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 June 30, 2017

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: 0-24786

Aspen Technology, Inc.
(Exact name of registrant as specified in its charter)

Delaware (State or other jurisdiction of incorporation or organization)	**04-2739697** (I.R.S. Employer Identification No.)
20 Crosby Drive **Bedford, MA** (Address of principal executive offices)	**01730** (Zip Code)

Registrant's telephone number, including area code: **781-221-6400**

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

Securities registered pursuant to Section 12(g) of the Act:
Common stock, $0.10 par value per share

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 Section 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 checkmark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of “large accelerated filer,” “accelerated filer," “smaller reporting company,” and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☒	Accelerated filer	☐

Non-accelerated filer ☐ (Do not check if a smaller reporting company)		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 Act). Yes ☐ No ☒

As of December 31, 2016, the aggregate market value of common stock (the only outstanding class of common equity of the registrant) held by non-affiliates of the registrant was $4,159,380,633 based on a total of 76,067,678 shares of common stock held by non-affiliates and on a closing price of $54.68 on December 31, 2016 for the common stock as reported on The NASDAQ Global Select Market.

There were 73,099,209 shares of common stock outstanding as of August 3, 2017.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement related to its 2017 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission pursuant to Regulation 14A not later than 120 days after the end of the fiscal year covered by this Form 10-K are incorporated by reference in Part III, Items 10-14 of this Form 10-K.

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Our registered trademarks include aspenONE and Aspen Plus. All other trademarks, trade names and service marks appearing in this Form 10-K are the property of their respective owners.

Our fiscal year ends on June 30, and references to a specific fiscal year are the twelve months ended June 30 of such year (for example, "fiscal 2017" refers to the year ended June 30, 2017).

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS AND INDUSTRY DATA

This Form 10-K contains "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. Forward-looking statements relate to future events or our future financial performance. We generally identify forward-looking statements by terminology such as "anticipate," "believe," "could," "estimate," "expect," "intend," "may," "potential," "should," "target," or the negative of these terms or other similar words. These statements are only predictions. The outcome of the events described in these forward-looking statements is subject to known and unknown risks, uncertainties and other factors that may cause our, our customers' or our industry's actual results, levels of activity, performance or achievements expressed or implied by these forward-looking statements, to differ. "Item 1. Business," "Item 1A. Risk Factors" and "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" as well as other sections in this Form 10-K, discuss some of the factors that could contribute to these differences. The forward-looking statements made in this Form 10-K relate only to events as of the date on which the statements are made. We undertake no obligation to update any forward-looking statement to reflect events or circumstances after the date on which the statement is made or to reflect the occurrence of unanticipated events. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make. The industry in which we operate is subject to a high degree of uncertainty and risk due to variety of factors, including those described in "Item 1A. Risk Factors." Unless the context indicates otherwise, references in this report to "we", "us", "our" and other similar references mean Aspen Technology, Inc. and its subsidiaries.

PART I

Item 1. Business.

Overview

We are a leading global supplier of asset optimization solutions that optimize asset design, operations and maintenance in complex, industrial environments. We combine decades of process modeling and operations expertise with big data machine-learning and analytics. Our purpose-built software solutions improve the competitiveness and profitability of our customers by increasing throughput, energy efficiency, and production, reducing unplanned downtime, enhancing capital efficiency, and decreasing working capital requirements over the entire asset lifecycle to support operational excellence.

Our software incorporates our proprietary mathematical and empirical models of manufacturing and planning processes and reflects the deep domain expertise we have amassed from focusing on solutions for the process and other capital-intensive industries for over 35 years. We have developed our applications to design and optimize processes across three principal business areas: engineering, manufacturing and supply chain, and asset performance management. We are a recognized market and technology leader in providing process optimization and asset performance management software solutions for each of these business areas.

We have established sustainable competitive advantages based on the following strengths:

- Innovative products that can enhance our customers' profitability and productivity;
- Long-term customer relationships;
- Large installed base of users of our software; and
- Long-term license contracts.

We have approximately 2,100 customers globally. Our customers consist of companies engaged in the process and other capital-intensive industries such as energy, chemicals, engineering and construction, as well as pharmaceuticals, transportation, power, metals and mining, pulp and paper, and consumer packaged goods.

Industry Background

The process manufacturing industries consist of companies that typically manufacture finished products by applying a controlled chemical process either to a raw material that is fed continuously through the plant or to a specific batch of raw material.

Process industry characteristics and dynamics are complex; therefore, any small improvement in the high-volume feedstocks used, or to the chemical process applied, can have a significant impact on the efficiency and cost-effectiveness of manufacturing operations. As a result, process manufacturers, as well as the engineering and construction firms that partner with these manufacturers, have extensive technical requirements and need sophisticated, integrated software to help design, operate and maintain complex manufacturing assets. The unique characteristics associated with process manufacturing create special demands for business applications that frequently exceed the capabilities of generic or non-process manufacturing software packages.

Industry Specific Challenges Facing the Process Industries

Companies in different segments of the process industries face specific challenges that are driving the need for software solutions that design, operate and maintain manufacturing environments more effectively:

Energy. Our energy markets are comprised of three primary sectors: Exploration and Production, also called "upstream," Oil and Gas Production and Processing, also called "midstream," and Refining and Marketing, also called "downstream":

- Companies engaged in Exploration and Production explore for and produce hydrocarbons. They target reserves in increasingly diverse geographies involving geological, logistical and political challenges. They need to design and develop ever larger, more complex and more remote production, gathering and processing facilities as quickly as possible with the objective of optimizing production and ensuring regulatory compliance.

- Companies engaged in Oil and Gas Production and Processing produce and gather oil and natural gas from well heads, clean it, process it and separate it into oil and dry natural gas and natural gas liquids in preparation for transport to downstream markets. The number of oil and gas processing plants in North America has increased significantly in recent years to process the oil and gas extracted from shale deposits.

- Companies engaged in Refining and Marketing convert crude oil through a thermal and chemical manufacturing process into end products such as gasoline, jet and diesel fuels and into intermediate products for downstream chemical manufacturing companies. These companies are characterized by high volumes and low operating margins. In order to deliver better margins, they focus on optimizing feedstock selection and product mix, reducing energy and capital costs, maximizing throughput, and minimizing inventory, all while operating safely and in accordance with regulations.

Chemicals. The chemicals industry includes both bulk and specialty chemical companies:

- Bulk chemical producers manufacture commodity chemicals and compete primarily on price; they seek to achieve economies of scale and manage operating margin pressure by building larger, more complex plants located near feedstock sources.

- Specialty chemical manufacturers, which primarily manufacture highly differentiated customer-specific products, face challenges in managing diverse product lines, multiple plants, complex supply chains and product quality.

Engineering and construction. Engineering and construction firms that work with process manufacturers compete on a global basis by bidding on and executing on complex, large-scale projects. They need a digital environment in which optimal plant designs can be produced quickly and efficiently, incorporating highly accurate modeling, analysis and cost estimation technology. In addition, these projects require software that enables significant collaboration internally, with the manufacturer, and in many cases, with other engineering and construction firms.

Companies in the consumer packaged goods, power, metals and mining, pulp and paper, pharmaceuticals and biofuels industries are also seeking asset optimization solutions that help them deliver improved financial and operating results in the face of varied process manufacturing challenges.

Complexity of the Process Industries

Companies in the process industries constantly face pressure on margins causing them to continually seek ways to operate more efficiently. At the same time, these manufacturers face complexity as a result of the following:

Globalization of markets. Process manufacturers are continuously expanding their operations to take advantage of growing demand and more economically viable sources of feedstocks. Process manufacturers must be able to design, build and operate plants efficiently and economically while managing and optimizing ever broadening supply chains.

Market volatility. Process manufacturers must react quickly to frequent changes in feedstock prices, temporary or longer-term feedstock shortages, and rapid changes in finished product prices. Unpredictable commodity markets strain the manufacturing and supply chain operations of process manufacturers, which must evaluate and implement changes in inventory levels, feedstock inputs, equipment usage and operational processes to remain competitive.

Environmental and safety regulations. Process companies must comply with an expanding array of data maintenance and reporting requirements under governmental and regulatory mandates, and the global nature of their operations can subject them to numerous regulatory regimes. These companies are increasingly relying upon software applications to model potential outcomes, store operating data and develop reporting capabilities in response to heightened scrutiny and oversight because of environmental, safety and other implications of their products and manufacturing processes.

Market Opportunity

Technology solutions play a major role in helping companies in the process industries improve their manufacturing productivity. In the 1980s, process manufacturers implemented distributed control systems, or DCS, to automate the management of plant hardware. DCS use computer hardware, communication networks and industrial instruments to measure, record and automatically control process variables. In the 1990s, these manufacturers adopted enterprise resource planning, or ERP, systems to streamline back office functions and interact with DCS. These systems allowed process manufacturers to track, monitor and report the performance of each plant, rather than rely on traditional paper and generic desktop spreadsheets.

Many process manufacturers have implemented both DCS and ERP systems but have realized that their investments in hardware and back-office systems are inadequate. DCS are only able to control and monitor processes based on fixed sets of parameters and cannot dynamically react to changes in the manufacturing process unless instructed by end users. ERP systems can only record what is produced in operations. Although DCS and ERP systems help manage manufacturing performance, neither of these systems can optimize what is produced, how it is produced or where it is produced. Moreover, neither can help a process manufacturer understand how to improve its processes or how to identify opportunities to decrease operating expenses.

Asset optimization software focuses on the optimum design, operation, and maintenance of the manufacturing process; how the design is optimized for operations and reliability, how the process is operated and the economics of the process, and how the design and operations impact the longevity and reliability of the equipment. By connecting DCS and ERP systems with intelligent, dynamic applications, asset optimization software allows a manufacturer to make better, faster economic decisions. Examples of how asset optimization software can optimize a manufacturing environment include incorporating process manufacturing domain knowledge, supporting real-time decision making, predicting equipment failure, and providing the ability to forecast and simulate potential actions. Furthermore, these solutions can optimize the supply chain by helping a manufacturer to understand the operating conditions in each plant, enabling more efficient and optimized production decisions.

Process manufacturers employ highly skilled technical personnel specializing in areas such as process design, equipment design, control engineering, manufacturing operations, analytics, planning, scheduling, and supply chain management. To drive efficiency and improve operating margins, these personnel need to collaborate across functional areas and increasingly rely on software to enable this collaboration as well as automate complex tasks associated with their jobs. Process companies must adapt to the changing nature of the technical workforce. A generation of highly experienced plant operators and engineers is nearing retirement. As a result, we believe there is increasing demand for intelligent software applications that capture and automate expert knowledge and are intuitive and easy-to-learn.

aspenONE Solutions

We provide integrated asset optimization software solutions designed and developed specifically for the process and other capital-intensive industries. Customers use our solutions to improve their competitiveness and profitability by increasing throughput and productivity, reducing operating and maintenance costs, enhancing capital efficiency, enabling collaboration among different functions and decreasing working capital requirements. Our aspenONE applications are organized into three suites: 1) engineering; 2) manufacturing and supply chain; and 3) asset performance management, or APM:

Engineering. Our engineering software is used to develop process designs of new plants, re-vamp existing plants, and simulate and optimize existing processes.

Manufacturing and Supply Chain. Our manufacturing software is used to optimize day-to-day processing activities, enabling process manufacturers to make better, more profitable decisions and to improve plant performance. Our supply chain management software is designed to enable process manufacturers to reduce inventory levels, increase asset efficiency, respond rapidly to market demands and optimize supply chain operations.

Asset Performance Management. Our asset performance management suite is used to understand and predict the reliability of a system; be it multiple assets, a single asset, or equipment in a plant. The factors that impact reliability include how operating conditions degrade equipment performance over time, or how process conditions lead to equipment failure, and the ability to predict when the equipment will fail and prescribe actions to avoid such occurrences. The APM suite is a comprehensive suite of machine learning and analytics technologies when used on a standalone or integrated manner with historical and real time asset and equipment data which can help our customers improve their return on capital employed.

Our aspenONE licensing model is a subscription offering under which customers receive access to all the products within the aspenONE suite(s) they license, including the right to any new unspecified future software products and updates that may be introduced into the licensed aspenONE software suite. This affords customers the ability to use our software whenever required and to experiment with different applications to best solve whatever critical business challenges they face.

We offer customer support, professional services and training services to our customers. Under our aspenONE licensing model, software maintenance and support is included for the term of the arrangement. Professional services are offered to customers as a means to further implement and extend our technology across their corporations.

The key benefits of our aspenONE solutions include:

Broad and comprehensive software suites. We believe we are the only software provider that has developed comprehensive suites of software applications addressing the engineering, manufacturing and supply chain and maintenance requirements of process manufacturers. While some competitors offer solutions in one or two principal business areas, no other vendor can match the breadth of our aspenONE offerings. In addition, we have developed an extensive array of software applications that address extremely specific and complex industry and end user challenges, such as feedstock selection and production scheduling for petroleum companies.

Integrated software solutions. aspenONE provides a standards-based framework that integrates applications, data and models within each of our software suites. Process manufacturers seeking to improve their business operations can use the integrated software applications in the aspenONE Manufacturing and Supply Chain suite to support real-time decision making both for individual production facilities and across multiple sites.

Flexible commercial model. Our aspenONE licensing model provides a customer with access to all of the applications within and across the aspenONE suite(s) the customer licenses, including the right to any new unspecified future software products and updates that may be introduced into the licensed aspenONE software suite. The customer can change or alternate the use of multiple applications in a licensed suite through the use of exchangeable units of measurement, or tokens, licensed in quantities determined by the customer. This enables the customer to use those applications whenever required and to experiment with different applications to best solve whatever critical business challenges the customer faces. The customer can easily increase its usage of our software as their business requirements evolve.

Our Competitive Strengths

In addition to the breadth and depth of our integrated aspenONE software and the flexibility of our aspenONE licensing model, we believe our key competitive advantages include the following:

Industry-leading innovation based on substantial process expertise. Over the past 35 years, our significant investment in research and development has led to a number of major process engineering advances considered to be industry-standard applications. Our development organization is comprised of software engineers, chemical engineers and data scientists. This combination of expertise has been essential to the development of leading products embedded with chemical engineering principles, optimization algorithms, analytics, and the process industries' workflows and best practices.

Rapid, high return on investment. Many customers purchase our software because they believe it will provide rapid, demonstrable and significant returns on their investment and increase their profitability. For some customers, cost reductions in the first year following installation have exceeded the total cost of our software. For many customers, even a relatively small improvement in performance can generate substantial recurring benefits due to the large production volumes and limited profit margins typical in process industries. In addition, our solutions can generate organizational efficiencies and operational improvements that can further increase a process company's profitability.

Growth Strategy

We seek to maintain and extend our position as a leading global provider of process optimization software and related services to the process industries. In the last twelve months, we have introduced a new strategy to evolve our scope of optimization from the process units in a plant to the process and the equipment in the plant or entire asset. We plan to expand our reach in optimization from conceptualization and design, operations, and supply chain to the maintenance aspects of the plant. We plan to build on our expertise in process optimization, our installed base, and long term customer relationships to expand our reach in the maintenance area of the plant. By focusing on asset optimization, we would be able to optimize the design and operations of a plant considering the performance of process equipment so as to optimize the full asset lifecycle. Our primary growth strategy is to expand organically within our core verticals by leveraging our market leadership position and driving increased usage and product adoption of the broad capabilities in our aspenONE offerings. Additionally, we seek acquisitions to accelerate our overall growth in the design and operations of the process, and acquisitions that will expand our maintenance solution to deliver asset optimization. To accomplish these goals, we will pursue the following activities:

Continue to provide innovative, market-leading solutions. Our recent innovations include adaptive process control, modeling of solids and batch processes, rundown blending optimization, crude assays characterization using molecular science, electrolyte and biofuel characterizations, process safety, sulfur recovery, methodologies for carbon management, multivariate analysis, process reliability, and equipment and process analytics. Most recently we introduced capabilities for column analytics and a solution for integrated steady state and batch process modeling. We intend to continue to invest in research and development in order to develop and offer new and enhanced solutions for our aspenONE suites. We have pioneered a number of industry standard and award-winning software applications. For example, Aspen Plus, our process modeling tool for the chemicals industry, has won the *Chemical Processing* magazine Readers' Choice Award for "Process Simulation Software" multiple times. We have also been recognized by *R&D Magazine* for innovation in out of the box modeling capabilities that we developed with the National Institute of Standards and Technology.

Further penetrate existing customer base. We have an installed base of approximately 2,100 customers. Many of our customers only use a fraction of our products. We work with our customers to identify ways in which they can improve their business performance by using the entire licensed suite of aspenONE applications, both at an individual user level and across all of their plant locations. Our customers are segmented based on their size and complexity. Our large complex customers are serviced by our Field Sales organization, while our other customers are serviced by our inside sales group. Additionally, we regularly enhance our products to make them easier to use and seek to increase productivity of users by offering more integrated workflows.

Adoption and usage in customer base. We strive for our customers to adopt and sustain the use of our products by maximizing the consumption of their token entitlement. We do so by focusing our go-to-market resources through specific customer success management activities that generate and sustain the value from our products by ensuring that customers are using the latest version of our products, that our software is deployed in the most optimum manner in their IT networks, and that our customers are familiar with the latest value enhancing functionality in our products.

Asset Performance Management (APM) expansion. We introduced a new suite of products that focus on improving the reliability of our customers' assets and equipment using a combination of machine learning, data science and process modeling together with historical and real time asset and equipment data. As such, we have increased our investment in the research and development, sales and marketing, and channel sales functions to build out the capabilities that will enable us to grow this new business area and deliver value for our customers. In addition, we will target a new set of capital-intensive industries with the APM functionality that we refer to as the global economy industries. These include transportation, power, pulp and paper, wastewater treatment, and consumer products goods.

Scale through digital channels. We have a broad user base spanning our vertical industries and geographies, and they possess a variety of skills, experience and business needs. To reach our user base in an effective, productive and leveraged manner, we utilize digital customer engagement solutions including webinars, digital communities, social media, videos, email and other digital means that target each of the specific personas that are users of our different products. We intend to capitalize increasingly on segmentation to ensure we deliver targeted messages intended to address the specific needs of each market, customer and user.

Build an ecosystem. The relevance of our solutions in the markets we serve means that we have the opportunity to leverage third parties interested in building or expanding their businesses to increase our market penetration. The breadth of relationships that we establish will depend on the profile of the third-party company and the objectives specified to be achieved from the promotion and implementation of our products and solutions.

Pursue acquisitions. As part of our ongoing make-vs-buy analysis, we regularly explore and evaluate acquisitions. We have made several small acquisitions in recent years and believe the opportunity exists to do more, especially as we seek to evolve our strategy to asset optimization and the maintenance area of the plant.

Expand our total addressable market. Our focus on innovation also means introducing product capabilities or new product categories that create value for our customers and therefore expand our total addressable market.

Products

Our integrated asset optimization software solutions are designed and developed specifically for the process industries. Customers use our solutions to improve their competitiveness and profitability by increasing throughput and productivity, reducing operating costs, enhancing capital efficiency, and decreasing working capital requirements. We have designed and developed our software applications across four principal business areas:

Engineering. Our engineering software applications are used during both the design and the ongoing operation of plant facilities to model and improve the way engineers develop and deploy manufacturing assets. Process manufacturers must address a variety of challenges including design, operational improvement, collaborative engineering and economic evaluation.

They must, for example, determine where they should locate facilities, how they can lower capital and manufacturing costs, what they should produce and how they can maximize plant efficiency.

Manufacturing. Our manufacturing software products focus on optimizing day-to-day processing activities, enabling customers to make better, faster decisions that lead to improved plant performance and operating results. These solutions include desktop and server applications that help customers make real-time decisions, which can reduce fixed and variable costs and improve product yields. Process manufacturers must address a wide range of manufacturing challenges such as optimizing execution efficiency, reducing costs, selecting the right raw materials, scheduling and coordinating production processes, and identifying an appropriate balance between turnaround times, delivery schedules, product quality, cost and inventory.

Supply Chain Management. Our supply chain management solutions include desktop and server applications that help customers optimize critical supply chain decisions in order to reduce inventory, increase asset efficiency, and respond more quickly to changing market conditions. Process manufacturers must address numerous challenges as they strive to effectively and efficiently manage raw materials inventory, production schedules and feedstock purchasing decisions. Supply chain managers face these challenges in an environment of ever-changing market prices, supply constraints and customer demands.

Asset Performance Management. Our asset performance management products are used to understand and predict the reliability of a system; be it multiple assets, a single asset, or equipment in a plant. The factors that impact reliability include how operating conditions degrade equipment performance over time, or how process conditions lead to equipment failure, and the ability to predict when the equipment will fail and prescribe actions to avoid such occurrences. The APM suite is a comprehensive suite of machine learning and analytics technologies when used on a standalone or integrated manner with historical and real time asset and equipment data which can help our customers improve their return on capital employed.

Our software applications are currently offered in three suites: aspenONE Engineering, aspenONE Manufacturing and Supply Chain, and aspenONE Asset Performance Management. These suites are integrated applications that allow end users to design process manufacturing environments, forecast and simulate potential actions, monitor operational performance, predict the reliability of an asset and equipment failure, and manage planning and scheduling activities as well as collaborate across these functions and activities. The three suites are designed around core modules and applications that allow customers to design, operate and maintain their process manufacturing environments, as shown below:

aspenONE Engineering

Business Area	aspenONE Module	Major Products	Product Description
Engineering	Process Simulation for Energy	Aspen HYSYS	Process modeling software for the design and optimization of hydrocarbon processes, including complete pressure relief analysis
	Process Simulation for Chemicals	Aspen Plus	Process modeling software for the design and optimization of chemical processes, including solids and batch processes
	Economic Evaluation	Aspen Economic Evaluation	Economic evaluation software for estimating project capital costs and lifecycle asset economics - from conceptual definition through detailed engineering
	Equipment Design & Rating	Aspen Exchanger Design and Rating	Software for the design, simulation and rating of various types of heat exchangers
	Basic Engineering	Aspen Basic Engineering	Process engineering platform for producing front-end design deliverables such as multi-disciplinary datasheets, process flow diagrams, piping and instrument diagrams, and equipment lists
	Operation Support	Aspen Online	Solution that connects models to real-time plant data for expedited decisions, operation guidance and optimization

aspenONE Manufacturing and Supply Chain

Business Area	aspenONE Module	Major Products	Product Description
Manufacturing	Advanced Process Control	Aspen DMC3	Multi-variable controller software for maintaining processes at their optimal operating point under changing process conditions
		Aspen Watch Performance Monitor	Real-time monitoring and diagnostic information software to help engineers and operators focus on the problems that erode margins
	Manufacturing Execution Systems	Aspen Info Plus.21	Data historian software for storing, visualizing and analyzing large volumes of data to improve production execution and enhance performance management
		AspenONE Process Explorer	Software for combining process measurements, product characteristics, alarms, events and unstructured data for a complete view of production
		Aspen Production Record Manager	Easy and fast segmentation of production data into batches, campaigns or other logical groupings for easier analysis and production reporting
		Aspen Production Execution Manager	Workflow, order and recipe management software per cGMP guidelines that ensures operational consistency for improved yields, higher quality and lower production costs
Supply Chain	Refinery Planning & Scheduling	Aspen PIMS Advanced Optimization	Refinery planning software for optimizing feedstock selection, product slate and operational execution
		Aspen Petroleum Scheduler	Refinery scheduling software for scheduling and optimization of refinery operations with integration to refinery planning, blending and dock operations
	Supply & Distribution	Aspen Petroleum Supply Chain Planner	Economic planning software for optimizing the profitability of the petroleum distribution network, including transportation, raw materials, sales demands, and processing facilities
		Aspen Fleet Optimizer	Software for inventory management and truck transportation optimization in secondary petroleum distribution
	Supply Chain Management	Aspen Collaborative Demand Manager	Software for forecasting market demand and managing forecast through changes in the business environment by combining historical and real time data
		Aspen Plant Scheduler	Software for generating optimal production schedules to meet total demand
		Aspen Supply Planner	Software for determining the optimal production plan taking into account labor and equipment, feedstock, inbound /outbound transportation, storage capacity, and other variables

aspenONE Asset Performance Management

Business Area	aspenONE Module	Major Products	Product Description
Asset Performance Management	Risk Analysis	Aspen Fidelis Reliability	Software for predicting the future performance of any system and quantifying the change in performance due to changes in design, capacity, operations, maintenance, logistics, market dynamics, and weather
	Process Analytics	Aspen ProMV	Multivariate analysis software for identifying and understanding variations across multiple variables
		Aspen Asset Analytics	Software for analyzing plant operations in real time to identify causal precursors that can lead to an unplanned downtime event
	Equipment Analytics	Aspen Mtell	Software for recognizing unique data patterns as predictions of future equipment behavior

Our product development activities are currently focused on strengthening the integration of our applications and adding new capabilities that address specific operational business processes in each industry. As of June 30, 2017, we had a total of 513 employees in our research and development group, which is comprised of product management, software development and quality assurance. Research and development expenses were $79.5 million in fiscal 2017, $67.2 million in fiscal 2016 and $69.6 million in fiscal 2015.

Sales and Marketing

We employ a value-based sales approach, offering our customers a comprehensive suite of software and services that enhance the efficiency and productivity of their engineering, manufacturing and supply chain and maintenance operations. We have increasingly focused on positioning our products as a strategic investment and therefore devote an increasing portion of our sales efforts to our customers' senior management, including senior decision makers in manufacturing, operations, maintenance and technology. Our aspenONE solution strategy supports this value-based approach by broadening the scope of optimization across the entire enterprise over its lifecycle, expanding the use of process models in the operations environment, and enabling the use of analytics and data science to enhance equipment and process reliability. We offer a variety of training programs focused on illustrating the capabilities of our applications as well as online training built into our applications. We have implemented incentive compensation programs for our sales force to reward efforts that increase customer usage of our products. Furthermore, we believe our aspenONE licensing model enables our sales force to develop consultative sales relationships with our customers.

Historically, most of our license sales have been generated through our direct Field Sales organization. In order to market the specific functionality and other technical features of our software, our account managers work with specialized teams of technical sales personnel and product specialists organized for each sales and marketing effort. Our technical sales personnel typically have degrees in chemical engineering or related disciplines and actively consult with a customer's plant engineers. Product specialists share their detailed knowledge of the specific features of our software solutions as they apply to the unique business processes of different vertical industries. In addition to our direct Field Sales organization, we employ an inside sales team that targets customers in certain market segments.

We have established channel relationships with select companies that we believe can help us pursue opportunities in non-core target markets. We also license our software products to universities that agree to use our products in teaching and research. We believe that students' familiarity with our products will stimulate future demand once the students enter the workplace.

We supplement our sales efforts with a variety of marketing initiatives, including industry analyst and public relations activities, campaigns to promote product usage and adoption, user group meetings and customer relationship programs. Our broad user base spans multiple verticals and geographies and these users possess a variety of skills, experience and business needs. In order to reach each of them in an effective, productive and leveraged manner we will increasingly capitalize on digital customer engagement solutions. Using webinars, digital communities, social media, videos, email and other digital means, we seek to engage our extensive user base with targeted messages intended to address the specific needs of each market, customer and user.

Our overall sales force, which consists of sales account managers, technical sales personnel, indirect-channel personnel, inside sales personnel, and marketing personnel, consisted of 416 employees as of June 30, 2017.

Software Maintenance and Support, Professional Services and Training

Software maintenance and support ("SMS") consists primarily of providing customer technical support and access to software fixes and upgrades. Customer technical support services are provided throughout the world by our three global call centers as well as via email and through our support website. For license term arrangements entered into subsequent to our transition to a subscription-based licensing model, SMS is included with the license arrangement. For license arrangements that don't include SMS, customers can purchase standalone SMS.

We offer professional services focused on implementation of our solution. Our professional services team primarily consists of project engineers with degrees in chemical engineering or a similar discipline, or who have significant relevant industry experience. Our employees include experts in fields such as thermophysical properties, distillation, adsorption processes, polymer processes, industrial reactor modeling, the identification of empirical models for process control or analysis, large-scale optimization, supply distribution systems modeling and scheduling methods. Our primary focus is the successful implementation and usage of our software, and in many instances, this work can be professionally performed by qualified third parties. As a result, we often compete with third-party consulting firms when bidding for professional services contracts, particularly in developed markets. We offer our services on either a time-and-material or fixed-price basis.

We offer a variety of training solutions ranging from standardized training, which can be delivered in a public forum, on-site at a customer's location or over the Internet, to customized training sessions, which can be tailored to fit customer needs. We have also introduced a wide range of online computer-based training courses offering customers on-demand training in basic and advanced features of our products directly from within the products. As of June 30, 2017, we had a total of 297 employees in our customer support, professional services and training groups.

Business Segments

We have two operating and reportable segments: i) subscription and software and ii) services. The subscription and software segment is engaged in the licensing of asset optimization software solutions and associated support services. The services segment includes professional services and training.

Competition

Our markets in general are competitive, and we expect the intensity of competition in our markets to increase as existing competitors enhance and expand their product and service offerings and as new participants enter the market. Increased competition may result in price reductions, reduced profitability and loss of market share. We cannot ensure that we will be able to compete successfully against existing or future competitors. Some of our customers and companies with which we have strategic relationships also are, or may become, competitors.

Many of our current and potential competitors have greater financial, technical, marketing, service and other resources than we have. As a result, these companies may be able to offer lower prices, additional products or services, or other incentives that we cannot match or offer. These competitors may be in a stronger position to respond more quickly to new technologies and may be able to undertake more extensive marketing campaigns. We believe they also have adopted and may continue to pursue more aggressive pricing policies and make more attractive offers to potential customers, employees and strategic partners. For example, some competitors may be able to initiate relationships through sales and installations of hardware and then seek to expand their customer relationships by offering asset optimization software at a discount. In addition, competitors with greater financial resources may make strategic acquisitions to increase their ability to gain market share or improve the quality or marketability of their products. Furthermore, we face challenges in selling our solutions to large companies in the process industries that have internally developed their own proprietary software solutions.

We seek to develop and offer integrated suites of targeted, high-value vertical industry solutions that can be implemented with relatively limited service requirements. We believe this approach provides us with an advantage over many of our competitors that offer software products that are point solutions or are more service-based. Our key competitive differentiators include:

- breadth, depth and integration of our aspenONE software offering;
- rapid return on investment and increase in profitability;
- domain expertise of chemical engineering personnel;
- focus solely on software for the process industries;
- flexibility of our usage-based aspenONE licensing model; and
- consistent global support.

Proprietary Rights

Our software is proprietary and fundamental to our business. We rely on a combination of copyright, patent, trademark and trade secret laws in the United States and other jurisdictions, and on license and confidentiality agreements and technology measures to protect our proprietary technology and brand, and prevent unauthorized use of our software. We generally seek to protect our trade secrets by entering into non-disclosure agreements with our employees and customers, and historically have restricted access to our software and source code, which we regard as proprietary information. We have obtained or applied for patent protection with respect to some of our intellectual property and have registered or applied to register some of our trademarks in the United States and in selected other countries. We actively monitor use of our intellectual property and have enforced, and will continue to enforce, our intellectual property rights. In the United States, we are generally able to maintain our patents for up to 20 years from the earliest effective filing date, and to maintain our trademark registrations for as long as the trademarks are in use.

The laws of many countries in which our products are licensed may not protect our intellectual property rights to the same extent as the laws of the United States. While we consider our intellectual property rights to be valuable, we do not believe that our competitive position in the industry can depend solely on obtaining legal protection for our software products and technology. Instead, we believe that the success of our business also depends on our ability to maintain a leadership position by continuing to develop innovative software products and technology.

Our proprietary rights are subject to risks and uncertainties described under Item 1A. “Risk Factors” below. You should read that discussion, which is incorporated into this section by reference.

Licenses

In connection with our acquisition of Hyprotech Ltd. and related subsidiaries of AEA Technology plc in May 2002 and the consent decree we entered into with the Federal Trade Commission in December 2004 to resolve allegations that the acquisition was improperly anticompetitive, we and certain of our subsidiaries entered into a purchase and sale agreement with Honeywell International Inc. and certain of its subsidiaries, pursuant to which we sold intellectual property and other assets to Honeywell relating to our operator training business and our Hyprotech engineering software products. Under the terms of the transactions, we retained a perpetual, irrevocable, worldwide, royalty-free non-exclusive license to the Hyprotech engineering software and have the right to continue to develop, license and sell the Hyprotech engineering products.

In March 1982, we entered into a System License Agreement with the Massachusetts Institute of Technology, or MIT, granting us a worldwide, perpetual non-exclusive license (with the right to sublicense) to use, reproduce, distribute and create derivative works of the computer program known as "ASPEN" which provides a framework for simulating the steady-state behavior of chemical processes that we utilize in the simulation engine for our Aspen Plus product. MIT agreed that we would own any derivative works and enhancements. MIT has the right to terminate the agreement if: we breach it and do not cure the breach within 90 days after receiving a written notice from MIT; we cease to carry on our business; or certain bankruptcy or insolvency proceedings are commenced and not dismissed. In the event of such termination, sublicenses granted to our customers prior to termination will remain in effect.

Employees

As of June 30, 2017, we had a total of 1,419 full-time employees, of whom 777 were located in the United States. None of our employees is represented by a labor union, except for one employee of our subsidiary Hyprotech UK Limited who belongs to the Prospect union for professionals. We have experienced no work stoppages and believe that our employee relations are satisfactory.

Corporate Information

Aspen Technology, Inc. was formed in Massachusetts in 1981 and reincorporated in Delaware in 1998. Our principal executive offices are at 20 Crosby Drive, Bedford, MA 01730, and our telephone number at that address is (781) 221-6400. Our website address is *http://www.aspentech.com*. The information on our website is not part of this Form 10-K, unless expressly noted.

Available Information

We file reports with the Securities and Exchange Commission, or the SEC, which we make available on our website free of charge. These reports include annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to such reports, each of which is provided on our website as soon as reasonably practicable after we electronically file such materials with or furnish them to the SEC. You can also read and copy any materials we file with the SEC at the SEC's Public Reference Room at 100 F Street, N.E., Washington, DC 20549. You can obtain additional information about the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. In addition, the SEC maintains a website (*http://www.sec.gov*) that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC, including us.

Item 1A. Risk Factors.

Investing in our common stock involves a high degree of risk. You should carefully consider the risks and uncertainties described below before purchasing our common stock. The risks and uncertainties described below are not the only ones facing our company. Additional risks and uncertainties may also impair our business operations. If any of the following risks actually *occurs, our business, financial condition, results of operations or cash flows would likely suffer. In that case, the trading price of our common stock could fall, and you may lose all or part of your investment in our common stock.*

Risks Related to Our Business

If we fail to increase usage and product adoption of our aspenONE engineering and manufacturing and supply chain offerings and grow our aspenONE APM business, or fail to continue to provide innovative, market-leading solutions, we may be unable to implement our growth strategy successfully, and our business could be seriously harmed.

The maintenance and extension of our market leadership and our future growth is largely dependent upon our ability to increase usage and product adoption of our aspenONE engineering and manufacturing and supply chain offerings and grow our aspenONE APM business, and to develop new software products that achieve market acceptance with acceptable operating margins. Enterprises are requiring their application software vendors to provide greater levels of functionality and broader product offerings. We must continue to enhance our current product line and develop and introduce new products and services that keep pace with increasingly sophisticated customer requirements and the technological developments of our competitors. Our business and operating results could suffer if we cannot successfully execute our strategy and drive usage and product adoption.

We have implemented a product strategy that unifies our software solutions under the aspenONE brand with differentiated aspenONE vertical solutions targeted at specific capital-intensive industries. We cannot ensure that our product strategy will result in products that will continue to meet market needs and achieve significant usage and product adoption. If we fail to increase usage and product adoption or fail to develop or acquire new software products that meet the demands of our customers or our target markets, our operating results and cash flows from operations will grow at a slower rate than we anticipate and our financial condition could suffer.

Our business could suffer if we do not grow our aspenONE APM business or if the demand for, or usage of, our other aspenONE software declines for any reason, including declines due to adverse changes in the process and other capital-intensive industries.

We have introduced the aspenONE APM suite, and our aspenONE engineering and manufacturing and supply chain suites account for a significant majority of our revenue and will continue to do so for the foreseeable future. If we do not grow our aspenONE APM business or if demand for, or usage of, our other suites declines for any reason, our operating results, cash flows from operations and financial position would suffer. Our business could be adversely affected by:

- insufficient growth in our aspenONE APM business;
- any decline in demand for or usage of our aspenONE suites;
- the introduction of products and technologies that serve as a replacement or substitute for, or represent an improvement over, our aspenONE suites;
- technological innovations that our aspenONE suites do not address;
- our inability to release enhanced versions of our aspenONE suites on a timely basis; and
- adverse changes in capital intensive industries or otherwise that lead to reductions, postponements or cancellations of customer purchases of our products and services, or delays in the execution of license agreement renewals in the same quarter in which the original agreements expire.

Because of the nature of their products and manufacturing processes and their global operations, companies in the process and other capital intensive industries are subject to risk of adverse or even catastrophic environmental, safety and health accidents or incidents and are often subject to changing standards and regulations worldwide.

In addition, worldwide economic downturns and pricing pressures experienced by energy, chemical, engineering and construction, and other capital intensive industries have led to consolidations and reorganizations. In particular, we believe that the volatility in oil prices has impacted and may continue to impact the operating levels and capital spending by certain of our customers in the engineering and construction market, which has resulted and could continue to result in less predictable and lower demand for our products and services.

Any such adverse environmental, safety or health incident, change in regulatory standards, or economic downturn that affects the capital-intensive industries, including continued challenges and uncertainty among customers whose business is adversely affected by volatility in oil prices, as well as general domestic and foreign economic conditions and other factors that reduce spending by companies in these industries, could harm our operating results in the future.

Unfavorable economic and market conditions or a lessening demand in the market for asset optimization software could adversely affect our operating results.

Our business is influenced by a range of factors that are beyond our control and difficult or impossible to predict. If the market for asset optimization software grows more slowly than we anticipate, demand for our products and services could decline and our operating results could be impaired. Further, the state of the global economy may deteriorate in the future. Our operating results may be adversely affected by unfavorable global economic and market conditions, including significant volatility in oil prices, as well as a lessening demand for asset optimization software generally.

Customer demand for our products is linked to the strength of the global economy. If weakness in the global economy persists, many customers, including those whose businesses are negatively impacted by lower oil prices, may delay or reduce technology purchases. This could result in reductions in sales of our products, longer sales cycles, slower adoption of new technologies, increased price competition or reduced use of our products by our customers. We will lose revenue if demand for our products is reduced because potential customers experience weak or deteriorating economic conditions, catastrophic environmental or other events, and our business, results of operations, financial condition and cash flow from operations would likely be adversely affected.

The majority of our revenue is attributable to operations outside the United States, and our operating results therefore may be materially affected by the economic, political, military, regulatory and other risks of foreign operations or of transacting business with customers outside the United States.

As of June 30, 2017, we operated in 31 countries. We sell our products primarily through a direct sales force located throughout the world. In the event that we are unable to adequately staff and maintain our foreign operations, we could face difficulties managing our international operations.

Customers outside the United States accounted for the majority of our total revenue during the fiscal years ended June 30, 2017, 2016 and 2015. We anticipate that revenue from customers outside the United States will continue to account for a significant portion of our total revenue for the foreseeable future. Our operating results attributable to operations outside the United States are subject to additional risks, including:

- unexpected changes in regulatory or environmental requirements, tariffs and other barriers, including, for example, changes in climate regulations, sanctions or other regulatory restrictions imposed by the United States or foreign governments; and the effects of the United Kingdom European Union membership referendum in June 2016 and the subsequent withdrawal process initiated in March 2017;

- less effective protection of intellectual property;

- requirements of foreign laws and other governmental controls;

- delays in the execution of license agreement renewals in the same quarter in which the original agreements expire;

- difficulties in collecting trade accounts receivable in other countries;

- adverse tax consequences; and

- the challenges of managing legal disputes in foreign jurisdictions.

Fluctuations in foreign currency exchange rates could result in declines in our reported revenue and operating results.

During fiscal 2017, 2016 and 2015, 9.8%, 11.5% and 13.8% of our total revenue was denominated in a currency other than the U.S. dollar, respectively. In addition, certain of our operating expenses incurred outside the United States are denominated in currencies other than the U.S. dollar. Our reported revenue and operating results are subject to fluctuations in foreign exchange rates. Foreign currency risk arises primarily from the net difference between non-U.S. dollar receipts from customers outside the United States and non-U.S. dollar operating expenses for subsidiaries in foreign countries. Currently, our largest exposures to foreign exchange rates exist primarily with the Euro, Pound Sterling, Canadian Dollar and Japanese Yen against the U.S. dollar. During fiscal 2017, 2016 and 2015, we did not enter into, and were not a party to any, derivative financial instruments, such as forward currency exchange contracts, intended to manage the volatility of these market risks. We cannot predict the impact of foreign currency fluctuations, and foreign currency fluctuations in the future may adversely affect our revenue and operating results. Any hedging policies we may implement in the future may not be successful, and the cost of those hedging techniques may have a significant negative impact on our operating results.

Competition from software offered by current competitors and new market entrants, as well as from internally developed solutions by our customers, could adversely affect our ability to sell our software products and related services and could result in pressure to price our products in a manner that reduces our margins.

Our markets in general are competitive and differ among our principal product areas: engineering, manufacturing, supply chain management and asset performance management. We face challenges in selling our solutions to large companies that have internally developed their own proprietary software solutions, and we face competition from well-established vendors as well as new entrants in our markets. Many of our current and potential competitors have greater financial, technical, marketing, service and other resources than we have. As a result, these companies may be able to offer lower prices, additional products or services, or other incentives that we cannot match or offer. These competitors may be in a stronger position to respond more quickly to new technologies and may be able to undertake more extensive marketing campaigns. We believe they also have adopted and may continue to pursue more aggressive pricing policies and make more attractive offers to potential customers, employees and strategic partners. For example, some competitors may be able to initiate relationships through sales and installations of hardware and then seek to expand their customer relationships by offering asset optimization software at a discount. In addition, many of our competitors have established, and may in the future continue to establish, cooperative relationships with third parties to improve their product offerings and to increase the availability of their products in the marketplace. Competitors with greater financial resources may make strategic acquisitions to increase their ability to gain market share or improve the quality or marketability of their products.

Competition could seriously impede our ability to sell additional software products and related services on terms favorable to us. Businesses may continue to enhance their internally developed solutions, rather than investing in commercial software such as ours. Our current and potential commercial competitors may develop and market new technologies that render our existing or future products obsolete, unmarketable or less competitive. In addition, if these competitors develop products with similar or superior functionality to our products, we may need to decrease the prices for our products in order to remain competitive. If we are unable to maintain our current pricing due to competitive pressures, our margins will be reduced and our operating results will be negatively affected. We cannot ensure that we will be able to compete successfully against current or future competitors or that competitive pressures will not materially adversely affect our business, financial condition and operating results.

Defects or errors in our software products could harm our reputation, impair our ability to sell our products and result in significant costs to us.

Our software products are complex and may contain undetected defects or errors. We have not suffered significant harm from any defects or errors to date, but we have from time to time found defects in our products and we may discover additional defects in the future. We may not be able to detect and correct defects or errors before releasing products. Consequently, we or our customers may discover defects or errors after our products have been implemented. We have in the past issued, and may in the future need to issue, corrective releases of our products to remedy defects or errors. The occurrence of any defects or errors could result in:

- lost or delayed market acceptance and sales of our products;
- delays in payment to us by customers;
- product returns;
- injury to our reputation;
- diversion of our resources;
- increased service and warranty expenses or financial concessions;
- increased insurance costs; and
- legal claims, including product liability claims.

Defects and errors in our software products could result in claims for substantial damages against us.

Potential acquisitions could be difficult to consummate and integrate into our operations, and they and investment transactions could disrupt our business, dilute stockholder value or impair our financial results.

As part of our business strategy, we may continue from time to time to seek to grow our business through acquisitions of or investments in new or complementary businesses, technologies or products that we believe can improve our ability to compete in our existing customer markets or allow us to enter new markets. The potential risks associated with acquisitions and investment transactions include, but are not limited to:

- failure to realize anticipated returns on investment, cost savings and synergies;
- difficulty in assimilating the operations, policies and personnel of the acquired company;

- unanticipated costs associated with acquisitions;
- challenges in combining product offerings and entering into new markets in which we may not have experience;
- distraction of management’s attention from normal business operations;
- potential loss of key employees of the acquired company;
- difficulty implementing effective internal controls over financial reporting and disclosure controls and procedures;
- impairment of relationships with customers or suppliers;
- possibility of incurring impairment losses related to goodwill and intangible assets; and
- other issues not discovered in due diligence, which may include product quality issues or legal or other contingencies

Acquisitions and/or investments may also result in potentially dilutive issuances of equity securities, the incurrence of debt and contingent liabilities, the expenditure of available cash, and amortization expenses or write-downs related to intangible assets such as goodwill, any of which could have a material adverse effect on our operating results or financial condition. Investments in immature businesses with unproven track records and technologies have an especially high degree of risk, with the possibility that we may lose our entire investment or incur unexpected liabilities. We may experience risks relating to the challenges and costs of closing a business combination or investment transaction and the risk that an announced business combination or investment transaction may not close. There can be no assurance that we will be successful in making additional acquisitions in the future or in integrating or executing on our business plan for existing or future acquisitions.

We may be subject to significant expenses and damages because of product-related claims.

In the ordinary course of business, we are, from time to time, involved in lawsuits, claims, investigations, proceedings and threats of litigation. These matters include an April 2004 claim by a customer that certain of our software products and implementation services failed to meet the customer's expectations. In March 2014, a judgment was issued by the trial court against us in the amount of approximately 1.9 million Euro (“€”) plus interest and a portion of legal fees. We subsequently filed an appeal of that judgment. In March 2016, the appellate court determined that we were liable for damages in the amount of approximately €1.7 million plus interest, with the possibility of additional damages to be determined in further proceedings by the appellate court. As of June 30, 2017, there has been no change to the appellate court’s determination.

The amount of damages cannot be predicted with certainty, and could materially adversely affect our results of operations, cash flows or financial position.

Claims that we infringe the intellectual property rights of others may be costly to defend or settle and could damage our business.

We cannot be certain that our software and services do not infringe patents, copyrights, trademarks or other intellectual property rights, so infringement claims might be asserted against us. In addition, we have agreed, and may agree in the future, to indemnify certain of our customers against infringement claims that third parties may assert against our customers based on use of our software or services. Such claims may have a material adverse effect on our business, may be time-consuming and may result in substantial costs and diversion of resources, including our management's attention to our business. Furthermore, a party making an infringement claim could secure a judgment that requires us to pay substantial damages and could also include an injunction or other court order that could prevent us from selling our software or require that we re-engineer some or all of our products. Claims of intellectual property infringement also might require us to enter costly royalty or license agreements. We may be unable to obtain royalty or license agreements on terms acceptable to us or at all. Our business, operating results and financial condition could be harmed significantly if any of these events were to occur, and the price of our common stock could be adversely affected.

We may not be able to protect our intellectual property rights, which could make us less competitive and cause us to lose market share.

Our software is proprietary. Our strategy is to rely on a combination of copyright, patent, trademark and trade secret laws in the United States and other jurisdictions, and to rely on license and confidentiality agreements and software security measures to further protect our proprietary technology and brand. We have obtained or applied for patent protection with respect to some of our intellectual property, but generally do not rely on patents as a principal means of protecting our intellectual property. We have registered or applied to register some of our trademarks in the United States and in selected other countries. We generally enter into non-disclosure agreements with our employees and customers, and historically have restricted third-party access to our software and source code, which we regard as proprietary information. In certain cases, we have provided copies of source code to customers for the purpose of special product customization or have deposited copies of the source code with a third-party escrow agent as security for ongoing service and license obligations. In these cases, we rely on non-disclosure and other contractual provisions to protect our proprietary rights.

The steps we have taken to protect our proprietary rights may not be adequate to deter misappropriation of our technology or independent development by others of technologies that are substantially equivalent or superior to our technology. Our intellectual property rights may expire or be challenged, invalidated or infringed upon by third parties or we may be unable to maintain, renew or enter into new licenses on commercially reasonable terms. Any misappropriation of our technology or development of competitive technologies could harm our business and could diminish or cause us to lose the competitive advantages associated with our proprietary technology, and could subject us to substantial costs in protecting and enforcing our intellectual property rights, and/or temporarily or permanently disrupt our sales and marketing of the affected products or services. The laws of some countries in which our products are licensed do not protect our intellectual property rights to the same extent as the laws of the United States. Moreover, in some non-U.S. countries, laws affecting intellectual property rights are uncertain in their application, which can affect the scope of enforceability of our intellectual property rights.

Our software research and development initiatives and our customer relationships could be compromised if the security of our information technology is breached as a result of a cyber-attack. This could have a material adverse effect on our business, operating results and financial condition, and could harm our competitive position.

We devote significant resources to continually updating our software and developing new products, and our financial performance is dependent in part upon our ability to bring new products and services to market. Our customers use our software to optimize their manufacturing processes and manage asset performance, and they rely on us to provide updates and releases as part of our software maintenance and support services, and to provide remote on-line troubleshooting support. The security of our information technology environment is therefore important to our research and development initiatives, and an important consideration in our customers' purchasing decisions. If the security of our systems is impaired, our development initiatives might be disrupted, and we might be unable to provide service. Our customer relationships might deteriorate, our reputation in the industry could be harmed, and we could be subject to liability claims. This could reduce our revenues, and expose us to significant costs to detect, correct and avoid recurrences of any breach of security and to defend any claims against us.

Risks Related to Our Common Stock

Our common stock may experience substantial price and volume fluctuations.

The equity markets have from time to time experienced extreme price and volume fluctuations, particularly in the high technology sector, and those fluctuations often have been unrelated to the operating performance of particular companies. In addition, the market price of our common stock may be affected by other factors, such as: (i) our financial performance; (ii) announcements of technological innovations or new products by us or our competitors; and (iii) market conditions in the computer software or hardware industries.

In the past, following periods of volatility in the market price of a public company's securities, securities class action litigation has often been instituted against that company. This type of litigation against us could result in substantial liability and costs and divert management's attention and resources.

Our corporate documents and provisions of Delaware law may prevent a change in control or management that stockholders may consider desirable.

Section 203 of the Delaware General Corporation Law, our charter and our by-laws contain provisions that might enable our management to resist a takeover of our company. These provisions include:

- limitations on the removal of directors;
- a classified board of directors, so that not all members of the board are elected at one time;
- advance notice requirements for stockholder proposals and nominations;
- the inability of stockholders to act by written consent or to call special meetings;
- the ability of the board to make, alter or repeal our by-laws; and
- the ability of the board to designate the terms of and issue new series of preferred stock without stockholder approval.

These provisions could:

- have the effect of delaying, deferring or preventing a change in control of our company or a change in our management that stockholders may consider favorable or beneficial;
- discourage proxy contests and make it more difficult for stockholders to elect directors and take other corporate actions; and
- limit the price that investors might be willing to pay in the future for shares of our common stock.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

Our principal executive offices are located in leased facilities in Bedford, Massachusetts, consisting of approximately 143,000 square feet of office space to accommodate our product development, sales, marketing, operations, finance and administrative functions. The lease for our Bedford executive offices commenced in November 2014 and is scheduled to expire March 2025. Subject to the terms and conditions of the lease, we may extend the term of the lease for two successive terms of five years each.

We also lease approximately 63,000 square feet in Houston, Texas to accommodate sales, services and product development functions. In addition to our Bedford and Houston locations, we lease office space in Shanghai, Reading (UK), Singapore, Bahrain and Tokyo, to accommodate sales, services and product development functions.

In the remainder of our other locations, the majority of our leases have lease terms of one year or less that are generally based on the number of workstations required. We believe this facilities strategy provides us with significant flexibility to adjust to changes in our business environment. We do not own any real property. We believe that our leased facilities are adequate for our anticipated future needs.

Item 3. Legal Proceedings.

Refer to Note 16, “Commitments and Contingencies,” to our Consolidated Financial Statements for information regarding certain legal proceedings, the contents of which are herein incorporated by reference.

Item 4. Mine Safety Disclosures

None.

PART II

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

Market Information

Our common stock currently trades on The NASDAQ Global Select Market under the symbol "AZPN." The closing price of our common stock on June 30, 2017 was $55.26. The following table sets forth, for the periods indicated, the high and low sales prices per share of our common stock as reported by The NASDAQ Global Select Market:

	2017		2016	
Period	Low	High	Low	High
Quarter ended June 30	$ 54.42	$ 63.05	$ 34.81	$ 40.31
Quarter ended March 31	52.79	59.46	30.15	37.58
Quarter ended December 31	46.07	55.09	37.17	44.16
Quarter ended September 30	39.67	47.02	36.45	45.75

Holders

On August 3, 2017, there were 385 holders of record of our common stock. The number of record holders does not include persons who held our common stock in nominee or "street name" accounts through brokers.

Dividends

We have never declared or paid cash dividends on our common stock. We do not anticipate paying cash dividends on our common stock in the foreseeable future. During fiscal 2016, we entered into a $250.0 million Credit Agreement (the “Credit Agreement”) with various lenders, which restricts us from declaring or paying dividends in cash on our capital stock if our Leverage Ratio is in excess of 2.75 to 1.00 (refer to “Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations” and Note 11, "Credit Agreement," to our Consolidated Financial Statements for further discussion of the Credit Agreement). Our Leverage Ratio is below 2.75 to 1.00 as of June 30, 2017. Any future determination relating to our dividend policy will be made at the discretion of the Board of Directors and will depend on a number of factors, including our future earnings, capital requirements, financial condition and future prospects and such other factors as the Board of Directors may deem relevant.

Purchases of Equity Securities by the Issuer

As of June 30, 2017, the total number of shares of common stock repurchased since November 1, 2010 under all programs approved by the Board of Directors was 29,145,976 shares.

On January 28, 2015, our Board of Directors approved a share repurchase program for up to $450 million worth of our common stock. On April 26, 2016 and June 8, 2017, the Board of Directors approved a $400 million and $200 million increase in our current share repurchase plan, respectively. Under the share repurchase program, purchases can be made from time to time using a variety of methods, which may include open market purchases, accelerated buyback programs, and others. The specific timing, price and size of purchases will depend on prevailing stock prices, general market and economic conditions, and other considerations, including the amount of cash generated in the United States and other potential uses of cash, such as acquisitions. Purchases may be made through a Rule 10b5-1 plan pursuant to predetermined metrics set forth in such plan. The Board of Directors' authorization of the share repurchase program does not obligate us to acquire any particular amount of common stock, and the program may be suspended or discontinued at any time.

On August 29, 2016, as part of our common stock repurchase program, we entered into an accelerated share repurchase program (the "ASR Program") with a third-party financial institution. Pursuant to the terms of the ASR Program, we made an upfront payment of $100.0 million in exchange for the delivery of approximately 2.1 million shares of our common stock, which was determined based on the volume-weighted average price per share of our common stock over the term of the ASR Program, less an agreed-upon discount. These shares were recorded as an increase to treasury stock.

During fiscal 2017, we repurchased 5,185,257 shares of our common stock in the open market for $275.0 million and 2,106,709 shares of our common stock for $100.0 million as part of the ASR Program.

As of June 30, 2017, the total remaining value under the share repurchase program was approximately $346.3 million.

The following table sets forth, for the month indicated, our purchases of common stock during the fourth quarter of fiscal 2017:

Issuer Purchases of Equity Securities

Period	Total Number of Shares Purchased (2)	Average Price Paid per Share (3)	Total Number of Shares Purchased as Part of Publicly Announced Program (1)	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Program (4)
April 1 to 30, 2017	165,849	$ 58.64	165,849	
May 1 to 31, 2017	261,159	58.59	261,159	
June 1 to 30, 2017	895,824	55.79	895,824	
	1,322,832	$ 56.70	1,322,832	$ 346,292,703

(1) On January 22, 2015, our Board of Directors approved a share repurchase program for up to $450 million worth of our common stock. On April 26, 2016 and June 8, 2017, the Board of Directors approved a $400 million and $200 million increase in our current share repurchase plan, respectively.

(2) As of June 30, 2017, the total number of shares of common stock repurchased under all programs approved by the Board of Directors was 29,145,976, including purchases under the ASR Program.

(3) The total average price paid per share is calculated as the total amount paid for the repurchase of our common stock during the period divided by the total number of shares repurchased.

(4) As of June 30, 2017, the total remaining value under the share repurchase program approved on January 22, 2015 and amended on April 26, 2016 was approximately $346.3 million.

Securities Authorized for Issuance Under Equity Compensation Plans

The following table provides information about the securities authorized for issuance under our equity compensation plans as of June 30, 2017:

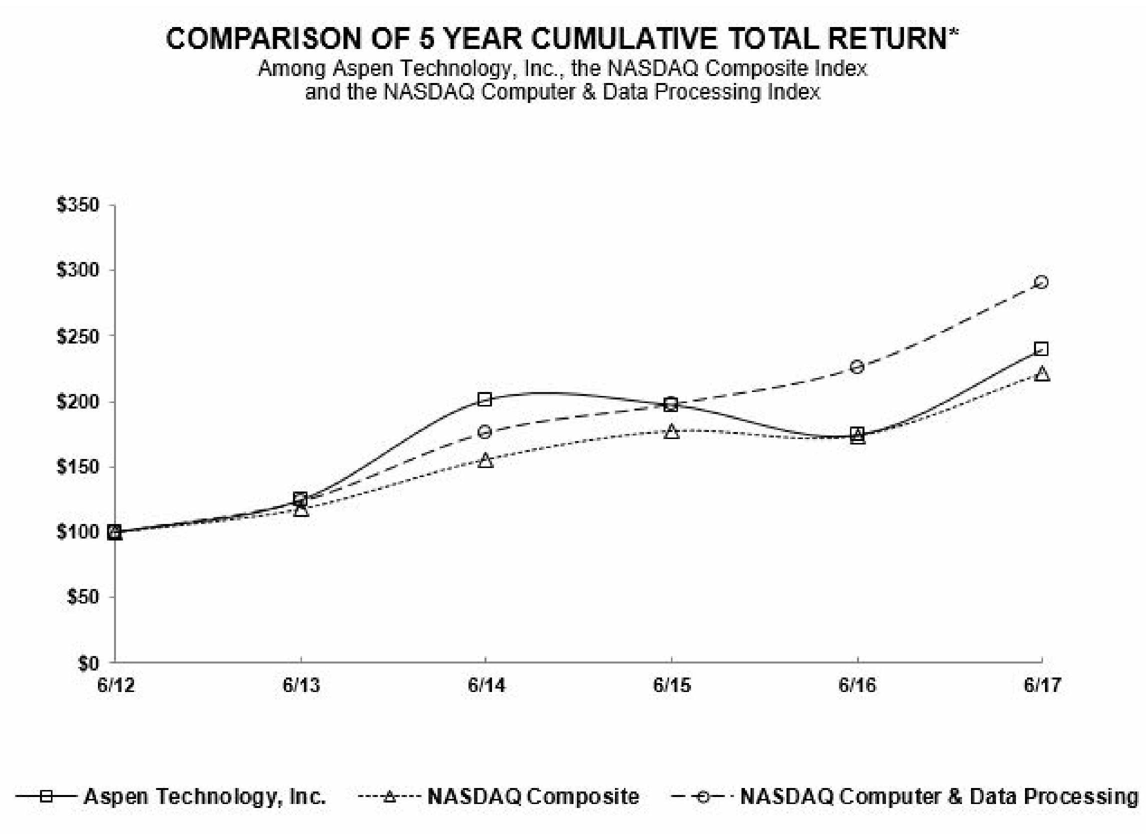
Plan Category	Number of securities to be issued upon exercise of outstanding options, warrants and rights	Weighted-average exercise price of outstanding options, warrants and rights	Number of securities remaining available for future issuance under equity compensation plans
Equity compensation plans approved by security holders	1,969,556	$ 40.37	10,751,481

Equity compensation plans approved by security holders consist of our 2010 and 2016 equity incentive plans. Options issuable under the equity incentive plan have a maximum term of ten years.

Stockholder Return Comparison

The information included in this section is not deemed to be "soliciting material" or to be "filed" with the SEC or subject to Regulation 14A or 14C under the Securities Exchange Act or to the liabilities of Section 18 of the Securities Exchange Act, and will not be deemed to be incorporated by reference into any filing under the Securities Act or the Securities Exchange Act, except to the extent we specifically incorporate it by reference into such a filing.

The graph below matches the cumulative 5-year total return of holders of our common stock with the cumulative total returns of the NASDAQ Composite index and the NASDAQ Computer & Data Processing index. The graph assumes that the value of the investment in our common stock and in each of the indexes (including reinvestment of dividends) was $100 on June 30, 2012 and tracks it through June 30, 2017.



* $100 invested on 6/30/12 in stock or index, including reinvestment of dividends.

Fiscal year ending June 30.

The stock price performance included in this graph is not necessarily indicative of future stock price performance.

	Year Ended June 30,					
	2012	2013	2014	2015	2016	2017
Aspen Technology, Inc.	$ 100.00	$ 124.36	$ 200.43	$ 196.76	$ 173.82	$ 238.70
NASDAQ Composite	$ 100.00	$ 117.69	$ 155.50	$ 177.19	$ 173.36	$ 221.11
NASDAQ Computer & Data Processing	$ 100.00	$ 123.37	$ 176.05	$ 197.82	$ 225.78	$ 290.57

Item 6. Selected Financial Data.

The following tables present selected consolidated financial data for Aspen Technology, Inc. The consolidated statements of operations data set forth below for fiscal 2017, 2016 and 2015 and the consolidated balance sheets data as of June 30, 2017, and 2016, are derived from our consolidated financial statements included beginning on page F-1 of this Form 10-K. The consolidated statements of operations data for fiscal 2014 and 2013 and the consolidated balance sheet data as of June 30, 2015, 2014, and 2013 are derived from our consolidated financial statements that are not included in this Form 10-K. The data presented below should be read in conjunction with our consolidated financial statements and accompanying notes beginning on page F-1 and "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations."

Our historical results should not be viewed as indicative of results expected for any future period.

	Year Ended June 30,				
	2017	2016	2015	2014	2013
	(in Thousands, except per share data)				
Consolidated Statements of Operations Data:					
Revenue(1)	$ 482,942	$ 472,344	$ 440,401	$ 391,453	$ 311,387
Gross profit	435,476	423,733	390,825	338,765	261,039
Income from operations	212,016	211,381	179,792	129,724	55,600
Net income	$ 162,196	$ 139,951	$ 118,407	$ 85,783	$ 45,262
Basic income per share	$ 2.12	$ 1.69	$ 1.34	$ 0.93	$ 0.48
Diluted income per share	$ 2.11	$ 1.68	$ 1.33	$ 0.92	$ 0.47
Weighted average shares outstanding—Basic	76,491	82,892	88,398	92,648	93,586
Weighted average shares outstanding—Diluted	76,978	83,309	89,016	93,665	95,410

(1) In July 2009, we introduced our aspenONE licensing model under which license revenue is recognized over the term of a license contract. We previously recognized a substantial majority of our license revenue upfront, upon shipment of software. We substantially completed our transition to the aspenONE licensing model in fiscal 2015.

	Year Ended June 30,				
	2017	2016	2015	2014	2013
	(in Thousands)				
Consolidated Balance Sheet Data:					
Cash and cash equivalents	$ 101,954	$ 318,336	$ 156,249	$ 199,526	$ 132,432
Marketable securities	—	3,006	62,244	98,889	92,368
Working (deficit) capital	(321,057)	(71,300)	(32,836)	63,178	69,890
Accounts receivable, net	27,670	20,476	30,721	38,532	36,988
Installments receivable, net	—	267	1,842	1,451	14,732
Total assets	247,942	419,738	315,361	407,972	382,748
Deferred revenue	300,359	282,078	288,887	274,882	231,353
Borrowings(1)	140,000	140,000	—	—	—
Total stockholders' (deficit) equity	(260,784)	(75,034)	(48,546)	83,676	101,898

(1) In February 2016, we entered into a Credit Agreement and borrowed $140.0 million under the agreement. Refer to "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" and Note 11, "Credit Agreement," to our Consolidated Financial Statements for further discussion of the Credit Agreement.

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

You should read the following discussion in conjunction with our consolidated financial statements and related notes beginning on page F-1. In addition to historical information, this discussion contains forward-looking statements that involve risks and uncertainties. You should read "Item 1A. Risk Factors" for a discussion of important factors that could cause our actual results to differ materially from our expectations.

Our fiscal year ends on June 30, and references to a specific fiscal year are the twelve months ended June 30 of such year (for example, "fiscal 2017" refers to the year ended June 30, 2017).

Business Overview

We are a leading global supplier of asset optimization solutions that optimize asset design, operations and maintenance in complex, industrial environments. We combine decades of process modeling and operations expertise with big data machine-learning and analytics. Our purpose-built software solutions improve the competitiveness and profitability of our customers by increasing throughput, energy efficiency, and production, reducing unplanned downtime, enhancing capital efficiency, and decreasing working capital requirements over the entire asset lifecycle to support operational excellence.

Our software incorporates our proprietary mathematical and empirical models of manufacturing and planning processes and reflects the deep domain expertise we have amassed from focusing on solutions for the process and other capital-intensive industries for over 35 years. We have developed our applications to design and optimize processes across three principal business areas: engineering, manufacturing and supply chain, and asset performance management. We are a recognized market and technology leader in providing process optimization and asset performance management software solutions for each of these business areas.

We have established sustainable competitive advantages based on the following strengths:

- Innovative products that can enhance our customers' profitability and productivity;
- Long-term customer relationships;
- Large installed base of users of our software; and
- Long-term license contracts.

We have approximately 2,100 customers globally. Our customers consist of companies engaged in the process and other capital-intensive industries such as energy, chemicals, engineering and construction, as well as pharmaceuticals, transportation, power, metals and mining, pulp and paper, and consumer packaged goods.

Business Segments

We have two operating and reportable segments: i) subscription and software and ii) services. The subscription and software segment is engaged in the licensing of asset optimization software solutions and associated support services. The services segment includes professional services and training.

Key Components of Operations

Revenue

We generate revenue primarily from the following sources:

Subscription and Software Revenue. We sell our software products to end users primarily under fixed-term licenses. We license our software products primarily through a subscription offering which we refer to as our aspenONE licensing model, which includes software maintenance and support, known as our Premier Plus SMS offering, for the entire term. Our aspenONE products are organized into three suites: 1) engineering; 2) manufacturing and supply chain; and 3) asset performance management. The aspenONE licensing model provides customers with access to all of the products within the aspenONE suite(s) they license. Customers can change or alternate the use of multiple products in a licensed suite through the use of exchangeable units of measurement, called tokens, licensed in quantities determined by the customer. This licensing system enables customers to use products as needed and to experiment with different products to best solve whatever critical business challenges they face. Customers can increase their usage of our software by purchasing additional tokens as business needs evolve.

We provide customers technical support, access to software fixes and updates and the right to any new unspecified future software products and updates that may be introduced into the licensed aspenONE software suite. Our technical support services are provided from our customer support centers throughout the world, as well as via email and through our support website.

We also license our software through point product arrangements with our Premier Plus SMS offering included for the contract term, as well as perpetual license arrangements.

Services and Other Revenue. We provide training and professional services to our customers. Our professional services are focused on implementing our technology in order to improve customers' plant performance and gain better operational data. Customers who use our professional services typically engage us to provide those services over periods of up to 24 months. We charge customers for professional services on a time-and-materials or fixed-price basis. We provide training services to our customers, including on-site, Internet-based and customized training.

Our services and other revenue consists of revenue related to professional services and training. The amount and timing of this revenue depend on a number of factors, including:

- whether the professional services arrangement was sold as a single arrangement with, or in contemplation of, a new aspenONE licensing arrangement;
- the number, value and rate per hour of service transactions booked during the current and preceding periods;
- the number and availability of service resources actively engaged on billable projects;
- the timing of milestone acceptance for engagements contractually requiring customer sign-off;
- the timing of collection of cash payments when collectability is uncertain; and
- the size of the installed base of license contracts.

Cost of Revenue

Cost of Subscription and Software. Our cost of subscription and software revenue consists of (i) royalties, (ii) amortization of capitalized software and intangibles, (iii) distribution fees, and (iv) costs of providing Premier Plus SMS bundled with our aspenONE licensing and point product arrangements.

Cost of Services and Other. Our cost of services and other revenue consists primarily of personnel-related and external consultant costs associated with providing customers professional services and training.

Operating Expenses

Selling and Marketing Expenses. Selling expenses consist primarily of the personnel and travel expenses related to the effort expended to license our products and services to current and potential customers, as well as for overall management of customer relationships. Marketing expenses include expenses needed to promote our company and our products and to conduct market research to help us better understand our customers and their business needs.

Research and Development Expenses. Research and development expenses consist primarily of personnel expenses related to the creation of new software products, enhancements and engineering changes to existing products and costs of acquired technology prior to establishing technological feasibility.

General and Administrative Expenses. General and administrative expenses include the costs of corporate and support functions, such as executive leadership and administration groups, finance, legal, human resources and corporate communications, and other costs, such as outside professional and consultant fees and provision for bad debts.

Other Income and Expenses

Interest Income. Interest income is recorded for the accretion of interest on the investment in marketable securities and short-term money market instruments.

Interest Expense. During fiscal 2017 and 2016, interest expense was primarily related to our Credit Agreement. During fiscal 2015, interest expense was comprised of miscellaneous interest charges.

Other Income (Expense), Net. Other income (expense), net is comprised primarily of foreign currency exchange gains (losses) generated from the settlement and remeasurement of transactions denominated in currencies other than the functional currency of our operating units. During fiscal 2017, other income also included a $0.7 million litigation related recovery receipt.

Provision for Income Taxes. Provision for income taxes is comprised of domestic and foreign taxes. We record interest and penalties related to income tax matters as a component of income tax expense. Our effective income tax rate may fluctuate between fiscal years and from quarter to quarter due to items arising from discrete events, such as tax benefits from the disposition of employee equity awards, settlements of tax audits and assessments and tax law changes. Our effective income tax rate is also impacted by, and may fluctuate in any given period because of, the composition of income in foreign jurisdictions where tax rates differ.

Key Business Metrics

Background

We utilize certain key non-GAAP and other business measures to track and assess the performance of our business and we make these measures available to investors. We have refined the set of appropriate business metrics in the context of our evolving business and use the following non-GAAP business metrics in addition to GAAP measures to track our business performance:

- Annual spend;
- Free cash flow; and
- Non-GAAP operating income.

None of these metrics should be considered as an alternative to any measure of financial performance calculated in accordance with GAAP.

Annual Spend

Annual spend is an estimate of the annualized value of our portfolio of term license arrangements, as of a specific date. Management believes that this financial measure is a useful metric to investors as it provides insight into the growth component of license bookings during a fiscal period. Annual spend is calculated by summing the most recent annual invoice value of each of our active term license contracts. Annual spend also includes the annualized value of standalone SMS agreements purchased in conjunction with term license agreements. Comparing annual spend for different dates can provide insight into the growth and retention rates of our business, and since annual spend represents the estimated annualized billings associated with our active term license agreements, it provides insight into the future value of subscription and software revenue.

Annual spend increases as a result of:

- New term license agreements with new or existing customers;
- Renewals or modifications of existing term license agreements that result in higher license fees due to price escalation or an increase in the number of tokens (units of software usage) or products licensed; and
- Escalation of annual payments in our active term license contracts.

Annual spend is adversely affected by term license and standalone SMS agreements that are renewed at a lower entitlement level or not renewed and, to a lesser extent, by customer contracts that are terminated during the contract term due to the customer's business ceasing operations.

We estimate that annual spend grew by approximately 4.1% during fiscal 2017, from $441.4 million at June 30, 2016 to $459.6 million at June 30, 2017. We estimate that annual spend grew by approximately 5.3% during fiscal 2016, from $419.3 million at June 30, 2015 to $441.4 million at June 30, 2016. The growth was attributable primarily to an increase in the number of tokens or products sold.

Free Cash Flow

We use a non-GAAP measure of free cash flow to analyze cash flows generated from our operations. Management believes that this financial measure is useful to investors because it permits investors to view our performance using the same tools that management uses to gauge progress in achieving our goals. We believe this measure is also useful to investors because it is an indication of cash flow that may be available to fund investments in future growth initiatives or to repay borrowings under the Credit Agreement, and it is a basis for comparing our performance with that of our competitors. The presentation of free cash flow is not meant to be considered in isolation or as an alternative to cash flows from operating activities as a measure of liquidity.

Free cash flow is calculated as net cash provided by operating activities adjusted for the net impact of (a) purchases of property, equipment and leasehold improvements, (b) capitalized computer software development costs, (c) excess tax benefits from stock-based compensation, (d) non-capitalized acquired technology, and (e) other nonrecurring items, such as acquisition related payments and litigation related payments (receipts).

The following table provides a reconciliation of GAAP cash flow from operating activities to free cash flow for the indicated periods:

	June 30, 2017	June 30, 2016	June 30, 2015
	(Dollars in Thousands)		
GAAP cash flow from operating activities	$ 182,386	$ 153,744	$ 191,985
Purchase of property, equipment, and leasehold improvements	(2,720)	(3,483)	(7,645)
Capitalized computer software development costs	(405)	(269)	(359)
Excess tax benefits from stock-based compensation	5,965	2,208	37,024
Non-capitalized acquired technology	2,246	1,250	2,621
Litigation related (receipts) payments	(721)	3,040	—
Acquisition related fee payments	448	8,649	—
Free cash flow (non-GAAP)	$ 187,199	$ 165,139	$ 223,626

Fiscal 2017 Compared to Fiscal 2016

Total free cash flow increased $22.1 million during fiscal 2017 as compared to the prior fiscal year primarily due to higher net income of $22.2 million.

Excess tax benefits are related to stock-based compensation tax deductions in excess of book compensation expense and reduce our income taxes payable. We have included the impact of excess tax benefits within free cash flow to be consistent with the treatment of other tax benefits.

In fiscal 2017, 2016 and 2015, we acquired technology that did not meet the accounting requirements for capitalization and therefore the cost of the acquired technology was expensed as research and development. We have excluded the payment for the acquired technology from free cash flow to be consistent with transactions where the acquired technology assets were capitalized.

Fiscal 2016 Compared to Fiscal 2015

Total free cash flow decreased $58.5 million during fiscal 2016 as compared to the prior fiscal year primarily due to higher net income tax payments of $65.3 million.

Non-GAAP Operating Income

Non-GAAP operating income excludes certain non-cash and non-recurring expenses, and is used as a supplement to operating income presented on a GAAP basis. We believe that non-GAAP operating income is a useful financial measure because removing certain non-cash and other items provides additional insight into recurring profitability and cash flow from operations.

The following table presents our net income, as adjusted for stock-based compensation expense, non-capitalized acquired technology and amortization of purchased technology intangibles, and other items, such as acquisition related expenses, for the indicated periods:

	June 30,			2017 Compared to 2016		2016 Compared to 2015	
	2017	2016	2015	$	%	$	%
GAAP income from operations	$ 212,016	$ 211,381	$ 179,792	$ 635	0.3 %	$ 31,589	17.6 %
Plus:							
Stock-based compensation	18,800	15,727	14,584	3,073	19.5 %	1,143	7.8 %
Non-capitalized acquired technology	2,250	250	3,277	2,000	800.0 %	(3,027)	-92.4 %
Amortization of intangibles	950	147	748	803	546.3 %	(601)	-80.3 %
Acquisition related fees	1,754	5,213	—	(3,459)	-66.4 %	5,213	100.0 %
Non-GAAP operating income	$ 235,770	$ 232,718	$ 198,401	$ 3,052	1.3 %	$ 34,317	17.3 %

Non-GAAP operating income increased $3.1 million, or approximately 1%, in fiscal year 2017 as compared to the prior year primarily due to a larger base of license arrangements recognized on a ratable basis amounting to $13.1 million. Non-GAAP operating income increased $34.3 million, or approximately 17%, in 2016 as compared to the prior year due to an increase in revenue primarily due to a larger base of license arrangements recognized on a ratable basis amounting to $34.8 million.

In fiscal 2017, 2016 and 2015, we acquired technology that did not meet the accounting requirements for capitalization and therefore the cost of the acquired technology was expensed as research and development. We have excluded the expense of the acquired technology from non-GAAP operating income to be consistent with transactions where the acquired assets were capitalized.

Results of Operations

The following table sets forth the results of operations, percentage of total revenue and the year-over-year percentage change in certain financial data for fiscal 2017, 2016 and 2015:

	Year Ended June 30,						2017 Compared to 2016 %	2016 Compared to 2015 %
	2017		2016		2015			
	(Dollars in Thousands)							
Revenue:								
Subscription and software	$ 453,512	93.9 %	$ 440,408	93.2 %	$ 405,640	92.1 %	3.0 %	8.6 %
Services and other	29,430	6.1	31,936	6.8	34,761	7.9	(7.8)	(8.1)
Total revenue	482,942	100.0	472,344	100.0	440,401	100.0	2.2	7.3
Cost of revenue:								
Subscription and software	21,051	4.4	20,376	4.3	21,165	4.8	3.3	(3.7)
Services and other	26,415	5.5	28,235	6.0	28,411	6.5	(6.4)	(0.6)
Total cost of revenue	47,466	9.9	48,611	10.3	49,576	11.3	(2.4)	(1.9)
Gross profit	435,476	90.1	423,733	89.7	390,825	88.7	2.8	8.4
Operating expenses:								
Selling and marketing	92,633	19.2	91,536	19.4	92,736	21.1	1.2	(1.3)
Research and development	79,530	16.5	67,152	14.2	69,584	15.8	18.4	(3.5)
General and administrative	51,297	10.6	53,664	11.4	48,713	11.1	(4.4)	10.2
Total operating expenses	223,460	46.3	212,352	45.0	211,033	47.9	5.2	0.6
Income from operations	212,016	43.9	211,381	44.8	179,792	40.8	0.3	17.6
Interest income	808	0.2	441	0.1	487	0.1	83.2	(9.4)
Interest expense	(3,787)	(0.8)	(1,212)	(0.3)	(30)	—	212.5	3,940.0
Other income (expense), net	1,309	0.3	29	—	(778)	(0.2)	4,413.8	(103.7)
Income before provision for income taxes	210,346	43.6	210,639	44.6	179,471	40.8	(0.1)	17.4
Provision for income taxes	48,150	10.0	70,688	15.0	61,064	13.9	(31.9)	15.8
Net income	$ 162,196	33.6 %	$ 139,951	29.6 %	$ 118,407	26.9 %	15.9 %	18.2 %

Revenue

Fiscal 2017 Compared to Fiscal 2016

Total revenue increased by $10.6 million during fiscal 2017 as compared to the prior fiscal year. The increase was due to higher subscription and software revenue of $13.1 million, partially offset by lower services and other revenue of $2.5 million.

Fiscal 2016 Compared to Fiscal 2015

Total revenue increased by $32.0 million during fiscal 2016 as compared to the prior fiscal year. The increase was due to higher subscription and software revenue of $34.8 million, partially offset by lower services and other revenue of $2.8 million.

Total revenue recognized during fiscal 2016 included $6.1 million related to the completion of customer arrangements recognized under completed contract accounting. This amount was recognized as $5.1 million of subscription and software revenue and $1.0 million of services and other revenue. We did not have a comparable event in fiscal 2015.

Subscription and Software Revenue

	Year Ended June 30,			2017 Compared to 2016		2016 Compared to 2015	
	2017	2016	2015	$	%	$	%
	(Dollars in Thousands)						
Subscription and software revenue	$ 453,512	$ 440,408	$ 405,640	$ 13,104	3.0%	$ 34,768	8.6%
As a percent of revenue	93.9%	93.2%	92.1%				

Fiscal 2017 Compared to Fiscal 2016

The increase in subscription and software revenue of $13.1 million during fiscal 2017 as compared to the prior fiscal year was primarily the result of the growth of our base of license arrangements being recognized on a ratable basis.

Fiscal 2016 Compared to Fiscal 2015

The increase in subscription and software revenue during fiscal 2016 as compared to the prior fiscal year was primarily the result of a larger base of license arrangements being recognized on a ratable basis.

The subscription and software revenue for fiscal 2016 included $5.1 million related to the completion of customer arrangements recognized under completed contract accounting, as noted above. We did not have a comparable event in fiscal 2015.

Services and Other Revenue

	Year Ended June 30,			2017 Compared to 2016		2016 Compared to 2015	
	2017	2016	2015	$	%	$	%
	(Dollars in Thousands)						
Services and other revenue	$ 29,430	$ 31,936	$ 34,761	$ (2,506)	(7.8)%	$ (2,825)	(8.1)%
As a percent of revenue	6.1%	6.8%	7.9%				

Services and other revenue consists primarily of revenue related to professional services and training.

Fiscal 2017 Compared to Fiscal 2016

The decrease in services and other revenue of $2.5 million during fiscal 2017 as compared to the prior fiscal year was attributable to lower professional services revenue of $1.6 million and lower training revenue of $0.8 million.

Under the aspenONE licensing model, revenue from committed professional service arrangements that are sold as a single arrangement with, or in contemplation of, a new aspenONE licensing transaction is deferred and recognized on a ratable basis over the longer of (a) the period the services are performed or (b) the term of the related software arrangement. As our typical contract term approximates five years, professional services revenue on these types of arrangements will usually be recognized over a longer period than the period over which the services are performed. Revenue from professional service arrangements bundled with and recognized over the term of aspenONE transactions was consistent year-over-year.

Fiscal 2016 Compared to Fiscal 2015

The decrease in services and other revenue of $2.8 million during fiscal 2016 as compared to the prior fiscal year was attributable to lower professional services revenue of $1.8 million and lower training revenue of $1.0 million.

Professional services revenue during fiscal 2016 included $1.0 million related to the completion of customer arrangements recognized under completed contract accounting, as noted above. We did not have a comparable event in fiscal 2015.

Cost of Revenue

Cost of Subscription and Software Revenue

	Year Ended June 30,			2017 Compared to 2016		2016 Compared to 2015	
	2017	2016	2015	$	%	$	%
	(Dollars in Thousands)						
Cost of subscription and software revenue	$ 21,051	$ 20,376	$ 21,165	$ 675	3.3%	$ (789)	(3.7)%
As a percent of revenue	4.4%	4.3%	4.8%				

Cost of subscription and software revenue increased by $0.7 million during fiscal 2017 as compared with the prior fiscal year and decreased by $0.8 million during fiscal year 2016 as compared with the prior fiscal year. Subscription and software gross profit margin was 95.4% in fiscal 2017 and was consistent with 95.4% and 94.8% in fiscal years 2016 and 2015, respectively.

Cost of Services and Other Revenue

	Year Ended June 30,			2017 Compared to 2016		2016 Compared to 2015	
	2017	2016	2015	$	%	$	%
	(Dollars in Thousands)						
Cost of services and other revenue	$ 26,415	$ 28,235	$ 28,411	$ (1,820)	(6.4)%	$ (176)	(0.6)%
As a percent of revenue	5.5%	6.0%	6.5%				

Cost of services and other revenue includes the cost of providing professional services and training.

Fiscal 2017 Compared to Fiscal 2016

Cost of services and other revenue decreased by $1.8 million during fiscal 2017 as compared to the prior fiscal year. The decrease was due to lower cost of training revenue of $1.7 million and lower cost of professional services revenue of $0.1 million.

Gross profit margin on services and other revenue decreased from 11.6% during fiscal 2016 to 10.2% during fiscal 2017 primarily due to lower services and other revenue.

Fiscal 2016 Compared to Fiscal 2015

Cost of services and other revenue decreased by $0.2 million during fiscal 2016 as compared to the prior fiscal year. The decrease was due to lower cost of professional services revenue of $0.4 million, slightly offset by higher cost of training revenue of $0.2 million.

The year-over-year decrease of $0.4 million in cost of professional services revenue is attributable to lower costs of revenue of $0.9 million related to lower professional service business activity during fiscal year 2016, partially offset by higher cost of revenue of $0.5 million related to projects accounted for under the completed contract method.

Gross profit margin on services and other revenue decreased from 18.3% during fiscal 2015 to 11.6% during fiscal 2016 primarily due to lower services and other revenue and flat costs.

Gross Profit

	Year Ended June 30,			2017 Compared to 2016		2016 Compared to 2015	
	2017	2016	2015	$	%	$	%
	(Dollars in Thousands)						
Gross profit	$ 435,476	$ 423,733	$ 390,825	$ 11,743	2.8%	$ 32,908	8.4%
As a percent of revenue	90.1%	89.7%	88.7%				

Fiscal 2017 Compared to Fiscal 2016

Gross profit increased by $11.7 million during fiscal 2017 as compared to the prior fiscal year and gross profit margin remained consistent at 90.1% in fiscal 2017 compared to 89.7% in fiscal 2016. The year-to-year increase in gross profit was primarily attributable to the growth of our subscription and software revenue, while gross profit margin remained consistent.

Fiscal 2016 Compared to Fiscal 2015

Gross profit increased by $32.9 million during fiscal 2016 as compared to the prior fiscal year and gross profit margin increased to 89.7% in fiscal 2016 from 88.7% in fiscal 2015. The year-to-year increase in gross profit and gross margin was primarily attributable to the growth of our subscription and software revenue, as well as decreases in costs of subscription and software revenue.

Operating Expenses

Selling and Marketing Expense

	Year Ended June 30,			2017 Compared to 2016		2016 Compared to 2015	
	2017	2016	2015	$	%	$	%
	(Dollars in Thousands)						
Selling and marketing expense	$ 92,633	$ 91,536	$ 92,736	$ 1,097	1.2%	$ (1,200)	(1.3)%
As a percent of revenue	19.2%	19.4%	21.1%				

Fiscal 2017 Compared to Fiscal 2016

The year-over-year increase in selling and marketing expense in fiscal 2017 as compared to the prior fiscal year was primarily the result of higher commissions expense of $1.2 million, higher marketing costs of $1.0 million due to our biennial customer conference held in fiscal 2017, and higher professional fees of $0.9 million, partially offset by lower sales conference costs of $1.6 million due to the holding of one sales conference in the current fiscal year compared to two sales conferences in the prior fiscal year, and lower stock-based compensation of $0.7 million.

Fiscal 2016 Compared to Fiscal 2015

The year-over-year decrease in selling and marketing expense in fiscal 2016 as compared to the prior fiscal year was primarily the result of lower commissions expense of $5.6 million, partially offset by higher compensation costs of $2.0 million, higher stock-based compensation of $1.3 million and higher overhead allocations of $1.1 million.

Overhead allocations consist of information systems costs, facility costs and certain benefit costs. The overhead expenses are allocated to departments based on relative headcount, geographic location and total salary.

Research and Development Expense

	Year Ended June 30,			2017 Compared to 2016		2016 Compared to 2015	
	2017	2016	2015	$	%	$	%
	(Dollars in Thousands)						
Research and development expense	$ 79,530	$ 67,152	$ 69,584	$ 12,378	18.4%	$ (2,432)	(3.5)%
As a percent of revenue	16.5%	14.2%	15.8%				

Fiscal 2017 Compared to Fiscal 2016

Research and development expenses increased by approximately $12.4 million during fiscal 2017 as compared to the prior fiscal year, which was primarily due to acquisitions and hiring related to our new asset performance management suite. The increase resulted primarily from higher compensation costs of $5.2 million related to an increase in headcount, higher stock-based compensation of $2.4 million, and higher overhead allocations of $1.9 million, as well as higher costs of acquired technology of $1.9 million and higher professional fees of $1.0 million.

In fiscal 2017 and 2016, we acquired technology in two separate transactions for $2.3 million and $0.3 million, respectively. At the time we acquired the technology, the projects to develop commercially available products did not meet the accounting definition of having reached technological feasibility and therefore the cost of the acquired technology was expensed as a research and development expense.

Fiscal 2016 Compared to Fiscal 2015

Research and development expenses decreased by approximately $2.4 million during fiscal 2016 as compared to the prior fiscal year. The decrease resulted primarily from lower costs of acquired technology of $3.0 million and lower stock-based compensation of $0.5 million, partially offset by higher compensation costs of $0.6 million and higher overhead allocations of $0.4 million.

In fiscal 2016 and 2015, we acquired technology in two separate transactions for $0.3 million and $3.3 million, respectively. At the time we acquired the technology, the projects to develop commercially available products did not meet the accounting definition of having reached technological feasibility and therefore the cost of the acquired technology was expensed as a research and development expense.

General and Administrative Expense

	Year Ended June 30,			2017 Compared to 2016		2016 Compared to 2015	
	2017	2016	2015	$	%	$	%
	(Dollars in Thousands)						
General and administrative expense	$ 51,297	$ 53,664	$ 48,713	$ (2,367)	(4.4)%	$ 4,951	10.2%
As a percent of revenue	10.6%	11.4%	11.1%				

Fiscal 2017 Compared to Fiscal 2016

The year-over-year decrease in general and administrative expense during fiscal 2017 as compared to the prior fiscal year was primarily attributable to lower acquisition costs of $3.4 million, lower overhead allocations of $2.2 million and lower compensation costs of $0.6 million, partially offset by higher professional fees of $1.9 million, which were primarily related to our assessment and implementation of ASU No. 2014-09 *Revenue from Contracts with Customers*, as well as higher stock-based compensation of $1.3 million and higher hardware and software maintenance costs of $0.7 million.

Fiscal 2016 Compared to Fiscal 2015

The year-over-year increase in general and administrative expense during fiscal 2016 as compared to the prior fiscal year was primarily attributable to the Acquisition Bid costs of $5.2 million, higher compensation expense of $0.9 million, higher bad debt expense of $0.8 million and a benefit in fiscal 2015 of $0.9 million associated with the collection of a business tax refund. These increases were partially offset by lower legal and litigation related expenses of $2.2 million and lower consulting costs of $1.0 million.

Interest Income

	Year Ended June 30,			2017 Compared to 2016		2016 Compared to 2015	
	2017	2016	2015	$	%	$	%
	(Dollars in Thousands)						
Interest income	$ 808	$ 441	$ 487	$ 367	83.2%	$ (46)	(9.4)%
As a percent of revenue	0.2%	0.1%	0.1%				

Fiscal 2017 Compared to Fiscal 2016

The year-over-year increase in interest income during fiscal 2017 as compared to the prior fiscal year was attributable to a higher level of interest income from investments.

Fiscal 2016 Compared to Fiscal 2015

The year-over-year decrease in interest income during fiscal 2016 as compared to the prior fiscal year was attributable to a lower level of interest income from investments.

Interest Expense

	Year Ended June 30,			2017 Compared to 2016		2016 Compared to 2015	
	2017	2016	2015	$	%	$	%
	(Dollars in Thousands)						
Interest expense	$ (3,787)	$ (1,212)	$ (30)	$ (2,575)	212.5%	$ (1,182)	3,940.0%
As a percent of revenue	(0.8)%	(0.3)%	— %				

Fiscal 2017 Compared to Fiscal 2016

The year-over-year increase in interest expense during fiscal 2017 as compared to the prior fiscal year was primarily attributable to interest expenses related to the Credit Agreement we entered into during fiscal 2016.

Fiscal 2016 Compared to Fiscal 2015

The year-over-year increase in interest expense during fiscal 2016 as compared to the prior fiscal year was primarily attributable to interest expenses related to the Credit Agreement we entered into during fiscal 2016.

Other Income (Expense), Net

	Year Ended June 30,			2017 Compared to 2016		2016 Compared to 2015	
	2017	2016	2015	$	%	$	%
	(Dollars in Thousands)						
Other income (expense), net	$ 1,309	$ 29	$ (778)	$ 1,280	4,413.8%	$ 807	(103.7)%
As a percent of revenue	0.3%	—%	(0.2)%				

Other income (expense), net is comprised primarily of unrealized and realized foreign currency exchange gains and losses generated from the settlement and remeasurement of transactions denominated in currencies other than the functional currency of our operating units. Other income (expense), net also includes miscellaneous non-operating gains and losses.

During fiscal 2017, other income, net was comprised of a $0.7 million litigation related recovery receipt and other net currency gains. During fiscal 2016, other income, net was less than $0.1 million of net currency gains, which was comprised primarily of $3.4 million of foreign currency exchange losses related to the Acquisition Bid, offset by $3.5 million of net currency gains. During fiscal 2015, other expense, net was $0.8 million, which was comprised primarily of net currency losses.

Provision for Income Taxes

	Year Ended June 30,			2017 Compared to 2016		2016 Compared to 2015	
	2017	2016	2015	$	%	$	%
	(Dollars in Thousands)						
Provision for income taxes	$ 48,150	$ 70,688	$ 61,064	$ (22,538)	(31.9)%	$ 9,624	15.8
Effective tax rate	22.9%	33.6%	34.0%				

Fiscal 2017 Compared to Fiscal 2016

The effective tax rate for the periods presented is primarily the result of income earned in the U.S. taxed at U.S. federal and state statutory income tax rates, income earned in foreign tax jurisdictions taxed at the applicable rates, as well as the impact of permanent differences between book and tax income.

Our effective tax rate was 22.9% and 33.6% during fiscal 2017 and 2016, respectively.

We recognized income tax expense of $48.2 million during fiscal 2017 compared to $70.7 million during fiscal 2016. The $22.5 million year-over-year decrease was generally attributable to an income tax benefit of $19.1 million primarily resulting from the release of tax contingency reserves as a result of concluding an examination of our fiscal 2015 federal tax return by the IRS and additional federal and state research and development ("R&D") credits.

As of June 30, 2017, we maintained a valuation allowance in the U.S. primarily for certain deferred tax assets related to capital losses that are anticipated to expire unused. We also maintain a valuation allowance on certain foreign subsidiary NOL carryforwards and state R&D credits because it is more likely than not that a benefit will not be realized. As of June 30, 2017 and 2016, our total valuation allowance was $11.3 million and $10.1 million, respectively.

We made cash tax payments totaling $65.5 million during fiscal 2017. We paid $60.8 million for U.S. federal and state income taxes and $4.7 million for foreign tax liabilities.

Fiscal 2016 Compared to Fiscal 2015

The effective tax rate for the periods presented is primarily the result of income earned in the U.S. taxed at U.S. federal and state statutory income tax rates, income earned in foreign tax jurisdictions taxed at the applicable rates, as well as the impact of permanent differences between book and tax income.

Our effective tax rate was 33.6% and 34.0% during fiscal 2016 and 2015, respectively.

We recognized income tax expense of $70.7 million during fiscal 2016 compared to $61.1 million during fiscal 2015. The $9.6 million year-over-year increase was generally attributable to additional income tax expense of $10.9 million primarily resulting from higher U.S. pre-tax profit and foreign income inclusion. These increases were partially offset by an increased tax benefit of $1.3 million related to a Domestic Production Activity Deduction.

As of June 30, 2016, we maintained a valuation allowance in the U.S. primarily for certain deferred tax assets related to capital losses that are anticipated to expire unused. We also maintain a valuation allowance on certain foreign subsidiary NOL carryforwards because it is more likely than not that a benefit will not be realized. As of June 30, 2016 and 2015, our total valuation allowance was $10.1 million.

We made cash tax payments totaling $69.4 million during fiscal 2016. We paid $65.4 million for U.S. federal and state income taxes and $4.0 million for foreign tax liabilities.

Liquidity and Capital Resources

Resources

In recent years, we have financed our operations with cash generated from operating activities. As of June 30, 2017, our principal sources of liquidity consisted of $102.0 million in cash and cash equivalents. As of June 30, 2016, our principal sources of liquidity consisted of $318.3 million in cash and cash equivalents and $3.0 million of marketable securities.

We believe our existing cash and cash equivalents and marketable securities, together with our cash flows from operating activities, will be sufficient to meet our anticipated cash needs for at least the next twelve months. We may need to raise additional funds if we decide to make one or more acquisitions of businesses, technologies or products. If additional funding for such purpose is required beyond existing resources and our Credit Agreement described below, we may not be able to effect a receivable, equity or debt financing on terms acceptable to us or at all.

Credit Agreement

On February 26, 2016, we entered into a $250.0 million Credit Agreement (the “Credit Agreement”) with various lenders. On August 9, 2017, we entered into an Amendment to increase the Credit Agreement to $350.0 million. The Credit Agreement matures on February 26, 2021. Prior to the maturity of the Credit Agreement, any amounts borrowed may be repaid and, subject to the terms and conditions of the Credit Agreement, borrowed again whole or in part without penalty. As of June 30, 2017 and 2016, we had $140.0 million in outstanding borrowings under the Credit Agreement.

For a more detailed description of the Credit Agreement, see Note 11, Credit Agreement, of our Consolidated Financial Statements.

Cash Equivalents and Cash Flows

Our cash equivalents of $79.7 million and $286.2 million as of June 30, 2017 and 2016, respectively, consisted primarily of money market funds. Our investments in marketable securities of $3.0 million as of June 30, 2016 consisted primarily of investment grade fixed income corporate debt securities with maturities ranging from less than two months. We had no investments in marketable securities as of June 30, 2017. The fair value of our portfolio is affected by interest rate movements, credit and liquidity risks. The objective of our investment policy is to manage our cash and investments to preserve principal and maintain liquidity, while earning a return on our investment portfolio by investing available funds. We diversify our investment portfolio by investing in multiple types of investment-grade securities and attempt to mitigate a risk of loss by using a third-party investment manager.

The following table summarizes our cash flow activities for the periods indicated:

	Year Ended June 30,		
	2017	2016	2015
	(Dollars in Thousands)		
Cash flow provided by (used in):			
Operating activities	$ 182,386	$ 153,744	$ 191,985
Investing activities	(36,698)	47,221	27,466
Financing activities	(362,017)	(38,659)	(261,259)
Effect of exchange rates on cash balances	(53)	(219)	(1,469)
Increase (decrease) in cash and cash equivalents	$ (216,382)	$ 162,087	$ (43,277)

Operating Activities

Our primary source of cash is from the annual installments associated with our software license arrangements and related software support services, and to a lesser extent from professional services and training. We believe that cash inflows from our term license business will grow as we benefit from the continued growth of our portfolio of term license contracts.

Fiscal 2017

Cash from operating activities provided $182.4 million during fiscal 2017. This amount resulted from net income of $162.2 million, adjusted for non-cash items of $20.7 million, and net uses of cash of $0.5 million due to increases in operating assets of $9.9 million and increases in operating liabilities of $9.4 million.

Cash flow from operations for fiscal 2017 was reduced by expensing $2.3 million related to the purchases of non-capitalized acquired technology. Other acquisitions of technology qualified for capitalization and therefore the cash outflow is shown in the investing section of the consolidated statements of cash flows. Refer to the ‘Key Business Metrics - Free Cash Flow” and “Non-GAAP Operating Income” for further discussion of the non-capitalized acquired technology transaction.

Non-cash expenses within net income consisted primarily of stock-based compensation expense of $18.8 million, depreciation and amortization expense of $6.4 million, and net foreign currency gains of $1.0 million.

An increase in operating assets of $9.9 million and an increase in operating liabilities of $9.4 million decreased net cash from operating activities by $0.5 million. Uses of cash consisted of net decreases in accounts payable, accrued expenses and other current liabilities of $9.1 million, increases in accounts receivable of $7.5 million and increases in prepaid expenses, prepaid income taxes and other assets totaling $2.4 million. Partially offsetting these uses of cash were net increases in deferred revenue of $18.5 million.

Fiscal 2016

Cash from operating activities provided $153.7 million during fiscal 2016. This amount resulted from net income of $140.0 million, adjusted for non-cash items of $21.2 million, and net uses of cash of $7.4 million due to decreases in operating assets of $3.3 million and decreases in operating liabilities of $10.7 million.

During fiscal 2015 and 2014, we utilized tax credits and net operating losses to offset U.S. corporate income taxes payable and paid net taxes of $3.7 million and $7.2 million, respectively. We became a tax payer in fiscal year 2016, and paid taxes of $69.4 million.

Cash flow from operations for fiscal 2016 was reduced by our expensing a $1.3 million payment related to the purchase of non-capitalized acquired technology. Other past acquisitions of technology qualified for capitalization and therefore the cash outflow was shown in the investing section of the consolidated statements of cash flows. Refer to the ‘Key Business Metrics - Free Cash Flow” and “Non-GAAP Operating Income” for further discussion of the non-capitalized acquired technology transaction.

Non-cash expenses within net income consisted primarily of stock-based compensation expense of $15.7 million, depreciation and amortization expense of $6.1 million, and net foreign currency gains of $3.7 million.

A decrease in operating assets of $3.3 million and a decrease in operating liabilities of $10.7 million reduced net cash from operating activities by $7.4 million. Uses of cash consisted of decreases in deferred revenue of $6.2 million, net decreases in accounts payable, accrued expenses and other current liabilities of $4.5 million, and increases in prepaid expenses, prepaid income taxes and other assets totaling $6.1 million. Partially offsetting these uses of cash were decreases in accounts receivable of $9.4 million.

Investing Activities

Fiscal 2017

During fiscal 2017, we used $36.7 million of cash from investing activities. The use of cash was from $36.2 million for business acquisitions and $3.1 million for capital expenditures. Partially offsetting this use of cash was $2.6 million related to the net maturity of marketable securities.

Fiscal 2016

During fiscal 2016, we provided $47.2 million of cash from investing activities. The source of cash was from $59.0 million related to the maturity of marketable securities. Partially offsetting this source of cash were a $8.0 million use of cash for business acquisitions, a $3.5 million use of cash for capital expenditures and a $0.3 million use of cash related to the capitalization of internally developed software costs.

Financing Activities

Fiscal 2017

During fiscal 2017, we used $362.0 million of cash for financing activities. We paid $371.5 million for repurchases of our common stock and paid withholding taxes of $5.8 million on vested and settled restricted stock units. Sources of cash in the period included proceeds of $9.3 million from the exercise of employee stock options and $6.0 million related to stock-based compensation tax deductions in excess of book compensation expense that reduced taxes payable and increased additional paid in capital.

Fiscal 2016

During fiscal 2016, we used $38.7 million of cash for financing activities. We paid $178.6 million for repurchases of our common stock, paid withholding taxes of $4.5 million on vested and settled restricted stock units and paid $1.7 million for issuance costs in connection with the Credit Agreement. Sources of cash in the period included $140.0 million in proceeds from the Credit Agreement, $2.2 million related to stock-based compensation tax deductions in excess of book compensation expense that reduced taxes payable and increased additional paid in capital and proceeds of $3.9 million from the exercise of employee stock options.

Contractual Obligations and Requirements

Our contractual obligations consisted primarily of borrowings and interest under our Credit Agreement, operating lease commitments for our headquarters and other facilities, royalty and other obligations and were as follows as of June 30, 2017:

	Payments due by Period				
	Total	**Less than 1 Year**	**1 to 3 Years**	**3 to 5 Years**	**More than 5 Years**
Contractual Cash Obligations:					
Credit agreement (1)	$ 144,098	$ 144,098	$ —	$ —	$ —
Operating leases	43,809	6,240	15,019	11,058	11,492
Royalty obligations	4,769	3,365	1,225	85	94
Deferred acquisition payments	8,650	8,650	—	—	—
Other purchase obligations	14,913	8,203	3,679	2,357	674
Total contractual cash obligations	$ 216,239	$ 170,556	$ 19,923	$ 13,500	$ 12,260
Other Commercial Commitments:					
Standby letters of credit	$ 2,943	$ 2,675	$ —	$ —	$ 268
Total commercial commitments	$ 219,182	$ 173,231	$ 19,923	$ 13,500	$ 12,528

(1) The $144.1 million contractual obligation related to our Credit Agreement includes $140.0 million in outstanding borrowings and $4.1 million of interest expense and commitment fees as of June 30, 2017.

Except for the commitments under the aforementioned lease agreement, we are not currently a party to any other material purchase contracts related to future capital expenditures, and we do not expect our future investment in capital expenditures to be materially different from recent levels.

The standby letters of credit were issued by Silicon Valley Bank in the United States and secure our performance on professional services contracts and certain facility leases.

The above table does not reflect a liability for uncertain tax positions of $3.9 million as of June 30, 2017. We estimate that none of this amount will be paid within the next year and we are currently unable to reasonably estimate the timing of payments for the remainder of the liability.

Off-Balance Sheet Arrangements

As of June 30, 2017, we did not have any significant off-balance sheet arrangements, as defined in Item 303(a)(4)(ii) of SEC Regulation S-K.

Critical Accounting Estimates and Judgments

Our consolidated financial statements are prepared in accordance with GAAP. The preparation of our financial statements requires management to make estimates and judgments that affect the reported amounts of assets, liabilities, revenue, expenses and related disclosures. We base our estimates on historical experience and various other assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

We believe that the assumptions and estimates associated with the following critical accounting policies have the greatest potential impact on our consolidated financial statements:

- revenue recognition;
- accounting for income taxes; and
- loss contingencies.

For further information on our significant accounting policies, refer to Note 2, "Significant Accounting Policies," to our Consolidated Financial Statements.

Revenue Recognition

Four basic criteria must be satisfied before software license revenue can be recognized: persuasive evidence of an arrangement between us and an end user; delivery of our product has occurred; the fee for the product is fixed or determinable; and collection of the fee is probable.

Persuasive evidence of an arrangement—We use a signed contract as evidence of an arrangement for software licenses and SMS. For professional services we use a signed contract and a work proposal to evidence an arrangement. In cases where both a signed contract and a purchase order are required by the customer, we consider both taken together as evidence of the arrangement.

Delivery of our product—Software and the corresponding access keys are generally delivered to customers via disk media with standard shipping terms of Free Carrier, our warehouse (i.e., FCA, named place) or electronic delivery. Our software license agreements do not contain conditions for acceptance.

Fee is fixed or determinable—We assess whether a fee is fixed or determinable at the outset of the arrangement. Significant judgment is involved in making this assessment.

Under our historical upfront revenue model, we are able to demonstrate that the fees are fixed or determinable for all arrangements, including those for our term licenses that contain extended payment terms. We have an established history of collecting under the terms of these contracts without providing concessions to customers. In addition, we also assess whether a contract modification to an existing term arrangement constitutes a concession. In making this assessment, significant analysis is performed to ensure that no concessions are given. Our software license agreements do not include a right of return or exchange. For license arrangements executed under the historical upfront revenue model, we recognize license revenue upon delivery of the software product, provided all other revenue recognition requirements are met.

We cannot assert that the fees under our aspenONE licensing model and point product arrangements with Premier Plus SMS are fixed or determinable because the rights provided to customers, and the economics of the arrangements, are not comparable to our transactions with other customers under the upfront revenue model. As a result, the amount of revenue recognized for these arrangements is limited by the amount of customer payments that become due.

Collection of fee is probable—We assess the probability of collecting from each customer at the outset of the arrangement based on a number of factors, including the customer's payment history, its current creditworthiness, economic conditions in the customer's industry and geographic location, and general economic conditions. If in our judgment collection of a fee is not probable, revenue is recognized as cash is collected, provided all other conditions for revenue recognition have been met.

Vendor-Specific Objective Evidence of Fair Value

We have established VSOE for professional services and certain training offerings, but not for our software products or our SMS offerings. We assess VSOE for SMS, professional services, and training based on an analysis of standalone sales of these offerings using the bell-shaped curve approach. We do not have a history of selling our Premier Plus SMS offering to customers on a standalone basis, and as a result are unable to establish VSOE for this deliverable. As of July 1, 2015, we were no longer able to establish VSOE for SMS offerings sold with our legacy term license arrangements. As a result, legacy term agreements that include legacy SMS entered into subsequent to June 30, 2015, are recognized ratably over the legacy SMS service period. Loss of VSOE on legacy SMS offerings sold with our legacy term arrangements did not have a material impact on our revenue in fiscal 2016 and 2017 and is not expected to have a material impact on our revenue in future periods.

Subscription and Software Revenue

Subscription and software revenue consists of product and related revenue from our (i) aspenONE licensing model; (ii) point product arrangements with our Premier Plus SMS offering included for the contract term; (iii) legacy arrangements including (a) amendments to existing legacy term arrangements, (b) renewals of legacy term arrangements and (c) legacy arrangements that are being recognized over time as a result of not previously meeting one or more of the requirements for recognition under the upfront revenue model; (iv) legacy SMS arrangements; and (v) perpetual arrangements.

When a customer elects to license our products under our aspenONE licensing model, our Premier Plus SMS offering is included for the entire term of the arrangement and the customer receives, for the term of the arrangement, the right to any new unspecified future software products and updates that may be introduced into the licensed aspenONE software suite. Due to our obligation to provide unspecified future software products and updates, we are required to recognize revenue ratably over the term of the arrangement, once the other revenue recognition criteria noted above have been met.

Our point product arrangements with Premier Plus SMS include SMS for the term of the arrangement. Since we do not have VSOE for our Premier Plus SMS offering, the SMS element of our point product arrangements is not separable. As a result, revenue associated with point product arrangements with Premier Plus SMS included for the contract term is recognized ratably over the term of the arrangement, once all other revenue recognition criteria have been met.

Legacy term license arrangements do not include the same rights as those provided to customers under the aspenONE licensing model and point product arrangements with Premier Plus SMS. Legacy SMS revenue is generated from legacy SMS offerings provided in support of legacy term license arrangements. Customers typically receive SMS for one year and then can elect to renew SMS annually. During fiscal 2015 and prior periods, we had VSOE for certain legacy SMS offerings sold with term license arrangements and could therefore separate the undelivered elements. Accordingly, license fee revenue for legacy term license arrangements was recognized upon delivery of the software products using the residual method, provided all other revenue recognition requirements were met. VSOE of fair value for the undelivered SMS component sold with our term license arrangements was deferred and subsequently amortized into revenue ratably over the contractual term of the SMS arrangement. As of July 1, 2015, we were no longer able to establish VSOE for SMS offerings sold with our legacy term license arrangements. As a result, legacy term agreements that include legacy SMS entered into subsequent to June 30, 2015, are recognized ratably over the legacy SMS service period. Loss of VSOE on legacy SMS offerings sold with our legacy term arrangements did not have a material impact on our revenue in fiscal 2016 and 2017 and is not expected to have a material impact on our revenue in future periods.

Services and Other Revenue

Professional Services Revenue

Professional services are provided to customers on a time-and-materials (T&M) or fixed-price basis. We recognize professional services fees for our T&M contracts based upon hours worked and contractually agreed-upon hourly rates. Revenue from fixed-price engagements is recognized using the proportional performance method based on the ratio of costs incurred to the total estimated project costs. Project costs are typically expensed as incurred. The use of the proportional performance method is dependent upon our ability to reliably estimate the costs to complete a project. We use historical experience as a basis for future estimates to complete current projects. Additionally, we believe that costs are the best available measure of performance. Out-of-pocket expenses which are reimbursed by customers are recorded as revenue.

In certain circumstances, professional services revenue may be recognized over a longer time period than the period over which the services are performed. If the costs to complete a project are not estimable or the completion is uncertain, the revenue is recognized upon completion of the services. In circumstances in which professional services are sold as a single arrangement with, or in contemplation of, a new aspenONE license or point product arrangement with Premier Plus SMS, revenue is deferred and recognized on a ratable basis over the longer of (i) the period the services are performed, or (ii) the license term. When we provide professional services considered essential to the functionality of the software, we recognize the combined revenue from the sale of the software and related services using the completed contract or percentage-of-completion method.

We have occasionally been required to commit unanticipated additional resources to complete projects, which resulted in losses on those contracts. Provisions for estimated losses on contracts are made during the period in which such losses become probable and can be reasonably estimated.

Training Revenue

We provide training services to our customers, including on-site, Internet-based, public and customized training. Revenue is recognized in the period in which the services are performed. In circumstances in which training services are sold as a single arrangement with, or in contemplation of, a new aspenONE license or point product arrangement with Premier Plus SMS, revenue is deferred and recognized on a ratable basis over the longer of (i) the period the services are performed or (ii) the license term.

Accounting for Income Taxes

We utilize the asset and liability method of accounting for income taxes in accordance with ASC 740. Under this method, deferred tax assets and liabilities are determined based on temporary differences between the financial reporting and tax bases of assets and liabilities. Deferred tax assets and liabilities are measured using the enacted tax rates and statutes that will be in effect when the differences are expected to reverse. Deferred tax assets can result from unused operating losses, R&D and foreign tax credit carryforwards and deductions recorded for financial statement purposes prior to them being deductible on a tax return.

The realization of deferred tax assets is dependent upon the generation of future taxable income and the reversal of taxable temporary differences. Valuation allowances are provided against net deferred tax assets if, based upon the available evidence, it is more likely than not that some or all of the deferred tax assets will not be realized. Significant management judgment is required in determining any valuation allowance recorded against deferred tax assets. We consider, among other available information, projected future taxable income, limitations on the availability of net operating loss ("NOLs") and tax credit carryforwards, scheduled reversals of deferred tax liabilities and other evidence assessing the potential realization of deferred tax assets. Adjustments to the valuation allowance are included in the provision for (benefit from) income taxes in our consolidated statements of operations in the period they become known.

Our provision for (benefit from) income taxes includes amounts determined under the provisions of ASC 740, and is intended to satisfy additional income tax assessments, including interest and penalties, that could result from any tax return positions for which the likelihood of sustaining the position on an audit does not meet a threshold of "more likely than not." Penalties and interest are recorded as a component of our provision for (benefit from) income taxes. Tax liabilities under the provisions of ASC 740 were recorded as a component of our income taxes payable and other non-current liabilities. The ultimate amount of taxes due will not be known until examinations are completed and settled or the audit periods are closed by statutes.

Our U.S. and foreign tax returns are subject to periodic compliance examinations by various local and national tax authorities through periods defined by the tax code in applicable jurisdictions. The years prior to 2016 are closed in the United States, although the utilization of tax credits generated in earlier periods will keep these periods open for examination to the extent of the credits claimed in fiscal 2016. Similarly, the years prior to 2015 are closed in the United Kingdom, although the utilization of net operating loss carryforwards generated in earlier periods will keep the periods open for examination. Our Canadian subsidiaries are subject to audit from 2012 forward, and certain other of our international subsidiaries are subject to audit from 2007 forward. In connection with examinations of tax filings, tax contingencies can arise from differing interpretations of applicable tax laws and regulations relative to the amount, timing or proper inclusion or exclusion of revenue and expenses in taxable income or loss. For periods that remain subject to audit, we have asserted and unasserted potential assessments that are subject to final tax settlements.

Loss Contingencies

The outcomes of legal proceedings and claims brought against us are subject to significant uncertainty. We accrue estimated liabilities for loss contingencies arising from claims, assessments, litigation and other sources when it is probable that a liability has been incurred and the amount of the claim, assessment or damages can be reasonably estimated. Disclosure of a contingency is required if there is at least a reasonable possibility that a loss has been incurred. In determining whether a loss should be accrued we evaluate, among other factors, the degree of probability of an unfavorable outcome and the ability to make a reasonable estimate of the loss amount. Change in these factors could materially impact our consolidated financial statements.

Under the terms of substantially all of our license agreements, we have agreed to indemnify customers for costs and damages arising from claims against such customers based on, among other things, allegations that our software products infringe the intellectual property rights of a third party. In most cases, in the event of an infringement claim, we retain the right to procure for the customer the right to continue using the software product or to replace or modify the software product to eliminate the infringement while providing substantially equivalent functionality. These indemnification provisions are accounted for in accordance with ASC Topic 460, *Guarantees*. In most cases, and where legally enforceable, the indemnification refund is limited to the amount of the license fees paid by the customer.

Recent Accounting Pronouncements

Refer to Note 2 (o) "Recent Accounting Pronouncements," to our Consolidated Financial Statements for information about recent accounting pronouncements.

Item 7A. Quantitative and Qualitative Disclosures about Market Risk.

In the ordinary course of conducting business, we are exposed to certain risks associated with potential changes in market conditions. These market risks include changes in currency exchange rates and interest rates which could affect operating results, financial position and cash flows. We manage our exposure to these market risks through our regular operating and financing activities and, if considered appropriate, we may enter into derivative financial instruments such as forward currency exchange contracts.

Foreign Currency Risk

During fiscal 2017 and 2016, 9.8% and 11.5% of our total revenue was denominated in a currency other than the U.S. dollar. In addition, certain of our operating costs incurred outside the United States are denominated in currencies other than the U.S. dollar. We conduct business on a worldwide basis and as a result, a portion of our revenue, earnings, net assets, and net investments in foreign affiliates is exposed to changes in foreign currency exchange rates. We measure our net exposure for cash balance positions and for cash inflows and outflows in order to evaluate the need to mitigate our foreign exchange risk. We may enter into foreign currency forward contracts to minimize the impact related to unfavorable exchange rate movements, although we have not done so during fiscal 2017 and fiscal 2016. Our largest exposures to foreign currency exchange rates exist primarily with the Euro, Pound Sterling, Canadian Dollar, and Japanese Yen.

During fiscal 2017 and fiscal 2016, we recorded net foreign currency gains of less than \$0.6 million and losses of less than \$0.1 million, respectively, related to the settlement and remeasurement of transactions denominated in currencies other than the functional currency of our operating units. Our analysis of operating results transacted in various foreign currencies indicated that a hypothetical 10% change in the foreign currency exchange rates could have increased or decreased the consolidated results of operations by approximately \$3.2 million and \$5.0 million for fiscal 2017 and 2016, respectively.

Interest Rate Risk

We place our investments in money market instruments and high quality, investment grade, fixed-income corporate debt securities that meet high credit quality standards, as specified in our investment guidelines.

We mitigate the risks by diversifying our investment portfolio, limiting the amount of investments in debt securities of any single issuer and using a third-party investment manager. Our debt securities are short-to intermediate-term investments with maturities ranging from less than 2 months as of June 30, 2016. We had no investments in debt securities as of June 30, 2017. We do not use derivative financial instruments in our investment portfolio.

Our analysis of our investment portfolio and interest rates at June 30, 2017 and 2016 indicated that a hypothetical 100 basis point increase or decrease in interest rates would not have a material impact on the fair value of our investment portfolio determined in accordance with an income-based approach utilizing portfolio future cash flows discounted at the appropriate rates.

We had $140.0 million in outstanding borrowings under our Credit Agreement as of June 30, 2017. A hypothetical 10% increase or decrease in interest rates paid on outstanding borrowings under the Credit Agreement would not have a material impact on our financial position, results of operations or cash flows.

Item 8. Financial Statements and Supplementary Data.

The following consolidated financial statements specified by this Item, together with the reports thereon of KPMG LLP, are presented following Item 15 of this Form 10-K:

Financial Statements:
Report of Independent Registered Public Accounting Firm
Consolidated Statements of Operations for the years ended June 30, 2017, 2016 and 2015
Consolidated Statements of Comprehensive Income for the years ended June 30, 2017, 2016 and 2015
Consolidated Balance Sheets as of June 30, 2017 and 2016
Consolidated Statements of Stockholders' (Deficit) Equity for the years ended June 30, 2017, 2016 and 2015
Consolidated Statements of Cash Flows for the years ended June 30, 2017, 2016 and 2015
Notes to Consolidated Financial Statements

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.

None.

Item 9A. Controls and Procedures

a) Disclosure Controls and Procedures

Our management, with the participation of our chief executive officer and chief financial officer, evaluated the effectiveness of our disclosure controls and procedures as of June 30, 2017. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Securities 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 Securities 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 Securities 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. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives, and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of June 30, 2017, our chief executive officer and chief financial officer concluded that, as of such date, our disclosure controls and procedures were effective.

b) Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting for our company. Internal control over financial reporting is defined in Rule 13a-15(f) and 15d-15(f) promulgated under the Exchange Act, as a process designed by, or under the supervision of, a company's principal executive and principal financial officers and effected by the Company's board of directors, management and other personnel, 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, and includes those policies and procedures that:

- pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company;
- 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 in accordance with authorizations of management and directors of the company; and
- 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. 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.

Our management, including our chief executive officer and chief financial officer, assessed the effectiveness of our internal control over financial reporting as of June 30, 2017 based on criteria established in "Internal Control—Integrated Frameworks (2013) issued by the Committee of Sponsors Organizations of the Treadway Commission ("COSO"), and concluded that, as of June 30, 2017, our internal control over financial reporting was effective.

KPMG LLP, our independent registered public accounting firm, has audited our consolidated financial statements and the effectiveness of our internal control over financial reporting as of June 30, 2017. This report appears below.

c) Changes in Internal Control over Financial Reporting

During the three months ended June 30, 2017, no changes were identified to our internal controls over financial reporting that materially affected, or were reasonably likely to materially affect, our internal controls over financial reporting.

Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders
Aspen Technology, Inc.:

We have audited Aspen Technology, Inc.'s internal control over financial reporting as of June 30, 2017, based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying *Management's Report on Internal Control over Financial Reporting*. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit 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 audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

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 (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) 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 (3) 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.

In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of June 30, 2017, based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated balance sheets of Aspen Technology, Inc. and subsidiaries as of June 30, 2017 and 2016, and the related consolidated statements of operations, comprehensive income, stockholders' (deficit) equity, and cash flows for each of the years in the three-year period ended June 30, 2017, and our report dated August 10, 2017 expressed an unqualified opinion on those consolidated financial statements.

/s/ KPMG LLP

Boston, Massachusetts
August 10, 2017

Item 9B. Other Information.

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

Certain information required under this Item 10 will appear under the sections entitled “Executive Officers of the Registrant,” “Election of Directors,” “Information Regarding our Board of Directors and Corporate Governance,” “Code of Business Conduct and Ethics,” and “Section 16(a) Beneficial Ownership Reporting Compliance” in our definitive proxy statement for our 2017 annual meeting of stockholders, and is incorporated herein by reference.

Item 11. Executive Compensation.

Certain information required under this Item 11 will appear under the sections entitled “Director Compensation,” “Compensation Discussion and Analysis,” “Executive Compensation” and “Employment and Change in Control Agreements” in our definitive proxy statement for our 2017 annual meeting of stockholders, and is incorporated herein by reference.

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

Certain information required under this Item 12 will appear under the sections entitled “Stock Owned by Directors, Executive Officers and Greater-than 5% Stockholders” and “Securities Authorized for Issuance Under Equity Compensation Plans” in our definitive proxy statement for our 2017 annual meeting of stockholders, and is incorporated herein by reference.

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

Certain information required under this Item 13 will appear under the sections entitled “Information Regarding the Board of Directors and Corporate Governance” and “Related Party Transactions” in our definitive proxy statement for our 2017 annual meeting of stockholders, and is incorporated herein by reference.

Item 14. Principal Accounting Fees and Services.

Certain information required under this Item 14 will appear under the section entitled “Independent Registered Public Accountants” in our definitive proxy statement for our 2017 annual meeting of stockholders, and is incorporated herein by reference.

PART IV

Item 15. Exhibits and Financial Statement Schedules.

(a)(1) Financial Statements

The consolidated financial statements appear immediately following page 48 ("Signatures").

(a)(2) Financial Statement Schedules

All schedules are omitted because they are not required or the required information is shown in the consolidated financial statements or notes thereto.

(a)(3) Exhibits

The exhibits listed in the accompanying exhibit index are filed or incorporated by reference as part of this Form 10-K.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

		ASPEN TECHNOLOGY, INC.
Date: August 10, 2017	By:	/s/ ANTONIO J. PIETRI
		Antonio J. Pietri *President and Chief Executive Officer*
Date: August 10, 2017	By:	/s/ KARL E. JOHNSEN
		Karl E. Johnsen *Senior Vice President and* *Chief Financial Officer*

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.

Signature	Title	Date
/s/ ANTONIO J. PIETRI Antonio J. Pietri	President and Chief Executive Officer and Director (Principal Executive Officer)	August 10, 2017
/s/ KARL E. JOHNSEN Karl E. Johnsen	Senior Vice President and Chief Financial Officer (Principal Financial and Accounting Officer)	August 10, 2017
/s/ ROBERT M. WHELAN, JR. Robert M. Whelan, Jr.	Chairman of the Board of Directors	August 10, 2017
/s/ DONALD P. CASEY Donald P. Casey	Director	August 10, 2017
/s/ GARY E. HAROIAN Gary E. Haroian	Director	August 10, 2017
/s/ JOAN C. MCARDLE Joan C. McArdle	Director	August 10, 2017
/s/ SIMON OREBI GANN Simon Orebi Gann	Director	August 10, 2017
/s/ R. HALSEY WISE R. Halsey Wise	Director	August 10, 2017

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders
Aspen Technology, Inc.:

We have audited the accompanying consolidated balance sheets of Aspen Technology, Inc. and subsidiaries as of June 30, 2017 and 2016, and the related consolidated statements of operations, comprehensive income, stockholders' (deficit) equity, and cash flows for each of the years in the three-year period ended June 30, 2017. These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of June 30, 2017 and 2016, and the results of their operations and their cash flows for each of the years in the three-year period ended June 30, 2017, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), Aspen Technology, Inc.'s internal control over financial reporting as of June 30, 2017, based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), and our report dated August 10, 2017 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

/s/ KPMG LLP

Boston, Massachusetts
August 10, 2017

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF OPERATIONS

	Year Ended June 30,		
	2017	2016	2015
	(Dollars in Thousands, Except per Share Data)		
Revenue:			
Subscription and software	$ 453,512	$ 440,408	$ 405,640
Services and other	29,430	31,936	34,761
Total revenue	482,942	472,344	440,401
Cost of revenue:			
Subscription and software	21,051	20,376	21,165
Services and other	26,415	28,235	28,411
Total cost of revenue	47,466	48,611	49,576
Gross profit	435,476	423,733	390,825
Operating expenses:			
Selling and marketing	92,633	91,536	92,736
Research and development	79,530	67,152	69,584
General and administrative	51,297	53,664	48,713
Total operating expenses	223,460	212,352	211,033
Income from operations	212,016	211,381	179,792
Interest income	808	441	487
Interest (expense)	(3,787)	(1,212)	(30)
Other income (expense), net	1,309	29	(778)
Income before provision for income taxes	210,346	210,639	179,471
Provision for income taxes	48,150	70,688	61,064
Net income	$ 162,196	$ 139,951	$ 118,407
Net income per common share:			
Basic	$ 2.12	$ 1.69	$ 1.34
Diluted	$ 2.11	$ 1.68	$ 1.33
Weighted average shares outstanding:			
Basic	76,491	82,892	88,398
Diluted	76,978	83,309	89,016

See accompanying notes to these consolidated financial statements.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	Year Ended June 30,		
	2017	2016	2015
	(Dollars in Thousands)		
Net income	$ 162,196	$ 139,951	$ 118,407
Other comprehensive loss:			
Net unrealized gains (losses) on available for sale securities, net of tax effects of $12 and $15 for fiscal years 2016 and 2015	—	22	(29)
Foreign currency translation adjustments	(1,192)	(3,841)	(2,873)
Total other comprehensive loss	(1,192)	(3,819)	(2,902)
Comprehensive income	$ 161,004	$ 136,132	$ 115,505

See accompanying notes to these consolidated financial statements.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS

	June 30, 2017	June 30, 2016
	(Dollars in Thousands, Except Share and Per Share Data)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 101,954	$ 318,336
Short-term marketable securities	—	3,006
Accounts receivable, net	27,670	20,476
Prepaid expenses and other current assets	12,061	13,948
Prepaid income taxes	4,501	5,557
Total current assets	146,186	361,323
Property, equipment and leasehold improvements, net	13,400	15,825
Computer software development costs, net	667	720
Goodwill	51,248	23,438
Intangible assets, net	20,789	5,000
Non-current deferred tax assets	14,352	12,236
Other non-current assets	1,300	1,196
Total assets	$ 247,942	$ 419,738
LIABILITIES AND STOCKHOLDERS' DEFICIT		
Current liabilities:		
Accounts payable	$ 5,467	$ 3,559
Accrued expenses and other current liabilities	48,149	36,105
Income taxes payable	1,603	439
Borrowings under credit agreement	140,000	140,000
Current deferred revenue	272,024	252,520
Total current liabilities	467,243	432,623
Non-current deferred revenue	28,335	29,558
Other non-current liabilities	13,148	32,591
Commitments and contingencies (Note 16)		
Series D redeemable convertible preferred stock, $0.10 par value—Authorized—3,636 shares as of June 30, 2017 and 2016 Issued and outstanding—none as of June 30, 2017 and 2016	—	—
Stockholders' deficit:		
Common stock, $0.10 par value—Authorized—210,000,000 shares Issued—102,567,129 shares at June 30, 2017 and 102,031,960 shares at June 30, 2016 Outstanding—73,421,153 shares at June 30, 2017 and 80,177,950 shares at June 30, 2016	10,257	10,203
Additional paid-in capital	687,479	659,287
Retained earnings (deficit)	156,520	(5,676)
Accumulated other comprehensive income	1,459	2,651
Treasury stock, at cost—29,145,976 shares of common stock at June 30, 2017 and 21,854,010 shares at June 30, 2016	(1,116,499)	(741,499)
Total stockholders' deficit	(260,784)	(75,034)
Total liabilities and stockholders' deficit	$ 247,942	$ 419,738

See accompanying notes to these consolidated financial statements.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' (DEFICIT) EQUITY

	Common Stock		Additional	Retained	Accumulated Other	Treasury Stock		Total
	Number of Shares	$0.10 Par Value	Paid-in Capital	Earnings (Deficit)	Comprehensive Income	Number of Shares	Cost	Stockholders' (Deficit) Equity
				(Dollars in Thousands, Except Share Data)				
Balance June 30, 2014	101,033,740	$ 10,103	$ 591,324	$ (264,034)	$ 9,372	9,371,890	$ (263,089)	$ 83,676
Comprehensive income (loss):								
Net income	—	—	—	118,407	—	—	—	118,407
Other comprehensive loss	—	—	—	—	(2,902)			(2,902)
Exercise of stock options	308,847	31	4,635	—	—	—		4,666
Withholding taxes related to restricted stock units net share settlement	264,933	27	(5,684)	—	—	—	—	(5,657)
Repurchase of common stock	—	—	—	—	—	7,731,428	(298,344)	(298,344)
Stock-based compensation	—	—	14,584	—	—	—	—	14,584
Excess tax benefits from stock-based compensation	—	—	37,024					37,024
Balance June 30, 2015	101,607,520	$ 10,161	$ 641,883	$ (145,627)	$ 6,470	17,103,318	$ (561,433)	$ (48,546)
Comprehensive income (loss):								
Net income	—	—	—	139,951	—	—	—	139,951
Other comprehensive loss	—	—	—	—	(3,819)			(3,819)
Exercise of stock options	201,706	20	3,900	—	—	—		3,920
Withholding taxes related to restricted stock units net share settlement	222,734	22	(4,431)	—	—	—	—	(4,409)
Repurchase of common stock	—	—	—	—	—	4,750,692	(180,066)	(180,066)
Stock-based compensation	—	—	15,727	—	—	—	—	15,727
Excess tax benefits from stock-based compensation	—	—	2,208					2,208
Balance June 30, 2016	102,031,960	$ 10,203	$ 659,287	$ (5,676)	$ 2,651	21,854,010	$ (741,499)	$ (75,034)
Comprehensive income (loss):								
Net income	—	—	—	162,196	—	—	—	162,196
Other comprehensive loss	—	—	—	—	(1,192)			(1,192)
Exercise of stock options	332,937	34	9,239	—	—	—		9,273
Withholding taxes related to restricted stock units net share settlement	202,232	20	(5,812)	—	—	—	—	(5,792)
Repurchase of common stock	—	—	—	—	—	7,291,966	(375,000)	(375,000)
Stock-based compensation	—	—	18,800	—	—	—	—	18,800
Excess tax benefits from stock-based compensation	—	—	5,965					5,965
Balance June 30, 2017	102,567,129	$ 10,257	$ 687,479	$ 156,520	$ 1,459	29,145,976	$(1,116,499)	$ (260,784)

See accompanying notes to these consolidated financial statements.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended June 30,		
	2017	2016	2015
	(Dollars in Thousands)		
Operating activities:			
Net income	$ 162,196	$ 139,951	$ 118,407
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	6,405	6,061	6,216
Net foreign currency gains	(1,036)	(3,666)	(1,552)
Stock-based compensation expense	18,800	15,727	14,584
Deferred income taxes	(4,286)	2,499	20,112
Provision for (recovery from) bad debts	199	260	(513)
Tax benefits from stock-based compensation	5,965	2,208	37,024
Excess tax benefits from stock-based compensation	(5,965)	(2,208)	(37,024)
Other non-cash operating activities	602	321	1,619
Changes in assets and liabilities, excluding initial effects of acquisitions:			
Accounts receivable	(7,480)	9,382	8,028
Prepaid expenses, prepaid income taxes, and other assets	(2,421)	(6,106)	4,232
Accounts payable, accrued expenses, income taxes payable and other liabilities	(9,070)	(4,489)	5,933
Deferred revenue	18,477	(6,196)	14,919
Net cash provided by operating activities	182,386	153,744	191,985
Investing activities:			
Purchases of marketable securities	(683,748)	—	(50,065)
Maturities of marketable securities	686,346	58,973	85,535
Purchase of property, equipment and leasehold improvements	(2,720)	(3,483)	(7,645)
Payments for business acquisitions, net of cash acquired	(36,171)	(8,000)	—
Payments for capitalized computer software costs	(405)	(269)	(359)
Net cash (used in) provided by investing activities	(36,698)	47,221	27,466
Financing activities:			
Exercise of stock options	9,273	3,924	4,662
Repurchases of common stock	(371,491)	(178,604)	(297,246)
Payment of tax withholding obligations related to restricted stock	(5,764)	(4,480)	(5,699)
Excess tax benefits from stock-based compensation	5,965	2,208	37,024
Proceeds from credit agreement	—	140,000	—
Payments of credit agreement issuance costs	—	(1,707)	—
Net cash used in financing activities	(362,017)	(38,659)	(261,259)
Effect of exchange rate changes on cash and cash equivalents	(53)	(219)	(1,469)
(Decrease) increase in cash and cash equivalents	(216,382)	162,087	(43,277)
Cash and cash equivalents, beginning of year	318,336	156,249	199,526
Cash and cash equivalents, end of year	$ 101,954	$ 318,336	$ 156,249

Supplemental disclosure of cash flow information:						
Income tax paid, net	$	65,536	$	69,028	$	3,712
Interest paid		3,444		963		30
Supplemental disclosure of non-cash investing and financing activities:						
Change in landlord improvement allowance included in leasehold improvements and deferred rent liability	$	—	$	—	$	6,064
Change in purchases of property, equipment and leasehold improvements included in accounts payable and accrued expenses		(47)		(825)		675
Change in common stock repurchases included in accounts payable and accrued expenses		3,509		1,462		1,098

See accompanying notes to these consolidated financial statements.

(1) Operations

Aspen Technology, Inc., together with its subsidiaries, is a leading global supplier of asset optimization solutions that optimize asset design, operations and maintenance lifecycle in complex, industrial environments. Our aspenONE software and related services have been developed specifically for companies in the process and other capital-intensive industries such as energy, chemicals, engineering and construction, as well as pharmaceuticals, transportation, power, metals and mining, pulp and paper, and consumer packaged goods. Customers use our solutions to improve their competitiveness and profitability by increasing throughput, energy efficiency, and production, reducing unplanned downtime, enhancing capital efficiency, and decreasing working capital requirements over the entire asset lifecycle to support operational excellence. We operate globally in 31 countries as of June 30, 2017.

(2) Significant Accounting Policies

(a) Principles of Consolidation

The accompanying consolidated financial statements include the accounts of Aspen Technology, Inc. and our wholly owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.

Reclassifications

Certain line items in prior period financial statements have been reclassified to conform to currently reported presentations.

(b) Management Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions. These estimates and assumptions affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. Actual results could differ from those estimates.

(c) Cash and Cash Equivalents

Cash and cash equivalents consist of short-term, highly liquid investments with remaining maturities of three months or less when purchased.

(d) Revenue Recognition

We generate revenue from the following sources: (1) Subscription and software revenue; and (2) Services and other revenue. We sell our software products to end users primarily under fixed-term licenses. We license our software products primarily through a subscription offering which we refer to as our aspenONE licensing model, which includes software maintenance and support, known as our Premier Plus SMS offering, for the entire term. Our aspenONE products are organized into three suites: 1) engineering; 2) manufacturing and supply chain; and 3) asset performance management. The aspenONE licensing model provides customers with access to all of the products within the aspenONE suite(s) they license. We refer to these arrangements as token arrangements. Tokens are fixed units of measure. The amount of software usage is limited by the number of tokens purchased by the customer.

We also license our software through point product term arrangements, which include our Premier Plus SMS offering for the entire term, as well as perpetual license arrangements.

Four basic criteria must be satisfied before software license revenue can be recognized: persuasive evidence of an arrangement between us and an end user; delivery of our product has occurred; the fee for the product is fixed or determinable; and collection of the fee is probable.

Persuasive evidence of an arrangement—We use a signed contract as evidence of an arrangement for software licenses and SMS. For professional services we use a signed contract and a work proposal to evidence an arrangement. In cases where both a signed contract and a purchase order are required by the customer, we consider both taken together as evidence of the arrangement.

Delivery of our product—Software and the corresponding access keys are generally delivered to customers via electronic delivery or via physical medium with standard shipping terms of Free Carrier, our warehouse (i.e., FCA, AspenTech). Our software license agreements do not contain conditions for acceptance.

Fee is fixed or determinable—We assess whether a fee is fixed or determinable at the outset of the arrangement. Significant judgment is involved in making this assessment.

As a standard business practice, we offer fixed-term license arrangements, which are generally payable on an annual basis.

We cannot assert that the fees under our aspenONE licensing model and point product arrangements with Premier Plus SMS are fixed or determinable because of the rights provided to customers, economics of the arrangements, and because we do not have an established history of our arrangements going to term end date without providing concessions to customers. As a result, the amount of revenue recognized for these arrangements is limited by the amount of customer payments that become due.

Collection of fee is probable—We assess the probability of collecting from each customer at the outset of the arrangement based on a number of factors, including the customer's payment history, its current creditworthiness, economic conditions in the customer's industry and geographic location, and general economic conditions. If in our judgment collection of a fee is not probable, revenue is recognized as cash is collected, provided all other conditions for revenue recognition have been met.

Vendor-Specific Objective Evidence of Fair Value (VSOE)

We have established VSOE for professional services and certain training offerings, but not for our software products or our SMS offerings. We assess VSOE for SMS, professional services, and training, based on an analysis of standalone sales of the offerings using the bell-shaped curve approach. We do not have a history of selling our Premier Plus SMS offering to customers on a standalone basis, and as a result are unable to establish VSOE for this deliverable.

Subscription and Software Revenue

Subscription and software revenue consists primarily of product and related revenue from our (i) aspenONE licensing model; (ii) point product arrangements with our Premier Plus SMS offering included for the contract term; and (iii) perpetual arrangements.

When a customer elects to license our products under our aspenONE licensing model, our Premier Plus SMS offering is included for the entire term of the arrangement and the customer receives, for the term of the arrangement, the right to any new unspecified future software products and updates that may be introduced into the licensed aspenONE software suite. Due to our obligation to provide unspecified future software products and updates and because we do not have VSOE for our Premier Plus SMS offering, we are required to recognize revenue ratably over the term of the arrangement, once the other revenue recognition criteria noted above have been met.

Our point product arrangements with Premier Plus SMS include SMS for the term of the arrangement. Since we do not have VSOE for our Premier Plus SMS offering, the SMS element of our point product arrangements is not separable. As a result, revenue associated with point product arrangements with Premier Plus SMS included for the contract term is recognized ratably over the term of the arrangement, once the other revenue recognition criteria have been met.

Services and Other Revenue

Professional Services Revenue

Professional services are provided to customers on a time-and-materials (T&M) or fixed-price basis. We recognize professional services fees for our T&M contracts based upon hours worked and contractually agreed-upon hourly rates. Revenue from fixed-price engagements is recognized using the proportional performance method based on the ratio of costs incurred to the total estimated project costs. Project costs are typically expensed as incurred. The use of the proportional performance method is dependent upon our ability to reliably estimate the costs to complete a project. We use historical experience as a basis for future estimates to complete current projects. Additionally, we believe that costs are the best available measure of performance. Out-of-pocket expenses which are reimbursed by customers are recorded as revenue.

In certain circumstances, professional services revenue may be recognized over a longer time period than the period over which the services are performed. If the costs to complete a project are not estimable or the completion is uncertain, the revenue and related costs are recognized upon completion of the services. In circumstances in which professional services are sold as a single arrangement with, or in contemplation of, a new aspenONE license or point product arrangement with Premier Plus SMS, revenue is deferred and recognized on a ratable basis over the longer of (i) the period the services are performed, or (ii) the license term. When we provide professional services considered essential to the functionality of the software, we recognize the combined revenue from the sale of the software and related services using the completed contract or percentage-of-completion method.

We have occasionally been required to commit unanticipated additional resources to complete projects, which resulted in losses on those contracts. Provisions for estimated losses on contracts are made during the period in which such losses become probable and can be reasonably estimated.

Training Revenue

We provide training services to our customers, including on-site, Internet-based, public and customized training. Revenue is recognized in the period in which the services are performed. In circumstances in which training services are sold as a single arrangement with, or in contemplation of, a new aspenONE license or point product arrangement with Premier Plus SMS, revenue is deferred and recognized on a ratable basis over the longer of (i) the period the services are performed or (ii) the license term.

Deferred Revenue

Deferred revenue includes amounts billed or collected in advance of revenue recognition, including arrangements under the aspenONE licensing model, point product arrangements with Premier Plus SMS, professional services, and training. Deferred revenue is recorded as each invoice becomes due.

Other Licensing Matters

Our standard licensing agreements include a product warranty provision. We have not experienced significant claims related to software warranties beyond the scope of SMS support, which we are already obligated to provide, and consequently, we have not established reserves for warranty obligations.

Our agreements with our customers generally require us to indemnify the customer against claims that our software infringes third-party patent, copyright, trademark or other proprietary rights. Such indemnification obligations are generally limited in a variety of industry-standard respects, including our right to replace an infringing product. As of June 30, 2017 and 2016, we had not experienced any material losses related to these indemnification obligations and no claims with respect thereto were outstanding. We do not expect significant claims related to these indemnification obligations, and consequently, have not established any related reserves.

(e) Computer Software Development Costs

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Certain computer software development costs are capitalized in the accompanying consolidated balance sheets. Capitalization of computer software development costs begins upon establishing technological feasibility defined as meeting specifications determined by the program design. Amortization of capitalized computer software development costs is provided on a product-by-product basis using the greater of (a) the amount computed using the ratio that current gross revenue for a product bears to total of current and anticipated future gross revenue for that product or (b) the straight-line method, beginning upon commercial release of the product, and continuing over the remaining estimated economic life of the product, not to exceed three years.

Total computer software costs capitalized were $0.4 million, $0.3 million and $0.4 million during the years ended June 30, 2017, 2016 and 2015, respectively. Total amortization expense charged to operations was approximately $0.5 million, $0.6 million and $0.7 million for the years ended June 30, 2017, 2016 and 2015, respectively. Computer software development accumulated amortization totaled $74.3 million and $73.8 million as of June 30, 2017 and 2016, respectively. Weighted average remaining useful life of computer software development costs was 0.6 years and 0.7 years at June 30, 2017 and 2016, respectively.

At each balance sheet date, we evaluate the unamortized capitalized software costs for potential impairment by comparing the balance to the net realizable value of the products. During the years ending June 30, 2017, 2016 and 2015, our computer software development costs were not considered impaired and as such, we did not recognize impairment losses during the periods then ended.

(f) Foreign Currency Translation

The determination of the functional currency of subsidiaries is based on the subsidiaries' financial and operational environment and is the local currency of the subsidiary. Gains and losses from foreign currency translation related to entities whose functional currency is their local currency are credited or charged to accumulated other comprehensive income included in stockholders' deficit in the consolidated balance sheets. In all instances, foreign currency transaction and remeasurement gains or losses are credited or charged to the consolidated statements of operations as incurred as a component of other income (expense), net. Net foreign currency transaction and remeasurement gains were less than $0.6 million in fiscal 2017 and losses were less than $0.1 million and $0.8 million in fiscal 2016 and 2015, respectively.

(g) Concentration of Credit Risk

Financial instruments that potentially subject us to concentrations of credit risk are principally cash and cash equivalents, marketable securities, accounts receivable and installments receivable. Our cash is held in financial institutions and our cash equivalents are invested in money market mutual funds that we believe to be of high credit quality. We diversify our investment portfolio by investing in multiple types of investment-grade securities and attempt to mitigate a risk of loss by using a third-party investment manager.

Concentration of credit risk with respect to receivables is limited to certain customers to which we make substantial sales. To reduce risk, we assess the financial strength of our customers. We do not require collateral or other security in support of our receivables. As of June 30, 2017, we had one customer receivable balances that represented approximately 18% of our total receivables. As of June 30, 2016, we had two customer receivable balances that represented approximately 10% and 15% of our total receivables, and were collected subsequent to June 30, 2016.

(h) Computer Software Developed for Internal Use and Long-Lived Assets

Computer Software Developed for Internal Use:

Computer software developed for internal use is capitalized in accordance with ASC Topic 350-40, *Intangibles Goodwill and Other—Internal Use Software*. We capitalize direct labor costs incurred to develop internal-use software during the application development stage after determining software technological requirements and obtaining management approval for funding projects probable of completion.

In fiscal 2017 and 2016 there were no capitalized direct labor costs associated with our development of software for internal use. In fiscal 2015, we capitalized direct labor costs of $0.3 million associated with our development of software for internal use. These costs are included within property, plant and equipment in our consolidated balance sheets.

Impairment of Long-Lived Assets:

We evaluate our long-lived assets, which include finite-lived intangible assets, property and leasehold improvements for impairment as events and circumstances indicate that the carrying amount of an asset or a group of assets may not be recoverable. We assess the recoverability of the asset or a group of assets based on the undiscounted future cash flows the asset is expected to generate, and recognize an impairment loss when estimated undiscounted future cash flows expected to result from the use of the asset are less than its carrying value. If an asset or a group of assets are deemed to be impaired, the amount of the impairment loss, if any, represents the excess of the asset's or a group of assets' carrying value compared to their estimated fair values.

(i) Comprehensive Income

Comprehensive income is defined as the change in equity of a business enterprise during a period from transactions and other events and circumstances from non-owner sources. Comprehensive income and its components for fiscal 2017, 2016 and 2015 are disclosed in the accompanying consolidated statements of comprehensive income.

As of June 30, 2017, 2016 and 2015, accumulated other comprehensive income is comprised of foreign translation adjustments of $1.5 million, $2.7 million $6.5 million, respectively, and net unrealized gains (losses) on available for sale securities of less than $0.1 million, $(0.1) million and ($0.1) million, respectively.

(j) Accounting for Stock-Based Compensation

Stock-based compensation cost is measured at the grant date based on the fair value of the award and is recognized as expense over the vesting period.

(k) Income Taxes

Deferred income taxes are recognized based on temporary differences between the financial statement and tax bases of assets and liabilities. Deferred tax assets and liabilities are measured using the statutory tax rates and laws expected to apply to taxable income in the years in which the temporary differences are expected to reverse. Valuation allowances are provided against net deferred tax assets if, based upon the available evidence, it is more likely than not that some or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income and the timing of the temporary differences becoming deductible. Management considers, among other available information, scheduled reversals of deferred tax liabilities, projected future taxable income, limitations of availability of net operating loss carryforwards, and other matters in making this assessment.

We do not provide deferred taxes on unremitted earnings of foreign subsidiaries since we intend to indefinitely reinvest either currently or sometime in the foreseeable future. Unrecognized provisions for taxes on undistributed earnings of foreign subsidiaries, which are considered indefinitely reinvested, are not material to our consolidated financial position or results of operations. We are continuously subject to examination by the IRS, as well as various state and foreign jurisdictions. The IRS and other taxing authorities may challenge certain deductions and credits reported by us on our income tax returns. In accordance with provisions of ASC Topic 740, *Income Taxes* (ASC 740), an entity should recognize a tax benefit when it is more-likely-than-not, based on the technical merits, that the position would be sustained upon examination by a taxing authority. The amount to be recognized, if the more-likely-than-not threshold was passed, should be measured as the largest amount of tax benefit that is greater than 50 percent likely of being realized upon ultimate settlement with a taxing authority that has full knowledge of all relevant information. Furthermore, any change in the recognition, de-recognition or measurement of a tax position should be recorded in the period in which the change occurs. We account for interest and penalties related to uncertain tax positions as part of the provision for income taxes.

(l) Loss Contingencies

We accrue estimated liabilities for loss contingencies arising from claims, assessments, litigation and other sources when it is probable that a liability has been incurred and the amount of the claim assessment or damages can be reasonably estimated. We believe that we have sufficient accruals to cover any obligations resulting from claims, assessments or litigation that have met these criteria. Refer to Note 16 for discussion of these matters and related liability accruals.

(m) Advertising Costs

Advertising costs are expensed as incurred and are classified as sales and marketing expenses. We incurred advertising expenses of $3.2 million, $2.3 million and $2.9 million during fiscal 2017, 2016 and 2015, respectively.

(n) Research and Development Expense

We charge research and development expenditures to expense as the costs are incurred. Research and development expenses consist primarily of personnel expenses related to the creation of new products, enhancements and engineering changes to existing products and costs of acquired technology prior to establishing technological feasibility.

During fiscal 2017, 2016 and 2015, we acquired certain technologies for $2.3 million, $0.3 million and $3.3 million, respectively. At the time we acquired the technology, the project to develop a commercially available product did not meet the definition of having reached technological feasibility and as such, the entire cost of the acquired technology was expensed as research and development expense.

(o) Recent Accounting Pronouncements

In May 2014, the FASB issued Accounting Standards Update (ASU) No. 2014-09, *Revenue from Contracts with Customers (Topic 606)*. ASU No. 2014-09 supersedes the revenue recognition requirements in *Revenue Recognition (Topic 605)*, and requires entities to recognize revenue when they transfer promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled to in exchange for those goods or services. As currently issued and amended, ASU 2014-09 is effective for annual reporting periods beginning after December 15, 2017, including interim periods within that reporting period, though early adoption is permitted for annual reporting periods beginning after December 15, 2016. We will adopt ASU No. 2014-09 during the first quarter of fiscal 2019. Based on our preliminary assessment, the adoption of ASU No. 2014-09 will impact the timing of a portion of the revenue recognized from our term contracts. We are continuing to evaluate the impact of ASU No. 2014-09 on our consolidated financial statements and implementing accounting system changes related to the adoption.

In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)*. Under the amendment, lessees will be required to recognize virtually all of their leases on the balance sheet, by recording a right-of-use asset and lease liability. The ASU is effective for annual periods, including interim periods within those annual periods, beginning after December 15, 2018. Early adoption is permitted. We are currently evaluating the impact of ASU No. 2016-02 on our consolidated financial statements.

In March 2016, the FASB issued ASU No. 2016-09, *Compensation - Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting*. The amendment identifies several areas for simplification applicable to entities that issue share-based payment awards to their employees, including income tax consequences, the option to recognize gross stock compensation expense with actual forfeitures recognized when they occur, and certain classifications on the statements of cash flows. The ASU is effective for annual periods, including interim periods within those annual periods, beginning after December 15, 2016. Early adoption is permitted. We are currently evaluating the impact of ASU No. 2016-09 on our consolidated financial statements.

In June 2016, the FASB issued ASU No. 2016-13, *Financial Instruments - Credit Losses (Topic 326).* The amendment changes the impairment model for most financial assets and certain other instruments. Entities will be required to use a model that will result in the earlier recognition of allowances for losses for trade and other receivables, held-to-maturity debt securities, loans, and other instruments. For available-for-sale debt securities with unrealized losses, the losses will be recognized as allowances rather than as reductions in the amortized cost of the securities. The ASU is effective for annual periods, including interim periods within those annual periods, beginning after December 15, 2019. Early adoption is permitted. We are currently evaluating the impact of ASU No. 2016-13 on our consolidated financial statements.

In August 2016, the FASB issued ASU No. 2016-15, *Statement of Cash Flows (Topic 230)*. The amendment updates the guidance as to how certain cash receipts and cash payments should be presented and classified, and is intended to reduce the existing diversity in practice. The ASU is effective for annual periods, including interim periods within those annual periods, beginning after December 15, 2017. Early adoption is permitted. We are currently evaluating the impact of ASU No. 2016-15 on our consolidated financial statements.

In January 2017, the FASB issued ASU No. 2017-01, *Business Combinations (Topic 805) - Clarifying the Definition of a Business.* The amendment changes the definition of a business to assist entities in evaluating when a set of transferred assets and activities constitutes a business. The ASU is effective for annual periods, including interim periods within those annual periods, beginning after December 15, 2017. Early adoption is permitted. We do not anticipate the adoption of ASU No. 2017-01 will have a material effect on the consolidated financial statements or related disclosures.

In January 2017, the FASB issued ASU No. 2017-04, *Intangibles - Goodwill and Other Topics (Topic 350) - Simplifying the Test for Goodwill Impairment.* The amendment eliminates Step 2 of the goodwill impairment test and requires goodwill impairment to be measured as the amount by which a reporting unit's carrying amount exceeds its fair value, not to exceed the carrying amount of its goodwill. The ASU is effective for annual periods, including interim periods within those annual periods, beginning after December 15, 2017. Early adoption is permitted. We do not anticipate the adoption of ASU No. 2017-04 will have a material effect on the consolidated financial statements or related disclosures.

(3) Marketable Securities

Our marketable securities are classified as available-for-sale and reported at fair value on the consolidated balance sheets. Net unrealized gains (losses) are reported as a separate component of accumulated other comprehensive income, net of tax. Realized gains and losses on investments are recognized in earnings as incurred. We had no investments in marketable securities as of June 30, 2017 and $3.0 million of investments in marketable securities as of June 30, 2016, which were comprised of U.S. corporate bonds with maturities of less than one year.

We review our marketable securities for impairment at each reporting period to determine if any of our securities have experienced an other-than-temporary decline in fair value in accordance with the provisions of ASC Topic 320, *Investments—Debt and Equity Securities*. We consider factors, such as the length of time and extent to which the market value has been less than the cost, the financial condition and near-term prospects of the issuer, our intent to sell, or whether it is more likely than not we will be required to sell the investment before recovery of its amortized cost basis. If we believe that an other-than-temporary decline in fair value has occurred, we write down the investment to fair value and recognize the credit loss in earnings and the non-credit loss in accumulated other comprehensive income. During fiscal 2017 and 2016, our marketable securities were not considered other-than-temporarily impaired and, as such, we did not recognize impairment losses during the periods then ended.

(4) Fair Value

We determine fair value by utilizing a fair value hierarchy that ranks the quality and reliability of the information used in its determination. Fair values determined using "Level 1 inputs" utilize unadjusted quoted prices in active markets for identical assets or liabilities that we have the ability to access. Fair values determined using "Level 2 inputs" utilize data points that are observable, such as quoted prices, interest rates and yield curves for similar assets and liabilities.

Cash equivalents of $79.7 million and $286.2 million as of June 30, 2017 and June 30, 2016, respectively, were reported at fair value utilizing quoted market prices in identical markets, or "Level 1 inputs." Our cash equivalents consist of short-term, highly liquid investments with remaining maturities of three months or less when purchased.

We held no marketable securities as of June 30, 2017. Marketable securities of $3.0 million as of June 30, 2016 were reported at fair value calculated in accordance with the market approach, utilizing market consensus pricing models with quoted prices that were directly or indirectly observable, or "Level 2 inputs."

Financial instruments not measured or recorded at fair value in the accompanying unaudited consolidated financial statements consist of accounts receivable, installments receivable, accounts payable and accrued liabilities. The estimated fair value of these financial instruments approximates their carrying value. The estimated fair value of the borrowings under the Credit Agreement (described below in Note 11, Credit Agreement) approximates its carrying value due to the floating interest rate.

(5) Accounts Receivable

Our accounts receivable, net of the related allowance for doubtful accounts, were as follows as of June 30, 2017 and 2016:

	Gross	Allowance	Net
		(Dollars in Thousands)	
June 30, 2017:			
Accounts Receivable	$ 28,955	$ 1,285	$ 27,670
June 30, 2016:			
Accounts Receivable	$ 22,080	$ 1,604	$ 20,476

As of June 30, 2017, we had one customer receivable balance that individually represented approximately 18% of our total receivables.

(6) Property and Equipment

Property, equipment and leasehold improvements in the accompanying consolidated balance sheets consist of the following:

	Year Ended June 30,	
	2017	2016
	(Dollars in Thousands)	
Property, equipment and leasehold improvements, at cost:		
Computer equipment	$ 8,262	$ 10,387
Purchased software	24,091	23,705
Furniture & fixtures	6,805	6,712
Leasehold improvements	12,025	12,523
Property, equipment and leasehold improvements, at cost	51,183	53,327
Accumulated depreciation	(37,783)	(37,502)
Property, equipment and leasehold improvements, net	$ 13,400	$ 15,825

Property and equipment are stated at cost. We provide for depreciation and amortization, primarily computed using the straight-line method, by charges to operations in amounts estimated to allocate the cost of the assets over their estimated useful lives, as follows:

Asset Classification	Estimated Useful Life
Computer equipment	3 years
Purchased software	3 - 5 years
Furniture and fixtures	3 - 10 years
Leasehold improvements	Life of lease or asset, whichever is shorter

During fiscal 2017, we wrote off fully depreciated property, equipment and leasehold improvements that were no longer in use with gross book values of $3.3 million.

Depreciation expense was $5.0 million, $5.1 million and $4.7 million for fiscal 2017, 2016 and 2015, respectively.

We account for asset retirement obligations in accordance with ASC Topic 410, *Asset Retirement and Environmental Obligations*. Our asset retirement obligations relate to leasehold improvements for leased properties. The balance of our asset retirement obligations was $0.9 million as of June 30, 2017 and 2016, respectively.

(7) Acquisitions

Mtelligence Corporation

On October 26, 2016, we completed the acquisition of all the outstanding shares of Mtelligence Corporation (“Mtell”), a provider of predictive and prescriptive maintenance software and related services used to optimize asset performance, for total cash consideration of $37.4 million. The purchase price consisted of $31.9 million of cash paid at closing and an additional $5.5 million to be held back until April 2018 as security for certain representations, warranties, and obligations of the sellers. The holdback was recorded at its fair value as of the acquisition date of $5.3 million, and is recorded in other current liabilities in our consolidated balance sheet.

A preliminary allocation of the purchase price is as follows. The valuation of certain acquired customer contract obligations is considered preliminary as of June 30, 2017.

	Amount (Dollars in Thousands)
Tangible assets acquired, net	$ 779
Identifiable intangible assets:	
Developed technology	11,385
Customer relationships	679
Non-compete agreements	553
Goodwill	25,888
Deferred tax liabilities, net	(2,099)
Total assets acquired	$ 37,185

We used the income approach to determine the values of the identifiable intangible assets. The weighted-average discount rate (or rate of return) used to determine the value of the Mtell intangible assets was 19% and the effective tax rate used was 34%. The values of the developed technology, customer relationships and non-compete agreements are being amortized on a straight-line basis, except technology, which is being amortized on a proportional use basis, over their estimated useful lives of 12 years, 6 years and 3 years, respectively.

The goodwill, which is not deductible for tax purposes, reflects the value of the assembled workforce and the company-specific synergies we expect to realize by selling Mtell products and services to our existing customers. The results of operations of Mtell have been included prospectively in our results of operations since the date of acquisition.

Technology and Trademarks

In August 2016, we acquired certain technology and trademarks for total cash consideration of $6.0 million. The purchase price consisted of $5.4 million of cash paid at closing and up to an additional $0.6 million to be paid in August 2017. The acquisition met the definition of a business combination as it contained inputs and processes that are capable of being operated as a business. We allocated $4.0 million of the purchase price to developed technology and $2.0 million to goodwill. The fair value of the developed technology of $4.0 million was determined using the replacement cost approach. The developed technology is being amortized on a straight-line basis over its estimated useful life of 6 years. The acquisition is treated as an asset purchase for tax purposes and accordingly, the goodwill resulting from the acquisition is expected to be deductible.

Fidelis Group, LLC

In June 2016, we completed the acquisition of all the outstanding shares of Fidelis Group, LLC ("Fidelis"), a provider of asset reliability software used to predict and optimize asset performance. The purchase price consisted of $8.0 million of cash paid at closing and up to an additional $2.0 million to be paid in December 2017.

An allocation of the purchase price is as follows, including adjustments identified subsequent to the acquisition date.

	Amount
	(Dollars in Thousands)
Tangible assets acquired, net	$ 49
Identifiable intangible assets:	
Developed technology	1,272
Customer relationships	753
In-process research and development	3,097
Goodwill	6,722
Deferred tax liabilities, net	(1,893)
Total assets acquired	$ 10,000

(8) Intangible Assets

We include in our amortizable intangible assets those intangible assets acquired in our business and asset acquisitions. We amortize acquired intangible assets with finite lives over their estimated economic lives, generally using the straight-line method. Each period, we evaluate the estimated remaining useful lives of acquired intangible assets to determine whether events or changes in circumstances warrant a revision to the remaining period of amortization. Acquired intangibles are removed from the accounts when fully amortized and no longer in use.

Intangible assets consist of the following as of June 30, 2017 and 2016:

	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
		(Dollars in Thousands)	
June 30, 2017:			
Technology and patents	$ 22,350	$ (3,254)	$ 19,096
Customer relationships	1,432	(169)	1,263
Non-compete agreements	553	(123)	430
Total	$ 24,335	$ (3,546)	$ 20,789
June 30, 2016:			
Technology and patents	$ 3,696	$ (2,596)	$ 1,100
In-process research & development	3,200	—	3,200
Customer relationships	700	—	700
Total	$ 7,596	$ (2,596)	$ 5,000

Amortization expense for technology and patents is included in operating expenses and amounted to $1.0 million, $0.1 million and $0.7 million in fiscal 2017, 2016 and 2015, respectively. Amortization expense is expected to be approximately $2.1 million in fiscal 2018, $2.1 million in fiscal 2019, $2.1 million in fiscal 2020, $2.2 million in fiscal 2021, $2.5 million in fiscal 2022, and $9.8 million thereafter.

(9) Goodwill

The changes in the carrying amount of goodwill for our subscription and software reporting unit during fiscal years ending June 30, 2017 and 2016 were as follows:

	Gross Carrying Amount	Accumulated Impairment Losses	Effect of Currency Translation	Net Carrying Amount
June 30, 2016:	$ 89,007	$ (65,569)	$ —	$ 23,438
Goodwill from Mtell acquisition	28,160	—	—	28,160
Goodwill from technology acquisition	2,000	—	—	2,000
Subsequent Fidelis goodwill adjustment	(62)	—	—	(62)
Subsequent Mtell goodwill adjustment	(2,272)	—	—	(2,272)
Foreign currency translation	—	—	(16)	(16)
June 30, 2017:	$ 116,833	$ (65,569)	$ (16)	$ 51,248

	Gross Carrying Amount	Accumulated Impairment Losses	Effect of Currency Translation	Net Carrying Amount
June 30, 2015:	$ 82,929	$ (65,569)	$ —	$ 17,360
Goodwill from Fidelis acquisition	6,784	—	—	6,784
Foreign currency translation	—	—	(706)	(706)
June 30, 2016:	$ 89,713	$ (65,569)	$ (706)	$ 23,438

We test goodwill for impairment annually (or more often if impairment indicators arise), at the reporting unit level. We first assess qualitative factors to determine whether the existence of events or circumstances indicates that it is more likely than not that the fair value of a reporting unit is less than its carrying amount. If we determine based on this assessment that it is more likely than not that the fair value of a reporting unit is less than its carrying amount, we perform the two-step goodwill impairment test. The first step requires us to determine the fair value of the reporting unit and compare it to the carrying amount, including goodwill, of such reporting unit. If the fair value exceeds the carrying amount, no impairment loss is recognized. However, if the carrying amount of the reporting unit exceeds its fair value, the goodwill of the unit may be impaired. The amount of impairment, if any, is measured based upon the implied fair value of goodwill at the valuation date.

Fair value of a reporting unit is determined using a combined weighted average of a market-based approach (utilizing fair value multiples of comparable publicly traded companies) and an income-based approach (utilizing discounted projected cash flows). In applying the income-based approach, we would be required to make assumptions about the amount and timing of future expected cash flows, growth rates and appropriate discount rates. The amount and timing of future cash flows would be based on our most recent long-term financial projections. The discount rate we would utilize would be determined using estimates of market participant risk-adjusted weighted-average costs of capital and reflect the risks associated with achieving future cash flows.

We have elected December 31st as the annual impairment assessment date and perform additional impairment tests if triggering events occur. We performed our annual impairment test for the subscription and software reporting unit as of December 31, 2016 and, based upon the results of our qualitative assessment, determined that it was not likely that its fair value was less than its carrying amount. As such, we did not perform the two-step goodwill impairment test and did not recognize impairment losses as a result of our analysis. If an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying value, goodwill will be evaluated for impairment between annual tests. No triggering events indicating goodwill impairment occurred during fiscal 2017, 2016 and 2015.

(10) Accrued Expenses and Other Liabilities

Accrued expenses and other current liabilities in the accompanying consolidated balance sheets consist of the following:

	June 30, 2017	June 30, 2016
	(Dollars in Thousands)	
Payroll and payroll-related	$ 20,864	$ 17,809
Royalties and outside commissions	2,733	2,640
Professional fees	2,216	1,696
Deferred acquisition payments	8,548	584
Other	13,788	13,376
Total accrued expenses and other current liabilities	$ 48,149	$ 36,105

Other non-current liabilities in the accompanying consolidated balance sheets consist of the following:

	June 30, 2017	June 30, 2016
	(Dollars in Thousands)	
Deferred rent	$ 6,916	$ 6,361
Uncertain tax positions	3,921	23,535
Deferred acquisition payments	—	2,000
Other	2,311	695
Total other non-current liabilities	$ 13,148	$ 32,591

(11) Credit Agreement

On February 26, 2016, we entered into a $250.0 million Credit Agreement (the “Credit Agreement”) with JPMorgan Chase Bank, N.A., as administrative agent, Silicon Valley Bank, as syndication agent, and the lenders and other parties named therein (the “Lenders”). On August 9, 2017, we entered into an Amendment to increase the Credit Agreement to $350.0 million. The indebtedness evidenced by the Credit Agreement matures on February 26, 2021. Prior to the maturity of the Credit Agreement, any amounts borrowed may be repaid and, subject to the terms and conditions of the Credit Agreement, borrowed again in whole or in part without penalty. As of June 30, 2017, we had $140.0 million in outstanding borrowings under the Credit Agreement.

Borrowings under the Credit Agreement bear interest at a rate equal to either, at our option, the sum of (a) the highest of (1) the rate of interest publicly announced by JPMorgan Chase Bank, N.A. as its prime rate in effect, (2) the Federal Funds Effective Rate plus 0.5%, and (3) the one-month Adjusted LIBO Rate plus 1.0%, plus (b) a margin initially of 0.5% for the first full fiscal quarter ending after the date of the Credit Agreement and thereafter based on our Leverage Ratio; or the Adjusted LIBO Rate plus a margin initially of 1.5% for the first full fiscal quarter ending after the date of the Credit Agreement and thereafter based on our Leverage Ratio. We must also pay, on a quarterly basis, an unused commitment fee at a rate of between 0.2% and 0.3% per annum, based on our Leverage Ratio. The interest rate as of June 30, 2017 was 2.73%.

All borrowings under the Credit Agreement are secured by liens on substantially all of our assets. The Credit Agreement contains affirmative and negative covenants customary for facilities of this type, including restrictions on: incurrence of additional debt; liens; fundamental changes; asset sales; restricted payments; and transactions with affiliates. The Credit Agreement contains financial covenants regarding maintenance as of the end of each fiscal quarter, commencing with the quarter ending June 30, 2016, of a maximum Leverage Ratio of 3.0 to 1.0 and a minimum Interest Coverage Ratio of 3.0 to 1.0. We were in compliance with all covenants as of June 30, 2017.

(12) Stock-Based Compensation

Stock Compensation Plans

In December 2016, the shareholders approved the establishment of the 2016 Omnibus Incentive Plan (the 2016 Plan), which provides for the issuance of a maximum of 6,000,000 shares of common stock. The 2016 Plan provides for the grant of incentive and nonqualified stock options, stock appreciation rights, restricted stock, restricted stock units, other stock-related awards, and performance awards that may be settled in cash, stock, or other property. As of June 30, 2017, there were 6,000,000 shares of common stock available for issuance subject to awards under the 2016 Plan.

In April 2010, the shareholders approved the establishment of the 2010 Equity Incentive Plan (the 2010 Plan), which provides for the issuance of a maximum of 7,000,000 shares of common stock. The 2010 Plan provides for the grant of incentive and nonqualified stock options, stock appreciation rights, restricted stock, restricted stock units, other stock-related awards, and performance awards that may be settled in cash, stock, or other property. As of June 30, 2017, there were 2,781,925 shares of common stock available for issuance subject to awards under the 2010 Plan.

In May 2005, the shareholders approved the establishment of the 2005 Stock Incentive Plan (the 2005 Plan), which provides for the issuance of a maximum of 4,000,000 shares of common stock. The 2005 Plan provides for the grant of incentive and nonqualified stock options and other stock-based awards, including the grant of shares based upon certain conditions, the grant of securities convertible into common stock and the grant of stock appreciation rights. Restricted stock and other stock-based awards granted under the 2005 Plan may not exceed, in the aggregate, 4,000,000 shares of common stock. The 2005 Plan expired on March 31, 2015.

General Award Terms

We issue stock options and restricted stock units (RSUs) to our employees and outside directors, pursuant to shareholder-approved equity compensation plans. Option awards are granted with an exercise price equal to the market closing price of our stock on the trading day prior to the grant date. Those options generally vest over four years and expire within 7 or 10 years of grant. RSUs generally vest over four years. Historically, our practice has been to settle stock option exercises and RSU vesting through newly-issued shares.

Stock Compensation Accounting

Our stock-based compensation is accounted for as awards of equity instruments. Our policy is to issue new shares upon the exercise of stock awards. We use the "with-and-without" approach for determining if excess tax benefits are realized under ASC 718.

We utilize the Black-Scholes option valuation model for estimating the fair value of options granted. The Black-Scholes option valuation model incorporates assumptions regarding expected stock price volatility, the expected life of the option, the risk-free interest rate, dividend yield and the market value of our common stock. The expected stock price volatility is determined based on our stock's historic prices over a period commensurate with the expected life of the award. The expected life of an option represents the period for which options are expected to be outstanding as determined by historic option exercises and cancellations. The risk-free interest rate is based on the U.S. Treasury yield curve for notes with terms approximating the expected life of the options granted. The expected dividend yield is zero, based on our history and expectation of not paying dividends on common shares. We recognize compensation costs on a straight-line basis, net of estimated forfeitures, over the requisite service period for time-vested awards.

The weighted average estimated fair value of option awards granted during fiscal 2017, 2016 and 2015 was $13.16, $13.16, and $13.43, respectively.

We utilized the Black-Scholes option valuation model with the following weighted average assumptions:

	Year Ended June 30,		
	2017	2016	2015
Risk-free interest rate	1.2%	1.4%	1.5%
Expected dividend yield	None	None	None
Expected life (in years)	4.6	4.6	4.6
Expected volatility factor	31%	34%	35%

The stock-based compensation expense and its classification in the accompanying consolidated statements of operations for fiscal 2017, 2016 and 2015 was as follows:

	Year Ended June 30, 2017	2016	2015
	(Dollars in Thousands)		
Recorded as expenses:			
Cost of service and other	$ 1,477	$ 1,390	$ 1,351
Selling and marketing	3,652	4,351	3,056
Research and development	5,806	3,423	3,881
General and administrative	7,865	6,563	6,296
Total stock-based compensation	$ 18,800	$ 15,727	$ 14,584

A summary of stock option and RSU activity under all equity plans in fiscal 2017 is as follows:

	Stock Options				Restricted Stock Units	
	Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value (in 000's)	Shares	Weighted Average Grant Date Fair Value
Outstanding at June 30, 2016	1,314,142	$ 32.47	7.23	$ 12,340	493,332	$ 41.06
Granted	482,982	46.31			532,656	46.59
Settled (RSUs)					(310,074)	41.71
Exercised	(332,937)	27.85				
Cancelled / Forfeited	(110,629)	39.40			(99,916)	40.42
Outstanding at June 30, 2017	1,353,558	$ 37.98	7.30	$ 23,535	615,998	$ 45.62
Exercisable at June 30, 2017	808,094	$ 33.04	6.35	$ 17,958		
Vested and expected to vest at June 30, 2017	1,288,241	$ 37.61	7.23	$ 22,877	542,323	$ 45.58

During fiscal 2017, 2016 and 2015, the weighted average grant-date fair value of RSUs granted was $46.59, $41.86 and $42.65, respectively. During fiscal 2017, 2016 and 2015 the total fair value of vested shares from RSU grants amounted to $16.6 million, $12.7 million and $16.1 million, respectively.

As of June 30, 2017, the total future unrecognized compensation cost related to stock options and RSUs was $6.1 million and $23.0 million, respectively, and are expected to be recorded over a weighted average period of 2.5 years and 2.6 years, respectively.

During fiscal 2017, 2016 and 2015 the weighted average exercise price of stock options granted was $46.31, $42.66 and $42.66. The total intrinsic value of options exercised during fiscal 2017, 2016 and 2015 was $7.9 million, $4.1 million and $8.2 million, respectively. We received $9.3 million, $3.9 million and $4.6 million in cash proceeds from option exercises during fiscal 2017, 2016 and 2015, respectively. We paid $5.8 million, $4.4 million and $5.7 million for withholding taxes on vested RSUs during fiscal 2017, 2016 and 2015, respectively.

At June 30, 2017, common stock reserved for future issuance or settlement under equity compensation plans was 10.8 million shares.

(13) Common Stock

On January 22, 2015, our Board of Directors approved a share repurchase program for up to $450 million worth of our common stock. On April 26, 2016 and June 8, 2017, the Board of Directors approved a $400 million and $200 million increase in our current share repurchase plan, respectively. The timing and amount of any shares repurchased are based on market conditions and other factors. All share repurchases of our common stock have been recorded as treasury stock under the cost method.

On August 29, 2016, as part of our common stock repurchase program, we entered into an accelerated share repurchase program (the "ASR Program") with a third-party financial institution. Pursuant to the terms of the ASR Program, we made an upfront payment of $100.0 million in exchange for the delivery of approximately 2.1 million shares of our common stock, which was determined based on the volume-weighted average price per share of our common stock over the term of the ASR Program, less an agreed-upon discount. These shares were recorded as an increase to treasury stock.

During fiscal 2017, we repurchased 5,185,257 shares of our common stock in the open market for $275.0 million and 2,106,709 shares of our common stock for $100.0 million as part of the ASR Program.

We repurchased 4,750,692 shares and 7,731,428 shares of our common stock for $180.1 million and $298.3 million during fiscal 2016 and 2015, respectively.

As of June 30, 2017, the remaining dollar value under the stock repurchase program approved on January 22, 2015 and amended on April 26, 2016 was $346.3 million.

(14) Net Income Per Share

Basic income per share is determined by dividing net income by the weighted average common shares outstanding during the period. Diluted income per share is determined by dividing net income by diluted weighted average shares outstanding during the period. Diluted weighted average shares reflect the dilutive effect, if any, of potential common shares. To the extent their effect is dilutive, employee equity awards and other commitments to be settled in common stock are included in the calculation of diluted net income per share based on the treasury stock method.

The calculations of basic and diluted net income per share and basic and dilutive weighted average shares outstanding for the years ended June 30, 2017, 2016 and 2015 are as follows:

	Year Ended June 30,		
	2017	2016	2015
	(Dollars and Shares in Thousands, Except per Share Data)		
Net income	$ 162,196	$ 139,951	$ 118,407
Weighted average shares outstanding	76,491	82,892	88,398
Dilutive impact from:			
Employee equity awards	487	417	618
Dilutive weighted average shares outstanding	76,978	83,309	89,016
Income per share			
Basic	$ 2.12	$ 1.69	$ 1.34
Dilutive	$ 2.11	$ 1.68	$ 1.33

For the years ended June 30, 2017, 2016 and 2015, certain employee equity awards were anti-dilutive based on the treasury stock method. Additionally, during the year ended June 30, 2017, options to purchase 27,778 shares of our common stock were not included in the computation of dilutive weighted average shares outstanding, because their exercise prices ranged from $54.22 per share to $63.05 per share and were greater than the average market price of our common stock during the period then ended. These options were outstanding as of June 30, 2017 and expire at various dates through June 5, 2027.

The following potential common shares were excluded from the calculation of dilutive weighted average shares outstanding because their effect would be anti-dilutive at the balance sheet date:

	Year Ended June 30,		
	2017	2016	2015
	(Shares in Thousands)		
Employee equity awards	525	1,028	587

(15) Income Taxes

Income before provision for income taxes consists of the following:

	Year Ended June 30,		
	2017	2016	2015
	(Dollars in Thousands)		
Domestic	$ 202,053	$ 201,885	$ 175,805
Foreign	8,293	8,754	3,666
Income before provision for income taxes	$ 210,346	$ 210,639	$ 179,471

The provision for income taxes shown in the accompanying consolidated statements of operations is composed of the following:

	Year Ended June 30,		
	2017	2016	2015
	(Dollars in Thousands)		
Federal—			
Current	$ 69,385	$ 56,535	$ —
Deferred	(22,449)	7,496	55,895
State—			
Current	1,737	1,866	2,176
Deferred	(1,079)	204	729
Foreign—			
Current	2,067	4,554	3,382
Deferred	(1,511)	33	(1,118)
	$ 48,150	$ 70,688	$ 61,064

The provision for income taxes differs from that based on the federal statutory rate due to the following:

	Year Ended June 30,		
	2017	2016	2015
	(Dollars in Thousands)		
Federal tax provision at statutory rate	$ 73,621	$ 73,723	$ 62,815
State income taxes	967	1,153	2,114
Subpart F and dividend income	2,912	3,581	2,799
Foreign taxes and rate differences	(206)	(663)	(222)
Stock-based compensation	991	1,359	763
Tax credits	(6,614)	(3,867)	(3,562)
Tax contingencies	(19,645)	(581)	(641)
Return to provision adjustments	464	658	384
Domestic Production Activity Deduction	(6,261)	(4,892)	(3,600)
Valuation allowance	1,522	49	176
Other	399	168	38
Provision for income taxes	$ 48,150	$ 70,688	$ 61,064

Deferred tax assets (liabilities) consist of the following at June 30, 2017 and 2016:

	Year Ended June 30,	
	2017	2016
	(Dollars in Thousands)	
Deferred tax assets:		
Federal and state credits	$ 2,553	$ 1,270
Capital loss carryforwards	7,940	8,073
Net operating loss carryforwards	3,028	1,742
Deferred revenue	5,881	7,821
Other reserves and accruals	10,701	6,762
Intangible assets	1,730	1,616
Property, leasehold improvements, and other basis differences	2,470	1,853
Other temporary differences	971	870
	35,274	30,007
Deferred tax liabilities:		
Deferred revenue	(44)	(1,276)
Intangible assets	(7,017)	(2,912)
Property, leasehold improvements, and other basis differences	(2,634)	(3,305)
Other temporary differences	—	(508)
	(9,695)	(8,001)
Valuation allowance	(11,259)	(10,119)
Net deferred tax assets	$ 14,320	$ 11,887

Reflected in the deferred tax assets above at June 30, 2017, we have foreign net operating loss carryforwards of $3.0 million, some of which will expire beginning in 2019 and others with unlimited carryforwards, and state research and development credits of $2.4 million which begin to expire in 2025.

In fiscal 2017 and fiscal 2016, we recorded reductions in the income taxes payable of $6.0 million and $2.2 million, respectively, with an increase to additional paid in capital, for the benefits of excess stock-based compensation deductions recognized during the period primarily in the United States.

Our valuation allowance for deferred tax assets was $11.3 million and $10.1 million as of June 30, 2017 and 2016 respectively. The most significant portion of the valuation allowance is attributable to a reserve against US capital loss carryforward deferred tax assets of $8.0 million and state R&D tax credits.

For fiscal 2017, our income tax provision included amounts determined under the provisions of ASC 740 intended to satisfy additional income tax assessments, including interest and penalties, that could result from any tax return positions for which the likelihood of sustaining the position on audit does not meet a threshold of "more likely than not." Tax liabilities were recorded as a component of our income taxes payable and other non-current liabilities. The ultimate amount of taxes due will not be known until examinations are completed and settled or the audit periods are closed by statutes.

A reconciliation of the reserve for uncertain tax positions is as follows:

	Year Ended June 30,		
	2017	2016	2015
	(Dollars in Thousands)		
Uncertain tax positions, beginning of year	$ 23,535	$ 19,870	$ 21,193
Gross (decreases) increases—tax positions in prior period	(19,116)	67	238
Gross increases—tax positions in current period	—	5,474	—
Gross decreases—lapse of statutes	(830)	(1,772)	(1,024)
Currency translation adjustment	332	(104)	(537)
Uncertain tax positions, end of year	$ 3,921	$ 23,535	$ 19,870

At June 30, 2017, the total amount of unrecognized tax benefits is $3.9 million. Upon being recognized, the amount would reduce the effective tax rate. Our policy is to recognize interest and penalties related to income tax matters as provision for (benefit from) income taxes. At June 30, 2017, we had approximately $0.5 million of accrued interest and $0.2 million of penalties related to uncertain tax positions. We recorded a benefit for interest and penalties of approximately $1.3 million during fiscal 2017.

During the fourth quarter of fiscal 2017, we settled an audit with the Internal Revenue Services ("IRS") for the fiscal 2015. As a result of settling the audit, we released a significant portion of our reserve for US tax positions. The amount reversed in the fourth quarter related to settling the tax audit was $19.2 million.

We are subject to income tax in many jurisdictions outside the U.S. Our operations in certain jurisdictions remain subject to examination for tax years 2007 to 2016, some of which are currently under audit by local tax authorities. The resolutions of these audits are not expected to be material to our consolidated financial statements.

(16) Commitments and Contingencies

Operating Leases

We lease certain facilities and various office equipment under non-cancellable operating leases with terms in excess of one year. Rental expense, including short term leases, maintenance charges and taxes on leased facilities, was approximately $8.4 million, $8.3 million and $8.3 million for fiscal years 2017, 2016 and 2015, respectively.

Future minimum lease payments under these leases as of June 30, 2017 are as follows:

Year Ended June 30,	Operating Leases
	(Dollars in Thousands)
2018	$ 6,240
2019	7,926
2020	7,093
2021	5,810
2022	5,248
Thereafter	11,492
Total	$ 43,809

Letters of Credit

Standby letters of credit for $2.9 million secure our performance on professional services contracts and certain facility leases. The letters of credit expire at various dates through fiscal 2025.

Legal Matters

In the ordinary course of business, we are, from time to time, involved in lawsuits, claims, investigations, proceedings and threats of litigation. These matters include an April 2004 claim by a customer that certain of our software products and implementation services failed to meet the customer's expectations. In March 2014, a judgment was issued by the trial court against us in the amount of approximately 1.9 million Euro ("€") plus interest and a portion of legal fees. We subsequently filed an appeal of that judgment. In March 2016, the appellate court determined that we are liable for damages in the amount of approximately €1.7 million plus interest, with the possibility of additional damages to be determined in further proceedings by the appellate court. As of June 30, 2017, there has been no change to the appellate court's determination.

While the outcome of the proceedings and claims referenced above cannot be predicted with certainty, there are no such matters, as of June 30, 2017 that, in the opinion of management, are reasonably possible to have a material adverse effect on our financial position, results of operations or cash flows. Liabilities, if applicable, related to the aforementioned matters discussed in this Note have been included in our accrued liabilities at June 30, 2017, and are not material to our financial position for the periods then ended. As of June 30, 2017, we do not believe that there is a reasonable possibility of a material loss exceeding the amounts already accrued for the proceedings or matters discussed above. However, the results of litigation (including the above-referenced appeal) and claims cannot be predicted with certainty; unfavorable resolutions are possible and could materially affect our results of operations, cash flows or financial position. In addition, regardless of the outcome, litigation could have an adverse impact on us because of attorneys' fees and costs, diversion of management resources and other factors.

(17) Retirement Plans

We maintain a defined contribution retirement plan under Section 401(k) of the Internal Revenue Code (IRC) covering all eligible employees, as defined. Under the plan, a participant may elect to defer receipt of a stated percentage of his or her compensation, subject to limitation under the IRC, which would otherwise be payable to the participant for any plan year. We may make discretionary contributions to this plan, including making matching contributions of 50%, up to a maximum of 6% of an employee's pretax contribution. We made matching contributions of approximately $2.5 million, $2.4 million and $2.2 million in fiscal 2017, 2016 and 2015, respectively. Additionally, we participate in certain government mandated and defined contribution plans throughout the world for which we comply with all funding requirements.

(18) Segment and Geographic Information

Operating segments are defined as components of an enterprise that engage in business activities for which discrete financial information is available and regularly reviewed by the chief operating decision maker in deciding how to allocate resources and to assess performance. Our chief operating decision maker is our President and Chief Executive Officer.

We have two operating and reportable segments, which are consistent with our reporting units: i) subscription and software and ii) services. The subscription and software segment is engaged in the licensing of asset optimization software solutions and associated support services. The services segment includes professional services and training.

The accounting policies of the operating segments are the same as those described in the summary of significant accounting policies (refer to Note 2). We do not track assets or capital expenditures by operating segments. Consequently, it is not practical to present assets, capital expenditures, depreciation or amortization by operating segments.

The following table presents a summary of our reportable segments' profits:

	Subscription and software	Services	Total
		(Dollars in Thousands)	
Year Ended June 30, 2017:			
Segment revenue	$ 453,512	$ 29,430	$ 482,942
Segment expenses(1)	(193,214)	(26,415)	(219,629)
Segment profit	$ 260,298	$ 3,015	$ 263,313
Year Ended June 30, 2016:			
Segment revenue	$ 440,408	$ 31,936	$ 472,344
Segment expenses(1)	(179,064)	(28,235)	(207,299)
Segment profit	$ 261,344	$ 3,701	$ 265,045
Year Ended June 30, 2015:			
Segment revenue	$ 405,640	$ 34,761	$ 440,401
Segment expenses(1)	(183,485)	(28,411)	(211,896)
Segment profit	$ 222,155	$ 6,350	$ 228,505

(1) Our reportable segments' operating expenses include expenses directly attributable to the segments. Segment expenses include selling and marketing, research and development, stock-based compensation and certain corporate expenses incurred in support of the segments. Segment expenses do not include allocations of general and administrative; interest income, net; and other income (expense), net.

Reconciliation to Income Before Provision for Income Taxes

The following table presents a reconciliation of total segment operating profit to income before provision for income taxes:

	Year Ended June 30,		
	2017	2016	2015
		(Dollars in Thousands)	
Total segment profit for reportable segments	$ 263,313	$ 265,045	$ 228,505
General and administrative	(51,297)	(53,664)	(48,713)
Other income (expense), net	1,309	29	(778)
Interest income (expense), net	(2,979)	(771)	457
Income before provision for income taxes	$ 210,346	$ 210,639	$ 179,471

Geographic Information:

Revenue to external customers is attributed to individual countries based on the location the product or services are sold. Domestic and international sales as a percentage of total revenue are as follows:

	Year Ended June 30,		
	2017	2016	2015
United States	37.9%	35.4%	34.6%
Europe	28.1	29.6	30.6
Other(1)	34.0	35.0	34.8
	100.0%	100.0%	100.0%

(1) Other consists primarily of Asia Pacific, Canada, Latin America and the Middle East.

We have long-lived assets of approximately $71.9 million that are located domestically and $15.5 million that reside in other geographic locations as of June 30, 2017. We had long-lived assets of approximately $31.6 million that were located domestically and $14.6 million that reside in other geographic locations as of June 30, 2016.

(19) Quarterly Financial Data (Unaudited)

The following tables present quarterly consolidated statement of operations data for fiscal 2017 and 2016. The below data is unaudited but, in our opinion, reflects all adjustments necessary for a fair presentation of this data in accordance with GAAP:

	Three Months Ended			
	June 30, 2017	March 31, 2017	December 31, 2016	September 30, 2016
	(Dollars and Shares in Thousands, Except per Share Data)			
Total revenue	$ 123,682	$ 119,277	$ 119,933	$ 120,050
Gross profit	111,568	107,010	108,354	108,544
Income from operations	48,948	52,273	56,065	54,730
Net income	54,352	35,834	37,010	35,000
Net income per common share:				
Basic	$ 0.73	$ 0.47	$ 0.48	$ 0.44
Diluted	$ 0.73	$ 0.47	$ 0.48	$ 0.44
Weighted average shares outstanding:				
Basic	74,294	75,676	76,905	79,048
Diluted	74,830	76,182	77,318	79,385

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

	Three Months Ended			
	June 30, 2016	March 31, 2016	December 31, 2015	September 30, 2015
	(Dollars and Shares in Thousands, Except per Share Data)			
Total revenue	$ 113,680	$ 119,217	$ 119,151	$ 120,296
Gross profit	101,949	107,197	107,263	107,324
Income from operations	48,972	50,681	56,299	55,429
Net income	33,326	33,171	36,683	36,771
Net income per common share:				
Basic	$ 0.41	$ 0.40	$ 0.44	$ 0.44
Diluted	$ 0.41	$ 0.40	$ 0.44	$ 0.44
Weighted average shares outstanding:				
Basic	81,282	83,081	83,315	83,876
Diluted	81,599	83,373	83,703	84,320

EXHIBIT INDEX

Exhibit Number	Description	Filed with this Form 10-K	Incorporated by Reference Form	Filing Date with SEC(1)	Exhibit Number
3.1	Certificate of Incorporation of Aspen Technology, Inc., as amended		8-K	August 22, 2003	4
3.2	Amended and Restated By-laws of Aspen Technology, Inc.		8-K	October 24, 2016	3.1
4.1	Specimen certificate for common stock, $.10 par value, of Aspen Technology, Inc.		8-A/A	June 12, 1998	4
10.1	Lease Agreement dated January 27, 2014 between RAR2-Crosby Corporate Center QRS, Inc. and Aspen Technology, Inc. regarding 20, 22 and 28 Crosby Drive, Bedford, Massachusetts		10-Q	January 30, 2014	10.1
10.2	System License Agreement dated March 30, 1982 between Aspen Technology, Inc. and the Massachusetts Institute of Technology		10-K	April 11, 2008	10.4
10.3	Amendment dated March 30, 1982 to System License Agreement dated March 30, 1982 between Aspen Technology, Inc. and the Massachusetts Institute of Technology		10-K	April 11, 2008	10.5
10.4	Rule 2.7 Announcement, dated January 12, 2016		8-K	January 19, 2016	2.1
10.5	364-Day Bridge Credit Agreement, dated as of January 12, 2016, among Aspen Technology, Inc., as borrower, the lenders party thereto, JPMorgan Chase Bank, N.A., as administrative agent, and J.P. Morgan Securities LLC, as sole lead arranger and sole bookrunner		8-K	January 19, 2016	10.1
10.6	Credit Agreement, dated as of February 26, 2016, among Aspen Technology, Inc., as borrower, the lenders, co-documentation agents and issuing banks party thereto, JPMorgan Chase Bank, N.A., as administrative agent, joint lead arranger and joint bookrunner, and Silicon Valley Bank, as syndication agent, joint lead arranger and joint bookrunner		8-K	February 29, 2016	10.1
10.7	Incremental Facility Amendment, dated as of August 9, 2017, to the Credit Agreement dated as of February 26, 2016 among Aspen Technology, Inc. as borrower, the lenders, JPMorgan Chase Bank, N.A. as administrative agent and issuing bank, and certain other Lenders acting in such capacity from time to time, as issuing banks	X			
10.8	Master Confirmation-Accelerated Share Repurchase Dated August 29, 2016, with J.P. Morgan Securities, as agent for JP Morgan Chase Bank		8-K	August 30, 2016	10.1

Exhibit Number	Description	Filed with this Form 10-K	Incorporated by Reference Form	Filing Date with SEC(1)	Exhibit Number
10.9	Stock Purchase Agreement dated October 26, 2016 by and among AspenTech Holding Corporation, Mtelligence Corporation, each of the stockholders and key sellers of Mtelligence Corporation, and Cito Capital Corporation		10-Q	October 27, 2016	10.4
10.10^	Aspen Technology, Inc. 2005 Stock Incentive Plan (as amended)		10-K	November 9, 2009	10.39
10.11^	Form of Terms and Conditions of Stock Option Agreement granted under Aspen Technology, Inc. 2005 Stock Incentive Plan		10-Q	November 14, 2006	10.8
10.12^	Form of Restricted Stock Unit Agreement granted under Aspen Technology, Inc. 2005 Stock Incentive Plan		10-Q	November 14, 2006	10.9
10.13^	Form of Restricted Stock Unit Agreement—G granted under Aspen Technology, Inc. 2005 Stock Incentive Plan		10-Q	November 14, 2006	10.10
10.14^	Terms and Conditions of Restricted Stock Unit Agreement granted under 2005 Stock Incentive Plan		10-K	November 9, 2009	10.43
10.15^	Aspen Technology, Inc. 2010 Equity Incentive Plan		8-K	April 21, 2010	10.1
10.16^	Form of Terms and Conditions of Restricted Stock Unit Agreement granted under Aspen Technology, Inc. 2010 Equity Incentive Plan		10-K	September 2, 2010	10.42
10.17^	Form of Terms and Conditions of Stock Option Agreement Granted under Aspen Technology, Inc. 2010 Equity Incentive Plan		10-K	September 2, 2010	10.43
10.18^	Aspen Technology, Inc. 2016 Omnibus Incentive Plan		10-Q	October 27, 2016	10.4
10.19^	Form of Terms and Conditions of Restricted Stock Unit Agreement Granted Under Aspen Technology Inc. 2016 Omnibus Incentive Plan		10-Q	January 26, 2017	10.2^
10.20^	Form of Terms and Conditions of Stock Option Agreement Granted Under Aspen Technology Inc. 2016 Omnibus Incentive Plan		10-Q	January 26, 2017	10.3^
10.21^	Aspen Technology, Inc. Executive Annual Incentive Bonus Plan (Fiscal Year 2015)		8-K	July 25, 2014	10.1
10.22^	Aspen Technology, Inc. Executive Annual Incentive Bonus Plan (Fiscal Year 2016)		8-K	July 24, 2015	10.1
10.23^	Aspen Technology, Inc. Executive Annual Bonus Plan (Fiscal Year 2017)		8-K	July 22, 2016	10.1
10.24^	Aspen Technology, Inc. Executive Annual Bonus Plan (Fiscal Year 2017) (Correction of the exhibit filed as Exhibit 10.1 of the 8-K filed on July 22, 2016, in which Growth in Annual Spend was referred to as Growth in License Annual Spend)		10-Q	October 27, 2016	10.3

Exhibit Number	Description	Filed with this Form 10-K	Incorporated by Reference Form	Filing Date with SEC(1)	Exhibit Number
10.25^	Aspen Technology, Inc. Executive Annual Incentive Bonus Plan (Fiscal Year 2018)		8-K	July 19, 2017	10.1
10.26^	Form of Amended and Restated Executive Retention Agreement entered into by Aspen Technology, Inc. and each executive officer of Aspen Technology, Inc. (other than Antonio J. Pietri)		10-K	August 13, 2014	10.29
10.27^	Amended and Restated Executive Retention Agreement dated July 1, 2013 entered into by Aspen Technology, Inc. and Antonio J. Pietri		10-K	August 15, 2013	10.29
10.28^	Form of Confidentiality and Non-Competition Agreement of Aspen Technology, Inc.		10-K	April 11, 2008	10.45
10.29^	Non-Competition and Non-Solicitation Agreement dated July 1, 2013 entered into by Aspen Technology, Inc. and Antonio J. Pietri		10-K	August 15, 2013	10.30
21.1	Subsidiaries of Aspen Technology, Inc.	X			
23.1	Consent of KPMG LLP	X			
31.1	Certification of Principal Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002	X			
31.2	Certification of Principal Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002	X			
32.1*	Certification Pursuant to 18 U.S.C. Section 1350, As Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002	X			
101.INS	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			

(1) The SEC File No. is 001-34630 for Exhibits 10.11 through 10.13; and 10.15 through 10.16, inclusive. The SEC File No. for all other exhibits is 000-24786.

^ Management contract or compensatory plan or arrangement

* The certification attached as Exhibit 32.1 that accompanies this Form 10-K is not deemed filed with the SEC and is not to be incorporated by reference into any filing of Aspen Technology, Inc. under the Securities Act of 1933 or the Securities Exchange Act of 1934, whether made before or after the date of this Form 10-K, irrespective of any general incorporation language contained in such filing.

Exhibit 10.7

INCREMENTAL FACILITY AMENDMENT

INCREMENTAL FACILITY AMENDMENT, dated as of August 9, 2017 (this " Incremental Facility Amendment") to the Credit Agreement, dated as of February 26, 2016 (as amended or modified from time to time, the "Credit Agreement"), among Aspen Technology, Inc. (the " Borrower"), each lender from time to time party thereto (collectively, the "Lenders" and individually, a "Lender"), JPMORGAN CHASE BANK, N.A., as Administrative Agent and Issuing Bank and certain other Lenders acting in such capacity from time to time, as Issuing Banks.

W I T N E S S E T H:

WHEREAS, pursuant to the Credit Agreement, the Lenders have agreed to make, and have made, certain loans and other extensions of credit to the Borrower;

WHEREAS, the Borrower desires to amend Schedule 3.11 of the Credit Agreement and, pursuant to Section 2.20 of the Credit Agreement, has requested an increase in the aggregate Revolving Credit Commitments under the Credit Agreement in an amount of $100,000,000;

WHEREAS, each Lender signatory to this Incremental Facility Amendment (each, an "Incremental Facility Lender") has agreed to, among other things, provide the additional Revolving Credit Commitments in the amount set forth opposite to its name in the commitment schedule attached hereto as Schedule A (the " Incremental Commitment Schedule"; such additional Incremental Revolving Commitments set forth in the Incremental Commitment Schedule, the "Incremental Commitments") upon the terms and subject to the conditions set forth herein;

WHEREAS, JPMorgan Chase Bank, N.A. and Silicon Valley Bank are appointed by the Borrower to act as Joint Lead Arrangers and Joint Bookrunners for the Incremental Commitments;

NOW, THEREFORE, in consideration of the mutual agreements herein contained and other good and valuable consideration, the sufficiency and receipt of which are hereby acknowledged, the parties hereto hereby agree as follows:

SECTION 1. Defined Terms. Unless otherwise defined herein, terms defined in the Credit Agreement and used herein shall have the meanings given to them in the Credit Agreement.

SECTION 2. Incremental Revolving Credit Commitments.

(a) On the Increase Effective Date (as defined below), this Incremental Facility Amendment shall constitute an increase in the Revolving Credit Commitments of the Lenders pursuant to Section 2.20 of the Credit Agreement, the Incremental Commitments shall constitute additional "Revolving Credit Commitments" and any loans made pursuant to the Incremental Commitments shall constitute "Revolving Loans" and "Loans" under the Credit Agreement.

(b) The Incremental Commitments shall have the same terms and conditions as those of the Revolving Credit Commitments existing prior to the Increase Effective Date under the Credit Agreement. No increase of the Revolving Increase Commitments pursuant to this Incremental Facility Amendment increases the Letter of Credit Facility set forth in the Credit Agreement.

(c) From the Increase Effective Date until the Maturity Date, all Revolving Loans shall be made in accordance with the Revolving Credit Commitments of the Lenders after giving effect to the Incremental Commitments. If any Revolving Loans are outstanding on the Increase Effective Date, the Lenders immediately after effectiveness of such Incremental Commitment shall purchase and assign at par such amounts of the Revolving Loans outstanding at such time as the Administrative Agent may require such that each Lender holds its Pro Rata Share of all Revolving Loans outstanding after giving effect to all such assignments. On the Increase Effective Date, each Incremental Facility Lender will automatically and without further act be deemed to have assumed a portion in outstanding Letters of Credit such that, after giving effect to such deemed assignment and assumption of participations, the percentage of the aggregate outstanding participations in Letters of Credit held by such Incremental Facility Lender equals its Pro Rata Shares (after giving effect to the Incremental Commitments). For the avoidance of doubt, it is understood that facility fees with respect to the Incremental Commitments shall accrue from the Increase Effective Date.

SECTION 3. Schedule 3.11 Amendment. Schedule 3.11 to the Credit Agreement is deleted in its entirety and replaced with the Schedule attached as Schedule C hereto

SECTION 4. Fees. The Borrower agrees to pay on the Increase Effective Date to the Administrative Agent, for the account of each Incremental Facility Lender, fees in the amounts previously communicated by the Borrower and the Arrangers to each such Incremental Facility Lender.

SECTION 5. Amendments to Credit Agreement to Reflect the Incremental Commitments. Schedule 2.01 of the Credit Agreement is hereby replaced with the revised Revolving Credit Commitments schedule attached hereto as Schedule B.

SECTION 6. Effectiveness of Incremental Facility Amendment. This Incremental Facility Amendment shall become effective upon satisfaction of the following conditions precedent (such date, the "Increase Effective Date"):

The Administrative Agent shall have received the following:

(a) counterparts to this Incremental Facility Amendment duly executed by the Borrower, each other Loan Party and each Incremental Facility Lender;

(b) a fee for the account of each Incremental Facility Lender that is a party to this Incremental Facility Amendment in accordance with Section 4 hereof;

(c) all other fees required to be paid, and all expenses for which invoices have been presented (including the reasonable and documented fees and reasonable, documented, out-of-pocket expenses of legal counsel) required to be paid in accordance with the Loan Documents;

(d) a certificate of the Borrower dated as of the Increase Effective Date (i) certifying and attaching the resolutions adopted by the Borrower approving or consenting to such increase, and (ii) certifying that, before and after giving effect to such increase, (A) the representations and warranties contained in the Loan Documents are true and correct in all material respects (except for representations and warranties qualified as to materiality and Material Adverse Effect, which shall be true and correct in all respects) on and as of Increase Effective Date, as though made on and as of such date (except to the extent any such representation or warranty specifically relates to an earlier date in which case such representation and warranty shall be accurate in all material respects as of such earlier date), and (B) no event has occurred and its continuing, or would result from the Incremental Commitments, that constitutes a Default or Event of Default; and

(e) a signed opinion, dated as of the Increase Effective Date, addressed to the Administrative Agent and the Incremental Facility Lenders from legal counsel to the Borrower covering the matters reasonably requested by the Administrative Agent.

SECTION 7. Representations and Warranties. To induce the other parties hereto to enter into this Incremental Facility Amendment and to provide the Incremental Commitments, the Borrower and each other Loan Party hereby represents and warrants to the Administrative Agent and to each Incremental Facility Lender, as of the Increase Effective Date:

(a) The Borrower and each other Loan Party has the power and authority, and the legal right, to make, deliver and perform this Incremental Facility Amendment, and to perform its obligations hereunder. The execution, delivery and performance by the Borrower and each other Loan Party of this Incremental Facility Amendment has been authorized by all necessary corporate or limited liability company action, and no other corporate, limited liability company or other organizational proceedings on the part of the Borrower or such other Loan Party is necessary to consummate such transactions.

(b) This Incremental Facility Amendment has been duly executed and delivered on behalf of the Borrower and each other Loan Party. This Incremental Facility Amendment is a legal, valid and binding obligation of the Borrower and each other Loan Party, enforceable against the Borrower and each other Loan Party in accordance with its terms, subject to bankruptcy, insolvency, reorganization, moratorium or similar laws affecting creditors' rights generally and by general equitable principles (whether enforcement is sought by proceedings in equity or at law) and an implied covenant of good faith and fair dealing, and is in full force and effect subject to bankruptcy, insolvency, reorganization, moratorium or similar laws affecting creditors' rights generally and by general equitable principles (whether enforcement is sought by proceedings in equity or at law).

SECTION 8. Reaffirmation.

(a) The Borrower agrees and reaffirms all of its Obligations and the Liens and security interests granted to secure the Obligations, in each case, under the Loan Documents, shall extend to cover the Incremental Commitments and all

Loans, interest thereon and fees and expenses and the other Obligations in respect thereof pursuant to the terms of the Loan Documents.

(b) Each Loan Party other than the Borrower agrees and reaffirms that its guarantee of all of the Obligations, and the Liens and security interests granted to secure the Obligations, in each case, under the Loan Documents, shall extend to cover the Incremental Commitments and all Loans, interest thereon and fees and expenses and the other Obligations in respect thereof pursuant to the terms of the Loan Documents.

SECTION 9. Effect on the Credit Agreement. (a) Except as specifically amended above, the Credit Agreement shall continue to be in full force and effect and is hereby in all respects ratified and confirmed.

(b) The execution, delivery and effectiveness of this Incremental Facility Amendment shall not operate as a waiver of any right, power or remedy of any Lender or the Administrative Agent under the Credit Agreement, nor constitute a waiver of any provision of any of the Credit Agreement.

SECTION 10. Expenses. Subject to the terms of the Loan Documents (including, without limitation, Section 9.03 of the Credit Agreement), the Borrower agrees to pay or reimburse the Administrative Agent for all of its out-of-pocket costs and reasonable expenses incurred in connection with this Incremental Facility Amendment, any other documents prepared in connection herewith and the transaction contemplated hereby, including, without limitation, the reasonable fees and disbursements of counsel to the Administrative Agent.

SECTION 11. Governing Law. THIS INCREMENTAL FACILITY AMENDMENT AND ANY CLAIM, CONTROVERSY OR DISPUTE ARISING UNDER OR RELATED TO OR IN CONNECTION WITH THIS INCREMENTAL FACILITY AMENDMENT, THE RELATIONSHIP OF THE PARTIES AND/OR THE INTERPRETATION AND ENFORCEMENT OF THE RIGHTS AND DUTIES OF THE PARTIES WILL BE GOVERNED BY THE LAWS OF THE STATE OF NEW YORK WITHOUT REGARD TO ANY CONFLICTS OF LAW PRINCIPLES OTHER THAN SECTION 5-1401 OF THE NEW YORK GENERAL OBLIGATIONS LAW. EACH PARTY HERETO HEREBY AGREES TO BE BOUND BY THE JURISDICTIONAL AND SERVICE OF PROCESS PROVISIONS OF SECTION 10.14 OF THE CREDIT AGREEMENT AS IF SUCH SECTION WERE SET FORTH IN FULL HEREIN.

SECTION 12. Counterparts. This Incremental Facility Amendment may be executed in counterparts (and by different parties hereto on different counterparts), each of which shall constitute an original, but all of which when taken together shall constitute a single contract. This Incremental Facility Amendment, the Credit Agreement and the other Loan Documents constitute the entire contract among the parties relating to the subject matter hereof and supersede any and all previous agreements and understandings, oral or written, relating to the subject matter hereof. Delivery of an executed counterpart of a signature page of this Incremental Facility Amendment by facsimile or email shall be effective as delivery of a manually executed counterpart of this Amendment. THIS INCREMENTAL FACILITY AMENDMENT, THE CREDIT AGREEMENT AND THE OTHER LOAN DOCUMENTS REPRESENT THE ENTIRE AGREEMENT BETWEEN THE PARTIES WITH RESPECT TO THE SUBJECT MATTER HEREOF AND THEREOF AND SUPERCEDE ALL PRIOR ORAL AGREEMENTS OF THE PARTIES.

[Remainder of page intentionally left blank.]

IN WITNESS WHEREOF, the parties hereto have caused this Incremental Facility Amendment to be duly executed and delivered by their respective proper and duly authorized officers as of the day and year first above written.

ASPEN TECHNOLOGY, INC.

By: /s/ KARL E. JOHNSEN

Name: Karl E. Johnsen

Title: Chief Financial Officer

ASPENTECH CANADA HOLDINGS, LLC

By: /s/ FREDERIC G. HAMMOND

Name: Frederic G. Hammond

Title: Sole Manager and Secretary

JPMORGAN CHASE BANK, N.A., as Administrative Agent and an Incremental Facility Lender

By: /s/ DAGLAS PANCHAL

Name: Daglas Panchal

Title: Executive Director

SILICON VALLEY BANK, as an Incremental Facility Lender

By: /s/ FRANK GROCCIA

Name: Frank Groccia

Title: Vice President

[Signature Page to Incremental Facility Amendment]

CITIBANK, N.A., as an Incremental Facility Lender

By: /s/ RONALD HOMA

Name: Ronald Homa

Title: Senior Vice President, as authorized

Wells Fargo Bank, National Association, as an Incremental Facility Lender

By: /s/ TIFFANY ORMON

Name: Tiffany Ormon

Title: Director

Wells Fargo Bank, N.A., London Branch, as an Incremental Facility Lender

By: /s/ K.J. MCKNIGHT
Name: K.J. McKnight
Title: Director, Credit Risk

By: /s/ GINA FLYNN
Name: Gina Flynn
Title: Authorized Signatory

[Signature Page to Incremental Facility Amendment]

Citizens Bank, N.A., as an Incremental Facility Lender

By: /s/ CHRISTOPHER J. DELAURO

Name: Christopher J. DeLauro

Title: Vice President

TD Bank, N.A., as an Incremental Facility Lender

By: /s/ CRAIG WELCH

Name: Craig Welch

Title: Senior Vice President

[Signature Page to Incremental Facility Amendment]

Schedule A
Incremental Commitment Schedule

Lender	Incremental Commitment
JPMORGAN CHASE BANK, N.A.	$20,000,000
SILICON VALLEY BANK	$20,000,000
CITIBANK, N.A.	$16,000,000
WELLS FARGO BANK, N.A. WELLS FARGO BANK, N.A. LONDON BRANCH	$16,000,000
CITIZENS BANK, N.A.	$14,000,000
TD BANK, N.A.	$14,000,000
Total	**$100,0000,000**

Schedule B
Commitments

Lender	Revolving Credit Commitment	Percentage
JPMorgan Chase Bank, N.A.	$70,000,000.00	20.00%
Silicon Valley Bank	$70,000,000.00	20.00%
Citibank, N.A.	$56,000,000.00	16.00%
Wells Fargo Bank, N.A. Wells Fargo Bank, N.A. London Branch	$56,000,000.00	16.00%
Citizens Bank, N.A.	$49,000,000.00	14.00%
TD Bank, N.A.	$49,000,000.00	14.00%
Total	**$350,000,000**	**100.00%**

Schedule C

Schedule 3.11
Subsidiaries

Name of Subsidiary	Jurisdiction of Organization	Ownership of Equity Interests
AspenTech Argentina S.r.l.	Argentina	95% of the Equity Interests are owned by the Borrower and the remaining 5% are owned by Aspen Technology International, Inc.
Aspen Technology Australia Pty. Ltd.	Australia	100% of the Equity Interests are owned by the Borrower.
Aspen Technology WLL	Bahrain	99% of the Equity Interests are owned by AspenTech Europe BV and the remaining 1% are owned by AspenTech Europe SA/NV.
AspenTech Europe S.A./N.V.	Belgium	95.84% of the Equity Interests are owned by the Borrower and the remaining 4.16% are owned by AspenTech Europe BV.
AspenTech Software Brazil Ltda.	Brazil	99% of the Equity Interests are owned by the Borrower and the remaining 1% are owned by Aspen Technology International, Inc.
AspenTech Canada Corporation	Canada	100% of the Equity Interests are owned by the AspenTech Canada Holdings, LLC.
Aspen Technology S.A.S.	Colombia	100% of the Equity Interests are owned by the Borrower.
Aspen Tech India Pte. Ltd.	India	15.75% of the Equity Interests are owned by the Borrower and the remaining 84.25% are owned by Aspen Technology (Asia), Inc.
Aspen Technology S.r.l.	Italy	100% of the Equity Interests are owned by the Borrower.
AspenTech Japan Co. Ltd.	Japan	100% of the Equity Interests are owned by Aspen Technology (Asia), Inc.
AspenTech Solutions Sdn. Bhd.	Malaysia	100% of the Equity Interests are owned by AspenTech Canada Corporation.
Aspen Tech de Mexico, S. de R.L. de C.V.	Mexico	99% of the Equity Interests are owned by the Borrower and the remaining 1% are owned by Aspen Technology International, Inc.
AspenTech Europe B.V.	Netherlands	100% of the Equity Interests are owned by the Borrower.
AspenTech (Beijing) Co., Ltd.	PRC	100% of the Equity Interests are owned by Aspen Technology (Asia), Inc.
AspenTech (Shanghai) Co., Ltd.	PRC	100% of the Equity Interests are owned by Aspen Technology (Asia), Inc.
Aspen Technology LLC	Russia	100% of the Equity Interests are owned by the Borrower.
AspenTech Pte. Ltd.	Singapore	100% of the Equity Interests are owned by the Borrower.
AspenTech Africa (Pty.) Ltd.	South Africa	100% of the Equity Interests are owned by the Borrower.
Aspen Technology S.L.	Spain	100% of the Equity Interests are owned by AspenTech Canada Corporation.
AspenTech (Thailand) Ltd.	Thailand	100% of the Equity Interests are owned by Aspen Technology (Asia), Inc.

AspenTech Ltd.	UK	100% of the Equity Interests are owned by the Borrower.
ATI Global Optimisation Ltd.	UK	100% of the Equity Interests are owned by the Borrower.
Hyprotech UK Ltd.	UK	100% of the Equity Interests are owned by AspenTech Ltd.
AspenTech Canada Holdings, LLC	Delaware	100% of the Equity Interests are owned by the Borrower.
AspenTech Holding Corporation	Delaware	100% of the Equity Interests are owned by the Borrower.
Aspen Technology (Asia) Inc.	Delaware	100% of the Equity Interests are owned by the Borrower.
Aspen Technology International, Inc.	Delaware	100% of the Equity Interests are owned by the Borrower.
Aspen Technology Services Corporation	Delaware	100% of the Equity Interests are owned by the Borrower.
AspenTech Software Corporation	Delaware	100% of the Equity Interests are owned by the Borrower.
AspenTech Venezuela, C.A.	Venezuela	100% of the Equity Interests are owned by the Borrower.
SolidSim Engineering GmbH	Germany	100% of the Equity Interests are owned by the AspenTech Holding Corporation.
The Fidelis Group, LLC	Texas	100% of the Equity Interests are owned by the Borrower.
Mtelligence Corporation	Delaware	100% of the Equity Interests are owned by the AspenTech Holding Corporation.

All Subsidiaries of the Borrower are Excluded Subsidiaries except for AspenTech Canada Holdings, LLC.

Exhibit 21.1

ASPEN TECHNOLOGY, INC.
List of Subsidiaries as of June 30, 2017

	Name of Subsidiary	State or Country of Incorporation
1	Aspen Tech de Mexico, S. de R.L. de C.V.	Mexico
2	Aspen Tech India Private Ltd.	India
3	Aspen Technology (Asia), Inc.	Delaware
4	Aspen Technology Australia Pty. Ltd.	Australia
5	Aspen Technology International, Inc.	Delaware
6	Aspen Technology LLC	Russia
7	Aspen Technology S.A.S.	Colombia
8	Aspen Technology S.L.	Spain
9	Aspen Technology Services Corporation	Delaware
10	Aspen Technology W.L.L	Bahrain
11	AspenTech (Beijing) Ltd.	PRC
12	AspenTech (Shanghai) Ltd.	PRC
13	AspenTech (Thailand) Ltd.	Thailand
14	AspenTech Africa (Pty.) Ltd.	South Africa
15	AspenTech Argentina S.R.L.	Argentina
16	AspenTech Canada Corporation	Canada
17	AspenTech Canada Holdings, LLC	Delaware
18	AspenTech Europe B.V.	Netherlands
19	AspenTech Europe, S.A./N.V.	Belgium
20	AspenTech Holding Corporation	Delaware
21	AspenTech Japan Co. Ltd.	Japan
22	AspenTech Ltd.	UK
23	AspenTech Pte. Ltd.	Singapore
24	AspenTech S.r.l.	Italy
25	AspenTech Software Brazil Ltda.	Brazil
26	AspenTech Software Corporation	Delaware
27	AspenTech Solutions Sdn. Bhd.	Malaysia
28	AspenTech Venezuela, C.A.	Venezuela
29	ATI Global Optimisation Ltd.	UK
30	Hyprotech UK Ltd.	UK
31	Mtelligence Corporation	Delaware
32	The Fidelis Group, LLC	Texas

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

The Board of Directors

Aspen Technology, Inc.

We consent to the incorporation by reference in the registration statements (No. 333-128423, 333-169657 and 333-215818) on Form S-8 of Aspen Technology, Inc. (the "Company") of our report dated August 10, 2017 with respect to the consolidated balance sheets of the Company as of June 30, 2017 and 2016 and the related consolidated statements of operations, comprehensive income, stockholders' (deficit) equity, and cash flows for each of the years in the three-year period ended June 30, 2017, and the effectiveness of internal control over financial reporting as of June 30, 2017, which reports appear in the June 30, 2017 annual report on Form 10-K of the Company.

/s/ KPMG LLP

Boston, Massachusetts.
August 10, 2017

Exhibit 31.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Antonio J. Pietri, certify that:

1. I have reviewed this Annual Report on Form 10-K of Aspen Technology, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
   a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
   b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
   c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
   a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
   b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 10, 2017	**/s/ ANTONIO. J. PIETRI**
	Antonio J. Pietri
	President and Chief Executive Officer
	(*Principal Executive Officer)*

Exhibit 31.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Karl E. Johnsen, certify that:

1. I have reviewed this Annual Report on Form 10-K of Aspen Technology, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
   a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
   b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
   c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
   a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
   b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 10, 2017

/s/ KARL E. JOHNSEN
Karl E. Johnsen
Senior Vice President and Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

**CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report on Form 10-K of Aspen Technology, Inc. (the "Company") for the year ended June 30, 2017, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), each of the undersigned hereby certifies in his capacity as an officer of the Company, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to his knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: August 10, 2017	**/s/ ANTONIO J. PIETRI**
	Antonio J. Pietri President and Chief Executive Officer
Date: August 10, 2017	**/s/ KARL E. JOHNSEN**
	Karl E. Johnsen Senior Vice President and Chief Financial Officer

A signed original of this written statement required by Section 906 has been provided to Aspen Technology, Inc. and will be retained by Aspen Technology, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.