anticipate payment (or receipt) of cash within one year. Interest and penalties related to uncertain tax positions are recognized in the provision for income taxes.

Segment

The Company has one operating segment with one business activity, developing and monetizing revenue management solutions. The Company’s Chief Operating Decision Maker (CODM) is its Chief Executive Officer, who manages operations on a consolidated basis for purposes of allocating resources. When evaluating performance and allocating resources, the CODM reviews financial information as presented on a consolidated basis.

Comprehensive Loss

Comprehensive loss is comprised of net loss and other comprehensive (loss) income. Other comprehensive loss includes foreign currency translation adjustments.

Recent Accounting Pronouncements

Recent Adopted Accounting Guidance

In March 2016, the Financial Accounting Standard Board (“FASB”) issued Accounting Standards Update ("ASU") 2016-09, Compensation - Stock Compensation (Topic 718), which simplifies several aspects of the accounting for share-based payment transactions, including the income tax consequences, classification of awards as either equity or liabilities, and classification on the statement of cash flows. For public companies, the guidance is effective for financial statements issued for annual periods beginning after December 15, 2016 and interim periods within those annual periods. Early adoption is permitted for all companies in any interim or annual period. Forfeitures can be estimated, as required today, or recognized when they occur. Estimates of forfeitures will still be required in certain circumstances, such as at the time of modification of an award or issuance of a replacement award in a business combination. The Company adopted this guidance in the first quarter of fiscal year 2018 and has elected to continue to estimate our forfeiture rate. In the year of adoption, the ASU requires that the cumulative effect adjustment be recorded to retained earnings. Due to a full valuation allowance, there is no cumulative effect adjustment to record and the adoption of this guidance had no material impact on the Company's consolidated financial statements.

In November 2015, the FASB issued ASU 2015-17, Balance Sheet Classification of Deferred Taxes (Topic 740), which amended the existing accounting standards for income taxes. The amendments require companies to report their deferred tax liabilities and deferred tax assets each as a single non-current item on their classified balance sheets. The Company adopted this guidance. The adoption of this guidance had no material impact on the Company's consolidated financial statements.

Recently Enacted Accounting Pronouncements

In May 2017, the FASB issued ASU 2017-09, Compensation-Stock Compensation (Topic 718): providing clarification on when modification accounting should be used for changes to the terms or conditions of a share-based payment award. This ASU does not change the accounting for modifications but clarifies that modification accounting guidance should only be applied if there is a change to the value, vesting conditions or award classification and would not be required if the changes are considered non-substantive. The amendments of this ASU are effective for reporting periods beginning after December 15, 2017, with early adoption permitted. The Company does not believe this will have a material impact on its consolidated financial statements.

In January 2017, the FASB issued ASU 2017-04, Intangibles—Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment. This new accounting standard update simplifies the measurement of goodwill by eliminating the Step two impairment test. Step two measures a goodwill impairment loss by comparing the implied fair value of goodwill with the carrying amount of that goodwill. The new guidance requires a comparison of the Company's fair value of with carrying amount and the Company is required to recognize an impairment charge for the amount by which the carrying amount exceeds the fair value.

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Additionally, we should consider income tax effects from any tax deductible goodwill on the carrying amount when measuring the goodwill impairment loss, if applicable. The new guidance becomes effective for goodwill impairment tests in fiscal years beginning after December 15, 2019, though early adoption is permitted. The Company is currently evaluating the impact this standard will have on its consolidated financial statements.

In January 2017, the FASB issued ASU 2017-01, Business Combination (Topic 805): clarifying the definition of a business. The amendments in this guidance change the definition of a business to assist with evaluating when a set of transferred assets and activities is a business. The guidance becomes effective for the Company at the beginning of its first quarter of fiscal year 2019. Early adoption is permitted. The Company does not believe this will have a material impact on its consolidated financial statements.

In November 2016, the FASB issued ASU 2016-18, Restricted Cash (Topic 230), clarifying the classification and presentation of restricted cash in the statement of cash flows. The standard requires that restricted cash and restricted cash equivalents are included in the cash and cash equivalent balance in the statement of cash flows. Further, reconciliation between the balance sheet and statement of cash flows is required when the balance sheet includes more than one line item for cash, cash equivalents, restricted cash, and restricted cash equivalents. Therefore, transfers between these balances should no longer be presented as a cash flow activity. The guidance become effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2017, with early adoption permitted. The Company do not plan to early adopt, and accordingly we will adopt the new standard effective at the beginning of its first quarter of fiscal year 2019. The Company does not believe this will have material impact on our consolidated financial statements.

In August 2016, the FASB issued ASU 2016-15, Statement of Cash Flow (Topic 230), amended the existing accounting standards for the statement of cash flows. The amendments provide guidance on how companies present and classify certain cash receipts and cash payments in the statement of cash flows. The guidance becomes effective for the Company at the beginning of its first quarter of fiscal year 2019. Early adoption is permitted, including adoption in an interim period. The Company does not believe this will have a material impact on its consolidated financial statements.

In February 2016, the FASB issued ASU 2016-02, guidance on the recognition and measurement of leases. Under the new guidance, lessees are required to recognize a lease liability, which represents the discounted obligation to make future minimum lease payments, and a corresponding right-of-use asset on the balance sheet for most leases. The guidance retains the current accounting for lessors and does not make significant changes to the recognition, measurement, and presentation of expenses and cash flows by a lessee. Enhanced disclosures will also be required to give financial statement users the ability to assess the amount, timing and uncertainty of cash flows arising from leases. The guidance will require modified retrospective application at the beginning of October 1, 2019 for the Company, with optional practical expedients, but permits adoption in an earlier period. The Company is currently evaluating the impact this standard will have on its consolidated financial statements.

In May 2014, the FASB issued ASU 2014-09, Revenue from Contracts with Customers (ASC 606), as amended, which will supersede nearly all existing revenue recognition guidance. The underlying principle of ASC 606 is to recognize revenue when a customer obtains control of promised goods or services at an amount that reflects the consideration that the Company expects to be entitled to in exchange for those goods or services. To achieve this, the Company should apply the five-step revenue recognition model, which may require the use of judgments and estimates, also requires expanded qualitative and quantitative disclosures relating to the nature, amount, timing and uncertainty of revenue and cash flows arising from contracts with customers, including significant judgments and estimates used. ASC 606 also includes Subtopic 340-40, Other Assets and Deferred Costs - Contracts with Customers, which requires the deferral of incremental costs of obtaining a contract with a customer. Subsequently, the FASB issued several amendments to the new standard, which clarified or affected certain aspects of ASC 606 but did not change the core principle of the guidance.

The new standard permits two methods of adoption: (i) retrospectively to each prior period presented (full retrospective method), or ii) retrospectively with the cumulative effect recognized in retained earnings as of the date of adoption (modified retrospective method). The Company will adopt the new standard using the modified retrospective method at the beginning of the first quarter of fiscal year 2019.

The Company is in process of finalizing its new accounting policies, processes, and internal controls necessary to support the requirements of ASC 606. The Company has substantially completed its assessment of the financial statement impact of ASC 606, the impact of which are as discussed below.

ASC 606 will primarily impact our revenue recognition for on-premises offerings, which contained deliverables within the scope of ASC 985-605, Software-Revenue Recognition, by eliminating the requirement to have VSOE for undelivered elements, which accelerates the timing of revenue recognition. In addition, ASC 606 requires incremental contract acquisition costs (such as sales commissions) for customer contracts to be capitalized and amortized on a systematic basis that is consistent with the transfer to the customer of the goods or services to which the capitalized cost relates. Currently, these costs are expensed as incurred.

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Upon adopting ASC 606 at the beginning of fiscal year 2019, the Company's cumulative effect adjustment will decrease accumulated deficit by approximately $10.3 million. This cumulative effect adjustment is primarily driven by a reduction to our deferred subscription revenues of approximately $3.2 million and deferred license and implementation revenues of approximately $3.9 million. Further, refundable amounts associated with customer contracts of approximately $0.6 million will be reclassified from deferred subscription revenues to customer deposit. In addition to the adjustment to deferred revenue, other adjustments at transition include adjustments to other current and noncurrent assets. The adjustment to other current and noncurrent assets is primarily for capitalized incremental contract acquisitions costs of approximately $3.2 million. The Company does not expect that this accounting standard update will have a material impact on the Company's tax provision.

3. Business Combinations

Revitas Acquisition

On January 5, 2017, the Company completed the acquisition of 100% of the equity interests of Sapphire Stripe Holdings, Inc., the parent company of Revitas, Inc. (“Revitas”). Pursuant to the Agreement and Plan of Merger (“Merger Agreement”), the Company paid approximately $52.8 million in cash and issued to the sellers two $5.0 million promissory notes, one which will mature 18 months after the closing and the other which will mature 36 months after the closing. The Company acquired Revitas to, among other things, expand the Company’s revenue management solutions for customers. The Company incurred acquisition and transaction costs associated with the acquisition of Revitas of approximately $2.2 million for the fiscal year ended September 30, 2017, which were recorded as general and administrative expenses.

In connection with Revitas acquisition, the Company funded the cash portion of the purchase price, in part with a five years term loan in the aggregate amount of $50.0 million. See Note 6, “Debt”, for additional information.

The final allocation of the purchase price is as follows:

	Fair Value (in thousands)
Cash and cash equivalents	$ 5,067
Accounts receivable	6,184
Prepaid expenses	1,067
Other current assets	47
Property, plant and equipment	1,506
Intangible assets	39,100
Goodwill	32,344
Other assets	25
Total assets acquired	85,340
Accounts payable	(1,352)
Accrued employee compensation	(3,983)
Accrued liabilities	(1,410)
Deferred revenue liability	(12,856)
Other liabilities	(4,256)
Total liabilities assumed	(23,857)
Net acquired assets	$ 61,483

The following table presents certain information on the acquired identifiable assets:

Intangible assets	Fair value	Estimated useful lives (years)	Weighted-average estimated useful

	(in thousands)		lives (years)
Developed technology	$ 6,770	6	6
Customer relationship	$ 32,180	10	10
Trade name	$ 150	1	1

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The purchase accounting allocation resulted in an ascribed value to the acquired intangible assets of $39.1 million and goodwill of $32.3 million. The key factors attributable to the creation of goodwill by the transaction are synergies in skill-sets, return on future technology and customer development.

The Company does not expect the goodwill recognized as a part of the acquisition to be deductible for income tax purposes. See Note 5, “Goodwill” for additional information.

Unaudited Pro Forma Combined Consolidated Financial Information

The results of operations for Revitas and the estimated fair values of the assets acquired and liabilities assumed have been included in the Company’s consolidated financial statements since the respective dates of acquisition.

The unaudited pro forma combined consolidated financial information is presented for illustrative purpose only and is not necessarily indicative of the result of operations that would have actually been reported had the acquisitions occurred on the above dates, nor is it necessarily indicative of the future results of operations of the combined company. The unaudited pro forma combined consolidated financial information reflects certain adjustments, such as amortization, interest expense, deferred tax valuation allowance and transaction related costs.

The following unaudited pro forma combined consolidated financial information has been prepared by the Company using the acquisition method of accounting to give effect to the Revitas acquisition as if it had occurred on October 1, 2015. The following table sets forth the unaudited pro forma consolidated combined results of operations:

	Fiscal Year Ended September 30,	
	2017	2016
	(in thousands, except per share data)	
Revenue	$ 140,227	$ 149,632
Net loss	(45,346)	(38,656)
Net loss per shares-basic and diluted	$ (1.58)	$ (1.41)

4. Consolidated Balance Sheet Components

Components of property and equipment, and intangible assets consisted of the following:

Property and Equipment

	As of September 30,	
	2018	2017
	(in thousands)	
Computer software and equipment	$ 8,154	$ 10,274
Furniture and fixtures	1,309	1,284
Leasehold improvements	1,251	1,466
Software development costs	9,416	9,416
Total property and equipment	20,130	22,440
Less: Accumulated depreciation and amortization	(17,984)	(17,829)
Total Property and equipment, net	2,146	4,611

Depreciation expense including depreciation of assets under capital leases totaled $2.7 million, $3.5 million and $4.5 million for the fiscal years ended September 30, 2018, 2017 and 2016, respectively.

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Intangible Assets

	Estimated Useful Life (in years)	As of September 30, 2018 Gross Carrying Amount (in thousands)	Accumulated Amortization	Net Carrying Amount
Intangible Assets:				
Developed technology	5-6	$12,083	$ (6,448)	$ 5,635
Backlog	5	280	(275)	5
Customer relationships	3-10	36,599	(7,642)	28,957
Total		$48,962	$ (14,365)	$ 34,597

	Estimated Useful Life (in years)	As of September 30, 2017 Gross Carrying Amount (in thousands)	Accumulated Amortization	Net Carrying Amount
Intangible Assets:				
Developed technology	5-6	$12,083	$ (4,545)	$ 7,538
Backlog	5	280	(215)	65
Non-competition agreement	3	100	(100)	—
Customer relationships	3-10	36,599	(4,084)	32,515
Trade name	1	260	(222)	38
Total		$49,322	$ (9,166)	$ 40,156

The Company recorded amortization expense related to the acquired intangible assets of $5.6 million, $4.6 million and $1.4 million during the fiscal years ended September 30, 2018, 2017 and 2016, respectively.
Estimated future amortization expense for the intangible assets as of September 30, 2018 is as follows:

	Fiscal Years Ending September 30, (in thousands)
2019	$ 5,466
2020	4,751
2021	4,687
2022	4,687
2023 and thereafter	15,006
Total future amortization	$ 34,597

5. Goodwill

The following table presents goodwill activity for the years ended September 30, 2018 and 2017 (in thousands):

Balance as at September 30, 2016	$6,939
Add: Goodwill from acquisition of business	32,344
Balance as at September 30, 2017	$39,283
Add: Goodwill from acquisition of business	—
Balance as at September 30, 2018	$39,283

As a result of the acquisition of Revitas in fiscal year 2017, the Company recognized goodwill of $32.3 million. See Note 3, “Business Combination”, for additional details.

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6. Debt
Term Loan
In connection with the Revitas acquisition, on January 5, 2017, the Company entered into a Financing Agreement (Financing Agreement) by and among the Company, the Subsidiaries, as guarantors, Crystal Financial SPV, LLC and TC Lending, LLC, pursuant to which the lenders extended a term loan to the Company in an aggregate principle amount of $50.0 million.
In May 2018, this term loan was extinguished and repaid in full in part from the proceeds of the refinancing with Wells Fargo Bank, N. A. (Wells Fargo), as discussed below.
The term loan made pursuant to the Financing Agreement bore interest at a rate of either (i) the Base Rate (as defined in the Financing Agreement) plus 9.25% or (ii) the LIBOR Rate (as defined in the Financing Agreement) plus 8.25%, as selected by the Company. The term loans would have matured on January 5, 2022. The Company selected the LIBOR Rate plus 8.25% except for the quarter beginning on April 1, 2018 through the payoff of the loan in May 2018, the Company selected the Base Rate plus 9.25%. The loan required quarterly payments of interest only and quarterly principal payments of 0.625% of the aggregate principal amount of the term loan beginning with the fiscal quarter ending March 31, 2019.
The Financing Agreement required the Company and the subsidiaries to maintain certain financial covenants and,,also contains certain non-financial covenants, including restricting our ability to dispose of assets, changing our organizational documents or amending our material agreements in a manner adverse to the lender, changing a method of accounting, merging with or acquiring other entities, incurring other indebtedness and making certain investments. The Company was in compliance with all of the covenants described in the Financing Agreements through the payoff on May 4, 2018, discussed below.
The balance of this term loan of $50.0 million was repaid in full in connection with a new facility under Wells Fargo in the third quarter of 2018. The Company recorded in the third quarter of fiscal year 2018, a loss on debt extinguishment of approximately of $3.1 million, of which $1.5 million was a pre-payment penalty and $1.6 million was the remaining non-cash unamortized discount and deferred financing costs write-off.
Term Loan - Wells Fargo

On May 4, 2018, the Company and certain of its subsidiaries entered into a Credit Agreement (Credit Agreement) by and among the Company, Wells Fargo Bank, National Association, as Administrative Agent, and the lenders party thereto (Lenders), pursuant to which the Lenders extended a term loan to the Company in an aggregate principal amount of $50.0 million and agreed to establish an additional revolving line of credit up to an aggregate principal amount of $5.0 million. In part from the proceeds of this refinancing, the Company repaid in full the existing term loan under the Financing Agreement dated January 5, 2017.

The term loan will mature on May 4, 2023. The Company is required to repay the principal of the term loan in quarterly installments follows:
- $250,000 on September 30, 2018 and the last day of each fiscal quarter thereafter up to June 30, 2019;
- $625,000 on September 30, 2019 and the last day of each fiscal quarter thereafter up to June 30, 2020;
- $937,500 on September 30, 2020 and the last day of each fiscal quarter thereafter up to March 31, 2023; and the remaining principal amount at maturity.

The loans will bear interest, at the Company’s option, at (i) the Base Rate (as defined in the Credit Agreement) plus applicable margin or (ii) the LIBOR Rate (as defined in the Credit Agreement) plus applicable margin. LIBOR interest is payable quarterly and margin varies based upon our leverage ratio. See the table below of applicable margin rates:

Level	Leverage Ratio	Applicable Margin Relative to	Applicable Margin Relative to

	Calculation	Base Rate	LIBOR Rate
I	<2.0:1.0	2.0%	3.0%
II	>=2.0:1.0 but less than 3.5:1.0	2.5%	3.5%
III	>=3.5:1.0	3.5%	4.5%

For the period ended as of September 30, 2018, the Company’s interest rate is at the LIBOR Rate plus 4.5%.

Certain United States subsidiaries of the Company (Guarantors) and the Company have entered into a guaranty and security agreement pursuant to which the Guarantors have agreed to guarantee the Company’s payment of its obligations under the Credit Agreement, and pursuant to which the Company’s and Guarantors’ obligations under the Credit Agreement and the guaranty and security agreement are secured by substantially all of their assets.

The Company may voluntarily prepay the term loan, with any such prepayment applied against the remaining installments of principal of the term loan on a pro rata basis; provided, that at the election of the Company, one such prepayment made during the fiscal quarter ending December 31, 2018 in an amount not to exceed $5.0 million may be applied against the remaining installments of principal in the direct order of maturity. The Company is required to repay the term loan with proceeds from the sale of assets, the receipt of certain insurance proceeds, litigation proceeds or indemnity payments, or the incurrence of debt (in each case subject to certain exceptions).

The Credit Agreement requires the Company and its subsidiaries to maintain certain financial covenants, including maintaining consolidated liquidity (cash in the United States plus revolving credit line availability) of at least $15 million, minimum levels of maintenance and subscription fee revenue and, if liquidity is less than $30 million for 90 consecutive days, leverage ratio not greater than 3.50 to 1.00. The Credit Agreement also requires the Company and Guarantors to maintain certain non-financial covenants, including covenants that restrict their ability to dispose of assets, change the Company's organizational documents, merge with or acquire (or make investments in) other entities, or incur other indebtedness or liens. The Credit Agreement also provides for customary events of default, including failure to pay amounts due or to comply with covenants, default on other indebtedness, or a change of control with respect to the Company.

The Company was in compliance with the financial covenant requirements as of September 30, 2018.

Promissory Notes

Also, in connection with the Revitas acquisition, the Company incurred $10.0 million in debt in the form of two promissory notes with the sellers, one which matured on July 5, 2018 and the other which will mature on January 5, 2020. The Company paid the first promissory note of $5.0 million on July 5, 2018. The remaining promissory notes bears interest at the rate of 3% per annum, and is subject to a right of set-off as partial security for the indemnification obligations of the target’s stockholders under the Merger Agreement. The remaining promissory notes is subordinate to the term loan with Wells Fargo. The fair value of the promissory notes of $8.6 million was determined based on a discounted future cash flow at 9.96% interest rate, which represents an arm’s length interest rate.

As of September 30, 2018, the term loan with Wells Fargo and promissory note consisted of the following:

	Amount (in thousands)
Principal	$ 54,750
Unamortized debt discount and issuance costs	(1,046)
Net carrying amount	$ 53,704

As of September 30, 2018, the carrying value of the of the debt approximates the fair value basis. The Company classified the debt under Level 2 of the fair value measurement hierarchy as the borrowings are not actively traded.

The Company incurred approximately $0.7 million in transaction costs in connection with the term loan with Wells Fargo in the third quarter of fiscal year 2018. These costs are included as part of the Company’s debt. The effective interest rate for the term loan with Wells Fargo is 7.2% and the 36 month promissory note is 9.89%.

The future scheduled principal payments for the term loan and promissory note as of September 30, 2018 were as follows (in thousands):

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Fiscal Year:	
2019	$1,375
2020	7,813
2021	3,750
2022	3,750
2023	38,062
Total	$54,750

7. Financial Instruments

The table below sets forth the Company's cash equivalents as of September 30, 2018 and 2017, which are measured at fair value on a recurring basis by level within the fair value hierarchy. The assets are classified based on the lowest level of input that is significant to the fair value measurement. The Company had no liabilities measured at fair value on a recurring basis.

	Level 1	Level 2	Level 3	Total
	(in thousands)			
As of September 30, 2018:				
Assets:				
Cash equivalents	$43,741	$ —	$ —	$43,741
Total	$43,741	$ —	$ —	$43,741
As of September 30, 2017:				
Assets:				
Cash equivalents	$47,754	$ —	$ —	$47,754
Total	$47,754	$ —	$ —	$47,754

The Company's cash equivalents as of September 30, 2018 and 2017 consisted of money market funds with original maturity dates of less than three months from the date of their respective purchase. Cash equivalents are classified as Level 1. The fair value of the Company's money market funds approximated amortized cost and, as such, there were no unrealized gains or losses on money market funds as of September 30, 2018 and 2017. The Company's financial instruments not measured at fair value on a recurring basis include cash, accounts receivable, accounts payable and accrued liabilities, and are reflected in the financial statements at cost and approximates their fair value due to their short-term nature. The term loan with Wells Fargo carrying value is approximately fair value since the term loan bears interest at rates that fluctuate with the changes in the Base Rate or the Libor Rate as selected by the Company. The promissory notes carrying value approximate its fair value as of September 30, 2018. As of September 30, 2018 and 2017, amounts of $13.0 million and $9.8 million, respectively, were held in bank deposits.

8. Commitments and Contingencies

Leases

The Company leases facilities under noncancelable operating leases. As of September 30, 2018, future minimum payments under operating leases were as follows:

	Contractual Payment Obligations Due by Period				
(in thousands)	Total	Less than 1 Year	1 to 3 Years	3 to 5 Years	More than 5 Years

Operating lease obligations(1)	$8,900	$3,200	$4,600	$1,100	$ —

(1) Operating lease obligations represent our obligations to make payments under the lease agreements for our facilities leases.

Rent expense under noncancelable operating leases for the fiscal years ended September 30, 2018, 2017 and 2016 was $3.4 million, $3.2 million and $2.7 million, respectively.

Indemnification Obligations

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Each of the Company's software licenses contains the terms of the contractual arrangement with the customer and generally includes certain provisions for defending the customer against any claims that the Company's software infringes upon a patent, copyright, trademark, or other proprietary right of a third party. The software license also provides for indemnification by the Company of the customer against losses, expenses, and liabilities from damages that may be assessed against the customer in the event the Company's software is found to infringe upon such third party rights.

The Company has not had to reimburse any of its customers for losses related to indemnification provisions, and there were no material claims against the Company outstanding as of September 30, 2018 and 2017. For several reasons, including the lack of prior indemnification claims and the lack of a monetary liability limit for certain infringement cases under the software license, the Company cannot estimate the amount of potential future payments, if any, related to indemnification provisions.

As permitted under Delaware law, the Company has indemnification arrangements with respect to its officers and directors, indemnifying them for certain events or occurrences while they serve as officers or directors of the Company.

Legal Proceedings

We are not currently a party to any pending material legal proceedings. From time to time, we may become involved in legal proceedings arising in the ordinary course of our business. Regardless of outcome, litigation can have an adverse impact on us due to defense and settlement costs, diversion of management resources, negative publicity and reputational harm and other factors.

9. Stock-Based Compensation

2000 Stock Plan

The 2000 Stock Plan (2000 Plan) authorized the board of directors to grant incentive share options and non-statutory share options to employees, directors and other eligible participants. Stock purchase rights may also be granted under the 2000 Plan. The exercise price of the stock options shall not be less than the estimated fair value of the underlying shares of the common stock on the grant date. Options generally vest over four years and expire ten years from the date of grant. In connection with the adoption of the 2010 Equity Incentive Plan (2010 Plan) in June 2010, the 2000 Plan was terminated and all shares of common stock previously reserved but unissued were transferred to 2010 Plan.

2010 Equity Incentive Plan

On June 15, 2010, the Company's Board adopted the 2010 Equity Incentive Plan under which employees, directors, and other eligible participants of the Company or any subsidiary of the Company may be granted incentive stock options, nonstatutory stock options and all other types of awards to purchase shares of the Company's common stock. The total number of shares reserved and available for grant and issuance pursuant to this 2010 Plan consists of (a) any authorized shares not issued or subject to outstanding grants under the 2000 Plan on the adoption date, (b) shares that are subject to issuance upon exercise of options granted under the Plan but cease to exist for any reason other than exercise of such options; and (c) shares that were issued under the Plan which are repurchased by the Company at the original issue price or forfeited. In connection with the adoption of the 2013 Equity Incentive Plan in February 2013, the 2010 Plan was terminated and all shares of common stock previously reserved but unissued were transferred to 2013 Plan.

2013 Equity Incentive Plan

The Company's board of directors (Board) adopted the 2013 Equity Incentive Plan (2013 Plan) in February 2013, and the stockholders approved the 2013 Plan in March 2013. The 2013 Plan became effective on March 18, 2013 and will terminate in February 28, 2023. The 2013 Plan serves as the successor equity compensation plan to the 2010 Equity Incentive Plan (2010 Plan). The 2013 Plan was approved with a reserve of 8.0 million shares, which consists of 2.5 million shares of the Company's common stock reserved for future issuance under the 2013 Plan and shares of common stock previously reserved but unissued under the 2010 Plan.

Additionally, the 2013 Plan provides for automatic increases in the number of shares available for issuance under it on October 1 of each of the first four calendar years during the term of the 2013 Plan by the lesser of 5% of the number of shares of common stock issued and outstanding on each September 30 immediately prior to the date of increase or the number determined by our board of directors. In fiscal year 2018, 2.0 million additional shares were approved by the Company's stockholders for issuance under the 2013 Plan No further grants will be made under the 2010 Plan, and the balances under the 2010 Plan have been transferred to the 2013 Plan. The 2013 Plan provides for the grant of incentive stock options, nonqualified stock options, restricted stock awards, stock appreciation rights, performance stock awards, restricted stock units and stock bonuses. Awards generally vest over four years and expire ten years from the date of grant. As of September 30, 2018, 5.2 million shares were available for future stock awards under the plans and any additional releases resulting from an over-achievement relating to performance-based restricted stock units.

Stock Options

There were no stock options granted in fiscal years 2018, 2017 and 2016, respectively. The expected terms of options granted were calculated using the simplified method, determined as the average of the contractual term and the vesting period. Estimated volatility is derived from the historical closing prices of common shares of similar entities whose share prices are publicly available for the expected term of the option. The risk-free interest rate is based on the U.S. treasury constant maturities in effect at the time of grant for the expected term of the option. We use historical data to estimate the number of future stock option forfeitures.

The following table summarized the stock option activity and related information under all stock option plans:

	Number of Shares (in thousands)	Weighted Average Exercised Price	Weighted Average Remaining Contract Term (in years)	Aggregate Intrinsic Value (in thousands)
Balance at September 30, 2015	1,119	$ 6.29	4.68	$ 4,904
Exercised	(233)	3.96	—	
Forfeited	(12)	13.70	—	
Expired	(68)	12.72	—	
Balance at September 30, 2016	806	6.31	3.56	$ 4,103
Exercised	(329)	4.06	—	
Forfeited	—	—	—	
Expired	(24)	11.69	—	
Balance at September 30, 2017	453	7.71	3.53	$ 3,281
Exercised	(179)	8.61	—	
Forfeited	—	—	—	
Expired	(47)	4.65	—	
Balance at September 30, 2018	227	$ 7.64	2.94	$ 1,861
Options exercisable as of September 30, 2018	227	$ 7.64	2.94	$ 1,861
Options vested and expected to vest as of September 30, 2018	227	$ 7.64	2.94	$ 1,861

The intrinsic value of options exercised during 2018, 2017 and 2016 was $1.5 million, $2.5 million and $1.7 million, respectively. The total estimated fair value of options vested during 2018, 2017 and 2016 was zero, $22 thousand and $0.4 million respectively.

Employee Stock Purchase Plan

The 2013 Employee Stock Purchase Plan (ESPP) became effective on March 19, 2013. The ESPP allows eligible employees to purchase shares of the Company’s common stock at a discount through payroll deductions of up to 15% of their eligible compensation, at not less than 85% of the fair market value, as defined in the ESPP, subject to any plan limitations. Except for the initial offering period, the ESPP provides for six-month offering periods, starting on February 20 and August 20 of each year.

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The following table summarizes the weighted-average assumptions used to estimate the fair value of rights to acquire stock granted under the Company's ESPP plan during the periods presented:

	Fiscal Years Ended September 30,		
	2018	2017	2016
Risk-free interest rate	1.73 %	0.75 %	0.38 %
Dividend yield	— %	— %	— %
Volatility	28 %	29 %	34 %
Expected term (in years)	0.50	0.50	0.50

Restricted Stock Units and Performance-based Restricted Stock Units

During the years ending September 30, 2018, 2017 and 2016, the Compensation Committee of the Board approved grants of performance-based restricted stock units to the Company's certain senior officers, including the Chief Executive Officer and the Chief Financial Officer. Under the terms of these grants, the actual number of shares that will vest and be released will range from 0% to 250% of the grant based on the performance of the Company's TSR relative to the TSR of the Index over a three-year period. No shares will vest and be released in the first year. In any of the two remaining years, no shares will vest and be released if the TSR of the Company's common stock is below the 30th percentile relative to the Index; 100% of the grant will vest and be released if the Company's TSR is at the 50th percentile relative to the Index; and 200% or 250% of the grant will vest and be released if the Company's TSR is over the 90th percentile relative to the Index. These grants vest over a three-year period with 50% vesting on each of the second and the third annual anniversary of the vesting commencing date. In addition, these grants have a "catch-up" provision such that if the Company's TSR relative to the Index for the three-year period exceeds that of the two-year period, additional shares for the two-year period will vest and be released based on the three-year achievement level. These grants have a ten-year term, subject to their earlier termination upon certain events including the awardee's termination of employment. As of September 30, 2018, 0.6 million shares were reserved for any additional release resulting from over-achievement relating to performance-based restricted stock units.

The fair value of these grants with a market condition is recognized using the graded-vesting attribution method over the requisite service period. The Company used the Monte-Carlo simulation model to calculate the fair value of these awards on the grant date. The Monte-Carlo simulation model takes into account the same input assumptions as the Black-Scholes model; however, it also further incorporates into the fair value determination the possibility that the performance criteria may not be satisfied.

The grant date fair values of these awards were determined using the following assumptions:

	Fiscal Year Ended September 30,		
	2018	2017	2016
Risk-free interest rate	2.42%-2.57%	1.32%-1.45%	0.86%-1.15%
Dividend yield	—	—	—
Volatility	39%-40%	38%-40%	45 %

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The following table summarizes the Company’s restricted stock unit activity (including performance based restricted stock awards) under all equity award plans:

	Restricted Stock Units Outstanding (in thousands)	Weighted Average Grant Date Fair Value
Balance at September 30, 2015	2,302	$ 12.32
Granted	2,064	10.61
Released	(720)	10.50
Forfeited	(529)	11.24
Balance at September 30, 2016	3,117	$ 11.81
Granted	1,817	11.67
Released	(813)	10.58
Forfeited	(1,204)	10.65
Balance at September 30, 2017	2,917	$ 12.55
Granted	1,355	22.92
Released	(1,137)	13.99
Forfeited	(822)	18.57
Balance at September 30, 2018	2,313	$ 15.78

On June 7, 2018, the Company issued Mr. Rinat 572,601 common shares, with fair value approximately $10.5 million, in connection with his transition agreement when he resigned as Chief Executive Officer and Chairman of the Board. The related tax withholding portion was later reimbursed by Mr. Rinat to the Company. Mr. Rinat’s 375,234 performance-based restricted stock units, were cancelled due to his departure and the previously recorded expense of approximately $2.0 million was reversed in general administrative expenses.
The total fair value of restricted stock and performance based restricted stock awards vested for the years ended September 30, 2018, 2017 and 2016 was $19.8 million, $8.6 million and $7.6 million, respectively.
The following table summarizes certain information of the unvested awards as of September 30, 2018:

	Restricted Stock Units (1)	ESPP
Total compensation cost for unvested (in millions)	$ 22.5	$ 0.4
Weighted-average period to recognize (in years)	2.2	0.4

(1): Includes restricted stock units and performance-based restricted stock awards.

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Stock-based Compensation

Stock-based compensation recorded in the statements of operations is as follows:

	Fiscal Years Ended September 30,		
	2018	2017	2016
	(in thousands)		
Cost of revenues:			
SaaS and maintenance	$1,269	$1,007	$1,032
License and implementation	1,387	1,015	918
Total stock-based compensation in cost of revenues	2,656	2,022	1,950
Operating expenses:			
Research and development	2,983	1,744	1,393
Sales and marketing	3,524	2,651	3,307
General and administrative	14,161	4,143	6,418
Total stock-based compensation in operating expenses	20,668	8,538	11,118
Total stock-based compensation	$23,324	$10,560	$13,068

10. Income Taxes

The components of loss before income taxes are as follows:

	Fiscal Years Ended September 30,		
	2018	2017	2016
	(in thousands)		
Domestic	$(31,312)	$(43,753)	$(34,527)
Foreign	3,078	921	1,751
Loss before taxes	$(28,234)	$(42,832)	$(32,776)

The components of the provision (benefit) for income taxes are as follows:

	Fiscal Years Ended September 30,		
	2018	2017	2016
	(in thousands)		
Current			
Federal	$(110)	$—	$—
State	36	37	23
Foreign	439	647	140
	365	684	163
Deferred			
Federal	(404)	(3,436)	150
State	12	(533)	22
	(392)	(3,969)	172
Total provision (benefit) for income taxes	$(27)	$(3,285)	$335

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Reconciliation of the statutory federal income tax to the Company’s effective tax:

	Fiscal Years Ended September 30,		
	2018	2017	2016
	(in thousands)		
Tax at statutory federal rate	$(6,854)	$(14,563)	$(11,147)
State tax, net of federal benefit	36	37	23
Permanent differences	1,006	692	370
Stock based compensation	(3,761)	(596)	201
Foreign tax rate differential	(308)	334	(453)
Change in valuation allowance	(13,785)	15,279	12,008
Research and development tax credits	(725)	(656)	(834)
Change in deferred tax liabilities	(392)	(3,390)	173
Change in federal statutory tax rate	24,828	—	—
Other	(72)	(422)	(6)
Total provision (benefit) for income taxes	$(27)	$(3,285)	$335

On December 22, 2017, tax reform legislation known as the Tax Cuts and Jobs Act (the Tax Legislation) was enacted in the United States (U.S.). The Tax Legislation significantly revises the U.S. corporate income tax by, among other things, lowering the corporate income tax rate to 21%, implementing a modified territorial tax system and imposing a one-time repatriation tax on deemed repatriated earnings and profits of U.S.-owned foreign subsidiaries (the Toll Charge), and limiting the deductibility of certain expenses, such as interest expense. As a fiscal-year taxpayer, certain provisions of the Tax Legislation impact the Company in fiscal year 2018, including the change in the corporate income tax rate and the Toll Charge, while other provisions will be effective starting at the beginning of fiscal year 2019. The U.S. federal income tax rate reduction was effective as of January 1, 2018. Accordingly, the Company’s federal statutory income tax rate for fiscal year 2018 reflects a blended rate of approximately 24.3%.

On December 22, 2017, the SEC issued Staff Accounting Bulletin No.118 (SAB 118), which addresses how a company recognizes provisional estimates when a company does not have the necessary information available, prepared or analyzed (including computations) in reasonable detail to complete its accounting for the effect of the changes in the Tax Legislation. The measurement period ends when a company has obtained, prepared, and analyzed the information necessary to finalize its accounting, but cannot extend beyond one year. The final impact of the Tax Legislation may differ from the above provisional estimates due to changes in interpretations of the Tax Legislation, any legislative action to address questions that arise because of the Tax Legislation, by changes in accounting standard for income taxes and related interpretations in response to the Tax Legislation, and any updates or changes to estimates used in the provisional amounts.

The Company's provision for income taxes does not include provisions for foreign withholding taxes associated with the repatriation of undistributed earnings of certain foreign subsidiaries that we intend to reinvest indefinitely in our foreign subsidiaries.

The Company is subject to income taxes in U.S. federal and various state, local and foreign jurisdictions. The tax years ended from September 2000 to September 2018 remain open to examination due to the carryover of unused net operating losses or tax credits.
Deferred tax assets and liabilities consisted of the following:

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	As of September 30,	
	2018	2017
	(in thousands)	
Deferred tax assets:		
Depreciation and amortization	$ 1,087	$ 842
Accruals and other	3,098	5,541
Deferred revenue	152	3,288
NOL carry-forward	58,245	68,190
Stock compensation	2,701	4,840
Research and development tax credits	11,895	9,792
Total deferred tax assets	77,178	92,493
Valuation allowance	(67,879)	(78,003)
Net deferred tax assets	9,299	14,490
Deferred tax liabilities:		
Intangibles	(9,398)	(14,983)
Net deferred tax liabilities	$ (99)	$ (493)

A valuation allowance is provided when it is more likely than not that the deferred tax assets will not be realized. The Company has established a full valuation allowance to offset net deferred tax assets at September 30, 2018, 2017, and 2016 due to the uncertainty of realizing future tax benefits from its net operating loss carry-forwards and other deferred tax assets. The net decrease in the total valuation allowance for the year ended September 30, 2018 was approximately $10.1 million. Due to the reduction in the U.S. federal income tax rate, deferred tax balances decreased by approximately $24.9 million.

At September 30, 2018, the Company has federal and state net operating loss carry-forwards of approximately $232.0 million and $606.2 million, respectively. The federal and state net operating losses will begin expiring in 2021 and 2019, respectively. At September 30, 2018, the Company had federal and state research and development credit carry forwards of approximately $6.1 million and $7.4 million, respectively. The federal research and development credit carry-forwards will begin expiring in 2020. The California and Massachusetts tax credit can be carried forward indefinitely.

The Company adopted ASU 2015-17 in the beginning of fiscal year 2018. The adoption of ASU 2015-17 did not have a material impact on the Company's consolidated financial statements.

The Company has adopted ASU 2016-09 in fiscal year 2018 and has elected to continue to estimate its forfeiture rate. The ASU 2016-09 is considered effective from the beginning of the year of adoption. In the year of adoption, the ASU requires that the cumulative effect adjustment be recorded to retained earnings. Due to full valuation allowance, there is no cumulative effect adjustment to record and the adoption of this ASU has no material impact in the Company’s consolidated financial statements.

As of September 30, 2018, the Company had unrecognized tax benefits of approximately $3.5 million. It is unlikely that the amount of liability for unrecognized tax benefits will significantly change over the next twelve months. The Company's policy is to recognize interest and penalties accrued on any unrecognized tax benefits as a component of income tax expense. As of September 30, 2018, there was a liability of $0.1 million related to uncertain tax positions recorded on the financial statements.

Internal Revenue Code section 382 places a limitation (Section 382 Limitation) on the amount of taxable income can be offset by net operating (NOL) carry-forwards after a change in control (generally greater than 50% change in ownership) of a loss corporation. California has similar rules. Generally, after a control change, a loss corporation cannot deduct NOL carry-forwards in excess of the Section 382 limitation. An IRC Section 382 analysis has been performed as of September 30, 2018 and determined there would be no effect on the NOL deferred tax asset if ownership changes occurred.

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

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MODEL N, INC.
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	Fiscal Years Ended September 30,		
	2018	2017	2016
	(in thousands)		
Unrecognized tax benefits at the beginning of the period	$3,143	$3,310	$3,119
Gross decrease based on tax positions during the prior period	(143)	(584)	(147)
Gross increase based on tax positions during the prior period	94	—	—
Gross increase based on tax positions during the current period	375	417	338
Unrecognized tax benefits at the end of the period	$3,469	$3,143	$3,310

11. Net Loss Per Share

The Company's basic net loss per share attributable to common stockholders is calculated by dividing the net loss attributable to common stockholders by the weighted average number of shares of common stock outstanding for the period, which excludes unvested restricted stock awards. The diluted net loss per share attributable to common stockholders is computed by giving effect to all potentially dilutive common stock equivalents outstanding for the period. For purposes of this calculation, options to purchase common stock, unvested restricted stock awards and unvested restricted stock units are considered to be common stock equivalents.

	Fiscal Years Ended September 30,		
	2018	2017	2016
	(in thousands, except per share data)		
Numerator:			
Basic and diluted:			
Net loss attributable to common stockholders	$(28,207)	$(39,547)	$(33,111)
Denominator:			
Basic and diluted:			
Weighted Average Shares Used in Computing Net Loss per Share Attributable to Common Stockholders	30,370	28,649	27,379
Net Loss per Share Attributable to Common Stockholders:			
Basic and diluted	$(0.93)	$(1.38)	$(1.21)

The following weighted average shares of common stock equivalents were excluded from the computation of diluted net loss per share attributable to common stockholders for the periods presented because including them would have been antidilutive:

	Fiscal Years Ended September 30,		
	2018	2017	2016
	(in thousands)		
Stock options	164	414	650
Performance-based restricted stock units and restricted stock units	1,709	1,074	736

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Notes to Consolidated Financial Statements

12. Geographic Information

The Company has one operating segment with one business activity - developing and monetizing revenue management solutions.

Revenues from External Customers

Revenues from customers outside the United States were 12%, 11% and 10% of total revenues for the fiscal years ended September 30, 2018, 2017 and 2016, respectively. No single jurisdiction outside of the United States had revenues in excess of 10%.

Long-Lived Assets

The following table sets forth the Company’s property and equipment, net by geographic region:

	As of September 30,	
	2018	2017
	(in thousands)	
United States	$1,809	$3,867
India	337	744
Total property and equipment, net	$2,146	$4,611

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 management, with the participation of our Chief Executive Officer and our Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures as of September 30, 2018. The term “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC’s rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the Company’s management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Based on the evaluation of our disclosure controls and procedures as of September 30, 2018, our Chief Executive Officer and Chief Financial Officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Management’s Annual Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. 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 internal control over financial reporting as of September 30, 2018 using the criteria established in Internal Control—Integrated Framework (2013 framework) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

Based on our evaluation under the COSO framework, our management has concluded that our internal control over financial reporting was effective as of September 30, 2018 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.

The effectiveness of our internal control over financial reporting as of September 30, 2018 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which appears herein.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting identified in connection with the evaluation required by Rules 13a-15(d) and 15d-15(d) of the Exchange Act that occurred during the quarter ended September 30, 2018 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Inherent Limitations on Effectiveness of Controls

Our management, including our Chief Executive Officer and Chief Financial Officer, believes that our disclosure controls and procedures and internal control over financial reporting are designed to provide reasonable assurance of achieving their objectives and are effective at the reasonable assurance level. However, our management does not expect that our disclosure controls and procedures or our internal control over financial reporting will prevent all errors and all fraud. A control system, no matter how well conceived 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 the benefits of controls must be considered 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, 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

Information about our Executive Officers and our Directors is incorporated by reference to information contained in the Proxy Statement for the 2019 Annual Meeting of Stockholders to be filed with the SEC within 120 days of September 30, 2018.

We have adopted a code of business conduct for directors and a code of business conduct for all of our employees, including our executive officers, and those employees responsible for financial reporting. Both codes of business conduct are available on the investor relations portion of our website at investor.modeln.com. A copy may also be obtained without charge by contacting Investor Relations, Model N, Inc., 777 Mariners Island Boulevard, Suite 300, San Mateo, CA 94404 or by calling (650) 610-4998.

We plan to post on our website at the address described above any future amendments or waivers of our codes of business conduct.

ITEM 11. Executive Compensation

The information required by this item is incorporated by reference to information contained in the Proxy Statement for the 2019 Annual Meeting of Stockholders to be filed with the SEC within 120 days of September 30, 2018.

ITEM 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required by this item is incorporated by reference to information contained in the Proxy Statement for the 2019 Annual Meeting of Stockholders to be filed with the SEC within 120 days of September 30, 2018.

ITEM 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this item is incorporated by reference to information contained in the Proxy Statement for the 2019 Annual Meeting of Stockholders to be filed with the SEC within 120 days of September 30, 2018.

ITEM 14. Principal Accountant Fees and Services

The information required by this item is incorporated by reference to information contained in the Proxy Statement for the 2019 Annual Meeting of Stockholders to be filed with the SEC within 120 days of September 30, 2018.

PART IV

ITEM 15. Exhibits and Financial Statement Schedules

(a) The following documents filed as a part of the report:

(1) Financial Statements

The financial statements are set forth in Item 8 of this Annual Report on Form 10-K.

(2) Financial Statement Schedule

Schedule II - Valuation and qualifying accounts

The table below presents the changes in the allowance for doubtful accounts for the fiscal years ended September 30, 2018, 2017, and 2016, respectively.

Description	Balance at Beginning of Period	Additions Charges to Costs and Expenses	Write-offs and Deductions	Balance at End of Period
Allowance for doubtful receivables				
For the Year Ended September 30, 2018	$ 85	172	85	$ 172
For the Year Ended September 30, 2017	$ —	85	—	$ 85
For the Year Ended September 30, 2016	$ —	—	—	$ —
Valuation allowance for deferred tax assets				
For the Year Ended September 30, 2018	$ 78,003	10,708	20,832	$ 67,879
For the Year Ended September 30, 2017	$ 56,113	21,890	—	$ 78,003
For the Year Ended September 30, 2016	$ 42,128	13,985	—	$ 56,113

(3) Exhibits

The following exhibits are included herein or incorporated herein by reference:

Exhibit Number	Exhibit Description	Incorporated by Reference Form	File No.	Exhibit	Filing Date	Filed Herewith
3.1	Amended and Restated Certificate of Incorporation of the Registrant	10-Q	001-35840	3.1	5/10/2013	
3.2	Amended and Restated Bylaws of the Registrant	10-Q	001-35840	3.2	5/10/2013	
4.1	Form of Registrant's Common Stock certificate	S-1	333-186668	4.01	3/7/2013	
4.2	Amended and Restated Investor Rights Agreement dated December 12, 2003 by and among Registrant and certain of its stockholders	S-1	333-186668	4.02	2/13/2013	
10.1	Form of Indemnity Agreement to be entered into between Registrant and each of its officers and directors	S-1	333-186668	10.01	3/12/2013	
10.2†	2000 Stock Plan and forms of stock option agreement and stock option exercise agreement	S-1	333-186668	10.02	2/13/2013	
10.3†	2010 Equity Incentive Plan and forms of stock option agreement and stock option exercise agreement	S-1	333-186668	10.03	2/13/2013	
10.4†	2013 Equity Incentive Plan and forms of stock option agreement and stock option exercise agreement	S-1	333-186668	10.04	3/7/2013	
10.5†	2013 Employee Stock Purchase Plan	S-8	333-187388	99.4	3/20/2013	
10.6†	Employment offer letter dated May 7, 2017 and Amendment 1 dated May 8, 2017 by and between Registrant and David Barter.	10-K	001-35840	10.07	11/15/2017	

10.7†	Employment offer letter dated December 9, 2016 by and between Registrant and Russell Mellott.	10-K	001-35840	10.08	11/15/2017	
10.8†	Form of Restricted Stock Unit Agreement	10-K	001-35840	10.12	12/6/2013	
10.9	Sublease by and between Dynatrace LLC and Registrant dated August 8, 2017	10-K	001-35840	10.10	11/15/2017	
10.10†	Transition agreement dated May 7, 2018 and Amendment 1 dated June 29, 2018 by and between Registrant and Zack Rinat	10-Q	001-35840	10.1	8/8/2018	
10.11†	Employment agreement dated May 7, 2018 by and between Registrant and Jason Blessing	10-Q	001-35840	10.2	8/8/2018	
10.1	Credit Agreement by and between Wells Fargo Bank, National Association and Registrant dated May 4, 2018	10-Q	001-35840	10.3	8/8/2018	
21.1	List of Subsidiaries of Registrant					X
23.1	Consent of PricewaterhouseCoopers LLP, independent registered public accounting firm					X
24.1	Power of Attorney (included on the signature page to this report)					X
31.1	Certification of Periodic Report by Principal Executive Officer under Section 302 of the Sarbanes-Oxley Act of 2002					X
31.2	Certification of Periodic Report by Principal Financial Officer under 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

† Indicates a management contract or compensatory plan.

* 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 the Registrant under the Securities Act of 1933 or the Exchange Act of 1934, whether made before or after the date hereof and irrespective of any general incorporation language in such filings.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this Annual Report on Form 10-K to be signed on its behalf by the undersigned, thereunto duly authorized, in San Mateo, State of California, on this 16th day of November 2018.

MODEL N, INC.

By: /S/ DAVID BARTER
David Barter
Chief Financial Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Jason Blessing or David Barter, or any of them, his attorneys-in-fact, for such person in any and all capacities, to sign any amendments to this report and to file the same, with exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that either of said attorneys-in-fact, or substitute or substitutes, may do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

Name	Title	Date
/S/ JASON BLESSING Jason Blessing	Chief Executive Officer (Principal Executive Officer)	November 16, 2018
/S/ DAVID BARTER David Barter	Chief Financial Officer (Principal Financial Officer and Accounting Officer)	November 16, 2018
Additional Directors:		
/S/ CHARLES J. ROBEL Charles J. Robel	Director	November 16, 2018
/S/ MELISSA FISHER Melissa Fisher	Director	November 16, 2018
/S/ DAVID BONNETTE David Bonnette	Director	November 16, 2018
/S/ TIM ADAMS Tim Adams	Director	November 16, 2018
/S/ ALAN HENRICKS Alan Henricks	Director	November 16, 2018
/S/ BALJIT DAIL Baljit Dail	Director	November 16, 2018