ptc

2016 Annual Report

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

FORM 10-K

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

For the Fiscal Year Ended: September 30, 2016

Commission File Number: 0-18059

PTC Inc.
(Exact name of registrant as specified in its charter)

Massachusetts	**04-2866152**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification Number)**

140 Kendrick Street, Needham, MA 02494
(Address of principal executive offices, including zip code)
(781) 370-5000
(Registrant's telephone number, including area code)

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

Title of each class	Name of each exchange on which registered
Common Stock, $.01 par value per share	**NASDAQ Global Select Market**

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

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

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

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

Indicate by check mark whether the registrant has submitted electronically 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 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 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 or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting 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 ☐

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

The aggregate market value of our voting stock held by non-affiliates was approximately $3,742,819,047 on April 2, 2016 based on the last reported sale price of our common stock on the Nasdaq Global Select Market on April 1, 2016. There were 114,620,630 shares of our common stock outstanding on that day and 115,604,111 shares of our common stock outstanding on November 16, 2016.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the definitive Proxy Statement in connection with the 2017 Annual Meeting of Stockholders (2017 Proxy Statement) are incorporated by reference into Part III.

PTC Inc.

ANNUAL REPORT ON FORM 10-K FOR FISCAL YEAR 2016

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Forward-Looking Statements

Statements in this Annual Report about our anticipated financial results and growth, as well as about the development of our products and markets, are forward-looking statements that are based on our current plans and assumptions. Important information about factors that may cause our actual results to differ materially from these statements is discussed in Item 1A. "Risk Factors" and generally throughout this Annual Report.

Unless otherwise indicated, all references to a year reflect our fiscal year that ends on September 30.

PART I

ITEM 1. Business

PTC is a global computer software and services company. We offer a portfolio of innovative CAD modeling, Product Lifecycle Management (PLM) and Service Lifecycle Management (SLM) solutions for manufacturers to create, operate, and service products. We also offer a suite of Internet of Things (IoT) solutions that enables our customers to securely connect smart things, manage and analyze data, and quickly create applications. Additionally, our Vuforia Augmented Reality (AR) platform empowers developers and others in the industrial enterprise to build AR experiences that transform the way users create, operate, and service products.

As the IoT gains momentum. Software, sensors, and IP-enabled connectivity are increasingly embedded into the design and build of products and are becoming integral to the manufacturing process. This transformation is taking shape across all manufacturing sectors. With smart connected products, manufacturers can now experience true closed-loop, product lifecycle management where they can track, manage and control product information at any phase of its lifecycle at any time and any place in the world.

We are organized in two primary business units:

- the **IoT Group** comprised of our IoT, analytics and augmented reality software; and
- the **Solutions Group** comprised of our core CAD, PLM and SLM solutions and software.

Our two business units develop solutions and software products in the following areas:

IoT Group

IoT and Augmented Reality
Enabling connectivity, application development, analysis, and augmented reality software applications for smart, connected products and environments.

Solutions Group

Computer-Aided Design (CAD)
Effective and collaborative product design across the globe.

Product Lifecycle Management (PLM)
Efficient and consistent management of product development, including embedded software development, from concept to retirement across functional processes and distributed teams.

Service Lifecycle Management (SLM)
Planning and delivery of service, including product intelligence, connected service, predictive service, and remote diagnostics.

Business Developments

Important business developments for the year are described under "2016 Business Developments" in Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations - Executive Overview" below. You should read that discussion, which is incorporated into this section by reference.

Our Markets

The markets we serve present different growth opportunities for us. We see greater opportunity for market growth in our IoT solutions, followed by SLM, PLM, and then CAD solutions, which is a more highly penetrated and slower growth market.

Our Principal Products and Services

We generate revenue through the sale of software licenses, subscriptions (which include license access and support for a period of time and optional cloud services), support (which includes technical support and software updates when and if available), and services (which include consulting and implementation and training). We report revenue by line of business (subscription, support, perpetual license and professional services), by geographic region, and by segment (IoT Group and Solutions Group).

IoT Group

Our IoT products enable customers to design, connect, operate and service smart, connected products and to improve the user experience.

Our principal IoT products are described below.

ThingWorx® is a technology platform that enables users to create and deploy applications and solutions for today's smart, connected world, enabling customers to transform their products and services and unlock new business models. ThingWorx allows customers to reduce the time, cost, and risk required to connect, manage, and develop applications for smart, connected products such as predictive maintenance, system monitoring, and usage-based product design requirements. Our ThingWorx solutions include cloud-based tools that allow customers to easily and more securely connect products and devices to the cloud, and intelligently process, transform, organize and store product and sensor data. Additionally, our ThingWorx offerings include a predictive intelligence tool that uses artificial intelligence technology to simplify and automate the processes of creating and operationalizing predictions inside ThingWorx-powered solutions and other systems of record. This machine learning tool complements our IoT portfolio by introducing data analytics to information collected from smart, connected products.

KEPServerEX® provides communications connectivity to industrial automation environments to connect disparate devices and control systems, providing users with a single source of real-time industrial sensor and machine data for operational intelligence to improve operations, accelerate troubleshooting, perform preventative maintenance, and improve productivity.

Vuforia Studio™ combines ThingWorx, Vuforia, and Creo technologies to bring AR and Virtual Reality into the world of industrial IoT. Studio, which is sold as part of our ThingWorx platform, is a powerful new tool for authoring and publishing augmented reality experiences. These augmented reality experiences overlay important digital information from IoT, onto the view of the physical things on which the user is working -- such as a dashboard of sensors and analytics data, or 3D step-by-step operating or repair instructions.

Vuforia® is an augmented reality technology platform that enables applications to see and interact with things in the physical world. Using computer vision technologies and building them for mobile platforms, the technology is accessible through an application programming interface and developer workflows.

Solutions Group

CAD

Our CAD products enable users to create conceptual and detailed designs, analyze designs, perform engineering calculations and leverage the information created downstream using 2D, 3D, parametric and direct modeling. Our principal CAD products are described below.

Creo® is an interoperable suite of product design software that provides a scalable set of packages for design engineers to meet a variety of specialized needs. Creo provides capabilities for design flexibility, advanced assembly design, piping and cabling design, advanced surfacing, comprehensive virtual prototyping and other essential design functions.

Mathcad® is software for solving, analyzing and sharing vital engineering calculations. Mathcad combines the ease and familiarity of an engineering notebook with the powerful features of a dedicated engineering calculations application.

PLM

Our PLM products are designed to address common challenges that companies, particularly manufacturing companies, face over the life of their products, from concept to retirement. These software products help customers manage product configuration information through each stage of the product lifecycle, and communicate and collaborate across the entire enterprise, including product development, manufacturing and the supply chain, including sourcing and procurement.

Our principal PLM products are described below.

Windchill® is a suite of PLM software that offers lifecycle intelligence - from design to service. Windchill offers a single repository for all product information. As such, it is designed to create a “single source of truth” for all product-related content such as CAD models, documents, technical illustrations, embedded software, calculations and requirement specifications for all phases of the product lifecycle to help companies streamline enterprise-wide communication and make informed decisions.

Additionally, our Windchill product family includes supply chain management (SCM) solutions that allow manufacturers, distributors and retailers to collaborate across product development and the supply chain, including sourcing and procurement, to identify an optimal set of parts, materials and suppliers. This functionality provides automated cost modeling and visibility into supply chain risk information to balance cost and quality, and enables customers to design products that meet compliance requirements and performance targets.

Integrity™ enables users to manage system models, software configurations, test plans and defects. With Integrity, engineering teams can improve productivity and quality, streamline compliance, and gain greater product visibility, ultimately enabling them to bring more innovative products to market.

Navigate™, our new ThingWorx-based PLM offering launched in 2016, is a collection of focused, role-based applications that provides complete, contextual, up-to-date and accurate product information from Windchill and other systems of record. Leveraging ThingWorx technology, Navigate applications can easily be tailored and deployed to roles across an enterprise, and extended to include data from other systems of record and even data from smart, connected products.

Creo® View™ enables enterprise-wide visualization, verification, annotation and automated comparison of a wide variety of product development data formats, including CAD (2D and 3D), ECAD, and documents. Creo View provides access to designs and related data without requiring the original authoring tool.

SLM

Our SLM products help manufacturers and their service providers improve service efficiency and quality. These include capabilities to support product service and maintenance requirements, service information delivery, service parts planning and optimization, service knowledge management, service analytics, connected remote service, and predictive service. Our principal SLM products are described below.

Servigistics® is a suite of SLM software products that integrate service planning, delivery and analysis to optimize service outcomes. Servigistics products enable a systematic approach to service lifecycle management by providing a single view of service throughout the service network, enabling customers to continuously improve their products and services and increase customer satisfaction.

Arbortext® is an enterprise software suite that allows manufacturers to create, illustrate, manage and publish technical and service parts information to improve the operation, maintenance, service and upgrade of equipment throughout its lifecycle. These products are available in stand-alone configurations as well as integrated with our Windchill products to deliver dynamic, product-centric service and parts information.

Global Support

We offer global support plans for our software products. Participating customers receive updates that we make generally available to our support customers and also have direct access to our global technical support team of certified engineers for issue resolution. We also provide self-service support tools that allow our customers access to extensive technical support information. When products are purchased as a subscription, support is included as part of the subscription.

Professional Services

We offer consulting, implementation, training and cloud services through our Global Professional Services Organization, with approximately 1,100 professionals worldwide, as well as through third-party resellers and other strategic partners. Our services create value by helping customers improve product development performance through technology enabled process improvement and multiple deployment paths. Our cloud services customers receive hosting and 24/7 application management.

Geographic and Segment Information

We have three operating and reportable segments: (1) the Solutions Group, which includes license, subscription, support and cloud services revenue for our core CAD, PLM and SLM products; (2) the IoT Group, which includes license, subscription, support and cloud services revenue for our IoT, analytics and augmented reality solutions, and (3) Professional Services, which includes consulting, implementation and training revenue. Financial information about our segments and international and domestic operations may be found in Note O *Segment Information* of "Notes to Consolidated Financial Statements" in this Annual Report, which information is incorporated herein by reference.

Research and Development

We invest heavily in research and development to improve the quality and expand the functionality of our products. Approximately one third of our employees are dedicated to research and development initiatives, conducted primarily in the United States, India and Israel.

Our research and development expenses were $229.3 million in 2016, $227.5 million in 2015, and $226.5 million in 2014. Additional information about our research and development expenditures may be found in Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations-Results of Operations-Costs and Expenses-Research and Development."

Sales and Marketing

We derive most of our sales from products and services sold directly by our sales force to end-user customers. Approximately 20% to 25% of our sales of products and services are through third-party resellers and other strategic partners. Our sales force focuses on large accounts, while our reseller channel provides a cost-effective means of covering the small- and medium-size business market. Our strategic services partners provide service offerings to help customers implement our product offerings. As we grow our IoT business, we expect our go-to-market strategy will rely more on partners and marketing directly to end users and developers.

Strategic Partners

Building an ecosystem of strategic partners will become increasingly important as we expand our IoT offerings and seek to improve the efficiency with which we deliver our traditional products and services. With this in mind, we have recently entered into strategic partner relationships to jointly market, sell, and develop integrated products and services.

Competition

We compete with a number of companies that offer solutions that address one or more specific functional areas covered by our solutions. For enterprise CAD and PLM solutions, we compete with companies including Dassault Systèmes SA and Siemens AG; for discrete desktop CAD products, we compete with Autodesk, Siemens and Dassault Systèmes, and for PLM solutions and SLM solutions, we compete with Oracle Corporation and SAP AG. We believe our products are more specifically targeted toward the business process challenges of manufacturing companies and offer broader and deeper functionality for those processes than ERP-based solutions. In our IoT business, we compete with large established companies like IBM Corporation, Microsoft, Cisco, Oracle, SAP, and General Electric. There are also a number of small companies that compete in the market for IoT products.

Proprietary Rights

Our software products and related technical know-how, along with our trademarks, including our company names, product names and logos, are proprietary. We protect our intellectual property rights in these items by relying on copyrights, trademarks, patents and common law safeguards, including trade secret protection. The nature and extent of such legal protection depends in part on the type of intellectual property right and the relevant jurisdiction. In the U.S., we are generally able to maintain our trademark registrations for as long as the trademarks are in use and to maintain our patents for up to 20 years from the earliest effective filing date. We also use license management and other anti-piracy technology measures, as well as contractual restrictions, to curtail the unauthorized use and distribution of our products.

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.

Deferred Revenue and Backlog (Unbilled Deferred Revenue)

Information about Deferred Revenue and Backlog (Unbilled Deferred Revenue) is discussed in Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations - Results of Operations" below. You should read that discussion, which is incorporated into this section by reference.

Employees

As of September 30, 2016, we had 5,800 employees, including 1,875 in product development; 1,810 in customer support, training, consulting, cloud services and product distribution; 1,442 in sales and marketing; and 673 in general and administration. Of these employees, 2,122 were located in the United States and 3,678 were located outside the United States.

Website Access to Reports and Code of Business Conduct and Ethics

We make available free of charge on our website at www.ptc.com the following reports as soon as reasonably practicable after electronically filing them with, or furnishing them to, the SEC: our Annual Reports on Form 10-K; our Quarterly Reports on Form 10-Q; our Current Reports on Form 8-K; and amendments to those reports filed or furnished pursuant to Sections 13(a) or 15(d) of the Securities Exchange Act of 1934. Our Proxy Statements for our Annual Meetings and Section 16 trading reports on SEC Forms 3, 4 and 5 also are available on our website. The reference to our website is not intended to incorporate information on our website into this Annual Report by reference.

Our Code of Ethics for Senior Executive Officers is embedded in our Code of Business Conduct and Ethics, which is also available on our website. Additional information about this code and amendments and waivers thereto can be found below in Part III, Item 10 of this Annual Report.

Executive Officers

Information about our executive officers is incorporated by reference from Part III, Item 10 of this Annual Report.

Corporate Information

PTC was incorporated in Massachusetts in 1985 and is headquartered in Needham, Massachusetts.

ITEM 1A. Risk Factors

The following are important factors we have identified that could affect our future results. You should consider them carefully when evaluating an investment in PTC's securities or any forward-looking statements made by us, including those contained in this Annual Report, because these factors could cause actual results to differ materially from historical results or the performance projected in forward-looking statements. The risks described below are not the only risks we face. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial may also materially adversely affect our business, financial condition and/or operating results. Holders of the 6.00% Senior Notes due 2024 (the "2024 6% Notes") that we issued in May 2016 should also consider the risk factors related to those notes described in the prospectus we filed with the Securities and Exchange Commission on May 5, 2016, which are incorporated herein by reference.

I. Operational Considerations

Our operating results fluctuate from quarter to quarter, making future operating results difficult to predict; failure to meet market expectations could cause the price of our securities to decline.

Our quarterly operating results historically have fluctuated and are likely to continue to fluctuate depending on a number of factors, including:

- a high percentage of our orders historically have been generated in the third month of each fiscal quarter and any failure to receive, complete or process orders at the end of any quarter could cause us to fall short of our revenue and bookings targets;
- a significant percentage of our orders comes from transactions with large customers, which tend to have long lead times that are less predictable;
- our mix of license, subscription and service revenues can vary from quarter to quarter, creating variability in our financial results;
- one or more industries that we serve may have weak or negative growth;
- our operating expenses are largely fixed in the short term and are based on expected revenues, so any failure to achieve our revenue targets could cause us to miss our earnings targets as well;
- because a significant portion of our revenue and expenses are generated from outside the U.S., shifts in foreign currency exchange rates could adversely affect our reported results; and
- we may incur significant expenses in a quarter in connection with corporate development initiatives, restructuring efforts or the investigation, defense or settlement of legal actions that would increase our operating expenses and reduce our earnings for the quarter in which those expenses are incurred.

Accordingly, our quarterly results are difficult to predict prior to the end of the quarter and we may be unable to confirm or adjust expectations with respect to our operating results for a particular quarter until that quarter has closed. Any failure to meet our quarterly revenue or earnings targets could adversely impact the market price of our securities.

We now offer our solutions as subscriptions, which has adversely affected, and may continue to adversely affect, our revenue and earnings in the transition period and make predicting our revenue and earnings more difficult.

We began offering most of our solutions under a subscription option in 2015, in addition to our perpetual license option. Under a subscription, customers pay a periodic fee for the right to use our software and receive support, or to use our cloud services and have us manage the application for a specified period. Under a subscription, revenue is recognized ratably over the term of the subscription while under a perpetual license, revenue is generally recognized upon purchase. A significant number of our customers have elected to purchase our solutions as subscriptions rather than under perpetual licenses. As a result, our license revenues have declined. Our support revenue (which comprises a significant portion of our revenue) may also decrease due to support services being included in the subscription offering and to customers converting their support contracts into subscriptions.

Our revenue and earnings targets are based on assumptions about the mix of revenue that will be attributable to subscription and perpetual license revenue. If a greater percentage of our customers elect to purchase our solutions as subscriptions in a period than we assumed, our revenue and earnings will likely fall below our expectations for that period (as occurred in 2016), which could cause our stock price to decline.

Our long range financial targets are predicated on bookings and revenue growth and operating margin improvements that we may fail to achieve, which could reduce our expected earnings and cause us to fail to meet the expectations of analysts or investors and cause the price of our securities to decline.

We are projecting long-term bookings, revenue and earnings growth. Our projections are based on the expected growth potential in the IoT market, as well as more modest growth in our core CAD, PLM and SLM markets. We may not achieve the expected bookings and revenue growth if the markets we serve do not grow at expected rates, if customers do not purchase or renew subscriptions as we expect, if we are not able to deliver solutions desired by customers and potential customers, and/or if acquired businesses do not generate the revenue growth that we expect.

Our long-term operating margin improvement targets are predicated on operating leverage as long range revenue increases and on improved operating efficiencies, particularly within our sales organization, and on service margin improvements. Services margins are significantly lower than license and support margins. Future projected improvements in our operating margin as a percent of revenue are based in part on our ability to improve services margins by reducing the amount of direct services that we perform through expansion of our service partner program, and improving the profitability of services that we perform. If our services revenue increases as a percentage of total revenue and/or if we are unable to improve our services margins, our overall operating margin may not increase to the levels we expect or may decrease. Additionally, if we do not achieve lower sales and marketing expenses as a percentage of revenue through productivity initiatives, we may not achieve our operating margin targets. If operating margins do not improve, our earnings could be adversely affected and the price of our securities could decline.

Our significant investment in our IoT business may not generate the revenues we expect, which could adversely affect our business and financial results.

We have made a significant investment in recent years in our IoT business, including five acquisitions totaling approximately $550 million. Our IoT business provides technology solutions that enable customers to transform their businesses and leverage the opportunities created by the IoT.

The Internet of Things is a relatively new market and there are a significant number of competitors in the market. If the market does not expand as rapidly as we or others expect or if customers adopt competitive solutions rather than our solutions, our IoT business may not generate the revenues we expect.

Further, one market for our IoT business is as a platform provider to a broad ecosystem of application and solutions providers. This market relies on an extensive and differentiated partner ecosystem to enable us to access markets and customers beyond our traditional markets, customers and buyers. We may be unable to expand our partner ecosystem as we expect and developers may not adopt our IoT solutions as we expect, which would adversely affect our ability to realize revenue from our investments in this business.

We depend on sales within the discrete manufacturing sector and our business could be adversely affected if manufacturing activity does not grow or if it contracts.

A large amount of our sales are to customers in the discrete manufacturing sector. If this economic sector does not grow, or if it contracts, our customers in this sector may, as they have in the past, reduce or defer purchases of our products and services, which adversely affects our business. In 2016 and 2015, the manufacturing sector was weak worldwide, which we believe adversely impacted our sales and operating results. Although we have seen some improvement in the latter part of 2016, if manufacturing economic conditions do not continue to improve, or if they deteriorate, sales could be adversely affected.

We face significant competition, which may reduce our profits and limit or reduce our market share.

The market for product development solutions and IoT solutions is rapidly changing and characterized by vigorous competition, both by entry of competitors with innovative technologies and by consolidation of companies with complementary products and technologies. This competition could result in price reductions for our products and services, reduced margins, loss of customers and loss of market share. Our primary competition comes from:

- larger companies that offer competitive solutions;
- larger, more well-known enterprise software providers with greater financial, technical, sales and marketing, and other resources; and
- other vendors of various competitive point solutions or IoT platforms.

In addition, barriers to entry into certain segments of the software industry have declined and the ability of customers to adopt software solutions has increased with the ability to offer software in the cloud and the increasing prevalence of subscription license models and customer acceptance of both those models. Because of these and other factors, competitive conditions in the industry are likely to intensify in the future.

Increased competition could result in price reductions, reduced net revenue and profit margins and loss of market share, any of which would likely harm our business.

A breach of security in our products or computer systems, or those of our third-party service providers, could compromise the integrity of our products, harm our reputation, create additional liability and adversely impact our financial results.

We have implemented and continue to implement measures intended to maintain the security and integrity of our products, source code and computer systems. The potential consequences of a security breach or system disruption (particularly through cyber-attack or cyber-intrusion, including by computer hackers, foreign governments and cyber terrorists) have increased in scope as the number, intensity and sophistication of attempted attacks and intrusions from around the world have increased. Despite efforts to create security barriers to such threats, it is impossible for us to entirely eliminate this risk. In addition, we offer cloud services to our customers and some of our products are hosted by third-party service providers, which expose us to additional risks as those repositories of our customers' proprietary data may be targeted by such hackers. A significant breach of the security and/or integrity of our products or systems, or those of our third-party service providers, could prevent our products from functioning properly, could enable access to sensitive, proprietary or confidential information, including that of our customers, without authorization, or could disrupt our business operations or those of our customers. This could require us to incur significant costs of remediation, harm our reputation, cause customers to stop buying our products, and cause us to face lawsuits and potential liability, which could have a material adverse effect on our financial condition and results of operations.

Businesses we acquire may not generate the revenue and earnings we anticipate and may otherwise adversely affect our business.

We have acquired, and intend to continue to acquire, new businesses and technologies. If we fail to successfully integrate and manage the businesses and technologies we acquire, or if an acquisition does not further our business strategy as we expect, our operating results will be adversely affected.

Moreover, business combinations also involve a number of risks and uncertainties that can adversely affect our operations and operating results, including:

- difficulties managing an acquired company's technologies or lines of business or entering new markets where we have limited or no prior experience or where competitors may have stronger market positions;
- unanticipated operating difficulties in connection with the acquired entities, including potential declines in revenue of the acquired entity;
- failure to achieve the expected return on our investments which could adversely affect our business or operating results and impair the assets that we recorded as a part of an acquisition including intangible assets and goodwill;
- diversion of management and employee attention;
- loss of key personnel;
- assumption of unanticipated legal or financial liabilities or other unidentified issues with the acquired business;
- potential incompatibility of business cultures;
- significant increases in our interest expense, leverage and debt service requirements if we incur additional debt to pay for an acquisition; and
- if we were to issue a significant amount of equity securities in connection with future acquisitions, existing stockholders may be diluted and earnings per share may decrease.

Our restructuring actions and reorganization may be disruptive and could harm our operations.

Over the past few years, we have taken a number of restructuring actions and reorganizations designed to realign our global workforce to our business needs, reduce our expenses and enable us to increase investment in our IoT business. These actions may not have the expected long-term effect on our expenses or may not be sufficient to fully offset additional investments we may make in our business. Disruptions in operations have occurred and will likely continue to occur as a result of these actions. Disruptions may include attrition beyond our planned reduction in workforce, a negative effect on employee morale or our ability to attract highly skilled employees. Further, we could experience delays, business disruptions, decreased productivity, unanticipated employee turnover and increased litigation-related costs in connection with the restructuring and other efficiency initiatives.

Our sales and operations are globally dispersed, which exposes us to additional compliance risks, which could adversely affect our business and financial results.

We sell and deliver software and services, and maintain support operations, in a large number of countries whose laws and practices differ from one another and are subject to unexpected changes. Managing these geographically dispersed operations requires significant attention and resources to ensure compliance with laws of those countries and those of the U.S. governing our activities in non-U.S. countries.

Those laws include, but are not limited to, anti-corruption laws and regulations (including the U.S. Foreign Corrupt Practices Act (FCPA) and the U.K. Bribery Act 2010) and trade and economic sanctions laws and regulations (including laws administered by the U.S. Department of the Treasury's Office of Foreign Assets Control, the U.S. State Department, the U.S. Department of Commerce, the United Nations Security Council and other relevant sanctions authorities). The FCPA and UK Bribery Act prohibit us and business partners or agents acting on our behalf from offering or providing anything of value to persons considered to be foreign officials under those laws for the purposes of obtaining or retaining business. The UK Bribery Act also prohibits commercial bribery and accepting bribes. Our compliance risks with these laws are heightened due to the global nature of our business, our new go-to-market approach for our IoT business that relies heavily on expanding our partner ecosystem, the fact that we operate in, and are expanding into, countries with a higher incidence of corruption and fraudulent business practices than others, and the fact that we deal with governments and state-owned business enterprises, the employees and representatives of which may be considered foreign officials for purposes of the FCPA and the UK Bribery Act.

Accordingly, while we strive to maintain a comprehensive compliance program, we cannot guarantee that an employee, agent or business partner will not act in violation of our policies or U.S. or other applicable laws. Investigations of alleged violations of those laws can be expensive and disruptive. Violations of such laws can lead to civil and/or criminal prosecutions, substantial fines and other sanctions, including the revocation of our rights to continue certain operations and also cause business and reputation loss.

Our international businesses present economic and operating risks, which could adversely affect our business and financial results.

We expect that our international operations will continue to expand and to account for a significant portion of our total revenue. Because we transact business in various foreign currencies, the volatility of foreign exchange rates has had and may in the future have a material adverse effect on our revenue, expenses and operating results.

Other risks inherent in our international operations include, but are not limited to, the following:

- difficulties in staffing and managing foreign sales and development operations;
- possible future limitations upon foreign-owned businesses;
- increased financial accounting and reporting burdens and complexities;
- inadequate local infrastructure; and
- greater difficulty in protecting our intellectual property.

We may be unable to adequately protect our proprietary rights, which could adversely affect our business and our ability to compete effectively.

Our software products are proprietary. We protect our intellectual property rights in these items by relying on copyrights, trademarks, patents and common law safeguards, including trade secret protection, as well as restrictions on disclosures and transferability contained in our agreements with other parties. Despite these measures, the laws of all relevant jurisdictions may not afford adequate protection to our products and other intellectual property. In addition, we frequently encounter attempts by individuals and companies to pirate our software. If our measures to protect our intellectual property rights fail, others may be able to use those rights, which could reduce our competitiveness and revenues.

In addition, any legal action to protect our intellectual property rights that we may bring or be engaged in could be costly, may distract management from day-to-day operations and may lead to additional claims against us, and we may not succeed, all of which would materially adversely affect our operating results.

Intellectual property infringement claims could be asserted against us, which could be expensive to defend and could result in limitations on our use of the claimed intellectual property.

The software industry is characterized by frequent litigation regarding copyright, patent and other intellectual property rights, as well as improper disclosure of confidential or proprietary information. If a lawsuit of this type is filed, it could result in significant expense to us and divert the efforts of our technical and management personnel. We cannot be sure that we would prevail against any such asserted claims. If we did not prevail, we could be prevented from using the claimed intellectual property or be required to enter into royalty or licensing agreements, which might not be available on terms acceptable to us. In addition to possible claims with respect to our proprietary products, some of our products contain technology developed by and licensed from third parties and we may likewise be susceptible to infringement claims with respect to these third-party technologies.

Our financial condition could be adversely affected if significant errors or defects are found in our software.

Sophisticated software can sometimes contain errors, defects or other performance problems. If errors or defects are discovered in our products, we may need to expend significant financial, technical and management resources, or divert some of our development resources, in order to resolve or work around those defects, and we may not be able to correct them in a timely manner or provide an adequate response to our customers.

Errors, defects or other performance problems in our products could also cause us to lose revenue, lose customers and lose market share, and could subject to liability. Such defects or problems could also damage our business reputation and cause us to lose new business opportunities.

We may have exposure to additional tax liabilities and our effective tax rate may increase or fluctuate, which could increase our income tax expense and reduce our net income.

As a multinational organization, we are subject to income taxes as well as non-income based taxes in the U.S. and in various foreign jurisdictions. Significant judgment is required in determining our worldwide income tax provision and other tax liabilities. In the ordinary course of a global business, there are many intercompany transactions and calculations where the ultimate tax determination is uncertain. Our tax returns are subject to review by various taxing authorities. Although we believe that our tax estimates are reasonable, the final determination of tax audits or tax disputes could be different from what is reflected in our historical income tax provisions and accruals.

Our effective tax rate can be adversely affected by several factors, many of which are outside of our control, including:

- changes in tax laws, regulations, and interpretations in multiple jurisdictions in which we operate;

- assessments, and any related tax interest or penalties, by taxing authorities;
- changes in the relative proportions of revenues and income before taxes in the various jurisdictions in which we operate that have differing statutory tax rates;
- changes to the financial accounting rules for income taxes;
- unanticipated changes in tax rates; and
- changes to a valuation allowance on net deferred tax assets, if any.

Because we have substantial cash requirements in the United States and a significant portion of our cash is generated and held outside of the United States, if our cash available in the United States and the cash available under our credit facility is insufficient to meet our operating expenses and debt repayment obligations in the United States, we may be required to raise cash in ways that could negatively affect our financial condition, results of operations and the market price of our securities.

We have significant operations outside the United States. As of September 30, 2016, approximately 90% of our cash and cash equivalents balance was held by subsidiaries outside the United States, with the remainder of the balance held by the U.S. parent company or its subsidiaries in the United States. We believe that the combination of our existing United States cash and cash equivalents, future United States operating cash flows and cash available under our credit facility, are sufficient to meet our ongoing United States operating expenses and known capital requirements. However, if these sources of cash are insufficient to meet our future financial obligations in the United States, we will be required to seek other available funding sources or means to repatriate cash to the United States, which could negatively impact our results of operations, financial position and the market price of our securities.

II. Other Considerations

Our substantial indebtedness could adversely affect our business, financial condition and results of operations, as well as our ability to meet our payment obligations under our debt.

We have a significant amount of indebtedness. As of November 15, 2016, our total debt outstanding was approximately $818 million, approximately $318 million of which was under our $900 million secured credit facility (which matures in September 2019) and $500 million of which was associated with the 2024 6% Notes (which mature in May 2024 and are unsecured). All amounts outstanding under the credit facility and the notes will be due and payable in full on their respective maturity dates. As of November 15, 2016, we had unused commitments under our credit facility of approximately $582 million. PTC Inc. (the parent company) and one of our foreign subsidiaries are eligible borrowers under the credit facility and certain other foreign subsidiaries may become borrowers under our credit facility in the future, subject to certain conditions.

Notwithstanding the limits contained in the credit agreement governing our credit facility and the indenture governing our 2024 6% Notes, we may be able to incur substantial additional debt from time to time to finance working capital, capital expenditures, investments or acquisitions, or for other purposes. If we do so, the risks related to our high level of debt could intensify. Specifically, our high level of debt could:

- make it more difficult for us to satisfy our debt obligations and other ongoing business obligations, which may result in defaults;
- result in an event of default if we fail to comply with the financial and other covenants contained in the agreements governing our debt instruments, which could result in all of our debt becoming immediately due and payable or require us to negotiate an amendment to financial or other covenants that could cause us to incur additional fees and expenses;
- limit our ability to obtain additional financing to fund future working capital, capital expenditures, acquisitions or other general corporate requirements;
- reduce the availability of our cash flow to fund working capital, capital expenditures, acquisitions and other general corporate purposes and limit our ability to obtain additional financing for these purposes;
- increase our vulnerability to the impact of adverse economic and industry conditions;
- expose us to the risk of increased interest rates as certain of our borrowings, including borrowings under the credit facility, are at variable rates of interest;
- limit our flexibility in planning for, or reacting to, and increasing our vulnerability to, changes in our business, the industries in which we operate, and the overall economy;
- place us at a competitive disadvantage compared to other, less leveraged competitors; and
- increase our cost of borrowing.

Any of the above-listed factors could have an adverse effect on our business, financial condition and results of operations and our ability to meet our payment obligations under our debt agreements.

We may not be able to generate sufficient cash to service all of our indebtedness and may be forced to take other actions to satisfy our obligations under our indebtedness, which may not be successful.

Our ability to make scheduled payments on or refinance our debt obligations depends on our financial condition and operating performance, which are subject to prevailing economic and competitive conditions and to certain financial, business, legislative, regulatory and other factors beyond our control. We may be unable to maintain a level of cash flows from operating activities sufficient to permit us to pay the principal, premium, if any, and interest on our indebtedness.

If our cash flows and capital resources are insufficient to fund our debt service obligations, we could face substantial liquidity problems and could be forced to reduce or delay investments and capital expenditures or to dispose of material assets or operations, seek additional debt or equity capital or restructure or refinance our indebtedness. We may not be able to effect any such alternative measures, if necessary, on commercially reasonable terms or at all and, even if successful, those alternative actions may not allow us to meet our scheduled debt service obligations. Our debt agreements restrict our ability to dispose of assets and use the proceeds from those dispositions and may also restrict our ability to raise debt or equity capital to be used to repay other indebtedness when it becomes due. We may not be able to consummate those dispositions or to obtain proceeds in an amount sufficient to meet any debt service obligations then due.

Our inability to generate sufficient cash flows to satisfy our debt obligations, or to refinance our indebtedness on commercially reasonable terms or at all, would materially and adversely affect our financial position and results of operations and our ability to satisfy our debt obligations.

If we cannot make scheduled payments on our debt, we will be in default and the lenders under our credit facility could terminate their commitments to loan money, the lenders could foreclose against the assets securing their borrowings, the holders of our 2024 6% Notes could declare all outstanding principal, premium, if any, and interest to be due and payable, and we could be forced into bankruptcy or liquidation. All of these events could result in a loss of your investment.

We are required to comply with certain financial and operating covenants under our debt agreements. Any failure to comply with those covenants could cause amounts borrowed to become immediately due and payable and/or prevent us from borrowing under the credit facility.

We are required to comply with specified financial and operating covenants under our debt agreements and to make payments under our debt, which limit our ability to operate our business as we otherwise might operate it. Our failure to comply with any of these covenants or to meet any debt payment obligations could result in an event of default which, if not cured or waived, would result in any amounts outstanding, including any accrued interest and/or unpaid fees, becoming immediately due and payable. We might not have sufficient working capital or liquidity to satisfy any repayment obligations in the event of an acceleration of those obligations. In addition, if we are not in compliance with the financial and operating covenants under the credit facility at the time we wish to borrow funds, we will be unable to borrow funds.

In addition, the financial and operating covenants under the credit facility may limit our ability to borrow funds, including for strategic acquisitions and share repurchases. For example, as of September 30, 2016, although we had unused commitments under our credit facility of approximately $641.9 million, due to the financial covenants only approximately $100 million would have been available for borrowing.

We may be unable to meet our goal of returning 40% of free cash flow to shareholders through share repurchases, which could decrease your expected return on investment in PTC stock.

In August 2014, we announced a new capital allocation strategy, a component of which is a long-term goal of returning approximately 40% of free cash flow (cash flow from operations less capital expenditures) to shareholders through share repurchases. Meeting this goal requires PTC to generate consistent free cash flow and have available capital in the years ahead in an amount sufficient to enable us to continue investing in organic and inorganic growth as well as to return a significant portion of the cash generated to stockholders in the form of share repurchases. We may not meet this goal if we do not generate the free cash flow we expect, if we use our available cash to satisfy other priorities or have insufficient funds available to make such repurchases. For example, in 2016 we made no repurchases due to limits on our borrowing capacity as a result of covenant limitations under our credit facility. Specifically, our leverage ratio, as a result of lower earnings due to our subscription transition, limited our ability to borrow.

Additionally, our cash flow fluctuates over the course of the year and over multiple years, so, although our goal is to return 40% of free cash flow to shareholders, that is an average over a longer term and the number of shares repurchased and amount of free cash flow returned in any given period will vary and may be more or less than 40% in any such period. Finally, the number of shares repurchased for a given amount of cash will vary based on PTC's stock price, so the number of shares repurchased will not be a consistent or predictable number or percentage of outstanding stock.

Our stock price has been volatile, which may make it harder to resell shares at a favorable time and price.

Market prices for securities of software companies are generally volatile and are subject to significant fluctuations that may be unrelated or disproportionate to the operating performance of these companies. The trading prices and valuations of these stocks, and of ours, may not be predictable. Negative changes in the public's perception of the prospects of software companies, or of PTC or the markets we serve, could depress our stock price regardless of our operating results.

Also, a large percentage of our common stock is held by institutional investors. Purchases and sales of our common stock by these institutional investors could have a significant impact on the market price of the stock. For more information about those investors, please see our proxy statement with respect to our most recent annual meeting of stockholders and Schedules 13D and 13G filed with the SEC with respect to our common stock.

Our 2024 6% Notes are not listed on any national securities exchange or included in any automated quotation system, which could make it harder to resell the notes at a favorable time and price.

Our 2024 6% Notes are not listed on any national securities exchange or included in any automated quotation system. As a result, an active market for the notes may not exist or be maintained, which would adversely affect the market price and liquidity of the notes. In that case, holders may not be able to sell their notes at a particular time or at a favorable price.

The market for non-investment grade debt historically has been subject to severe disruptions that have caused substantial volatility in the prices of securities similar to the notes. The market, if any, for the notes may experience similar disruptions and any such disruptions may adversely affect the liquidity in that market or the prices at which the notes may be sold.

ITEM 1B. Unresolved Staff Comments

None.

ITEM 2. Properties

We currently lease 107 offices used in operations in the United States and internationally, predominately as sales and/or support offices and for research and development work. Of our total of approximately 1,396,000 square feet of leased facilities used in operations, approximately 586,000 square feet are located in the U.S., including 321,000 square feet at our headquarters facility located in Needham, Massachusetts, and approximately 260,000 square feet are located in India, where a significant amount of our research and development is conducted. We believe that our facilities are adequate for our present and foreseeable needs.

ITEM 3. Legal Proceedings

On March 7, 2016, a putative class action lawsuit captioned *Matthew Crandall v. PTC Inc. et al*., No. 1:16-cv-10471, was filed against us and certain of our current and former officers and directors in the U.S. District Court for the District of Massachusetts ostensibly on behalf of purchasers of our stock during the period November 24, 2011 through July 29, 2015. The lawsuit, which seeks unspecified damages, interest, attorneys' fees and costs, alleges (among other things) that, during that period, PTC's public disclosures concerning investigations by the U.S. Securities and Exchange Commission and the U.S. Department of Justice into U.S. Foreign Corrupt Practices Act matters in China (the "China Investigation") were false and/or misleading. We have reached an agreement-in-principle with the plaintiff to settle this lawsuit for an amount that is not material to our results of operations and the associated liability has been accrued in our fiscal 2016 results. The settlement is conditioned on execution and final court approval of formal settlement documents. Accordingly, we cannot predict the outcome of this action nor when it will be resolved.

ITEM 4. Mine Safety Disclosures

Not applicable.

PART II

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

Information with respect to the market for our common stock is located in Selected Consolidated Financial Data beginning on page A-1 of this Form 10-K and is incorporated herein by reference.

On September 30, 2016, the close of our fiscal year, and on November 16, 2016, our common stock was held by 1,308 and 1,299 shareholders of record, respectively.

We do not pay cash dividends on our common stock and we retain earnings for use in our business or to repurchase our shares. Although we review our dividend policy periodically, our review may not cause us to pay any dividends in the future.

Further, our debt instruments require us to maintain specified leverage and fixed-charge ratios that limit the amount of dividends that we could pay. (See "Credit Agreements" and "Outstanding Notes" under Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations - Liquidity and Capital Resources.)

ITEM 6. Selected Financial Data

Our five-year summary of selected financial data and quarterly financial data for the past two years is located on pages A-1 and A-2 at the end of this Form 10-K and incorporated herein by reference.

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

Forward-Looking Statements

Statements in this Annual Report about anticipated financial results and growth, as well as about the development of our products and markets, are forward-looking statements that are based on our current plans and assumptions. Important information about the bases for these plans and assumptions and factors that may cause our actual results to differ materially from these statements is contained below and in Item 1A. "Risk Factors" of this Annual Report.

Information about Our Financial Reporting

We use certain operating measures, including our Bookings Measure, and non-GAAP financial measures when discussing our business and results. We discuss these measures, how we use them and how they are calculated in "Bookings Measure" and "Non-GAAP Financial Measures" below.

Unless otherwise indicated, all references to a year reflect our fiscal year that ends on September 30.

Executive Overview

2016 Business Developments

Subscription Acceleration

In 2016, we saw an acceleration in the adoption of subscription licensing by our customers, including the conversion by some customers of their support contracts into subscriptions. Subscription bookings as a percentage of license and subscription bookings grew to 56% for 2016, up from 17% in 2015 and 8% in 2014. Subscription bookings grew to $226 million in 2016 from $60 million in 2015 and $32 million in 2014. License and subscription bookings grew 16% in 2016 over 2015, with license and subscription bookings of $401 million in 2016, and grew 2% over 2014. Our success with our subscription initiative contributed to the decline in both revenue, including perpetual license revenue, and earnings in 2016.

Approximately 68% of our revenue in 2016 came from recurring revenue streams, compared to 59% in 2015 and 53% in 2014. Approximately 82% of our software revenue in 2016 came from recurring revenue streams, compared to 73% in 2015 and 66% in 2014.

Debt Offering

In May 2016, we issued $500 million of 6.0% senior, unsecured long-term notes at par value, due in 2024 (the 2024 6% Notes). We used the net proceeds from the issuance of the notes to repay a portion of the outstanding revolving loan under our credit facility. Because the interest rate on the notes is higher than the variable rate we now pay under our credit facility, our annual interest expense will increase by about $20 million. The first interest payment on the notes is due in November 2016.

2016 Restructuring of Our Workforce

On October 23, 2015, we initiated a plan to restructure our workforce and consolidate select facilities to reduce our cost structure to enable us to invest in our identified growth opportunities. The restructuring resulted in charges of $37 million in the first quarter of 2016, $5 million in the second quarter of 2016, $3 million in the third quarter of 2016, and $32 million in the fourth quarter of 2016 primarily related to termination benefits associated with 810 employees. We expect to complete facility-related restructuring actions in the first half of 2017 and to record approximately $3 million of charges associated with excess facilities.

Acquisitions

We closed two acquisitions in fiscal 2016, both of which enhanced our IoT portfolio.

In November 2015, we acquired the Vuforia business from Qualcomm for approximately $65 million in cash. At the time of the acquisition, Vuforia had approximately 80 employees and its historical annualized revenues were not material.

In January 2016, we acquired Kepware Inc., a software development company that provides communications connectivity to industrial automation environments, for approximately $99 million in cash and up to $18 million of contingent earn-out. At the time of the acquisition, Kepware had approximately 115 employees and historical annualized revenues of approximately $20 million.

Results for 2016

Revenue was down year over year, despite growth in license and subscription bookings, due to:

- a higher mix of subscription revenue in 2016 compared to 2015 as we transition from selling perpetual licenses to a subscription-based licensing model, where revenue is recognized over the subscription term;
- a decline in professional services revenue of 13%, consistent with our strategy to migrate more service engagements to our partners;
- a challenging macroeconomic environment; and
- the impact of foreign currency exchange rates on our reported revenue due to an increase in the strength of the U.S. Dollar relative to international currencies, most notably the Euro and the Yen.

Revenue	Year Ended September 30, 2016	Year Ended September 30, 2015	Change	Constant Currency Change
	(in millions)			
Subscription	$ 118.3	$ 65.2	81 %	83 %
Support	651.8	681.5	(4)%	(2)%
Total recurring software revenue	770.1	746.8	3 %	5 %
Perpetual license	173.5	282.8	(39)%	(37)%
Total software revenue	943.6	1,029.5	(8)%	(6)%
Professional services	196.9	225.7	(13)%	(10)%
Total revenue	$ 1,140.5	$ 1,255.2	(9)%	(7)%

We delivered strong growth in our IoT Group, closing a number of significant deals with large, industrial companies that are adopting our platform for their IoT initiatives. IoT Group software revenue represented approximately 8% of our total software revenue in 2016, compared to 5% in 2015. Additionally, although revenue declined year over year due to our subscription transition, we had strong bookings growth in CAD, PLM and SLM.

From a geographic perspective, total license and subscriptions bookings grew in all regions. Due to the higher mix of subscription bookings, total software revenue in 2016, compared to 2015, decreased by 5% in the Americas, 6% on a constant currency basis in Europe, 7% on a constant currency basis in the Pacific Rim and 14% on a constant currency basis in Japan.

Other Operating Measures	Year Ended September 30, 2016	Year Ended September 30, 2015	Change	Constant Currency Change
Operating Margin	(3.2)%	3.3%	(198)%	(188)%
Earnings (Loss) Per Share	$ (0.48)	$ 0.41	(216)%	(207)%
Non-GAAP Operating Margin(1)	15.1 %	24.2%	(38)%	(37)%
Non-GAAP EPS(1)	$ 1.19	$ 2.23	(47)%	(44)%

(1) Non-GAAP measures are reconciled to GAAP results under *Results of Operations - Non-GAAP Measures* below.

GAAP and non-GAAP operating income reflect lower revenue, higher incentive-based compensation and costs from acquired businesses, partially offset by reductions in operating expenses driven by cost savings from restructuring actions. Our GAAP operating margin in 2016 included restructuring charges of $76 million. Our GAAP operating margin in 2015 included a $66 million pension settlement loss due to the termination of our U.S. pension plan, a $28 million accrual associated with the China Investigation and restructuring charges of $43 million. Both GAAP and non-GAAP EPS benefited from a lower tax rate.

In 2016, our GAAP and non-GAAP results reflect a tax benefit of $4 million in 2016 related to the write-off of a deferred tax liability that resulted from the change in tax status of a foreign subsidiary. In 2015, our GAAP results reflect a tax benefit of $19 million related to the reversal of a portion of the U.S. valuation allowance related to reducing deferred tax assets in connection with settling the U.S. pension plan.

We generated $183 million of cash from operations in 2016, up 2% from $180 million in 2015, and we borrowed $90 million under our credit facility to fund acquisitions. We ended 2016 with $278 million of cash, up from $273 million at the end of 2015.

Revenue, Operating Margin, Earnings per Share and Cash Flow

The following table shows the financial measures that we consider the most significant indicators of the performance of our business. In addition to providing operating income, operating margin, and diluted earnings per share as calculated under generally accepted accounting principles ("GAAP"), it shows non-GAAP operating income, non-GAAP operating margin, and non-GAAP diluted earnings per share for the reported periods. These non-GAAP financial measures exclude fair value adjustments related to acquired deferred revenue, acquired deferred costs, stock-based compensation expense, amortization of acquired intangible assets expense, acquisition-related and pension plan termination costs, restructuring charges, certain identified gains or charges included in non-operating other income (expense) and the related tax effects of the preceding items, as well as the tax items identified. These non-GAAP financial measures provide investors another view of our operating results that is aligned with management budgets and with performance criteria in our incentive compensation plans. Management uses, and investors should use, non-GAAP financial measures in conjunction with our GAAP results.

			Percent Change 2015 to 2016			Percent Change 2014 to 2015	
	2016	2015	Actual	Constant Currency	2014	Actual	Constant Currency
	(Dollar amounts in millions, except per share data)						
Subscription revenue	$ 118.3	$ 65.2	81 %	83 %	$ 27.1	140 %	152 %
Support revenue	651.8	681.5	(4)%	(2)%	688.5	(1)%	7 %
Total recurring software revenue	770.1	746.8	3 %	5 %	715.6	4 %	12 %
Perpetual license	173.5	282.8	(39)%	(37)%	362.6	(22)%	(15)%
Total software revenue	943.6	1,029.5	(8)%	(6)%	1,078.2	(5)%	3 %
Professional services revenue	196.9	225.7	(13)%	(10)%	278.7	(19)%	(12)%
Total revenue	1,140.5	1,255.2	(9)%	(7)%	1,357.0	(7)%	— %
Total cost of revenue	325.7	334.7	(3)%		373.7	(10)%	
Gross margin	814.9	920.5	(11)%		983.3	(6)%	
Operating expenses	851.9	878.9	(3)%		786.7	12 %	
Total costs and expenses (1)	1,177.5	1,213.6	(3)%	(1)%	1,160.4	5 %	9 %
Operating income (loss) (1)	$ (37.0)	$ 41.6	(189)%	(182)%	$ 196.6	(79)%	(57)%
Non-GAAP operating income (1)	$ 172.7	$ 304.3	(43)%	(41)%	$ 340.3	(11)%	5 %
Operating margin (1)	(3.2)%	3.3%			14.5%		
Non-GAAP operating margin (1)	15.1 %	24.2%			25.1%		
Diluted earnings (loss) per share (2)	$ (0.48)	$ 0.41			$ 1.34		
Non-GAAP diluted earnings per share (2)	$ 1.19	$ 2.23			$ 2.17		
Cash flow from operations	$ 183.2	$ 179.9			$ 304.6		

(1) Costs and expenses in 2016 included $76.3 million of restructuring charges, a $3.2 million legal accrual, and $3.5 million of acquisition-related costs. Costs and expenses in 2015 included $73.2 million of pension plan termination-related costs, $43.4 million of restructuring charges, a $28.2 million legal accrual, and $8.9 million of acquisition-related costs. Costs and expenses in 2014 included $28.4 million of restructuring charges and $13.1 million of acquisition-related and pension plan termination costs. These restructuring, acquisition-related, pension plan termination and legal accrual costs have been excluded from non-GAAP operating income, non-GAAP operating margin and non-GAAP diluted EPS.

(2) Income taxes for non-GAAP diluted earnings per share reflect the tax effects of non-GAAP adjustments which are calculated by applying the applicable tax rate by jurisdiction to the non-GAAP adjustments described in *Non-GAAP Measures*, and also exclude the following non-operating income and tax items. The GAAP diluted earnings per share in 2015 reflect a tax benefit of $18.7 million related to the reversal of a portion of the U.S. valuation allowance related to reducing deferred tax assets in connection with settling the U.S. pension plan. GAAP diluted earnings per share in 2014 includes (i) tax benefits of $18.1 million related to the release of a portion of the valuation allowance as a result of deferred

tax liabilities established for acquisitions recorded in 2014 and (ii) a tax charge of $3.5 million to establish valuation allowances against net deferred tax assets in two foreign jurisdictions.

Future Expectations, Strategies and Risks

Our transition to a subscription model and continued economic uncertainty were headwinds for revenue and earnings growth in fiscal 2016. Additionally, our results have been impacted, and we expect will continue to be impacted, by our ability to close large transactions. The amount of bookings and revenue, particularly license and subscriptions, attributable to large transactions, and the number of such transactions, may vary significantly from quarter to quarter based on customer purchasing decisions and macroeconomic conditions. Such transactions may have long lead times as they often follow a lengthy product selection and evaluation process and, for existing customers, are influenced by contract expiration cycles. This may cause volatility in our results. In addition, we expect that deal sizes may decrease as we expect that customers will purchase more of our solutions as subscriptions, which tend be smaller purchases than perpetual license purchases.

Looking forward, as we move into 2017, we have three overriding goals:

- focus on driving sustainable growth,
- continue to control costs and improve margins, and
- continue to expand our subscription-based licensing.

Sustainable Growth

Our goals for overall growth are predicated on continuing to grow in the IoT market and continuing to drive improvements in operational performance in our core CAD, PLM and SLM Solutions business.

Subscription

Historically, the majority of our software licenses were sold as perpetual licenses, under which customers own the software license and revenue is recognized at the time of sale. We began offering subscription licensing for our core Solutions Group products in 2015 and expanded our subscription program in 2016. Under a subscription, customers pay a periodic fee to license our software and access technical support over a specified period of time. As part of our expanded subscription program, we also launched a program for our existing customers to convert their support contracts to subscription contracts. A number of customers converted their support contracts to subscriptions in 2016, and we expect there will be continued opportunities to convert existing support contracts to subscription contracts in 2017 and beyond due to the renewal cycles of certain of those contracts.

In 2016, 56% of our bookings were sold as subscriptions, compared to 17% in 2015. We expect that in 2017 a significant majority of our license and subscription bookings could be subscription. The transition to a subscription licensing model has had, and will continue to have, an adverse impact on revenue, operating margin and EPS growth relative to periods in which we primarily sold perpetual licenses, until the transition of our customer base to subscription is completed.

Cost Controls and Margin Expansion

We continue to proactively manage our cost structure and invest in what we believe are high return opportunities in our business. Our goal is to drive continued margin expansion over the long term. To that end, we restructured our workforce in 2016, incurring charges of $76 million. We expect to complete facility-related restructuring actions in the first half of 2017 and record approximately $3 million of charges associated with excess facilities. In 2016, we made cash expenditures related to restructuring actions of $55 million. We expect that the cost savings associated with the headcount and facility reductions will be offset by certain planned cost increases and investments in our business. As a result, we do not expect net operating expense reductions in 2017, as compared to 2016 levels.

Results of Operations

Acquisitions

In 2016 we acquired Vuforia (on November 3) and Kepware (January 12). In 2015, we acquired ColdLight (on May 7). These acquisitions collectively added $24.8 million of revenue in 2016 and $1.7 million of revenue in 2015.

Impact of Foreign Currency Exchange on Results of Operations

Approximately two thirds of our revenue and half of our expenses are transacted in currencies other than the U.S. dollar. Currency translation affects our reported results, which are in U.S. Dollars. Changes in currency exchange rates, particularly for the Yen and the Euro, compared to the prior year decreased revenue and decreased expenses in 2016 and 2015. If actual reported results were converted into U.S. dollars based on the corresponding prior year's foreign currency exchange rates, 2016 and 2015 revenue would have been higher by $24.4 million and $99.7 million, respectively, and expenses would have been higher by $24.1 million and $56.6 million, respectively. The net impact on year-over-year results would have been an increase in operating income of $0.3 million in 2016 and an increase in operating income of $43.1 million in 2015. The results of operations, revenue by line of business and revenue by geographic region in the tables that follow present both actual percentage changes year over year and percentage changes on a constant currency basis.

Reclassifications

In 2015, we classified revenue and cost of revenue in three categories: 1) license and subscription, 2) support and 3) professional services. Effective with the beginning of the first quarter of 2016, we are reporting perpetual license revenue separately from subscription revenue and are presenting revenue in four categories: 1) subscription, 2) support, 3) perpetual license and 4) professional services. Effective with the beginning of the first quarter of 2016, we are combining cost of license and subscription revenue with cost of support revenue and reporting it as cost of software revenue. As a result, we are presenting cost of revenue in two categories: 1) cost of software revenue and 2) cost of professional services revenue. The discussion that follows reflects our revised reporting structure.

Deferred Revenue and Backlog (Unbilled Deferred Revenue)

We define unbilled deferred revenue as contractually committed orders for license, subscription and support with a customer for which the associated revenue has not been recognized and the customer has not been invoiced. We do not record unbilled deferred revenue on our Consolidated Balance Sheet until we invoice the customer. Deferred revenue primarily relates to software agreements invoiced to customers for which the revenue has not yet been recognized.

	September 30, 2016	September 30, 2015
	(Dollar amounts in millions)	
Unbilled deferred revenue	$ 369	$ 211
Deferred revenue	414	387
Total	$ 783	$ 598

Of the unbilled deferred revenue balance at September 30, 2016, we expect to invoice customers approximately $210 million within the next twelve months. The increase in unbilled deferred revenue is primarily due to the increase in our subscription bookings, which are generally billed annually at the start of each annual subscription period.

We expect that the amount of unbilled deferred revenue and deferred revenue will change from quarter to quarter for several reasons, including the specific timing, duration and size of large customer subscription and support agreements, varying billing cycles of such agreements, the specific timing of customer renewals, foreign currency fluctuations and the timing of when unbilled deferred revenue is to be recognized as revenue.

Revenue

Revenue is reported below by line of business (subscription, support, perpetual license and professional services), by product area (Solutions and IoT Groups) and by geographic region (Americas, Europe, Pacific Rim and Japan). Results include combined revenue from direct sales and our channel.

Revenue by Line of Business

	% of Total Revenue		
	Year ended September 30,		
	2016	2015	2014
	(Dollar amounts in millions)		
Subscription revenue	10%	5%	2%
Support revenue	57%	54%	51%
Total recurring software	68%	59%	53%
Perpetual license revenue	15%	23%	27%
Total software revenue	83%	82%	79%
Professional Services revenue	17%	18%	21%
Total revenue	100%	100%	100%

Revenue by Group

	Year ended September 30,						
		Percent Change			Percent Change		
	2016	Actual	Constant Currency	2015	Actual	Constant Currency	2014
	(Dollar amounts in millions)						
Solutions Group							
Subscription	$ 75.4	112 %	115 %	$ 35.6	52 %	66 %	$ 23.3
Support	641.6	(5)%	(3)%	676.4	(2)%	6 %	688.1
Total recurring software revenue	717.0	1 %	3 %	712.0	— %	8 %	711.5
Perpetual license	154.2	(43)%	(41)%	268.3	(26)%	(19)%	362.0
Total software revenue	871.2	(11)%	(9)%	980.3	(9)%	(1)%	1,073.4
Professional services	189.0	(15)%	(12)%	222.1	(20)%	(13)%	278.4
Total revenue	$1,060.2	(12)%	(10)%	$1,202.4	(11)%	(4)%	$1,351.8
IoT Group							
Subscription	$ 42.9	45 %	45 %	$ 29.7	680 %	685 %	$ 3.8
Support	10.2	99 %	100 %	5.1	1,272 %	1,297 %	0.4
Total recurring software revenue	53.1	53 %	53 %	34.8	733 %	740 %	4.2
Perpetual license	19.3	33 %	33 %	14.5	2,161 %	2,206 %	0.6
Total software revenue	72.4	47 %	47 %	49.2	923 %	934 %	4.8
Professional services	7.9	120 %	121 %	3.6	928 %	962 %	0.4
Total revenue	$ 80.3	52 %	52 %	$ 52.9	923 %	936 %	$ 5.2

Software Revenue Performance

Software revenue consists of subscription, support, and perpetual license revenue. Subscription revenue includes time-based licenses whereby customers use our software and receive related support for a specified term, and for which revenue is recognized ratably over the term of the contract. Support revenue is composed of contracts to maintain new and/or previously purchased perpetual licenses, for which revenue is recognized ratably over the term of the contract. Perpetual licenses include a perpetual right to use the software, for which revenue is generally recognized up front upon shipment to the customer.

Solutions Group

The decline in software revenue in 2016 and 2015 compared to the prior year was driven primarily by a higher mix of subscription bookings as well as foreign currency rate changes and macroeconomic conditions.

IoT Group

The IoT Group delivered revenue growth in 2016 and 2015, including from acquisitions. Revenue from Kepware, which we acquired on January 12, 2016, totaled $16.1 million in 2016, and revenue from ThingWorx and Axeda totaled $18.6 million and $32.5 million, respectively, in 2015.

Professional Services Revenue

Consulting and training services engagements typically result from sales of new perpetual licenses and subscriptions, particularly of our PLM and SLM solutions. The decline in professional services revenue in 2016 was due in part to strong growth in bookings by our service partners, which is in line with our strategy for professional services revenue to trend flat-to-down over time as we expand our service partner program under which service engagements are referred to third party service providers. Additionally, over time, we anticipate offering solutions that require less service. As a result, we do not expect that professional services revenue will increase proportionately with software revenue. Foreign currency exchange rates negatively impacted professional services revenue by $5.9 million and $20.4 million in 2016 and 2015, respectively.

Revenue by Geographic Region

	2016	% of Total Revenue	Percent Change: Actual	Percent Change: Constant Currency	2015	% of Total Revenue	Percent Change: Actual	Percent Change: Constant Currency	2014	% of Total Revenue
	(Dollar amounts in millions)									
Revenue by region:										
Americas	$ 487.6	43%	(8)%	(8)%	$ 530.3	42%	(5)%	(4)%	$ 558.7	41%
Europe	$ 424.3	37%	(9)%	(5)%	$ 467.8	37%	(11)%	3 %	$ 528.1	39%
Pacific Rim	$ 123.8	11%	(11)%	(7)%	$ 139.2	11%	(6)%	(4)%	$ 148.2	11%
Japan	$ 104.9	9%	(11)%	(13)%	$ 118.0	9%	(3)%	12 %	$ 122.1	9%

A significant percentage of our annual revenue comes from large customers in the broader manufacturing space. As a result, software revenue growth in our core CAD and PLM products historically has correlated to growth in broader measures of the global manufacturing economy, including GDP, industrial production and manufacturing PMI.

The decrease in revenue in 2016, compared to 2015, was driven primarily by a higher mix of subscription bookings as well as the impact of currency movements on reported revenue, particularly the Euro and the Yen. We believe that continued macroeconomic headwinds also contributed to a decrease in revenue performance year over year.

Americas

The decrease in revenue in Americas in 2016 compared to 2015 consisted of decreases of 39%, 24% and 3% in perpetual license revenue, professional services revenue and support revenue (primarily PLM), respectively, partially offset by an increase in subscription revenue of 58%.

The decrease in revenue in Americas in 2015 compared to 2014 consisted of decreases of 32% and 23% in perpetual license revenue and professional services revenue, respectively, partially offset by increases in subscription revenue and support revenue (primarily PLM) of 128% and 6%, respectively.

Europe

The decrease in revenue in Europe in 2016 compared to 2015 consisted of decreases in perpetual license revenue of 46% (43% on a constant currency basis) and in support revenue of 6% (1% on a constant currency basis), partially offset by an increase in subscription revenue of 84% (91% on a constant currency basis).

The decrease in revenue in Europe in 2015 compared to 2014 consisted of decreases in perpetual license revenue of 26% (13% on a constant currency basis), in professional services revenue of 17% (4% on a constant currency basis) and in support revenue of 7% (increase of 7% on a constant currency basis), partially offset by an increase in subscription revenue of 150% (185% on a constant currency basis).

Year-over-year changes in foreign currency exchange rates, particularly the Euro, unfavorably impacted revenue in Europe by $21.3 million and $73.6 million in 2016 and 2015, respectively.

Pacific Rim

The decrease in revenue in Pacific Rim in 2016 compared to 2015 consisted of decreases in perpetual license revenue of 17% (14% on a constant currency basis), in professional services revenue of 14% (10% on a constant currency basis) and in support revenue of 9% (5% on a constant currency basis), partially offset by an increase in subscription revenue of 428% (448% on a constant currency basis).

The decrease in revenue in Pacific Rim in 2015 compared to 2014 consisted of decreases in professional services revenue of 29% (28% on a constant currency basis) and in perpetual license revenue of 6% (4% on a constant currency basis), partially offset by increases in subscription revenue of 253% (257% on a constant currency basis) and in support revenue of 5% (8% on a constant currency basis).

Year-over-year changes in foreign currency exchange rates unfavorably impacted revenue in Pacific Rim by $5.2 million and $3.2 million in 2016 and 2015, respectively.

In 2016 and 2015, compared to the prior year, revenue in China decreased 18% and 14%, respectively, and represented 4% of total revenue in both years.

Japan

The decrease in revenue in Japan in 2016 compared to 2015 consisted of decreases in perpetual license revenue of 55% (54% on a constant currency basis) and in professional services revenue of 5% (11% on a constant currency basis), partially offset by an increase in subscription revenue of 408% (383% on a constant currency basis).

The decrease in revenue in Japan in 2015 compared to 2014 consisted of decreases in support revenue of 10% (increase of 5% on a constant currency basis) and in perpetual license revenue of 5% (increase of 12% on a constant currency basis), partially offset by increases in subscription revenue of 572% (637% on a constant currency basis) and in professional services revenue of 15% (34% on a constant currency basis).

Year-over-year changes in foreign currency exchange rates favorably impacted revenue in Japan by $5.0 million in 2016 and unfavorably impacted revenue in Japan by $19.2 million in 2015.

Gross Margin

	2016	Percent Change	2015	Percent Change	2014
		(Dollar amounts in millions)			
Gross margin	$ 814.9	(11)%	$ 920.5	(6)%	$ 983.3
Non-GAAP gross margin	853.2	(11)%	953.4	(6)%	1,013.0
Gross margin as a % of revenue:					
Software	84%		87%		88%
Professional Services	14%		12%		12%
Gross margin as a % of total revenue	71%		73%		72%
Non-GAAP gross margin as a % of total non-GAAP revenue	75%		76%		75%

Gross margin as a percentage of total revenue in 2016 compared to 2015 reflects lower software margins due to lower perpetual license revenue. Support revenue comprised 57% of our total revenue in 2016 compared to 54% in 2015 and 51% in 2014.

Gross margin as a percentage of total revenue in 2015 compared to 2014 reflects lower software margins due to lower perpetual license revenue and a higher mix of cloud services revenue (due to our acquisition of Axeda), which has lower margins than license revenue.

Costs and Expenses

	2016	Percent Change	2015	Percent Change	2014	
Cost of software revenue	$ 155.4	14 %	$ 136.0	5 %	$ 129.7	
Cost of professional services revenue	170.2	(14)%	198.7	(19)%	244.0	
Sales and marketing	367.5	6 %	346.8	(6)%	367.5	
Research and development	229.3	1 %	227.5	— %	226.5	
General and administrative	145.6	(8)%	158.7	20 %	132.2	
U.S. pension settlement loss	—		66.3		—	
Amortization of acquired intangible assets	33.2	(8)%	36.1	12 %	32.1	
Restructuring charges	76.3	76 %	43.4	53 %	28.4	
Total costs and expenses	$ 1,177.5	(3)% (1)	$ 1,213.6	5 % (1)	$ 1,160.4	
Total headcount at end of period	5,800	(3)%	5,982	(7)%	6,444	(2)

(1) On a constant currency basis from the prior period, total costs and expenses decreased 1% from 2015 to 2016 and increased 9% from 2014 to 2015.

(2) Headcount at September 30, 2014 included approximately 250 employees with termination dates after September 30, 2014 who were included in our fourth quarter of 2014 restructuring actions.

2016 compared to 2015

Costs and expenses in 2016 compared to 2015 decreased primarily as a result of the following:

- cost savings from restructuring actions in 2016 and 2015;
- acquisition and pension termination-related costs, which were $75.4 million lower in 2016 compared to 2015 due to costs associated with terminating our U.S. pension plan which totaled $73.2 million (including a $66.3 million settlement loss) in 2015;
- a $28.2 million accrual recorded in 2015 related to the China Investigation; and
- foreign currency rates which favorably impacted costs and expenses of 2016 by $24.1 million.

The decreases above were partially offset by increases due to:

- cash-based incentive compensation expense, which was higher by $30.3 million in 2016 compared to 2015 (as a result of over performance on subscription mix in 2016 and because 2015 incentive targets were not achieved in full);
- costs from acquired businesses (ColdLight, Vuforia, and Kepware added approximately 255 employees at the date of the acquisitions);
- an increase in stock-based compensation expense of $15.8 million in 2016, compared to 2015, due in part to a modification of performance-based awards previously granted under our long-term incentive programs;
- investments we are making in our IoT business; and
- company-wide merit pay increases that were effective in the fourth quarter of 2015.

2015 compared to 2014

Costs and expenses in 2015 compared to 2014 increased primarily as a result of the following:

- restructuring charges of $43.4 million in 2015 compared to $28.4 million in 2014, primarily for severance and other related costs associated with the termination of 411 employees;
- costs from acquired businesses (Axeda, Atego, ThingWorx and ColdLight added approximately 360 employees at the date of the acquisitions);
- costs associated with terminating our U.S. pension plan which totaled $73.2 million (including a $66.3 million settlement loss);
- a litigation accrual of $28.2 million related to the China Investigation; and
- amortization of acquired intangible assets (including amortization of purchased software which is included in cost of revenue), primarily related to our acquisitions in 2014 and 2015, which was higher by $5.3 million.

These cost increases were partially offset by

- cost savings associated with restructuring actions in 2014 and 2015;
- the impact of foreign currency movements which favorably impacted costs and expenses by $56.6 million in 2015; and
- a decrease in cash-based incentive compensation of $18.1 million.

Cost of Software Revenue

	2016	Percent Change	2015	Percent Change	2014
		(Dollar amounts in millions)			
Cost of software revenue	$ 155.4	14%	$ 136.0	5%	$ 129.7
% of total revenue	14%		11%		10%
% of total software revenue	16%		13%		12%
Software headcount at end of period	841	7%	783	7%	733

Our cost of software revenue consists of fixed and variable costs associated with reproducing and distributing software and documentation, as well as royalties paid to third parties for technology embedded in or licensed with our software products, amortization of intangible assets associated with acquired products and costs to perform and support our cloud services business. Our cost of software revenue also includes costs such as salaries, benefits, information technology and facilities associated with customer support and the release of support updates (including related royalty costs). Cost of software revenue as a percent of software revenue can vary depending on product mix sold, the effect of fixed and variable royalties, and the level of amortization of acquired software intangible assets. Amortization of acquired purchased software totaled $24.6 million, $19.4 million, and $18.1 million in 2016, 2015, and 2014, respectively. Total compensation, benefits costs and travel expenses increased by $8.2 million from 2015 to 2016 and by $0.9 million from 2014 to 2015.

Cost of Professional Services Revenue

	2016	Percent Change	2015	Percent Change	2014
		(Dollar amounts in millions)			
Cost of professional services revenue	$ 170.2	(14)%	$ 198.7	(19)%	$ 244.0
% of total revenue	15%		16%		18%
% of total professional services revenue	86%		88%		88%
Professional service headcount at end of period	969	(10)%	1,074	(23)%	1,388

Our cost of professional services revenue includes costs such as salaries, benefits, information technology costs and facilities expenses for our training and consulting personnel, and third-party subcontractor fees.

In 2016 compared to 2015, total compensation, benefit costs and travel expenses decreased by $24.8 million. The cost of third-party consulting services was $2.6 million lower in 2016 compared to 2015.

In 2015 compared to 2014, total compensation, benefit costs and travel expenses decreased 21% ($36.9 million) primarily due to reduced headcount. Additionally, the cost of third-party consulting services was $7.4 million lower in 2015 compared to 2014.

The decreases in 2016 and 2015 compared to the prior years in the cost of third-party consulting services is a result of our strategy to have our strategic services partners perform services for customers directly, which has contributed to lower revenue and improving services margins. As a result of decreases in professional services revenue in 2016 and 2015, compared to the prior year, we have reduced headcount resulting in lower compensation-related costs.

Sales and Marketing

	2016	Percent Change	2015	Percent Change	2014
		(Dollar amounts in millions)			
Sales and marketing expenses	$ 367.5	6%	$ 346.8	(6)%	$ 367.5
% of total revenue	32%		28%		27%
Sales and marketing headcount at end of period	1,442	2%	1,416	(4)%	1,481

Our sales and marketing expenses primarily include salaries and benefits, sales commissions, advertising and marketing programs, travel, information technology costs and facility expenses.

Our compensation, benefit costs and travel expenses were higher by an aggregate of 5% ($14.4 million) in 2016 compared to 2015, which reflects lower salaries, offset by higher incentive-based compensation, including commissions (due primarily to higher than planned subscription bookings), and increased headcount.

Our compensation, benefit costs and travel expenses were lower by an aggregate of 7% ($20.3 million) in 2015 compared to 2014, primarily due to lower headcount.

Research and Development

	2016	Percent Change	2015	Percent Change	2014
		(Dollar amounts in millions)			
Research and development expenses	$ 229.3	1 %	$ 227.5	— %	$ 226.5
% of total revenue	20%		18%		17%
Research and development headcount at end of period	1,875	(6)%	1,998	(7)%	2,156

Our research and development expenses consist principally of salaries and benefits, information technology costs and facility expenses. Major research and development activities include developing new releases of our software and releases and updates of our software that enhance functionality and add features.

Total compensation, benefit costs and travel expenses were higher by 2% ($4.3 million) in 2016 compared to 2015. The decrease in research and development headcount from 2015 to 2016 reflects restructuring actions offset by approximately 132 employees added from businesses acquired after the second quarter of 2015.

Total compensation, benefit costs and travel expenses were lower by 1% ($1.9 million) in 2015 compared to 2014.

General and Administrative (G&A)

	2016	Percent Change	2015	Percent Change	2014
		(Dollar amounts in millions)			
General and administrative	$ 145.6	(8)%	$ 158.7	20%	$ 132.2
% of total revenue	13%		13%		10%
General and administrative headcount at end of period	673	(5)%	711	4%	686

Our G&A expenses include the costs of our corporate, finance, information technology, human resources, legal and administrative functions, as well as acquisition-related charges, bad debt expense and outside professional services, including accounting and legal fees. Acquisition-related costs include direct costs of acquisitions and expenses related to acquisition integration activities, including transaction fees, due diligence costs, retention bonuses and severance, and professional fees, including legal and accounting costs, related to the acquisition. In addition, subsequent adjustments to our initial estimated amount of contingent consideration associated with specific acquisitions are included in acquisition-related charges. Acquisition-related charges and pension plan termination-related costs included in G&A were $3.5 million, $15.8 million, and $13.1 million, in 2016, 2015, and 2014, respectively. Additionally, as described below, we recorded a pension settlement loss of $66.3 million in 2015 (such loss is not included in G&A). The decrease in overall general and administrative costs in 2016, compared to 2015 was due primarily to an increase in performance-based bonus and stock-based compensation (due in part to a modification of performance-based awards previously granted under our long-term incentive programs) of $23.7 million offset by the $28.2 million accrual recorded in 2015 related to the settlement of the China Investigation.

The increase in overall general and administrative costs in 2015, compared to 2014, was due primarily to the $28.2 million reserve recorded related to the settlement of the China Investigation.

U.S. pension settlement loss

	2016	Percent Change	2015	Percent Change	2014
		(Dollar amounts in millions)			
U.S. pension termination loss	$ —		$ 66.3		$ —
% of total revenue	—%		5%		—%

U.S. pension settlement loss reflects the loss recognized in the fourth quarter of 2015 related to the termination of our U.S. pension plan, due to the amortization of actuarial losses previously recorded in equity.

Amortization of Acquired Intangible Assets

	2016	Percent Change	2015	Percent Change	2014
		(Dollar amounts in millions)			
Amortization of acquired intangible assets	$ 33.2	(8)%	$ 36.1	12%	$ 32.1
% of total revenue	3%		3%		2%

Amortization of acquired intangible assets reflects the amortization of acquired non-product related intangible assets, primarily customer and trademark-related intangible assets, recorded in connection with completed acquisitions. The decrease in amortization of acquired intangible assets from 2015 to 2016 is due to certain intangibles becoming fully amortized, partially offset by an increase in amortization related to recent acquisitions. The increase in amortization of acquired intangible assets in 2015 compared to 2014 includes our acquisitions of ColdLight in the third quarter of 2015, Axeda and Atego in the fourth quarter of 2014, and our acquisition of ThingWorx in the second quarter of 2014.

Restructuring Charges

	2016	2015	2014
	(Dollar amounts in millions)		
Restructuring charges	$ 76.3	$ 43.4	$ 28.4
% of total revenue	7%	3%	2%

Restructuring charges for 2016 were $76.3 million, $76.9 million related to the plan announced in October 2015 described below, offset by a $0.6 million credit related to prior year restructuring actions.

Our 2016 restructuring actions resulted in a charge of $76.9 million in 2016, including $1.1 million of facility related charges and $75.8 million of employee related termination costs, primarily related to termination benefits associated with 810 employees. In 2016 we completed planned headcount reductions and we expect to complete facility-related restructuring actions in the first half of 2017 and record approximately $3 million of charges associated with excess facilities. We expect that the cost savings associated with the headcount and facility reductions will be offset by certain planned cost increases and investments in our business. As a result, we do not expect net operating expense reductions in 2017, as compared to 2016 levels.

Our 2015 restructuring was undertaken to enable us to increase investment in our IoT business and to reduce our cost structure through organizational efficiencies in the face of significant foreign currency depreciation relative to the U.S. Dollar and a more cautious outlook on global macroeconomic conditions. The restructuring actions resulted in charges of $43.4 million during 2015, including $1.4 million of facility related charges and $42.0 million of employee-related termination costs, primarily related to termination benefits associated with 411 employees. This reorganization resulted in net annualized expense reductions of approximately $30 million.

Our 2014 restructuring in support of integrating businesses acquired in the prior year and the continued evolution of our business model resulted in a charge of $26.8 million attributable to termination benefits associated with 283 employees, which benefits were primarily paid in fiscal 2015. This restructuring action resulted in annualized cost savings of approximately $30 million. In addition, in 2014 we recorded restructuring charges of $1.6 million, primarily associated with the completion of the restructuring actions initiated in the fourth quarter of 2013.

In 2016, 2015, and 2014, we made cash payments related to restructuring charges of $55.0 million, $53.6 million, and $20.6 million, respectively. At September 30, 2016, accrued expenses for unpaid restructuring charges totaled $36.6 million, which we expect to pay within the next twelve months.

Non-Operating Income (Expense)

	2016	2015	2014
	(Dollar amounts in millions)		
Foreign currency losses, net	$ (1.9)	$ (2.7)	$ (4.5)
Interest income	3.4	3.7	3.1
Interest expense	(29.9)	(14.7)	(8.2)
Other income (expense), net	(1.8)	(1.3)	(1.0)
	$ (30.2)	$ (15.1)	$ (10.5)

Foreign Currency Net Losses: Foreign currency net losses include costs of hedging contracts, certain realized and unrealized foreign currency transaction gains or losses, and foreign exchange gains or losses resulting from the required period-end currency re-measurement of the assets and liabilities of our subsidiaries that use the U.S. dollar as their functional currency. Because a large portion of our revenue and expenses is transacted in foreign currencies, we engage in hedging transactions involving the use of foreign currency forward contracts to reduce our exposure to fluctuations in foreign exchange rates.

Interest Income: Interest income represents earnings on the investment of our available cash balances and interest on financing provided to customers as described in Note B *Summary of Significant Accounting Policies* of "Notes to Consolidated Financial Statements" in this Annual Report.

Interest Expense: The increase in interest expense in 2016 compared to 2015 was due to higher amounts outstanding under our credit facility and the issuance of the 2024 6% Notes. We had $758 million total debt at September 30, 2016, compared to $668 million at September 30, 2015.

We used the net proceeds from the issuance of the notes to repay a portion of our outstanding revolving loan under our credit facility. Because the interest rate on the notes is higher than the variable rate we now pay under our credit facility, our annual interest expense will increase by about $20 million.

We had $668 million outstanding under the credit facility at September 30, 2015, compared to $612 million at September 30, 2014 (including $295 million borrowed in the fourth quarter of 2014 to fund our acquisition of Axeda and to fund an accelerated share repurchase program). The balance outstanding at September 30, 2015 reflects amounts borrowed in 2015 as a result of our acquisition of ColdLight.

The average interest rate on amounts outstanding under the credit facility was 3.0% in 2016, 1.7% in 2015 and 1.6% in 2014.

Other Income (Expense), Net: There were no significant changes to other income (expense) which is primarily made up other non-operating gains and losses.

Income Taxes

Tax Provision and Effective Income Tax Rates

	Year ended September 30,		
	2016	2015	2014
		(in millions)	
Pre-tax income	$ (67.2)	$ 26.5	$ 186.1
Tax (benefit) provision	(12.7)	(21.0)	25.9
Effective income tax rate	(19)%	(79)%	14%

In 2016 and 2015, our effective tax rate was lower than the 35% statutory federal income tax rate due, in large part, to our corporate structure in which our foreign taxes are at an effective tax rate lower than the U.S. A significant amount of our foreign earnings is generated by our subsidiaries organized in Ireland and, in 2016, 2015 and 2014, the foreign rate differential predominantly relates to these Irish earnings. Our foreign rate differential in 2016 and 2015 includes the continuing rate benefit from a business realignment completed on September 30, 2014 in which intellectual property was transferred between two wholly-owned foreign subsidiaries. The realignment allows us to more efficiently manage the distribution of our software to European customers. In 2016 and 2015, this realignment resulted in a tax benefit of approximately $28 million and $24 million, respectively. In fiscal 2017, we expect this realignment to result in a tax benefit of approximately $25 million. In 2016 the change in valuation allowance primarily relates to U.S. losses not benefitted, as well as the release of valuation allowance totaling $3.1 million in two foreign subsidiaries. Our provision also reflects a $6.0 million tax benefit related to a U.S. research and development tax credit which was offset by a corresponding provision to increase our U.S. valuation allowance.

Additionally, in 2015, U.S. permanent items include the tax effect of a $14.5 million expense related to the settlement of the China Investigation. Other factors that impacted the 2015 effective tax rate included: the release of a valuation allowance totaling $18.7 million relating to the U.S. pension plan termination, foreign withholding taxes of $3.8 million, a tax benefit of $3.1 million relating to the reassessment of our reserve requirements and a benefit of $1.4 million in conjunction with the reorganization of our Atego U.S. subsidiaries. Additionally, our 2015 provision reflected a $2.1 million tax benefit related to a retroactive extension of the U.S. research and development tax credit enacted in the first quarter of 2015. This benefit was offset by a corresponding provision to increase our U.S. valuation allowance.

In 2014, our effective tax rate was lower than the 35% statutory federal income tax rate due, in large part, to the reversal of a portion of the valuation allowance against US deferred tax assets. We recorded benefits resulting from 2014 acquisitions as described below. Other factors that impacted the rate include foreign withholding taxes of $5.1 million and the establishment of a valuation allowance totaling $3.5 million in two foreign subsidiaries.

Acquisitions in 2014 were accounted for as business combinations. Assets acquired, including the fair value of acquired tangible assets, intangible assets and assumed liabilities were recorded, and we recorded net deferred tax liabilities of $21.6 million in 2014, primarily related to the tax effect of acquired intangible assets that are not deductible for income tax purposes. These deferred tax liabilities reduced our net deferred tax asset balance and resulted in a tax benefit of $18.1 million in 2014, to decrease our valuation allowance in jurisdictions where we have recorded a valuation allowance (primarily the U.S.). As these decreases in the valuation allowance are not part of the accounting for business combinations (the fair value of the assets acquired and liabilities assumed), they were recorded as an income tax benefit.

Valuation Allowance

We have concluded, based on the weight of available evidence, that a full valuation allowance continues to be required against our U.S. net deferred tax assets as they are not more likely than not to be realized in the future. We will continue to reassess whether a valuation allowance is required each financial reporting period.

Tax Audits and Examinations

In the normal course of business, PTC and its subsidiaries are examined by various taxing authorities, including the Internal Revenue Service (IRS) in the United States. We regularly assess the likelihood of additional assessments by tax authorities and provide for these matters as appropriate. We are currently under audit by tax authorities in several jurisdictions. Audits by tax authorities typically involve examination of the deductibility of certain permanent items, limitations on net operating losses and tax credits. Although we believe our tax estimates are appropriate, the final determination of tax audits and any related litigation could result in material changes in our estimates.

Our Future Effective Income Tax Rate

Our future effective income tax rate may be materially impacted by the amount of income taxes associated with our foreign earnings, which are taxed at rates different from the U.S. federal statutory income tax rate, as well as the timing and extent of the realization of deferred tax assets and changes in the tax law. Further, our tax rate may fluctuate within a fiscal year, including from quarter to quarter, due to items arising from discrete events, including settlements of tax audits and assessments, the resolution or identification of tax position uncertainties, and acquisitions of other companies.

Bookings Measure

We offer both perpetual and subscription licensing options to our customers, as well as monthly software rentals for certain products. Given the difference in revenue recognition between the sale of a perpetual software license (revenue is recognized at the time of sale) and a subscription (revenue is deferred and recognized ratably over the subscription term), we use bookings for internal planning, forecasting and reporting of new license and cloud services transactions. In order to normalize between perpetual and subscription licenses, we define subscription bookings as the subscription annualized contract value (subscription ACV) of new subscription bookings multiplied by a conversion factor of 2. We arrived at the conversion factor of 2 by considering a number of variables including pricing, support, length of term, and renewal rates. We define subscription ACV as the total value of a new subscription booking divided by the term of the contract (in days) multiplied by 365. If the term of the subscription contract is less than a year, the ACV is equal to the total contract value. In 2016, the weighted average contract length of our subscription bookings was approximately 2 years.

License and subscription bookings equal subscription bookings (as described above) plus perpetual license bookings plus any monthly software rental bookings during the period. Total ACV equals subscription ACV (as described above) plus the annualized value of incremental monthly software rental bookings during the period.

Because subscription bookings is a metric we use to approximate the value of subscription sales if sold as perpetual licenses, it does not represent the actual revenue that will be recognized with respect to subscription sales or that would be recognized if the sales were perpetual licenses, nor does the annualized value of monthly software rental bookings represent the value of any such booking.

Non-GAAP Financial Measures

The non-GAAP financial measures presented in the discussion of our results of operations and the respective most directly comparable GAAP measures are:

- non-GAAP revenue—GAAP revenue
- non-GAAP gross margin—GAAP gross margin
- non-GAAP operating income—GAAP operating income
- non-GAAP operating margin—GAAP operating margin
- non-GAAP net income—GAAP net income
- non-GAAP diluted earnings per share—GAAP diluted earnings per share

The non-GAAP financial measures exclude fair value adjustments related to acquired deferred revenue and deferred costs, stock-based compensation expense, amortization of acquired intangible assets expense, acquisition-related charges, pension plan termination-related costs, a legal settlement accrual, restructuring charges, non-operating credit facility refinancing costs, identified discrete charges included in non-operating other expense, net and the related tax effects of the preceding items, and any other identified tax items.

These items are normally included in the comparable measures calculated and presented in accordance with GAAP. Our management excludes these items when evaluating our ongoing performance and/or predicting our earnings trends, and therefore excludes them when presenting non-GAAP financial measures. Management uses non-GAAP financial measures in conjunction with our GAAP results, as should investors.

Fair value of acquired deferred revenue is a purchase accounting adjustment recorded to reduce acquired deferred revenue to the fair value of the remaining obligation, so our GAAP revenue after an acquisition does not reflect the full amount of revenue that would have been reported if the acquired deferred revenue was not written down to fair value. We believe excluding these adjustments to revenue from these contracts (and associated costs in *fair value adjustment to deferred services cost*) is useful to investors as an additional means to assess revenue trends of our business.

Stock-based compensation is a non-cash expense relating to stock-based awards issued to executive officers, employees and outside directors, consisting of restricted stock, stock options and restricted stock units. We exclude this expense as it is a non-cash expense and we assess our internal operations excluding this expense and believe it facilitates comparisons to the performance of other companies in our industry.

Amortization of acquired intangible assets is a non-cash expense that is impacted by the timing and magnitude of our acquisitions. We believe the assessment of our operations excluding these costs is relevant to our assessment of internal operations and comparisons to the performance of other companies in our industry.

Acquisition-related charges included in general and administrative costs are direct costs of potential and completed acquisitions and expenses related to acquisition integration activities, including transaction fees, due diligence costs, severance and professional fees. In addition, subsequent adjustments to our initial estimated amount of contingent consideration associated with specific acquisitions are also included within acquisition-related charges. The occurrence and amount of these costs will vary depending on the timing and size of acquisitions.

U.S. pension plan termination-related costs include charges related to our plan that we began terminating in the second quarter of 2014. Costs associated with termination of the plan are not considered part of our regular operations.

Legal accrual includes amounts accrued to settle our SEC and DOJ FCPA investigation in China, which was ultimately settled and paid in the second quarter of 2016 for $28.2 million, and other amounts in respect of related regulatory and other matters. We view these matters as non-ordinary course events and exclude the amounts when reviewing our operating performance.

Restructuring charges include severance costs and excess facility restructuring charges resulting from reductions of personnel driven by modifications to our business strategy. These costs may vary in size based on our restructuring plan.

Non-operating credit facility refinancing costs are non-operating charges we record as a result of the refinancing of our credit facility. We assess our internal operations excluding these costs and believe it facilitates comparisons to the performance of other companies in our industry.

Income tax adjustments include the tax impact of the items above and assumes that we are profitable on a non-GAAP basis in the U.S. and one foreign jurisdiction, and eliminates the effect of the valuation allowance recorded against our net deferred tax assets in those jurisdictions. Additionally, we exclude other material tax items that we view as non-ordinary course.

We use these non-GAAP financial measures, and we believe that they assist our investors, to make period-to-period comparisons of our operational performance because they provide a view of our operating results without items that are not, in our view, indicative of our core operating results. We believe that these non-GAAP financial measures help illustrate underlying trends in our business, and we use the measures to establish budgets and operational goals (communicated internally and externally) for managing our business and evaluating our performance. We believe that providing non-GAAP financial measures affords investors a view of our operating results that may be more easily compared to the results of peer companies.

The items excluded from the non-GAAP financial measures often have a material impact on our financial results and such items often recur. Accordingly, the non-GAAP financial measures included in this Annual Report should be considered in addition to, and not as a substitute for or superior to, the comparable measures prepared in accordance with GAAP. The following tables reconcile each of these non-GAAP financial measures to its most closely comparable GAAP measure on our financial statements.

	Year ended September 30,		
	2016	2015	2014
	(in millions, except per share amounts)		
GAAP revenue	$ 1,140.5	$ 1,255.2	$ 1,357.0
Fair value of acquired deferred revenue	3.5	3.9	1.2
Non-GAAP revenue	$ 1,144.0	$ 1,259.1	$ 1,358.2
GAAP gross margin	$ 814.9	$ 920.5	$ 983.3
Fair value of acquired deferred revenue	3.5	3.9	1.2
Fair value to acquired deferred costs	(0.5)	(0.5)	(0.1)
Stock-based compensation	10.8	10.2	10.4
Amortization of acquired intangible assets included in cost of revenue	24.6	19.4	18.1
Non-GAAP gross margin	$ 853.2	$ 953.4	$ 1,013.0
GAAP operating income (loss)	$ (37.0)	$ 41.6	$ 196.6
Fair value of acquired deferred revenue	3.5	3.9	1.2
Fair value to acquired deferred costs	(0.5)	(0.5)	(0.2)
Stock-based compensation	66.0	50.2	50.9
Amortization of acquired intangible assets included in cost of revenue	24.6	19.4	18.1
Amortization of acquired intangible assets	33.2	36.1	32.1
Acquisition-related charges included in general and administrative expenses	3.5	8.9	12.7
U.S. pension plan termination-related costs (1)	—	73.2	0.4
Legal accrual	3.2	28.2	—
Restructuring charges	76.3	43.4	28.4
Non-GAAP operating income	$ 172.7	$ 304.3	$ 340.3
GAAP net income (loss)	$ (54.5)	$ 47.6	$ 160.2
Fair value of acquired deferred revenue	3.5	3.9	1.2
Fair value to acquired deferred costs	(0.5)	(0.5)	(0.2)
Stock-based compensation	66.0	50.2	50.9
Amortization of acquired intangible assets included in cost of revenue	24.6	19.4	18.1
Amortization of acquired intangible assets	33.2	36.1	32.1
Acquisition-related charges included in general and administrative expenses	3.5	8.9	12.7
U.S. pension plan termination-related costs (1)	—	73.2	0.4
Legal accrual	3.2	28.2	—
Restructuring charges	76.3	43.4	28.4
Non-operating credit facility refinancing costs	2.4	—	—
Income tax adjustments (2)	(19.8)	(51.1)	(43.5)
Non-GAAP net income	$ 137.8	$ 259.2	$ 260.4
GAAP diluted earnings (loss) per share	$ (0.48)	$ 0.41	$ 1.34
Fair value of acquired deferred revenue	0.03	0.03	0.01
Fair value to acquired deferred costs	—	—	—
Stock-based compensation	0.57	0.43	0.42
Total amortization of acquired intangible assets	0.50	0.48	0.42

Acquisition-related charges included in general and administrative expenses	0.03	0.08	0.11
U.S. pension plan termination-related costs	—	0.63	—
Legal accrual	0.03	0.24	—
Restructuring charges	0.66	0.37	0.24
Non-operating credit facility refinancing costs	0.02	—	—
Income tax adjustments (2)	(0.17)	(0.44)	(0.36)
Non-GAAP diluted earnings per share (3)	$ 1.19	$ 2.23	$ 2.17

	Year ended September 30,		
Operating margin impact of non-GAAP adjustments:	2016	2015	2014
GAAP operating margin	(3.2)%	3.3%	14.5%
Fair value of acquired deferred revenue	0.3 %	0.3%	0.1%
Fair value to acquired deferred costs	— %	—%	—%
Stock-based compensation	5.8 %	4.0%	3.8%
Total amortization of acquired intangible assets	5.1 %	4.4%	3.7%
Acquisition-related charges included in general and administrative expenses	0.3 %	0.7%	0.9%
U.S. pension plan termination-related costs	— %	5.8%	—%
Legal accrual	0.3 %	2.2%	—%
Restructuring charges	6.7 %	3.5%	2.1%
Non-GAAP operating margin	15.1 %	24.2%	25.1%

(1) Represents charges related to terminating a U.S. pension plan, including a settlement loss of $66.3 million in 2015.

(2) We have recorded a full valuation allowance against our U.S. net deferred tax assets and a valuation allowance against net deferred tax assets in certain foreign jurisdictions. As we are profitable on a non-GAAP basis, the 2016 and 2015 non-GAAP tax provisions are being calculated assuming there is no valuation allowance. Income tax adjustments for 2016 reflect the tax effects of non-GAAP adjustments which are calculated by applying the applicable tax rate by jurisdiction to the non-GAAP adjustments listed above. Additionally, we recorded a tax benefit in 2016 for the write-off of a deferred tax liability that resulted from the change in tax status of a foreign subsidiary. This tax benefit has been excluded from non-GAAP tax expense.

(3) Diluted earnings per share impact of non-GAAP adjustments is calculated by dividing the dollar amount of the non-GAAP adjustment by the diluted weighted average shares outstanding for the respective year.

Critical Accounting Policies and Estimates

We have prepared our consolidated financial statements in accordance with accounting principles generally accepted in the United States of America. In preparing our financial statements, we make estimates, assumptions and judgments that can have a significant impact on our reported revenues, results of operations, and net income, as well as on the value of certain assets and liabilities on our balance sheet. These estimates, assumptions and judgments are necessary because future events and their effects on our results and the value of our assets cannot be determined with certainty, and are made based on our historical experience and on other assumptions that we believe to be reasonable under the circumstances. These estimates may change as new events occur or additional information is obtained, and we may periodically be faced with uncertainties, the outcomes of which are not within our control and may not be known for a prolonged period of time.

The accounting policies, methods and estimates used to prepare our financial statements are described generally in Note B *Summary of Significant Accounting Policies* of “Notes to Consolidated Financial Statements" in this Annual Report. The most important accounting judgments and estimates that we made in preparing the financial statements involved:

- revenue recognition;
- accounting for income taxes;
- valuation of assets and liabilities acquired in business combinations;
- valuation of goodwill;
- accounting for pensions; and
- legal contingencies.

A critical accounting policy is one that is both material to the presentation of our financial statements and requires us to make subjective or complex judgments that could have a material effect on our financial condition and results of operations. Critical accounting policies require us to make assumptions about matters that are uncertain at the time of the estimate, and different estimates that we could have used, or changes in the estimates that are reasonably likely to occur, may have a material impact on our financial condition or results of operations. Because the use of estimates is inherent in the financial reporting process, actual results could differ from those estimates.

Accounting policies, guidelines and interpretations related to our critical accounting policies and estimates are generally subject to numerous sources of authoritative guidance and are often reexamined by accounting standards rule makers and regulators. These rule makers and/or regulators may promulgate interpretations, guidance or regulations that may result in changes to our accounting policies, which could have a material impact on our financial position and results of operations.

Revenue Recognition

Our sources of revenue include: (1) subscription, (2) support, (3) perpetual license and (4) professional services. We record revenues for software related deliverables in accordance with the guidance provided by ASC 985-605, *Software-Revenue Recognition* and revenues for non-software deliverables in accordance with ASC 605-25*, Revenue Recognition, Multiple-Element Arrangements* when the following criteria are met: (1) persuasive evidence of an arrangement exists, (2) delivery has occurred (generally, FOB shipping point or electronic distribution), (3) the fee is fixed or determinable, and (4) collection is probable. We exercise judgment and use estimates in connection with determining the amounts of software license and services revenues to be recognized in each accounting period. Our primary judgments involve the following:

- determining whether collection is probable;
- assessing whether the fee is fixed or determinable;
- determining whether service arrangements, including modifications and customization of the underlying software, are not essential to the functionality of the licensed software and thus would result in the revenue for license and service elements of an agreement being recorded separately; and
- determining the fair value of services and support elements included in multiple-element arrangements, which is the basis for allocating and deferring revenue for such services and support.

Our software is distributed primarily through our direct sales force. In addition, we have an indirect distribution channel through alliances with resellers. Revenue arrangements with resellers are generally recognized on a sell-through basis; that is, when we deliver the product to the end-user customer. We record consideration given to a reseller as a reduction of revenue to the extent we have recorded revenue from the reseller. We do not offer contractual rights of return, stock balancing, or price protection to our resellers, and actual product returns from them have been insignificant to date. As a result, we do not maintain reserves for reseller product returns.

At the time of each sale transaction, we must make an assessment of the collectability of the amount due from the customer. Revenue is only recognized at that time if management deems that collection is probable. In making this assessment, we consider customer credit-worthiness and historical payment experience. At that same time, we assess whether fees are fixed or determinable and free of contingencies or significant uncertainties. In assessing whether the fee is fixed or determinable, we consider the payment terms of the transaction, including transactions with payment terms that extend beyond our customary payment terms, and our collection experience in similar transactions without making concessions, among other factors. We have periodically provided financing to credit-worthy customers with payment terms up to 24 months. If the fee is determined not to be fixed or determinable, revenue is recognized only as payments become due from the customer, provided that all other revenue recognition criteria are met. Our software license arrangements generally do not include customer acceptance provisions. However, if an arrangement includes an acceptance provision, we record revenue only upon the earlier of (1) receipt of written acceptance from the customer or (2) expiration of the acceptance period.

Generally, our contracts are accounted for individually. However, when contracts are closely interrelated and dependent on each other, it may be necessary to account for two or more contracts as one to reflect the substance of the group of contracts.

Subscription

Subscription revenue includes revenue from two primary sources: (1) subscription-based licenses, and (2) cloud services.

Subscription-based licenses include the right for a customer to use our licenses, which may be on premise or in the cloud, and receive related support for a specified term and revenue is recognized ratably over the term of the arrangement. When sold in arrangements with other elements, vendor-specific objective evidence ("VSOE") of fair value is established for the subscription-based licenses through the use of a substantive renewal clause within the customer contract for a combined annual fee that includes the term-based license and related support.

Cloud services reflect recurring revenues that include fees for hosting and application management of customers' perpetual or subscription-based licenses. Generally, customers have the right to terminate the cloud services contract and take possession of the licenses without a significant penalty. When cloud services are sold as part of a multi-element transaction, revenue is allocated to cloud services based on VSOE, and recognized ratably over the contractual term beginning on the commencement dates of each contract, which is the date the services are made available to the customer. VSOE is established for cloud services either through a substantive stated renewal option or stated contractual overage rates, as these rates represent the value the customer is willing to pay on a standalone basis. We also offer Cloud services under SaaS arrangements whereby customers access our software in the cloud. Under SaaS arrangements, customers are not entitled to terminate the cloud services and cannot take possession of the software. Cloud services include set-up fees, which are recognized ratably over the contract term or the expected customer life, whichever is longer.

Support

Support contracts generally include rights to unspecified upgrades (when and if available), telephone and internet-based support, updates and bug fixes. Support revenue is recognized ratably over the term of the support contract on a straight-line basis.

Perpetual License

Under perpetual license arrangements, we generally recognize license revenue up front upon shipment to the customer. We use the residual method to recognize revenue from perpetual license software arrangements that include one or more elements to be delivered at a future date when evidence of the fair value of all undelivered elements exists, and the elements of the arrangement qualify for separate accounting as described below. Under the residual method, the fair value of the undelivered elements (i.e., support and services) based on our VSOE of fair value is deferred and the remaining portion of the total arrangement fee is allocated to the delivered elements (i.e., perpetual software license). If evidence of the fair value of one or more of the undelivered elements does not exist, all revenues are deferred and recognized when delivery of all of those elements has occurred or when fair values can be established. We determine VSOE of the fair value of services and support revenue based upon our recent pricing for those elements when sold separately. For certain transactions, VSOE is determined based on a substantive renewal clause within a customer contract. Our current pricing practices are influenced primarily by product type, purchase volume, sales channel and customer location. We review services and support sold separately on a periodic basis and update, when appropriate, our VSOE of fair value for such elements to ensure that it reflects our recent pricing experience.

Professional Services

Our software arrangements often include implementation, consulting and training services that are sold under consulting engagement contracts or as part of the software license arrangement. When we determine that such services are not essential to the functionality of the licensed software, we record revenue separately for the license and service elements of these arrangements, provided that appropriate evidence of fair value exists for the undelivered services (i.e. VSOE of fair value). We consider various factors in assessing whether a service is not essential to the functionality of the software, including if the services may be provided by independent third parties experienced in providing such services (i.e. consulting and implementation) in coordination with dedicated customer personnel, and whether the services result in significant modification or customization of the software's functionality. When professional services qualify for separate accounting, professional services revenues under time and materials billing arrangements are recognized as the services are performed. Professional services revenues under fixed-priced contracts are generally recognized as the services are performed using a proportionate performance model with hours or costs as the input method of attribution.

When we provide professional services that are considered essential to the functionality of the software, the arrangement does not qualify for separate accounting of the license and service elements, and the license revenue is recognized together with the consulting services using the percentage-of-completion method of contract accounting. Under such arrangements, consideration is recognized as the services are performed as measured by an observable input. In these circumstances, we separate license revenue from service revenue for income statement presentation by allocating VSOE of fair value of the consulting services as service revenue, and the residual portion as license revenue. Under the percentage-of-completion method, we estimate the stage of completion of contracts with fixed or "not to exceed" fees based on hours or costs incurred to date as compared with estimated total project hours or costs at completion. Adjustments to estimates to complete are made in the periods in which facts resulting in a change become known. When total cost estimates exceed revenues, we accrue for the estimated losses when identified. The use of the proportionate performance and percentage-of-completion methods of accounting require significant judgment relative to estimating total contract costs or hours (hours being a proxy for costs), including assumptions relative to the length of time to complete the project, the nature and complexity of the work to be performed and anticipated changes in salaries and other costs.

Reimbursements of out-of-pocket expenditures incurred in connection with providing consulting services are included in professional services revenue, with the offsetting expense recorded in cost of professional services revenue.

Training services include on-site and classroom training. Training revenues are recognized as the related training services are provided.

Accounting for Income Taxes

As part of the process of preparing our consolidated financial statements, we are required to calculate our income tax expense based on taxable income by jurisdiction. There are many transactions and calculations about which the ultimate tax outcome is uncertain; as a result, our calculations involve estimates by management. Some of these uncertainties arise as a consequence of revenue-sharing, cost-reimbursement and transfer pricing arrangements among related entities and the differing tax treatment of revenue and cost items across various jurisdictions. If we were compelled to revise or to account differently for our arrangements, that revision could affect our tax liability.

The income tax accounting process also involves estimating our actual current tax liability, together with assessing temporary differences resulting from differing treatment of items for tax and accounting purposes. These differences result in deferred tax assets and liabilities, which are included within our consolidated balance sheets. We must then assess the likelihood that our deferred tax assets will be recovered from future taxable income and, to the extent we believe that it is more likely than not that all or a portion of our deferred tax assets will not be realized, we must establish a valuation allowance as a charge to income tax expense.

As of September 30, 2016, we have a valuation allowance of $209.0 million against net deferred tax assets in the U.S. and a valuation allowance of $26.5 million against net deferred tax assets in certain foreign jurisdictions. We have concluded, based on the weight of available evidence, that a full valuation allowance continues to be required against our U.S. net deferred tax assets as they are not more likely than not to be realized in the future. We will continue to reassess our valuation allowance requirements each financial reporting period.

The valuation allowance recorded against net deferred tax assets of certain foreign jurisdictions is established primarily for our net operating loss carryforwards, the majority of which do not expire. There are limitations imposed on the utilization of such net operating losses that could further restrict the recognition of any tax benefits.

We have not provided for U.S. income taxes or foreign withholding taxes on foreign unrepatriated earnings as it is our current intention to permanently reinvest these earnings outside the U.S. unless it can be done with no significant tax cost, with the exception of a foreign holding company formed in 2014. In 2016, we incurred U.S. tax expense of $12 million on the repatriation of the 2016 earnings of this foreign holding company. This expense was offset by a change in the valuation allowance. If we decide to change this assertion in the future to repatriate any additional non-U.S. earnings, we may be required to establish a deferred tax liability on such earnings. The cumulative basis difference associated with the undistributed earnings of our subsidiaries totaled approximately $789 million and $684 million as of September 30, 2016 and 2015, respectively. The amount of unrecognized deferred tax liability on the undistributed earnings cannot be practicably determined at this time. If we decide to change this assertion in the future to repatriate any additional non-U.S. earnings, we may be required to establish a deferred tax liability on such earnings.

In the normal course of business, PTC and its subsidiaries are examined by various taxing authorities, including the Internal Revenue Service (IRS) in the United States. We regularly assess the likelihood of additional assessments by tax authorities and provide for these matters as appropriate. We are currently under audit by tax authorities in several jurisdictions. Audits by tax authorities typically involve examination of the deductibility of certain permanent items, limitations on net operating losses and tax credits. Although we believe our tax estimates are appropriate, the final determination of tax audits and any related litigation could result in material changes in our estimates.

Valuation of Assets and Liabilities Acquired in Business Combinations

In accordance with business combination accounting, we allocate the purchase price of acquired companies to the tangible and intangible assets acquired and liabilities assumed based on their estimated fair values. Determining these fair values requires management to make significant estimates and assumptions, especially with respect to intangible assets.

Our identifiable intangible assets acquired consist of developed technology, core technology, tradenames, customer lists and contracts, and software support agreements and related relationships. Developed technology consists of products that have reached technological feasibility. Core technology represents a combination of processes, inventions and trade secrets related to the design and development of acquired products. Customer lists and contracts and software support agreements and related relationships represent the underlying relationships and agreements with customers of the acquired company's installed base. We have generally valued intangible assets using a discounted cash flow model. Critical estimates in valuing certain of the intangible assets include but are not limited to:

- future expected cash flows from software license sales, customer support agreements, customer contracts and related customer relationships and acquired developed technologies and trademarks and trade names;
- expected costs to develop the in-process research and development into commercially viable products and estimating cash flows from the projects when completed;

- the acquired company's brand awareness and market position, as well as assumptions about the period of time the acquired brand will continue to be used by the combined company; and
- discount rates used to determine the present value of estimated future cash flows.

In addition, we estimate the useful lives of our intangible assets based upon the expected period over which we anticipate generating economic benefits from the related intangible asset.

Net tangible assets consist of the fair values of tangible assets less the fair values of assumed liabilities and obligations. Except for deferred revenues, net tangible assets were generally valued by us at the respective carrying amounts recorded by the acquired company, if we believed that their carrying values approximated their fair values at the acquisition date. The values assigned to deferred revenue reflect an amount equivalent to the estimated cost plus an appropriate profit margin to perform the services related to the acquired company's software support contracts.

In addition, uncertain tax positions and tax related valuation allowances assumed in connection with a business combination are initially estimated as of the acquisition date and we reevaluate these items quarterly with any adjustments to our preliminary estimates being recorded to goodwill provided that we are within the measurement period (up to one year from the acquisition date) and we continue to collect information in order to determine their estimated values. Subsequent to the measurement period or our final determination of the estimated value of uncertain tax positions or tax related valuation allowances, whichever comes first, changes to these uncertain tax positions and tax related valuation allowances will affect our provision for income taxes in our Consolidated Statements of Operations.

Our estimates of fair value are based upon assumptions believed to be reasonable at that time, but which are inherently uncertain and unpredictable. Assumptions may be incomplete or inaccurate, and unanticipated events and circumstances may occur, which may affect the accuracy or validity of such assumptions, estimates or actual results.

When events or changes in circumstances indicate that the carrying value of a finite-lived intangible asset may not be recoverable, we perform an assessment of the asset for potential impairment. This assessment is based on projected undiscounted future cash flows over the asset's remaining life. If the carrying value of the asset exceeds its undiscounted cash flows, we record an impairment loss equal to the excess of the carrying value over the fair value of the asset, determined using projected discounted future cash flows of the asset.

Valuation of Goodwill

Our goodwill totaled $1,169.8 million and $1,069.0 million as of September 30, 2016 and 2015, respectively. We assess goodwill for impairment at the reporting unit level. Our reporting units are determined based on the components of our operating segments that constitute a business for which discrete financial information is available and for which operating results are regularly reviewed by segment management. Our reporting units are consistent with our operating segments. Through the second quarter of 2016, we had two operating and reportable segments: (1) Software Products and (2) Services. With a change in our organizational structure in an effort to create more effective and efficient operations and to improve customer and product focus, in the third quarter of 2016, we revised the information that our chief executive officer, who is also our chief operating decision maker ("CODM"), regularly reviews for purposes of allocating resources and assessing performance. As a result, effective in the third quarter of 2016, we changed our operating and reportable segments from two to three: (1) the Solutions Group, (2) the IoT Group and (3) Professional Services.

As of September 30, 2016, goodwill and acquired intangible assets in the aggregate attributable to our Solutions Group, IoT Group and Professional Services segment was $1,196.6 million, $252.8 million and $30.7 million, respectively. As of September 30, 2015, goodwill and acquired intangible assets in the aggregate attributable to our software products reportable segment and our services reportable segment was $1,297.9 million and $62.4 million, respectively. We test goodwill for impairment in the third quarter of our fiscal year, or on an interim basis if an event occurs or circumstances change that would, more likely than not, reduce the fair value of a reporting segment below its carrying value. Factors we consider important (on an overall company basis and reportable segment basis, as applicable) that could trigger an impairment review include significant underperformance relative to historical or projected future operating results, significant changes in our use of the acquired assets or a significant change in the strategy for our business, significant negative industry or economic trends, a significant decline in our stock price for a sustained period, or a reduction of our market capitalization relative to net book value.

We completed our annual goodwill impairment review as of July 2, 2016 and concluded that no impairment charge was required as of that date. To conduct our test of goodwill, the fair value of each reporting unit is compared to its carrying value. If the reporting unit's carrying value exceeds its fair value, we record an impairment loss equal to the difference between the carrying value of goodwill and its implied fair value. We estimate the fair values of our reporting units using discounted cash flow valuation models. Those models require estimates of future revenues, profits, capital expenditures, working capital, terminal values based on revenue multiples, and discount rates for each reporting unit. We estimate these amounts by evaluating historical trends, current budgets, operating plans and industry data. The estimated fair value of each reporting unit was at least approximately twice its carrying value as of July 2, 2016.

Accounting for Pensions

We sponsor several international pension plans. We make assumptions that are used in calculating the expense and liability of these plans. These key assumptions include the expected long-term rate of return on plan assets and the discount rate used to determine the present value of benefit obligations. In selecting the expected long-term rate of return on assets, we consider the average future rate of earnings expected on the funds invested to provide for the benefits under the pension plan. This includes considering the plans' asset allocations and the expected returns likely to be earned over the life of the plans. The discount rate reflects the estimated rate at which an amount that is invested in a portfolio of high-quality debt instruments would provide the future cash flows necessary to pay benefits when they come due. The actuarial assumptions used by us may differ materially from actual results due to changing market and economic conditions or longer or shorter life spans of the participants. Our actual results could differ materially from those we estimated, which could require us to record a greater amount of pension expense in future years and/or require higher than expected cash contributions.

Accounting and reporting for these plans requires the use of country-specific assumptions for discount rates and expected rates of return on assets. We apply a consistent methodology in determining the key assumptions that, in addition to future experience assumptions such as mortality rates, are used by our actuaries to determine our liability and expense for each of these plans. The discount rate for Germany was selected with reference to a spot-rate yield curve based on the yields of AA-rated Euro-denominated corporate bonds. In addition, our actuarial consultants determine the expense and liabilities of the plan using other assumptions for future experience, such as mortality rates. In determining our pension cost for 2016, 2015, and 2014, we used weighted average discount rates of 2.2%, 2.4% and 3.3%, respectively, and weighted average expected returns on plan assets of 5.7%, 5.8% and 5.7%, respectively. In 2016, 2015 and 2014, our actual return (loss) on plan assets was $1.7 million, $(0.4) million and $3.5 million, respectively. If actual returns are below our expected rates of return, it will impact the amount and timing of future contributions and expense for these plans.

As of September 30, 2016 and 2015, our plans in total were underfunded, representing the difference between our projected benefit obligation and fair value of plan assets, by $30.8 million and $20.2 million, respectively. The projected benefit obligation as of September 30, 2016 was determined using a weighted average discount rate of 1.3%. The most sensitive assumptions used in calculating the expense and liability of our pension plans are the discount rate and the expected return on plan assets. Total GAAP net periodic pension cost was $2.0 million in 2016 and we expect it to be approximately $2.7 million in 2017. A 50 basis point change to our discount rate and expected return on plan assets assumptions would have changed our pension expense for the year ended September 30, 2016 by less than $1 million. A 50 basis point decrease in our discount rate assumptions would increase our projected benefit obligation as of September 30, 2015 by approximately $8 million.

Legal Contingencies

We are periodically subject to various legal claims and involved in various legal proceedings. We routinely review the status of each significant matter and assess our potential financial exposure. If the potential loss from any matter is considered probable and the amount can be reasonably estimated, we record a liability for the estimated loss. Significant judgment is required in both the determination of probability and the determination as to whether the amount of an exposure is reasonably estimable. Because of inherent uncertainties related to these legal matters, we base our loss accruals on the best information available at the time. Further, estimates of this nature are highly subjective, and the final outcome of these matters could vary significantly from the amounts that have been included in the accompanying Consolidated Financial Statements. As additional information becomes available, we reassess our potential liability and may revise our estimates. Such revisions could have a material impact on future quarterly or annual results of operations.

Liquidity and Capital Resources

	September 30,		
	2016	2015	2014
	(in thousands)		
Cash and cash equivalents	$ 277,935	$ 273,417	$ 293,654
Marketable securities	49,616	—	—
Total	$ 327,551	$ 273,417	$ 293,654
Activity for the year included the following:			
Cash provided by operating activities	$ 183,168	$ 179,903	$ 304,552
Cash used by investing activities	(237,156)	(140,039)	(348,800)
Cash provided (used) by financing activities	51,699	(42,155)	105,353

Cash and cash equivalents

We invest our cash with highly rated financial institutions and in diversified domestic and international money market mutual funds. Cash and cash equivalents include highly liquid investments with original maturities of three months or less. In addition, we hold investments in marketable securities totaling approximately $49.6 million with average maturity of 18 months. At September 30, 2016, cash and cash equivalents totaled $277.9 million, up from $273.4 million at September 30, 2015, reflecting $183.2 million in operating cash flow, $90.0 million of net amounts borrowed under our credit facility and debt issuance, partially offset by $165.8 million used to acquire Vuforia and Kepware, $45.2 million used for the purchase of investment grade securities, $26.2 million used for capital expenditures and $20.9 million used to pay withholding taxes on stock-based awards that vested in the period.

Cash provided by operating activities

Cash provided by operating activities was $183.2 million in 2016, compared to $179.9 million in 2015 and $304.6 million in 2014. Cash provided by operations in 2016 reflects lower contributions to pension plans ($44.7 million lower in 2016 compared to 2015), offset by $28.2 million paid to resolve the China Investigation and lower earnings. Restructuring payments totaled $55.0 million in 2016, compared to $53.6 million in 2015 and $20.6 million in 2014. Cash paid for income taxes was $25.5 million, $30.1 million, and $25.5 million in 2016, 2015, and 2014, respectively.

We periodically provide financing with payment terms up to 24 months to credit-worthy customers. The accompanying Consolidated Balance Sheets include receivables from customers related to extended payment term contracts totaling $7.1 million and $27.4 million at September 30, 2016 and 2015, respectively. We periodically transfer future payments under customer contracts to third-party financial institutions on a non-recourse basis. We did not sell any receivables in 2016, compared to $3.0 million in 2015 and $24.5 million in 2014.

Cash used by investing activities

	Year ended September 30,		
	2016	2015	2014
	(in thousands)		
Acquisitions of businesses, net of cash acquired	$ (165,802)	$ (98,411)	$ (323,525)
Additions to property and equipment	(26,189)	(30,628)	(25,275)
Purchases of investments	(45,165)	(11,000)	—
	$ (237,156)	$ (140,039)	$ (348,800)

In the second quarter of 2016, we acquired Kepware for $99.4 million, net of cash acquired, and in the first quarter of 2016, we acquired Vuforia for $64.8 million, net of cash acquired. In the third quarter of 2015, we acquired ColdLight for $98.6 million, net of cash acquired. In the fourth quarter 2014, we acquired Axeda and Atego for $165.9 million and $46.1 million, respectively, net of cash acquired, and in the second quarter of 2014, we acquired ThingWorx for $111.5 million, net of cash acquired.

Our expenditures for property and equipment consist primarily of computer equipment, software, office equipment and facility improvements.

In 2016, we invested in investment grade securities with maturities up to three years, and in 2015 we made minority investments in preferred stock of strategic companies of $11 million.

Cash provided (used) by financing activities

	Year ended September 30,		
	2016	2015	2014
		(in thousands)	
Borrowings under debt agreements	$ 670,000	$ 185,000	$ 1,386,250
Repayments of borrowings under credit facility	(580,000)	(128,750)	(1,032,500)
Repurchases of common stock	—	(64,940)	(224,915)
Proceeds from issuance of common stock	21	41	877
Payments of withholding taxes in connection with vesting of stock-based awards	(20,939)	(29,207)	(26,857)
Excess tax benefits from stock-based awards	93	24	10,428
Credit facility origination costs	(6,855)	—	(7,930)
Contingent consideration	$ (10,621)	$ (4,323)	$ —
	$ 51,699	$ (42,155)	$ 105,353

Credit facility origination costs include costs associated with issuing our 2024 6% Notes and costs in 2014 in connection with entering into and amending the new and previous credit facilities. In 2015, we borrowed $100 million as a result of the purchase of ColdLight and used $64.9 million to repurchase shares. In 2014, we borrowed $280 million to finance acquisitions and used $224.9 million to repurchase shares, including $125.0 million under an accelerated share repurchase transaction.

Credit Agreement

In November 2015, we entered into a multi-currency credit facility with a syndicate of sixteen banks for which JPMorgan Chase Bank, N.A. acts as Administrative Agent. We amended the credit facility in June and September 2016 to decrease the revolving loan commitment from $1 billion to $900 million and to make additional adjustments.

We use the credit facility for general corporate purposes, including acquisitions of businesses, share repurchases and working capital requirements. As of September 30, 2016, we had $258.1 million in revolving loans outstanding under the credit facility, the fair value of which approximated its book value. In November 2016, we borrowed $60 million under our credit facility to fund working capital requirements, including 2016 year end incentive-based compensation accruals. After such borrowing we had approximately $318 million outstanding under the credit facility with approximately $582 million undrawn, of which only approximately $40 million would be available to borrow due to covenant limitations.

The revolving loan commitment does not require amortization of principal and may be repaid in whole or in part before the scheduled maturity date at our option without penalty or premium. The credit facility matures on September 15, 2019, when all remaining amounts outstanding will be due and payable in full.

Any borrowings by PTC Inc. or certain of our foreign subsidiaries under the credit facility would be guaranteed, respectively, by our material domestic subsidiaries that become parties to the subsidiary guaranty, if any, and/or by PTC Inc. Borrowings are also secured by first priority liens on property of PTC and certain of our material domestic subsidiaries, including 100% of the voting equity interests of certain of our domestic subsidiaries and 65% of our material first-tier foreign subsidiaries. Loans under the credit facility bear interest at variable rates that reset every 30 to 180 days depending on the rate and period selected by us and based upon our total leverage ratio. During 2016, the weighted average annual interest rate for borrowings outstanding was 3.0% and, as of September 30, 2016 the rate on the credit facility was 2.56%.

The credit facility imposes customary covenants that limit our ability to incur liens or guarantee obligations, pay dividends and make other distributions, make investments and engage in certain other transactions. In addition, we and our material domestic subsidiaries may not invest in, or loan to, our foreign subsidiaries in aggregate amounts exceeding $75 million for any purpose and an additional $200 million for acquisitions of businesses. We also must maintain the following financial ratios:

	Ratio as of September 30, 2016		
Total Leverage Ratio Ratio of consolidated total indebtedness to the consolidated trailing four quarters EBITDA, not to exceed 4.00 to 1.00 as of the last day of any fiscal quarter.	**3.55**	**to**	**1.00**
Fixed Charge Coverage Ratio Ratio of consolidated trailing four quarters EBITDA less consolidated capital expenditures to consolidated fixed charges as of the last day of any fiscal qu arter, to be not less than 3.50 to 1.00.	**7.14**	**to**	**1.00**
Senior Secured Leverage Ratio Ratio of senior consolidated total indebtedness (which excludes unsecured in debtedness) to consolidated trailing four quarters EBITDA as of the last day of any fiscal quarter, not to exceed 3.00 to 1.00.	**1.18**	**to**	**1.00**

Any failure to comply with such covenants would prevent us from being able to borrow additional funds, and would constitute a default, permitting the lenders to, among other things, accelerate the amounts outstanding and terminate the credit facility. As of September 30, 2016, we were in compliance with all financial and operating covenants of the credit facility.

Outstanding Notes

On May 12, 2016, we issued $500 million of 6.00% Senior Notes due 2024 (the "2024 6% Notes") in a registered offering and used the net proceeds to prepay indebtedness under our senior credit facility. As of September 30, 2016, unamortized deferred financing fees associated with the offering were $6.5 million.

The 2024 6% Notes are unsecured, mature on May 15, 2024, and bear interest at a rate of 6.00% per annum, payable semi-annually beginning in November 2016. At any time before May 15, 2019, (i) we may redeem up to 40% of the aggregate principal amount of the 2024 6% Notes with the net cash proceeds of certain public equity offerings at a price equal to 106.00% of the aggregate principal amount redeemed plus accrued and unpaid interest, provided that at least 60% of the 2024 6% Notes that were originally issued remain outstanding immediately thereafter, and (ii) we may redeem some or all of the 2024 6% Notes at a price equal to 100% of the aggregate principal amount plus accrued and unpaid interest and a make-whole premium. On or after May 15, 2019, we may redeem some or all of the 2024 6% Notes at redemption prices specified in the 2024 6% Notes plus accrued and unpaid interest. In addition, if we undergo a change of control, we will be required to make an offer to purchase all the 2024 6% Notes at a price equal to 101% of the principal amount of the 2024 6% Notes plus accrued and unpaid interest.

The notes were issued under an indenture that contains customary covenants. Subject to certain exceptions, our ability to incur certain additional debt is limited unless, after giving pro forma effect to such incurrence and the application of the proceeds thereof, the ratio of our EBITDA to our Consolidated Fixed Charges (as both terms are defined in the indenture) is not greater than 2.00 to 1.00. The indenture also restricts our ability to incur liens, pay dividends or make certain other distributions, sell assets or engage in sale/leaseback transactions. Any failure to comply with these and other covenants included in the indenture could constitute an event of default that could result in the acceleration of the payment of the aggregate principal amount of 2024 6% Notes then outstanding and accrued interest. As of September 30, 2016, we were in compliance with all such covenants.

Share Repurchase Authorization

Our Articles of Organization authorize us to issue up to 500 million shares of our common stock. Our Board of Directors has periodically authorized the repurchase of shares of our common stock. In August 2014, our Board of Directors authorized us to repurchase up to $600 million of our common stock through September 30, 2017. We intend to use cash from operations and borrowings under our credit facility to make such repurchases. In 2016, we did not repurchase any shares due to the accelerated pace of our transition to a subscription business model and the near-term impact on free cash flow and EBITDA. We repurchased 2.7 million shares at a cost of $64.9 million in 2015 and 5.1 million shares at a cost of $224.9 million in 2014 (including $125 million purchased through accelerated share repurchase transaction). All shares of our common stock repurchased are automatically restored to the status of authorized and unissued.

Expectations for Fiscal 2017

We believe that existing cash and cash equivalents, together with cash generated from operations, and amounts available under our credit facility will be sufficient to meet our working capital and capital expenditure requirements (which we expect to be $30 million in 2017) through at least the next twelve months and to meet our known long-term capital requirements. We expect to resume share repurchases in the second half of fiscal 2017. Our ability to repurchase shares is subject to our having sufficient cash available and maintaining compliance with credit facility covenants.

We evaluate possible strategic transactions on an ongoing basis and at any given time may be engaged in discussions or negotiations with respect to possible strategic transactions. Our expected uses of cash could change, our cash position could be reduced and we may incur additional debt obligations to the extent we complete additional acquisitions.

We have substantial cash requirements in the United States and a significant portion of our cash is generated and held outside of the United States. At September 30, 2016, we had cash and cash equivalents of $27.3 million in the United States, $104.5 million in Europe, $101.8 million in the Pacific Rim (including India), $24.3 million in Japan and $20.0 million in other non-U.S. countries. We believe that the combination of our existing United States cash and cash equivalents, future United States operating cash flows and cash available under our credit facility, are sufficient to meet our ongoing United States operating expenses and known capital requirements.

Contractual Obligations

At September 30, 2016, our contractual obligations were as follows:

	Payments due by period				
Contractual Obligations	**Total**	**Less than 1 year**	**1-3 years**	**3-5 years**	**More than 5 years**
			(in millions)		
Debt (1)	$ 1,025.2	$ 38.9	$ 336.3	$ 60.0	$ 590.0
Operating leases (2)	156.0	40.0	61.5	37.7	16.8
Purchase obligations (3)	45.4	25.5	19.6	0.3	—
Pension liabilities (4)	30.8	2.2	4.8	5.4	18.4
Unrecognized tax benefits (5)	15.5	—	—	—	—
Total	$ 1,272.9	$ 106.6	$ 422.1	$ 103.4	$ 625.2

(1) Includes required principal repayments and interest and commitment fees on our 2024 6% Notes and our revolving credit facility based on the balance outstanding as of September 30, 2016 and the interest rates in effect as of September 30, 2016, 6.0% for our 2024 6% Notes and 2.56% for our revolving credit facility. The credit facility matures on September 15, 2019, when all remaining amounts outstanding will be due and payable in full. In November 2016 we borrowed an additional $60 million under our revolving credit facility. Principal and interest on the additional borrowing are not included in the contractual obligations above.

(2) The future minimum lease payments above include minimum future lease payments for excess facilities under noncancelable operating leases. These leases qualify for operating lease accounting treatment and, as such, are not included on our balance sheet. See Note I *Commitments and Contingencies* of "Notes to Consolidated Financial Statements" in this Annual Report for additional information regarding our operating leases.

(3) Purchase obligations represent minimum commitments due to third parties, including royalty contracts, research and development contracts, telecommunication contracts, information technology maintenance contracts in support of internal-use software and hardware and other marketing and consulting contracts. Contracts for which our commitment is variable, based on volumes, with no fixed minimum quantities, and contracts that can be canceled without payment penalties have been excluded. The purchase obligations included above are in addition to amounts included in current liabilities and prepaid expenses recorded on our September 30, 2016 consolidated balance sheet.

(4) These obligations relate to our international pension plans. These liabilities are not subject to fixed payment terms. Payments have been estimated based on the plans' current funded status, planned employer contributions and actuarial assumptions. In addition, we may, at our discretion, make additional voluntary contributions to the plans. See Note M *Pension Plans* of "Notes to Consolidated Financial Statements" in this Annual Report for further discussion.

(5) As of September 30, 2016, we had recorded total unrecognized tax benefits of $15.5 million. This liability is not subject to fixed payment terms and the amount and timing of payments, if any, which we will make related to this liability, are not known. See Note G *Income Taxes* of "Notes to Consolidated Financial Statements" in this Annual Report for additional information.

As of September 30, 2016, we had letters of credit and bank guarantees outstanding of approximately $4.2 million (of which $1.2 million was collateralized), primarily related to our corporate headquarters lease in Needham, Massachusetts.

Off-Balance Sheet Arrangements

We have not created, and are not party to, any special-purpose or off-balance sheet entities for the purpose of raising capital, incurring debt or operating parts of our business that are not consolidated (to the extent of our ownership interest therein) into our financial statements. We have not entered into any transactions with unconsolidated entities whereby we have subordinated retained interests, derivative instruments or other contingent arrangements that expose us to material continuing risks, contingent liabilities, or any other obligation under a variable interest in an unconsolidated entity that provides financing, liquidity, market risk or credit risk support to us.

Recent Accounting Pronouncements

Income Taxes

In October 2016, the Financial Accounting Standards Board (FASB) issued ASU 2016-16, Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other Than Inventory ("ASU 2016-16"). The purpose of ASU 2016-16 is to simplify the income tax accounting of an intra-entity transfer of an asset other than inventory and to record its effect when the transfer occurs. The guidance is effective for annual reporting periods beginning after December 15, 2017, including interim reporting periods within those annual reporting periods and early adoption is permitted. We are currently assessing the potential impact of the adoption of ASU 2016-16 on our consolidated financial statements.

Cash Flows

In August 2016, the FASB issued ASU 2016-15 to clarify whether the following items should be categorized as operating, investing or financing in the statement of cash flows: (i) debt prepayments and extinguishment costs, (ii) settlement of zero-coupon debt, (iii) settlement of contingent consideration, (iv) insurance proceeds, (v) settlement of corporate-owned life insurance (COLI) and bank-owned life insurance (BOLI) policies, (vi) distributions from equity method investees, (vii) beneficial interests in securitization transactions, and (viii) receipts and payments with aspects of more than one class of cash flows. The amendments in this Update are effective for public business entities for fiscal years beginning after December 15, 2017, and interim periods within those fiscal years. Early adoption is permitted, including adoption in an interim period.

Financial Instruments - Credit Losses

In June 2016, the FASB issued Accounting Standards Update (ASU) No. 2016-13, Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments. This update introduces a current expected credit loss model for measuring expected credit losses for certain types of financial instruments held at the reporting date based on historical experience, current conditions and reasonable supportable forecasts. ASU 2016-13 replaces the current incurred loss model for measuring expected credit losses, requires expected losses on available-for-sale debt securities to be recognized through an allowance for credit losses rather than as reductions in the amortized cost of the securities, and provides for additional disclosure requirements. ASU 2016-13 is effective for interim and annual reporting periods beginning after December 15, 2019, our fiscal 2021, with early adoption permitted for interim and annual reporting periods beginning after December 15, 2018. We are currently evaluating the impact of the new guidance on our consolidated financial statements.

Stock Compensation

In March 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2016-09, Compensation - Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting. The ASU includes multiple provisions intended to simplify various aspects of the accounting for share-based payments, including accounting for income taxes, earnings per share, and forfeitures, as well as certain practical expedients for nonpublic entities. The ASU is effective for public companies in annual periods beginning after December 15, 2016, our fiscal 2018, and interim periods within those years. Early adoption is permitted in any interim period, with all adjustments applied as of the beginning of the fiscal year of adoption. We are currently evaluating the impact of the new guidance on our consolidated financial statements.

Leases

In February 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2016-02, Leases (Topic 842), which will replace the existing guidance in ASC 840, Leases. The updated standard aims to increase transparency and comparability among organizations by requiring lessees to recognize lease assets and lease liabilities on the balance sheet and to disclose important information about leasing arrangements. ASU 2016-02 is effective for annual periods beginning after December 15, 2018, our fiscal 2020, and interim periods within those annual periods. Early adoption is permitted and modified retrospective application is required. We are currently evaluating the impact of the new guidance on our consolidated financial statements.

Financial Instruments

In January 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2016-01, Financial Instruments-Overall: Recognition and Measurement of Financial Assets and Financial Liabilities, which requires equity investments to be measured at fair value with changes in fair value recognized in net income and simplifies the impairment assessment of equity investments without readily determinable fair values by requiring a qualitative assessment to identify impairment. Entities may choose a practical expedient, to estimate the fair value of certain equity securities that do not have readily determinable fair values. If the practical expedient is elected, these investments would be recorded at cost, less impairment and subsequently adjusted for observable price changes. The guidance also updates certain presentation and disclosure requirements. ASU 2016-01 is effective for financial statements issued for fiscal years beginning after December 15, 2017, our fiscal 2019, and interim periods within those fiscal years. We are currently evaluating the impact of the new guidance on our consolidated financial statements.

Deferred Taxes

In November 2015, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2015-17, Balance Sheet Classification of Deferred Taxes (Topic 740), to simplify the presentation of deferred income taxes. The amendments in this Update require that all deferred tax assets and liabilities, along with any related valuation allowance, be classified as noncurrent on the balance sheet. As a result, each jurisdiction will now only have one net noncurrent deferred tax asset or liability. The guidance does not change the existing requirement that permits offsetting only within a jurisdiction and companies are still prohibited from offsetting deferred tax liabilities from one jurisdiction against deferred tax assets of another jurisdiction. ASU 2015-17 is effective for public companies for fiscal years beginning after December 15, 2016, with early adoption permitted for all entities as of the beginning of an interim or annual reporting period. This guidance may be applied either prospectively or retrospectively (by reclassifying the comparative balance sheet). We adopted this new guidance in our first quarter ended January 2, 2016 and applied this guidance prospectively and therefore prior periods have not been retrospectively adjusted. At September 30, 2015, net current deferred tax assets and net current deferred tax liabilities were \$36.8 million and \$1.6 million, respectively.

Revenue Recognition

In May 2014, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2014-09, Revenue from Contracts with Customers: Topic 606 (ASU 2014-09), to supersede nearly all existing revenue recognition guidance under U.S. GAAP. The core principle of ASU 2014-09 is to recognize revenues when promised goods or services are transferred to customers in an amount that reflects the consideration that is expected to be received for those goods or services. ASU 2014-09 defines a five step process to achieve this core principle and, in doing so, it is possible more judgment and estimates may be required within the revenue recognition process than required under existing U.S. GAAP including identifying performance obligations in the contract, estimating the amount of variable consideration to include in the transaction price and allocating the transaction price to each separate performance obligation. In July 2015, the FASB approved a one-year delay in the effective date. ASU 2014-09 is effective for us in our first quarter of fiscal 2019 using either of two methods: (i) retrospective to each prior reporting period presented with the option to elect certain practical expedients as defined within ASU 2014-09; or (ii) retrospective with the cumulative effect of initially applying ASU 2014-09 recognized at the date of initial application and providing certain additional disclosures as defined per ASU 2014-09. Subsequently, the FASB has issued the following standards to provide additional clarification and implementation guidance on ASU 2014-09: ASU 2016-08, Revenue from Contracts with Customers (Topic 606): Principal versus Agent Considerations; ASU 2016-10, Revenue from Contracts with Customers (Topic 606): Identifying Performance Obligations and Licensing; and ASU 2016-12, Revenue from Contracts with Customers (Topic 606): Narrow-Scope Improvements and Practical Expedients. We are currently evaluating the impact of these new standards on our consolidated financial statements.

Debt Issuance Costs

In April 2015, the FASB issued ASU No. 2015-03, Interest-Imputation of Interest (Subtopic 835-30), to simplify the required presentation of debt issuance costs. The amended guidance requires that debt issuance costs be presented in the balance sheet as a direct reduction from the carrying amount of the related debt liability rather than as an asset. It is effective for financial statements issued for fiscal years beginning after December 15, 2015, our fiscal 2017, with early adoption permitted. The new guidance will be applied retrospectively to each prior period presented. See Note H. Debt for our debt balances at September 30, 2016 and 2015 net of the debt issuance costs.

Going Concern

In August 2014, the FASB issued ASU No. 2014-15, "Presentation of Financial Statements - Going Concern: Disclosure of Uncertainties about an Entity's Ability to Continue as a Going Concern," which requires management to evaluate whether there is substantial doubt about the entity's ability to continue as a going concern and, if so, provide certain footnote disclosures. This ASU is effective for annual periods ending after December 15, 2016, including interim reporting periods thereafter. We do not anticipate that adopting this standard will have an impact on the financial statements and are currently evaluating the potential impact to our footnote disclosures.

ITEM 7A. Quantitative and Qualitative Disclosures about Market Risk

We face exposure to financial market risks, including adverse movements in foreign currency exchange rates and changes in interest rates. These exposures may change over time as business practices evolve and could have a material adverse impact on our financial results.

Foreign currency exchange risk

Our earnings and cash flows are subject to fluctuations due to changes in foreign currency exchange rates. Our most significant foreign currency exposures relate to Western European countries, Japan, China and Canada. We enter into foreign currency forward contracts to manage our exposure to fluctuations in foreign exchange rates that arise from receivables and payables denominated in foreign currencies. We do not enter into or hold foreign currency derivative financial instruments for trading or speculative purposes nor do we enter into derivative financial instruments to hedge future cash flow or forecast transactions.

Our non-U.S. revenues generally are transacted through our non-U.S. subsidiaries and typically are denominated in their local currency. In addition, expenses that are incurred by our non-U.S. subsidiaries typically are denominated in their local currency. In 2016, 2015, and 2014, approximately two-thirds of our revenue and half of our expenses were transacted in currencies other than the U.S. dollar. Currency translation affects our reported results because we report our results of operations in U.S. Dollars. Historically, our most significant currency risk has been changes in the Euro and Japanese Yen relative to the U.S. Dollar. Based on current revenue and expense levels (excluding restructuring charges and stock-based compensation), a $0.10 change in the USD to European exchange rates and a 10 Yen change in the Yen to USD exchange rate would impact operating income by approximately $8 million and $7 million, respectively.

Our exposure to foreign currency exchange rate fluctuations arises in part from intercompany transactions, with most intercompany transactions occurring between a U.S. dollar functional currency entity and a foreign currency denominated entity. Intercompany transactions typically are denominated in the local currency of the non-U.S. dollar functional currency subsidiary in order to centralize foreign currency risk. Also, both PTC (the parent company) and our non-U.S. subsidiaries may transact business with our customers and vendors in a currency other than their functional currency (transaction risk). In addition, we are exposed to foreign exchange rate fluctuations as the financial results and balances of our non-U.S. subsidiaries are translated into U.S. dollars (translation risk). If sales to customers outside of the United States increase, our exposure to fluctuations in foreign currency exchange rates will increase.

Our foreign currency risk management strategy is principally designed to mitigate the future potential financial impact of changes in the U.S. dollar value of balances denominated in foreign currency, resulting from changes in foreign currency exchange rates. Our foreign currency hedging program uses forward contracts to manage the foreign currency exposures that exist as part of our ongoing business operations. The contracts primarily are denominated in Canadian Dollars and European currencies, and have maturities of less than three months.

Generally, we do not designate foreign currency forward contracts as hedges for accounting purposes, and changes in the fair value of these instruments are recognized immediately in earnings. Because we enter into forward contracts only as an economic hedge, any gain or loss on the underlying foreign-denominated balance would be offset by the loss or gain on the forward contract. Gains and losses on forward contracts and foreign denominated receivables and payables are included in foreign currency net losses.

As of September 30, 2016 and 2015, we had outstanding forward contracts for derivatives not designated as hedging instruments with notional amounts equivalent to the following:

Currency Hedged	September 30, 2016	September 30, 2015
	(in thousands)	
Canadian/U.S. Dollar	$ 14,685	$ 17,448
Euro/U.S. Dollar	174,120	82,917
British Pound/Euro	1,382	9,409
Israeli Sheqel/U.S. Dollar	7,271	4,607
Japanese Yen/Euro	32,782	25,133
Japanese Yen/USD	6,716	—
Swiss Franc/U.S. Dollar	730	5,149
All other	11,848	12,592
Total	$ 249,534	$ 157,255

As of September 30, 2016 and 2015, we had outstanding forward contracts designated as cash flow hedges with notional amounts equivalent to the following:

Currency Hedged	September 30, 2016	September 30, 2015
	(in thousands)	
Euro / U.S. Dollar	$ 26,181	$ —
Japanese Yen / U.S. Dollar	8,800	—
SEK / U.S. Dollar	4,078	—
Total	$ 39,059	$ —

Debt

In addition to amounts due under our 2024 6% Notes as described above, as of September 30, 2016, we had $258.1 million outstanding under our variable-rate credit facility. Loans under the credit facility bear interest at variable rates which reset every 30 to 180 days depending on the rate and period selected by us. These loans are subject to interest rate risk as interest rates will be adjusted at each rollover date to the extent such amounts are not repaid. As of September 30, 2016, the annual rate on the credit facility loans was 2.56%. If there was a hypothetical 100 basis point change in interest rates, the annual net impact to earnings and cash flows would be $2.6 million. This hypothetical change in cash flows and earnings has been calculated based on the borrowings outstanding at September 30, 2016 and a 100 basis point per annum change in interest rate applied over a one-year period.

Cash and cash equivalents

As of September 30, 2016, cash equivalents were invested in highly liquid investments with maturities of three months or less when purchased. We invest our cash with highly rated financial institutions in North America, Europe and Asia-Pacific and in diversified domestic and international money market mutual funds. At September 30, 2016, we had cash and cash equivalents of $27.3 million in the United States, $104.5 million in Europe, $101.8 million in the Pacific Rim (including India), $24.3 million in Japan and $20.0 million in other non-U.S. countries. Given the short maturities and investment grade quality of the portfolio holdings at September 30, 2016, a hypothetical 10% change in interest rates would not materially affect the fair value of our cash and cash equivalents.

Our invested cash is subject to interest rate fluctuations and, for non-U.S. operations, foreign currency risk. In a declining interest rate environment, we would experience a decrease in interest income. The opposite holds true in a rising interest rate environment. Over the past several years, the U.S. Federal Reserve Board, European Central Bank and Bank of England have changed certain benchmark interest rates, which have led to declines and increases in market interest rates. These changes in market interest rates have resulted in fluctuations in interest income earned on our cash and cash equivalents. Interest income will continue to fluctuate based on changes in market interest rates and levels of cash available for investment. Our consolidated cash balances were impacted favorably by $6.8 million in 2016 and unfavorably by $17.9 million, and $9.4

million in 2015 and 2014, respectively, due to changes in foreign currencies relative to the U.S. dollar, particularly the Euro and the Japanese Yen.

ITEM 8. Financial Statements and Supplementary Data

The consolidated financial statements and notes to the consolidated financial statements are attached as APPENDIX A.

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

None.

ITEM 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our management maintains disclosure controls and procedures as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act") that are designed to provide reasonable assurance that information required to be disclosed in our reports filed or submitted under the Exchange Act is processed, recorded, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer (our principal executive officer and principal financial officer, respectively), as appropriate, to allow for timely decisions regarding required disclosure.

As required by SEC Rule 15d-15(b), we carried out an evaluation, under the supervision and with the participation of management, including our principal executive and principal financial officers, of the effectiveness of the design and operation of our disclosure controls and procedures as of the end of the period covered by this Annual Report. Based on this evaluation, we concluded that our disclosure controls and procedures were effective at the reasonable assurance level as of September 30, 2016.

Management's Annual Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is defined in Rules 13a-15(f) and 15d-15(f) of the Exchange Act as a process designed by, or under the supervision of, our principal executive and principal financial officers and effected by our 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 our assets;
- Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors; and
- Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our 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 assessed the effectiveness of our internal control over financial reporting as of September 30, 2016 using the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control-Integrated Framework (2013)*. Based on this assessment and those criteria, our management concluded that, as of September 30, 2016, our internal control over financial reporting was effective.

The effectiveness of our internal control over financial reporting as of September 30, 2016 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report, which appears under Item 8.

Change in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting that occurred during the quarter ended September 30, 2016 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. Other Information

None.

PART III

ITEM 10. Directors, Executive Officers and Corporate Governance

The information required by this item with respect to our directors and executive officers may be found in the sections captioned “Proposal 1: Election of Directors,” “Corporate Governance,” “Section 16(a) Beneficial Ownership Reporting Compliance,” and “Transactions With Related Persons” appearing in our 2016 Proxy Statement. Such information is incorporated into this Item 10 by reference.

Our executive officers are:

Name	Age	Position
James Heppelmann	52	President and Chief Executive Officer
Craig Hayman	53	Group President, Solutions
Andrew Miller	56	Executive Vice President, Chief Financial Officer
Barry Cohen	72	Executive Vice President, Strategy
Matthew Cohen	40	Executive Vice President, Global Services
Anthony DiBona	61	Executive Vice President, Global Support
Robert Gremley	51	Group President, IoT Group
Aaron von Staats	50	Corporate Vice President, General Counsel and Secretary

Mr. Heppelmann has been our President and Chief Executive Officer since October 2010. Mr. Heppelmann was our President and Chief Operating Officer from March 2009 through September 2010. Prior to that, Mr. Heppelmann served as our Executive Vice President and Chief Product Officer from February 2003 to March 2009. Mr. Heppelmann joined PTC in 1998.

Mr. Hayman has been our Solutions Group President since November 2015 when he joined PTC. Mr. Hayman was the President of eBay’s enterprise business, an e-commerce platform business, from July 2014 to November 2015. Before that, Mr. Hayman was the General Manager of the Software as a Service and Industry Solutions business at IBM, an information technology and services company, from August 2010 to June 2014. Before that, Mr. Hayman held a number of other executive positions at IBM.

Mr. Miller has been our Executive Vice President, Chief Financial Officer since February 2015 when he joined PTC. Mr. Miller was Executive Vice President, Chief Financial Officer of Cepheid, a publicly-traded medical technology company from April 2008 to February 2015. Prior to that, Mr. Miller was employed by Autodesk Inc., a publicly-traded software company, where he was the Vice President of Finance and Chief Accounting Officer.

Mr. Barry Cohen has been our Executive Vice President, Strategy since October 2010. Mr. Cohen was our Executive Vice President, Strategic Services and Partners from August 2002 through September 2010. Mr. Cohen joined PTC in 1998.

Mr. Matthew Cohen has been our Executive Vice President, Global Services since April 2014. Mr. Cohen was a Divisional Vice President, Global Services from September 2010 to March 2014. Mr. Cohen joined PTC in 2001.

Mr. DiBona has been our Executive Vice President, Global Support since April 2003. Mr. DiBona joined PTC in 1998.

Mr. Gremley has been our IoT Group President since October 1, 2015. Prior to that, Mr. Gremley served as Group President of our Internet of Things business from February 2012 to September 2015 and as Executive Vice President, Corporate Marketing from March 2009 to January 2012. Mr. Gremley joined PTC in 1989.

Mr. von Staats has been Corporate Vice President, General Counsel and Secretary since March 2008. Prior to that, he served as Senior Vice President, General Counsel and Clerk from February 2003 to February 2008. Mr. von Staats joined PTC in 1997.

Code of Ethics for Senior Executive Officers

We have adopted a Code of Ethics for Senior Executive Officers that applies to our Chief Executive Officer, President, Chief Financial Officer, and Controller, as well as others. The Code is embedded in our Code of Business Conduct and Ethics applicable to all employees. A copy of the Code of Business Conduct and Ethics is publicly available on our website at www.ptc.com. If we make any substantive amendments to, or grant any waiver from, including any implicit waiver, the Code of Ethics for Senior Executive Officers to or for our Chief Executive Officer, President, Chief Financial Officer or Controller, we will disclose the nature of such amendment or waiver in a current report on Form 8-K.

ITEM 11. Executive Compensation

Information with respect to director and executive compensation may be found under the headings "Director Compensation," "Compensation Discussion and Analysis," "Executive Compensation," and "Compensation Committee Report" appearing in our 2017 Proxy Statement. Such information is incorporated herein by reference.

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

Information required by this item may be found under the heading "Information about PTC Common Stock Ownership" in our 2017 Proxy Statement. Such information is incorporated herein by reference.

EQUITY COMPENSATION PLAN INFORMATION
as of SEPTEMBER 30, 2016

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:			
2000 Equity Incentive Plan (1)	3,775,980	— (1)	5,118.675
Total	3,775,980	— (1)	5,118.675

(1) All of the shares issuable upon vesting are restricted stock units, which have no exercise price.

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

Information with respect to this item may be found under the headings "Independence of Our Directors," "Review of Transactions with Related Persons" and "Transactions with Related Persons" in our 2017 Proxy Statement. Such information is incorporated herein by reference.

ITEM 14. Principal Accounting Fees and Services

Information with respect to this item may be found under the headings "Engagement of Independent Auditor and Approval of Professional Services and Fees" and "PricewaterhouseCoopers LLP Professional Services and Fees" in our 2017 Proxy Statement. Such information is incorporated herein by reference.

PART IV

ITEM 15. Exhibits and Financial Statement Schedules

(a) Documents Filed as Part of Form 10-K

1. Financial Statements

2. Financial Statement Schedules

   Schedules have been omitted since they are either not required, not applicable, or the information is otherwise included in the Financial Statements per Item 15(a)1 above.

3. Exhibits

   The list of exhibits in the Exhibit Index is incorporated herein by reference.

(b) Exhibits

We hereby file the exhibits listed in the attached Exhibit Index.

(c) Financial Statement Schedules

None.

ITEM 16. Form 10-K Summary

None

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 on the 18th day of November, 2016.

PTC Inc.

By: /s/ JAMES HEPPELMANN

James Heppelmann
President and Chief Executive Officer

POWER OF ATTORNEY

We, the undersigned officers and directors of PTC Inc., hereby severally constitute Andrew Miller and Aaron von Staats, Esq., and each of them singly, our true and lawful attorneys with full power to them, and each of them singly, to sign for us and in our names in the capacities indicated below any and all subsequent amendments to this report, and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that each of said attorneys-in-fact may do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities indicated below, on the 18th day of November, 2016.

Signature	Title
(i) Principal Executive Officer:	
/s/ JAMES HEPPELMANN **James Heppelmann**	President and Chief Executive Officer
(ii) Principal Financial and Accounting Officer:	
/s/ ANDREW MILLER **Andrew Miller**	Executive Vice President and Chief Financial Officer
(iii) Board of Directors:	
/s/ ROBERT SCHECHTER **Robert Schechter**	Chairman of the Board of Directors
/s/ JANICE CHAFFIN **Janice Chaffin**	Director
/s/ PHILLIP FERNANDEZ **Phillip Fernandez**	Director
/s/ DONALD GRIERSON **Donald Grierson**	Director
/s/ JAMES HEPPELMANN **James Heppelmann**	Director
/s/ KLAUS HOEHN **Klaus Hoehn**	Director
/s/ PAUL LACY **Paul Lacy**	Director
/s/ RENATO ZAMBONINI **Renato Zambonini**	Director

EXHIBIT INDEX

Exhibit Number	Exhibit
1	— Underwriting Agreement, dated May 4, 2016, by and between PTC Inc. and J.P. Morgan Securities LLC, as the representative of the several underwriters named therein (filed as Exhibit 1.1 to our Current Report on Form 8-K filed on May 5, 2016 (File No. 0-18059) and incorporated herein by reference).
2.1	— Asset Purchase Agreement dated as of October 9, 2015 by and between PTC Inc. and Qualcomm Connected Experiences, Inc. (filed as Exhibit 10.1 to our Current Report on Form 8-K dated October 13, 2015 (File No. 0-18059) and incorporated herein by reference).
2.2	— Stock Purchase Agreement dated December 22, 2015 by and among PTC Inc., EAP Holdings, Inc., Kepware, Inc., and the Seller Owners listed on Schedule I of the Stock Purchase Agreement (filed as Exhibit 10.1 to our Current Report on Form 8-K dated December 22, 2015 (File No. 0-18059) and incorporated herein by reference).
3.1	— Restated Articles of Organization of PTC Inc. adopted August 4, 2015 (filed as exhibit 3.1 to our Annual Report on Form 10-K for the fiscal year ended September 30, 2015 (File No. 0-18059) and incorporated herein by reference).
3.2	— By-Laws, as amended and restated, of PTC Inc. (filed as Exhibit 3.2 to our Quarterly Report on Form 10-Q for the fiscal quarter ended March 29, 2014 (File No. 0-18059) and incorporated herein by reference).
4.1	— Indenture, dated as of May 12, 2016, by and between the Company and The Bank of New York Mellon, as Trustee (filed as Exhibit 4.1 to our Current Report on Form 8-K filed on May 18, 2016 (File No. 0-18059) and incorporated herein by reference).
4.2	— First Supplemental Indenture, dated as of May 12, 2016, by and between the Company and The Bank of New York Mellon, as Trustee (filed as Exhibit 4.2 to our Current Report on Form 8-K filed on May 18, 2016 (File No. 0-18059) and incorporated herein by reference).
4.3	— 6.000% Senior Notes due 2024 (filed as Exhibit 4.3 to our Current Report on Form 8-K filed on May 18, 2016 (File No. 0-18059) and incorporated herein by reference).
10.1.1*	— 2000 Equity Incentive Plan (filed as Exhibit 10.1 to our Current Report on Form 8-K filed on March 2, 2016 and incorporated herein by reference).
10.1.2*	— Form of Restricted Stock Agreement (Non-Employee Director) (filed as Exhibit 10.2 to our Quarterly Report on Form 10-Q for the fiscal quarter ended April 4, 2009 (File No. 0-18059) and incorporated herein by reference).
10.1.3*	— Form of Restricted Stock Agreement (Employee) (filed as Exhibit 10.2 to our Quarterly Report on Form 10-Q for the fiscal quarter ended July 2, 2005 (File No. 0-18059) and incorporated herein by reference).
10.1.4	— Form of Restricted Stock Unit Certificate (Non-U.S.) (filed as Exhibit 10.4 to our Quarterly Report on Form 10-Q for the fiscal quarter ended July 2, 2005 (File No. 0-18059) and incorporated herein by reference).
10.1.5	— Form of Incentive Stock Option Certificate (filed as Exhibit 10.5 to our Quarterly Report on Form 10-Q for the fiscal quarter ended July 2, 2005 (File No. 0-18059) and incorporated herein by reference).
10.1.6*	— Form of Nonstatutory Stock Option Certificate (filed as Exhibit 10.6 to our Quarterly Report on Form 10-Q for the fiscal quarter ended July 2, 2005 (File No. 0-18059) and incorporated herein by reference).

10.1.7*	—	Form of Stock Appreciation Right Certificate (filed as Exhibit 10.7 to our Quarterly Report on Form 10-Q for the fiscal quarter ended July 2, 2005 (File No. 0-18059) and incorporated herein by reference).
10.1.8*	—	Form of Restricted Stock Unit Certificate (Non-Employee Director) (filed as Exhibit 10.1.1 to our Quarterly Report on Form 10-Q for the fiscal quarter ended March 30, 2013 (File No. 0-18059) and incorporated herein by reference).
10.1.9	—	Form of Restricted Stock Unit Certificate (U.S.).
10.1.10	—	Form of Restricted Stock Unit Certificate (U.S.).
10.1.11	—	Form of Restricted Stock Unit Certificate (U.S.).
10.1.12	—	Form of Restricted Stock Unit Certificate (U.S. EVP).
10.1.13*	—	Form of Restricted Stock Unit Certificate (U.S. Section 16).
10.1.14	—	Form of Restricted Stock Unit Certificate (U.S. EVP).
10.1.15	—	Form of Restricted Stock Unit Certificate (U.S).
10.1.16*	—	Form of Restricted Stock Unit Certificate (U.S. Section 16).
10.1.17*	—	Form of Restricted Stock Unit Certificate (U.S. Section 16).
10.2*	—	2009 Executive Cash Incentive Performance Plan (filed as Exhibit 10.5 to our Annual Report on Form 10-K for the fiscal year ended September 30, 2012 (File No. 0-18059) and incorporated herein by reference).
10.3*	—	2016 Employee Stock Purchase Plan.
10.4*	—	Amended and Restated Executive Agreement with James Heppelmann, President and Chief Executive Officer, dated May 7, 2010 (filed as Exhibit 10.2 to our Quarterly Report on Form 10-Q for the fiscal quarter ended April 3, 2010 (File No. 0-18059) and incorporated herein by reference).
10.5*	—	Amendment to Executive Agreement dated as of November 18, 2011 by and between PTC Inc. and James Heppelmann to Amended and Restated Executive Agreement dated as of May 7, 2010 by and between PTC and James Heppelmann (filed as Exhibit 10.2 to our Current Report on Form 8-K dated November 15, 2011 (File No. 0-18059) and incorporated herein by reference).
10.6*	—	Amendment to Executive Agreement by and between PTC Inc. and James Heppelmann dated May 13, 2013 (filed as Exhibit 10.9 to our Annual Report on Form 10-K for the fiscal year ended September 30, 2013 (File No. 0-18059) and incorporated herein by reference).
10.7*	—	Amendment to Executive Agreement by and between PTC Inc. and James Heppelmann dated August 4, 2015 (filed as Exhibit 10.1 to our Current Report on Form 8-K dated August 10, 2015 (File No. 0-18059) and incorporated herein by reference).
10.8*	—	Form of Amended and Restated Executive Agreement by and between PTC Inc. and each of Barry Cohen, Anthony DiBona, and Aaron von Staats (filed as Exhibit 10.3 to our Quarterly Report on Form 10-Q for the fiscal quarter dated April 3, 2010 (File No. 0-18059) and incorporated herein by reference).

10.9*	—	Form of Amendment to Amended and Restated Executive Agreement entered into as of November 18, 2011 by and between PTC Inc. and each of Barry Cohen, Anthony DiBona, and Aaron von Staats (filed as Exhibit 10.3 to our Current Report on Form 8-K dated November 15, 2011 (File No. 0-18059) and incorporated herein by reference).
10.10*	—	Executive Agreement dated April 16, 2014 between PTC Inc. and Matthew Cohen (filed as Exhibit 10.1 to our Quarterly Report on Form 10-Q for the fiscal quarter ended March 29, 2014 (File No. 0-18059) and incorporated herein by reference).
10.11*	—	Executive Agreement dated February 11, 2015 between PTC Inc. and Andrew Miller (filed as Exhibit 10.2 to our Quarterly Report on Form 10-Q for the fiscal quarter ended April 4, 2015 (File No. 0-18059) and incorporated herein by reference).
10.12*	—	Form of Amendment to Executive Agreement dated August 4, 2015 by and between PTC Inc. and each of Andrew Miller, Barry Cohen, Matthew Cohen, Anthony DiBona, and Aaron von Staats (filed as Exhibit 10.2 to our Current Report on Form 8-K dated August 10, 2015 (File No. 0-18059) and incorporated herein by reference).
10.13*	—	Amended and Restated Executive Agreement dated May 7, 2010, as amended, between PTC Inc. and Robert Gremley (filed as exhibit 10.12 to our Annual Report on Form 10-K for the fiscal year ended September 30, 2015 (File No. 0-18059) and incorporated herein by reference).
10.14	—	Executive Agreement dated December 2, 2015 between PTC Inc. and Craig Hayman.
10.15	—	Lease dated December 14, 1999 by and between PTC Inc. and Boston Properties Limited Partnership (filed as Exhibit 10.21 to our Annual Report on Form 10-K for the fiscal year ended September 30, 2000 (File No. 0-18059) and incorporated herein by reference).
10.16	—	Third Amendment to Lease Agreement dated as of October 27, 2010 by and between Boston Properties Limited Partnership and PTC Inc. (filed as Exhibit 10.1 to our Current Report on Form 8-K dated November 8, 2010 (File No. 0-18059) and incorporated herein by reference).
10.17	—	Credit Agreement dated as of November 4, 2015 by and among PTC Inc., JPMorgan Chase Bank, N.A., as Administrative Agent, and the lenders party thereto (filed as Exhibit 10 to our Current Report on Form 8-K dated November 4, 2015 (File No. 0-18059) and incorporated herein by reference).
10.18	—	Amendment No. 1 dated April 18, 2016 to Credit Agreement dated as of November 4, 2015 by and among PTC Inc., JP Morgan Chase Bank, N.A., as Administrative Agent, and the lenders party thereto (filed as Exhibit 99.3 to our Current Report on Form 8-K filed on April 20, 2016 (File No. 0-18059) and incorporated herein by reference).
10.19	—	Amendment No. 2 dated June 1, 2016 to Credit Agreement dated as of November 4, 2015 by and among PTC Inc., JP Morgan Chase Bank, N.A., as Administrative Agent, and the lenders party thereto (filed as Exhibit 10.2 to our Quarterly Report on Form 10-Q for the fiscal quarter ended July 2, 2016 (File No. 0-18059) and incorporated herein by reference).
10.20	—	Amendment No. 3 dated September 21, 2016 to Credit Agreement dated as of November 4, 2015 by and among PTC Inc., JP Morgan Chase Bank, N.A., as Administrative Agent, and the lenders party thereto.
21.1	—	Subsidiaries of PTC Inc.
23.1	—	Consent of PricewaterhouseCoopers LLP, an independent registered public accounting firm.
31.1	—	Certification of the Chief Executive Officer Pursuant to Exchange Act Rules 13(a)-14(a) and 15d-14(a).

31.2	—	Certification of the Chief Financial Officer Pursuant to Exchange Act Rules 13(a)-14(a) and 15d-14(a).
32**	—	Certification of Periodic Financial Report Pursuant to 18 U.S.C. Section 1350.
101	—	The following materials from PTC Inc.'s Annual Report on Form 10-K for the year ended September 30, 2016, formatted in XBRL (eXtensible Business Reporting Language): (i) Consolidated Balance Sheets as of September 30, 2016 and 2015; (ii) Consolidated Statements of Operations for the years ended September 30, 2016, 2015 and 2014; (iii) Consolidated Statements of Comprehensive Income for the years ended September 30, 2016, 2015 and 2014; (iv) Consolidated Statements of Cash Flows for the years ended September 30, 2016, 2015 and 2014; (v) Consolidated Statements of Stockholders' Equity for the years ended September 30, 2016, 2015 and 2014; and (vi) Notes to Consolidated Financial Statements.

* Identifies a management contract or compensatory plan or arrangement in which an executive officer or director of PTC participates.

** Indicates that the exhibit is being furnished with this report and is not filed as a part of it.

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of PTC Inc.:

In our opinion, the accompanying consolidated balance sheets and the related statements of operations, comprehensive income (loss), of stockholders' equity, and cash flows present fairly, in all material respects, the financial position of PTC Inc. and its subsidiaries at September 30, 2016 and September 30, 2015, and the results of their operations and their cash flows for each of the three years in the period ended September 30, 2016 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of September 30, 2016, 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 these financial statements, for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in “Management's Annual Report on Internal Control over Financial Reporting” appearing under Item 9A. Our responsibility is to express opinions on these financial statements and on the Company's internal control over financial reporting based on our integrated 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 audits to obtain reasonable assurance about whether the financial statements are free of material misstatement and whether effective internal control over financial reporting was maintained in all material respects. Our audits of the financial statements included examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

As discussed in Note B to the consolidated financial statements, the Company changed the manner in which it classifies deferred taxes in 2016.

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

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

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts
November 18, 2016

PTC Inc.

CONSOLIDATED BALANCE SHEETS
(in thousands, except per share data)

	September 30, 2016	September 30, 2015
ASSETS		
Current assets:		
Cash and cash equivalents	$ 277,935	$ 273,417
Short term marketable securities	18,695	—
Accounts receivable, net of allowance for doubtful accounts of $1,012 and $998 at September 30, 2016 and 2015, respectively	161,357	197,275
Prepaid expenses	52,819	56,365
Other current assets	131,783	140,819
Deferred tax assets	—	36,803
Total current assets	642,589	704,679
Property and equipment, net	67,113	65,162
Goodwill	1,169,813	1,069,041
Acquired intangible assets, net	310,305	291,301
Long term marketable securities	30,921	—
Deferred tax assets	89,692	38,936
Other assets	41,820	40,794
Total assets	$ 2,352,253	$ 2,209,913
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 18,022	$ 13,361
Accrued expenses and other current liabilities	84,141	97,613
Accrued compensation and benefits	145,633	82,414
Accrued income taxes	6,303	4,010
Deferred tax liabilities	—	1,622
Current portion of long term debt	—	50,000
Deferred revenue	400,420	368,240
Total current liabilities	654,519	617,260
Long term debt, net of current portion	758,125	618,125
Deferred tax liabilities	13,754	42,361
Deferred revenue	13,237	18,610
Other liabilities	69,952	53,386
Total liabilities	1,509,587	1,349,742
Commitments and contingencies (Note I)		
Stockholders' equity:		
Preferred stock, $0.01 par value; 5,000 shares authorized; none issued	—	—
Common stock, $0.01 par value; 500,000 shares authorized; 114,968 and 113,745 shares issued and outstanding at September 30, 2016 and 2015, respectively	1,150	1,137
Additional paid-in capital	1,598,548	1,553,390
Accumulated deficit	(657,079)	(602,614)
Accumulated other comprehensive loss	(99,953)	(91,742)
Total stockholders' equity	842,666	860,171
Total liabilities and stockholders' equity	$ 2,352,253	$ 2,209,913

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

PTC Inc.

CONSOLIDATED STATEMENTS OF OPERATIONS
(in thousands, except per share data)

	Year ended September 30, 2016	2015	2014
Revenue:			
Subscription	$ 118,322	$ 65,239	$ 27,137
Support	651,807	681,524	688,502
Total recurring software revenue	770,129	746,763	715,639
Perpetual license	173,467	282,760	362,602
Total software revenue	943,596	1,029,523	1,078,241
Professional services	196,937	225,719	278,726
Total revenue	1,140,533	1,255,242	1,356,967
Cost of revenue:			
Cost of software revenue	155,439	135,992	129,708
Cost of professional services revenue	170,226	198,742	243,975
Total cost of revenue	325,665	334,734	373,683
Gross margin	814,868	920,508	983,284
Operating expenses			
Sales and marketing	367,465	346,794	367,454
Research and development	229,331	227,513	226,496
General and administrative	145,615	158,715	132,225
U.S. pension settlement loss	—	66,332	—
Amortization of acquired intangible assets	33,198	36,129	32,127
Restructuring charges	76,273	43,409	28,406
Total operating expenses	851,882	878,892	786,708
Operating income (loss)	(37,014)	41,616	196,576
Foreign currency losses, net	(1,889)	(2,706)	(4,469)
Interest income	3,437	3,697	3,117
Interest expense	(29,882)	(14,742)	(8,155)
Other expense (income), net	(1,844)	(1,340)	(957)
Income (loss) before income taxes	(67,192)	26,525	186,112
Provision (benefit) for income taxes	(12,727)	(21,032)	25,918
Net income (loss)	$ (54,465)	$ 47,557	$ 160,194
Earnings (loss) per share—Basic	$ (0.48)	$ 0.41	$ 1.36
Earnings (loss) per share—Diluted	$ (0.48)	$ 0.41	$ 1.34
Weighted average shares outstanding—Basic	114,612	114,775	118,094
Weighted average shares outstanding—Diluted	114,612	116,012	119,984

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

PTC Inc.

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
(in thousands)

	Year ended September 30,		
	2016	2015	2014
Net income	$ (54,465)	$ 47,557	$ 160,194
Other comprehensive income (loss), net of tax:			
Unrealized hedge gain (loss) arising during the period	(3,375)	—	—
Net hedge loss reclassified into earnings	2,131	—	—
Unrealized loss on hedging instruments	(1,244)	—	—
Foreign currency translation adjustment, net of tax of $0 for all periods	408	(47,177)	(24,069)
Unrealized loss on marketable securities, net of tax	(122)	—	—
Amortization of net actuarial pension loss included in net income, net of tax of $0.7 million, $18.5 million, and $0.3 million in 2016, 2015 and 2014, respectively	1,609	52,249	3,048
Pension net loss arising during the period net of tax of $3.5 million, $1.6 million and $2.8 million in 2016, 2015, and 2014, respectively	(8,646)	(4,797)	(24,267)
Change in unamortized pension loss during the period related to changes in foreign currency	(216)	2,350	2,081
Other comprehensive income (loss)	(8,211)	2,625	(43,207)
Comprehensive income (loss)	$ (62,676)	$ 50,182	$ 116,987

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

PTC Inc.

CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)

	Year ended September 30,		
	2016	2015	2014
Cash flows from operating activities:			
Net income (loss)	$ (54,465)	$ 47,557	$ 160,194
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Stock-based compensation	65,996	50,182	50,889
Depreciation and amortization	86,554	84,433	77,307
Benefit from deferred income taxes	(44,182)	(49,361)	(19,946)
Excess tax benefits realized from stock-based awards	(93)	(24)	(10,428)
Pension settlement loss	—	66,332	—
Other non-cash costs, net	966	157	(760)
Changes in operating assets and liabilities, excluding the effects of acquisitions:			
Accounts receivable	52,617	29,723	7,554
Accounts payable and accrued expenses	(14,185)	31,134	(436)
Accrued compensation and benefits	60,944	(56,950)	8,974
Deferred revenue	16,232	8,852	24,998
Accrued income taxes, net of income tax receivable	6,749	(3,536)	19,134
Other current assets and prepaid expenses	4,591	(10,716)	4,417
Other noncurrent assets and liabilities	1,444	(17,880)	(17,345)
Net cash provided by operating activities	183,168	179,903	304,552
Cash flows from investing activities:			
Additions to property and equipment	(26,189)	(30,628)	(25,275)
Acquisitions of businesses, net of cash acquired	(165,802)	(98,411)	(323,525)
Purchases of investments	(45,165)	(11,000)	—
Net cash used by investing activities	(237,156)	(140,039)	(348,800)
Cash flows from financing activities:			
Borrowings under credit facility and senior notes	670,000	185,000	1,386,250
Repayments of borrowings under credit facility	(580,000)	(128,750)	(1,032,500)
Repurchases of common stock	—	(64,940)	(224,915)
Proceeds from issuance of common stock	21	41	877
Excess tax benefits realized from stock-based awards	93	24	10,428
Payments of withholding taxes in connection with vesting of stock-based awards	(20,939)	(29,207)	(26,857)
Credit facility origination costs	(6,855)	—	(7,930)
Contingent consideration	(10,621)	(4,323)	—
Net cash provided (used) by financing activities	51,699	(42,155)	105,353
Effect of exchange rate changes on cash and cash equivalents	6,807	(17,946)	(9,364)
Net increase (decrease) in cash and cash equivalents	4,518	(20,237)	51,741
Cash and cash equivalents, beginning of year	273,417	293,654	241,913
Cash and cash equivalents, end of year	$ 277,935	$ 273,417	$ 293,654
Supplemental disclosure of non-cash financing activities:			
Fair value of contingent consideration recorded for acquisition	$ 16,900	$ 3,800	$ 13,048

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

PTC Inc.

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(in thousands)

	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Amount				
Balance as of October 1, 2013	118,446	$ 1,185	$ 1,786,820	$ (810,365)	$ (51,160)	$ 926,480
Common stock issued for employee stock-based awards	2,455	24	853	—	—	877
Shares surrendered by employees to pay taxes related to stock-based awards	(808)	(8)	(26,849)	—	—	(26,857)
Compensation expense from stock-based awards	—	—	50,889	—	—	50,889
Excess tax benefits from stock-based awards	—	—	10,428	—	—	10,428
Net income	—	—	—	160,194	—	160,194
Repurchases of common stock	(5,068)	(51)	(187,364)	—	—	(187,415)
Common stock repurchase holdback	—	—	(37,500)	—	—	(37,500)
Foreign currency translation adjustment	—	—	—	—	(24,069)	(24,069)
Change in pension benefits, net of tax	—	—	—	—	(19,138)	(19,138)
Balance as of September 30, 2014	115,025	$ 1,150	$ 1,597,277	$ (650,171)	$ (94,367)	$ 853,889
Common stock issued for employee stock-based awards	2,212	22	19	—	—	41
Shares surrendered by employees to pay taxes related to stock-based awards	(764)	(8)	(29,199)	—	—	(29,207)
Compensation expense from stock-based awards	—	—	50,182	—	—	50,182
Excess tax benefits from stock-based awards	—	—	24	—	—	24
Net income	—	—	—	47,557	—	47,557
Repurchases of common stock	(2,728)	(27)	(64,913)	—	—	(64,940)
Foreign currency translation adjustment	—	—	—	—	(47,177)	(47,177)
Change in pension benefits, net of tax	—	—	—	—	49,802	49,802
Balance as of September 30, 2015	113,745	$ 1,137	$ 1,553,390	$ (602,614)	$ (91,742)	$ 860,171
Common stock issued for employee stock-based awards	1,820	18	3	—	—	21
Shares surrendered by employees to pay taxes related to stock-based awards	(597)	(5)	(20,934)	—	—	(20,939)
Compensation expense from stock-based awards	—	—	65,996	—	—	65,996
Excess tax benefits from stock-based awards	—	—	93	—	—	93
Net loss	—	—	—	(54,465)	—	(54,465)
Unrealized loss on hedging instruments, net of tax	—	—	—	—	(1,244)	(1,244)
Foreign currency translation adjustment	—	—	—	—	408	408
Unrealized loss on available-for-sale securities, net of tax	—	—	—	—	(122)	(122)
Change in pension benefits, net of tax	—	—	—	—	(7,253)	(7,253)
Balance as of September 30, 2016	114,968	$ 1,150	$ 1,598,548	$ (657,079)	$ (99,953)	$ 842,666

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

A. Description of Business and Basis of Presentation

Business

PTC Inc. was incorporated in 1985 and is headquartered in Needham, Massachusetts. PTC Inc. develops and delivers technology solutions, comprised of software and services, that transform the way our customers create, operate and service their products for a smart, connected world. Our technology solutions are complemented by our services and support organizations, as well as third-party resellers and other strategic partners, who provide services and support to customers worldwide.

Basis of Presentation

Our fiscal year-end is September 30. The consolidated financial statements include PTC Inc. (the parent company) and its wholly owned subsidiaries, including those operating outside the U.S. All intercompany balances and transactions have been eliminated in the consolidated financial statements. In 2015, we recorded an out of period correction of approximately $6.4 million of additional revenue that was deferred and should have been recognized previously. Management believes this correction was not material to the then current period financial statements or any previously issued financial statements.

We prepare our financial statements under generally accepted accounting principles in the U.S. that require management to make estimates and assumptions that affect the amounts reported and the related disclosures. Actual results could differ from these estimates.

Reclassifications

In 2015, we classified 2015 and 2014 revenue and cost of revenue in three categories: 1) license and subscription ("L&S"), 2) support and 3) professional services. Effective with the beginning of the first quarter of 2016, we are reporting perpetual license revenue separately from subscription revenue and are presenting revenue in four categories: 1) subscription, 2) support, 3) perpetual license and 4) professional services. Effective with the beginning of the first quarter of 2016, we are combining cost of license and subscription revenue with cost of support revenue and reporting it as cost of software revenue. As a result, we are presenting cost of revenue in two categories: 1) cost of software revenue and 2) cost of professional services revenue.

Effective with the beginning of the first quarter of 2016, we reclassified certain expenses related to management of our product lines from general and administrative to marketing.

The following revenue and costs have been reclassified in the accompanying Consolidated Statements of Operations for the year ended September 30, 2015 and 2014 to conform to the current period presentation.

	Year Ended September 30,	
	2015	2014
Reclassifications within revenue	(in millions)	
From L&S to Perpetual License	$ 282.8	$ 362.6
From L&S to Subscription	65.2	27.1
Reclassifications within cost of revenue		
From L&S to Software	$ 53.2	$ 45.0
From Support to Software	82.8	84.7
Reclassifications within operating expenses		
From General and Administrative to Selling and Marketing	$ 8.0	$ 10.0

Segments

Through the second quarter of 2016, we had two operating and reportable segments: (1) Software Products, which included license and related support revenue (including updates and technical support) for all our products except training-related products; and (2) Services, which included consulting, implementation, training, cloud services, computer-based training products, including support on these products, and other services revenue.

With a change in our organizational structure in an effort to create more effective and efficient operations and to improve customer and product focus, during the three months ended July 2, 2016, we revised the information that our chief executive officer, who is also our chief operating decision maker ("CODM"), regularly reviews for purposes of allocating resources and assessing performance. As a result, effective with the beginning of the third quarter of 2016, we changed our operating and reportable segments from two to three: (1) the Solutions Group, which includes license, subscription, support and cloud services revenue for our core CAD, SLM and PLM products; (2) the IoT Group, which includes license, subscription, support and cloud services revenue for our IoT, analytics and augmented reality solutions; and (3) Professional Services, which includes consulting, implementation and training revenue.

Revenue and operating income in Note O. *Segment Information* have been reclassified to conform to the current period presentation.

B. Summary of Significant Accounting Policies

Foreign Currency Translation

For our non-U.S. operations where the functional currency is the local currency, we translate assets and liabilities at exchange rates in effect at the balance sheet date and record translation adjustments in stockholders' equity. For our non-U.S. operations where the U.S. dollar is the functional currency, we remeasure monetary assets and liabilities using exchange rates in effect at the balance sheet date and nonmonetary assets and liabilities at historical rates and record resulting exchange gains or losses in foreign currency net losses in the Consolidated Statements of Operations. We translate income statement amounts at average rates for the period. Transaction gains and losses are recorded in foreign currency net losses in the Consolidated Statements of Operations.

Revenue Recognition

Our sources of revenue include: (1) subscription, (2) support, (3) perpetual license and (4) professional services. We record revenues for software related deliverables in accordance with the guidance provided by ASC 985-605, *Software-Revenue Recognition* and revenues for non-software deliverables in accordance with ASC 605-25*, Revenue Recognition, Multiple-Element Arrangements* when the following criteria are met: (1) persuasive evidence of an arrangement exists, (2) delivery has occurred (generally, FOB shipping point or electronic distribution), (3) the fee is fixed or determinable, and (4) collection is probable. We exercise judgment and use estimates in connection with determining the amounts of software license and services revenues to be recognized in each accounting period. Our primary judgments involve the following:

- determining whether collection is probable;
- assessing whether the fee is fixed or determinable;
- determining whether service arrangements, including modifications and customization of the underlying software, are not essential to the functionality of the licensed software and thus would result in the revenue for license and service elements of an agreement being recorded separately; and
- determining the fair value of services and support elements included in multiple-element arrangements, which is the basis for allocating and deferring revenue for such services and support.

Our software is distributed primarily through our direct sales force. In addition, we have an indirect distribution channel through alliances with resellers. Revenue arrangements with resellers are generally recognized on a sell-through basis; that is, when we deliver the product to the end-user customer. We record consideration given to a reseller as a reduction of revenue to the extent we have recorded revenue from the reseller. We do not offer contractual rights of return, stock balancing, or price protection to our resellers, and actual product returns from them have been insignificant to date. As a result, we do not maintain reserves for reseller product returns.

At the time of each sale transaction, we must make an assessment of the collectability of the amount due from the customer. Revenue is only recognized at that time if management deems that collection is probable. In making this assessment, we consider customer credit-worthiness and historical payment experience. At that same time, we assess whether fees are fixed or determinable and free of contingencies or significant uncertainties. In assessing whether the fee is fixed or determinable, we consider the payment terms of the transaction, including transactions with payment terms that extend beyond our customary payment terms, and our collection experience in similar transactions without making concessions, among other factors. We have periodically provided financing to credit-worthy customers with payment terms up to 24 months. If the fee is determined not to be fixed or determinable, revenue is recognized only as payments become due from the customer, provided that all other revenue recognition criteria are met. Our software license arrangements generally do not include customer acceptance provisions. However, if an arrangement includes an acceptance provision, we record revenue only upon the earlier of (1) receipt of written acceptance from the customer or (2) expiration of the acceptance period.

Generally, our contracts are accounted for individually. However, when contracts are closely interrelated and dependent on each other, it may be necessary to account for two or more contracts as one to reflect the substance of the group of contracts.

Subscription

Subscription revenue includes revenue from two primary sources: (1) subscription-based licenses, and (2) cloud services.

Subscription-based licenses include the right for a customer to use our licenses and receive related support for a specified term and revenue is recognized ratably over the term of the arrangement. When sold in arrangements with other elements, VSOE of fair value is established for the subscription-based licenses through the use of a substantive renewal clause within the customer contract for a combined annual fee that includes the term-based license and related support.

Cloud services reflect recurring revenues that include fees for hosting and application management of customers' perpetual or subscription-based licenses. Generally, customers have the right to terminate the cloud services contract and take possession of the licenses without a significant penalty. When cloud services are sold as part of a multi-element transaction, revenue is allocated to cloud services based on VSOE, and recognized ratably over the contractual term beginning on the commencement dates of each contract, which is the date the services are made available to the customer. VSOE is established for cloud services either through a substantive stated renewal option or stated contractual overage rates, as these rates represent the value the customer is willing to pay on a standalone basis. We also offer Cloud services under SaaS arrangements whereby customers access our software in the cloud. Under SaaS arrangements, customers are not entitled to terminate the cloud services and cannot take possession of the software. Cloud services include set-up fees, which are recognized ratably over the contract term or the expected customer life, whichever is longer.

Support

Support contracts generally include rights to unspecified upgrades (when and if available), telephone and internet-based support, updates and bug fixes. Support revenue is recognized ratably over the term of the support contract on a straight-line basis.

Perpetual License

Under perpetual license arrangements, we generally recognize license revenue up front upon shipment to the customer. We use the residual method to recognize revenue from perpetual license software arrangements that include one or more elements to be delivered at a future date when evidence of the fair value of all undelivered elements exists, and the elements of the arrangement qualify for separate accounting as described below. Under the residual method, the fair value of the undelivered elements (i.e., support and services) based on our vendor-specific objective evidence ("VSOE") of fair value is deferred and the remaining portion of the total arrangement fee is allocated to the delivered elements (i.e., perpetual software license). If evidence of the fair value of one or more of the undelivered elements does not exist, all revenues are deferred and recognized when delivery of all of those elements has occurred or when fair values can be established. We determine VSOE of the fair value of services and support revenue based upon our recent pricing for those elements when sold separately. For certain transactions, VSOE is determined based on a substantive renewal clause within a customer contract. Our current pricing practices are influenced primarily by product type, purchase volume, sales channel and customer location. We review services and support sold separately on a periodic basis and update, when appropriate, our VSOE of fair value for such elements to ensure that it reflects our recent pricing experience.

Professional Services

Our software arrangements often include implementation, consulting and training services that are sold under consulting engagement contracts or as part of the software license arrangement. When we determine that such services are not essential to the functionality of the licensed software, we record revenue separately for the license and service elements of these arrangements, provided that appropriate evidence of fair value exists for the undelivered services (i.e. VSOE of fair value). We consider various factors in assessing whether a service is not essential to the functionality of the software, including if the services may be provided by independent third parties experienced in providing such services (i.e. consulting and implementation) in coordination with dedicated customer personnel, and whether the services result in significant modification or customization of the software's functionality. When professional services qualify for separate accounting, professional services revenues under time and materials billing arrangements are recognized as the services are performed. Professional services revenues under fixed-priced contracts are generally recognized as the services are performed using a proportionate performance model with hours or costs as the input method of attribution.

When we provide professional services that are considered essential to the functionality of the software, the arrangement does not qualify for separate accounting of the license and service elements, and the license revenue is recognized together with the consulting services using the percentage-of-completion method of contract accounting. Under such arrangements, consideration is recognized as the services are performed as measured by an observable input. In these circumstances, we separate license revenue from service revenue for income statement presentation by allocating VSOE of fair value of the consulting services as service revenue, and the residual portion as license revenue. Under the percentage-of-completion method, we estimate the stage of completion of contracts with fixed or "not to exceed" fees based on hours or costs incurred to date as compared with estimated total project hours or costs at completion. Adjustments to estimates to complete are made in the periods in which facts resulting in a change become known. When total cost estimates exceed revenues, we accrue for the estimated losses when identified. The use of the proportionate performance and percentage-of-completion methods of accounting require significant judgment relative to estimating total contract costs or hours (hours being a proxy for costs), including assumptions relative to the length of time to complete the project, the nature and complexity of the work to be performed and anticipated changes in salaries and other costs.

Reimbursements of out-of-pocket expenditures incurred in connection with providing consulting services are included in professional services revenue, with the offsetting expense recorded in cost of professional services revenue.

Training services include on-site and classroom training. Training revenues are recognized as the related training services are provided.

Deferred Revenue

Deferred revenue primarily relates to software subscription and support agreements billed to customers for which the services have not yet been provided. The liability associated with performing these services is included in deferred revenue and, if not yet paid, the related customer receivable is included in other current assets. Billed but uncollected support and subscription-related amounts included in other current assets at September 30, 2016 and 2015 were $126.3 million and $129.3 million, respectively. Deferred revenue consisted of the following:

	September 30,	
	2016	2015
	(in thousands)	
Deferred subscription revenue	$ 102,847	$ 37,478
Deferred support revenue	297,684	331,793
Deferred perpetual license revenue	4,151	4,940
Deferred professional services revenue	8,975	12,639
Total deferred revenue	$ 413,657	$ 386,850

Cash Equivalents

Our cash equivalents are invested in money market accounts and time deposits of financial institutions. We have established guidelines relative to credit ratings, diversification and maturities that are intended to maintain safety and liquidity. Cash equivalents include highly liquid investments with maturity periods of three months or less when purchased.

Marketable Securities

The amortized cost and fair value of marketable securities as of September 30, 2016 were as follows:

	September 31, 2016			
	Amortized cost	Gross unrealized gains	Gross unrealized losses	Fair value
	(in thousands)			
Certificates of deposit	$ 681	$ —	$ —	$ 681
Commercial paper	11,945	—	(20)	11,925
Corporate notes/bonds	34,701	—	(100)	34,601
US government agency securities	2,411	—	(2)	2,409
	$ 49,738	$ —	$ (122)	$ 49,616

Our investment portfolio consists of certificates of deposit, commercial paper, corporate notes/bonds and government securities that have a maximum maturity of three years. The longer the duration of these securities, the more susceptible they are to changes in market interest rates and bond yields. All unrealized losses are due to changes in market interest rates, bond yields and/or credit ratings. We review our investments to identify and evaluate investments that have an indication of possible impairment. We concluded that, at September 30, 2016, the unrealized losses were temporary.

The following table presents our available-for-sale marketable securities by contractual maturity date, as of September 31, 2016.

	September 31, 2016	
	Amortized cost	Fair value
	(in thousands)	
Due in one year or less	$ 18,585	$ 18,549
Due after one year through three years	31,153	31,067
	$ 49,738	$ 49,616

Cost Method Investments

We generally account for non-marketable equity investments under the cost method. We monitor non-marketable equity investments for events that could indicate that the investments are impaired, such as deterioration in the investee's financial condition and business forecasts, and lower valuations in recent or proposed financings. For an other-than-temporary impairment in the investment, we record a charge to other expense for the difference between the estimated fair value and the carrying value. The carrying value of our non-marketable equity investments are recorded in noncurrent assets and totaled $11.6 million and $11.0 million as of September 30, 2016 and 2015, respectively.

Concentration of Credit Risk and Fair Value of Financial Instruments

The amounts reflected in the Consolidated Balance Sheets for cash and cash equivalents, accounts receivable and accounts payable approximate their fair value due to their short maturities. Financial instruments that potentially subject us to concentration of credit risk consist primarily of investments, trade accounts receivable and foreign currency derivative instruments. Our cash, cash equivalents, and foreign currency derivatives are placed with financial institutions with high credit standings. Our credit risk for derivatives is also mitigated due to the short-term nature of the contracts. Our customer base consists of large numbers of geographically diverse customers dispersed across many industries. No individual customer comprised more than 10% of our trade accounts receivable as of September 30, 2016 or 2015 or comprised more than 10% of our revenue for the years ended September 30, 2016, 2015 or 2014.

Fair Value Measurements

Fair value is defined as the price that would be received from selling an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. When determining the fair value measurements for assets and liabilities required to be recorded at fair value, we consider the principal or most advantageous market in which we would transact and consider assumptions that market participants would use when pricing the asset or liability, such as inherent risk, transfer restrictions, and risk of nonperformance. Generally accepted accounting principles prescribe a fair value hierarchy that requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. A financial instrument’s categorization within the fair value hierarchy is based upon the lowest level of input that is significant to the fair value measurement. Three levels of inputs that may be used to measure fair value:

- Level 1: quoted prices (unadjusted) in active markets for identical assets or liabilities;
- Level 2: inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices in active markets for similar assets or liabilities, quoted prices for identical or similar assets or liabilities in markets that are not active, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities; or
- Level 3: unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

A financial instrument’s level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement.

Money market funds, time deposits and corporate notes/bonds are classified within Level 1 of the fair value hierarchy because they are valued based on quoted market prices in active markets.

Certificates of deposit, commercial paper and certain U.S. government agency securities are classified within Level 2 of the fair value hierarchy. These instruments are valued based on quoted prices in markets that are not active or based on other observable inputs consisting of market yields, reported trades and broker/dealer quotes.

The principal market in which we execute our foreign currency contracts is the institutional market in an over-the-counter environment with a relatively high level of price transparency. The market participants usually are large financial institutions. Our foreign currency contracts’ valuation inputs are based on quoted prices and quoted pricing intervals from public data sources and do not involve management judgment. These contracts are typically classified within Level 2 of the fair value hierarchy.

The fair value of our contingent consideration arrangements are determined based on our evaluation as to the probability and amount of any earn-out that will be achieved based on expected future performances by the acquired entities. These arrangements are classified within Level 3 of the fair value hierarchy.

Our significant financial assets and liabilities measured at fair value on a recurring basis as of September 30, 2016 and 2015 were as follows:

	September 30, 2016			
	Level 1	Level 2	Level 3	Total
	(in thousands)			
Financial assets:				
Cash equivalents (1)	$ 60,139	$ —	$ —	$ 60,139
Marketable securities				
Certificates of deposit	—	681	—	681
Commercial paper	—	11,925	—	11,925
Corporate notes/bonds	34,601	—	—	34,601
U.S. government agency securities	—	2,409	—	2,409
Forward contracts	—	260	—	260
	$ 94,740	$ 15,275	$ —	$ 110,015
Financial liabilities:				
Contingent consideration related acquisitions	$ —	$ —	$ 19,570	$ 19,570
Forward contracts	—	3,170	—	3,170
	$ —	$ 3,170	$ 19,570	$ 22,740

	September 30, 2015			
	Level 1	Level 2	Level 3	Total
	(in thousands)			
Financial assets:				
Cash equivalents (1)	$ 91,216	$ —	$ —	$ 91,216
Forward contracts	—	507	—	507
	$ 91,216	$ 507	$ —	$ 91,723
Financial liabilities:				
Contingent consideration related to acquisitions	$ —	$ —	$ 13,000	$ 13,000
Forward contracts	—	46	—	46
	$ —	$ 46	$ 13,000	$ 13,046

(1) Money market funds and time deposits.

For a description of the inputs used to value the contingent consideration liability see Note E *Acquisitions*. Changes in the fair value of Level 3 contingent consideration liability associated with our acquisitions of ThingWorx, ColdLight and Kepware were as follows:

	Contingent Consideration (in thousands)			
	ThingWorx	ColdLight	Kepware	Total
Balance at October 1, 2014	$ 15,191	$ —	$ —	$ 15,191
Contingent consideration at acquisition	—	3,800	—	3,800
Change in fair value of contingent consideration	2,809	200	—	3,009
Payment of contingent consideration	(9,000)	—	—	(9,000)
Balance at October 1, 2015	9,000	4,000	—	13,000
Contingent consideration at acquisition	—	—	16,900	16,900
Change in fair value of contingent consideration	—	1,000	170	1,170
Payment of contingent consideration	(9,000)	(2,500)	—	(11,500)
Balance at September 30, 2016	$ —	$ 2,500	$ 17,070	$ 19,570

Of the total, $11.8 million of the contingent consideration liabilities is included in accrued expenses and other current liabilities, with the remaining $7.8 million in other liabilities in the Consolidated Balance Sheet as of September 30, 2016.

Allowance for Doubtful Accounts

We maintain allowances for doubtful accounts for estimated losses resulting from the inability of our customers to make required payments. In determining the adequacy of the allowance for doubtful accounts, management specifically analyzes individual accounts receivable, historical bad debts, customer concentrations, customer credit-worthiness, current economic conditions, and accounts receivable aging trends. Our allowance for doubtful accounts on trade accounts receivable was $1.0 million as of September 30, 2016, $1.0 million as of September 30, 2015, $1.6 million as of September 30, 2014 and $3.0 million as of September 30, 2013. Uncollectible trade accounts receivable written-off, net of recoveries, were $0.3 million, $0.8 million and $0.6 million in 2016, 2015 and 2014, respectively. Bad debt (credit) expense was $0.3 million, $0.2 million and $(0.8) million in 2016, 2015 and 2014, respectively, and is included in general and administrative expenses in the accompanying Consolidated Statements of Operations.

Financing Receivables and Transfers of Financial Assets

We periodically provide extended payment terms for software purchases to credit-worthy customers with payment terms up to 24 months. The determination of whether to offer such payment terms is based on the size, nature and credit-worthiness of the customer, and the history of collecting amounts due, without concession, from the customer and customers generally. This determination is based on an internal credit assessment. In making this assessment, we use the Standard & Poor's (S&P) credit rating as our primary credit quality indicator, if available. If a customer, whether commercial and U.S. Federal government, has an S&P bond rating of BBB- or above, we designate the customer as a Tier 1. If a customer does not have an S&P bond rating, or has a S&P bond rating below BBB-, we base our assessment on an internal credit assessment which considers selected balance sheet, operating and liquidity measures, historical payment experience, and current business conditions within the industry or region. We designate these customers as Tier 2 or Tier 3, with Tier 3 being lower credit quality than Tier 2.

As of September 30, 2016 and 2015, amounts due from customers for contracts with original payment terms greater than twelve months (financing receivables) totaled $7.1 million and $27.4 million, respectively. Accounts receivable and other current assets in the accompanying Consolidated Balance Sheets include current receivables from such contracts totaling $7.1 million and $21.8 million at September 30, 2016 and 2015, respectively, and other assets in the accompanying Consolidated Balance Sheets include long-term receivables from such contracts totaling $5.6 million at September 30, 2015 and none at September 30, 2016. As of September 30, 2016 and September 30, 2015, $0.1 million and $0.5 million, respectively, of these receivables were past due. Our credit risk assessment for financing receivables was as follows:

	September 30, 2016	September 30, 2015
	(in thousands)	
S&P bond rating BBB- and above-Tier 1	$ 5,953	$ 16,841
Internal Credit Assessment-Tier 2	1,182	10,593
Internal Credit Assessment-Tier 3	—	—
Total financing receivables	$ 7,135	$ 27,434

We evaluate the need for an allowance for doubtful accounts for estimated losses resulting from the inability of these customers to make required payments. As of September 30, 2016 and 2015, we concluded that all financing receivables were collectible and no reserve for credit losses was recorded. We did not provide a reserve for credit losses or write off any uncollectible financing receivables in 2016, 2015 and 2014. We write off uncollectible trade and financing receivables when we have exhausted all collection avenues.

We periodically transfer future payments under certain of these contracts to third-party financial institutions on a non-recourse basis. We record such transfers as sales of the related accounts receivable when we surrender control of such receivables. In 2016, we did not sell any financing receivables to third-party financial institutions. In 2015 and 2014, we sold $3.0 million and $24.5 million, respectively, of financing receivables to third-party financial institutions.

Derivatives

Generally accepted accounting principles require all derivatives, whether designated in a hedging relationship or not, to be recorded on the balance sheet at fair value. Our earnings and cash flows are subject to fluctuations due to changes in foreign currency exchange rates. Our most significant foreign currency exposures relate to Western European countries, Japan, China and Canada. Our foreign currency risk management strategy is principally designed to mitigate the future potential financial impact of changes in the U.S. dollar value of anticipated transactions and balances denominated in foreign currency, resulting from changes in foreign currency exchange rates. We enter into derivative transactions, specifically foreign currency forward contracts, to manage the exposures to foreign currency exchange risk to reduce earnings volatility. We do not enter into derivatives transactions for trading or speculative purposes. For a description of our non-designated hedge and cash flow hedge activities see Note N *Derivative Financial Instruments*.

Non-Designated Hedges

We hedge our net foreign currency monetary assets and liabilities primarily resulting from foreign currency denominated receivables and payables with foreign exchange forward contracts to reduce the risk that our earnings and cash flows will be adversely affected by changes in foreign currency exchange rates. These contracts have maturities of up to approximately three months. Generally, we do not designate these foreign currency forward contracts as hedges for accounting purposes and changes in the fair value of these instruments are recognized immediately in earnings. Because we enter into forward contracts only as an economic hedge, any gain or loss on the underlying foreign-denominated balance would be offset by the loss or gain on the forward contract. Gains and losses on forward contracts and foreign denominated receivables and payables are included in other income (expense), net.

Cash Flow Hedges

Our foreign exchange risk management program objective is to identify foreign exchange exposures and implement appropriate hedging strategies to minimize earnings fluctuations resulting from foreign exchange rate movements. We designate certain foreign exchange forward contracts as cash flow hedges of Euro, Yen and SEK denominated intercompany forecasted revenue transactions (supported by third party sales). All foreign exchange forward contracts are carried at fair value on the Consolidated Balance Sheets and the maximum duration of foreign exchange forward contracts does not exceed 13 months.

Cash flow hedge relationships are designated at inception, and effectiveness is assessed prospectively and retrospectively using regression analysis on a monthly basis. As the forward contracts are highly effective in offsetting changes to future cash flows on the hedged transactions, we record the effective portion of changes in these cash flow hedges in accumulated other comprehensive income and subsequently reclassify into earnings in the same period during which the hedged transactions are recognized in earnings. Changes in the fair value of foreign exchange forward contracts due to changes in time value are included in the assessment of effectiveness. Our derivatives are not subject to any credit contingent features. We manage credit risk with counterparties by trading among several counterparties and we review our counterparties' credit at least quarterly.

Property and Equipment

Property and equipment are recorded at cost and depreciated using the straight-line method over their estimated useful lives. Computer hardware and software are typically amortized over three to five years, and furniture and fixtures over three to eight years. Leasehold improvements are amortized over the shorter of their useful lives or the remaining terms of the related leases. Property and equipment under capital leases are amortized over the lesser of the lease terms or their estimated useful lives. Maintenance and repairs are charged to expense when incurred; additions and improvements are capitalized. When an item is sold or retired, the cost and related accumulated depreciation is relieved, and the resulting gain or loss, if any, is recognized in income.

Software Development Costs

We incur costs to develop computer software to be licensed or otherwise marketed to customers. Research and development costs are expensed as incurred, except for costs of internally developed or externally purchased software that qualify for capitalization. Development costs for software to be sold externally incurred subsequent to the establishment of technological feasibility, but prior to the general release of the product, are capitalized and, upon general release, are amortized using the greater of either the straight-line method over the expected life of the related products or based upon the pattern in which economic benefits related to such assets are realized. The straight-line method is used if it approximates the same amount of expense as that calculated using the ratio that current period gross product revenues bear to total anticipated gross product revenues. No development costs for software to be sold externally were capitalized in 2016, 2015 or 2014. In connection with acquisitions of businesses described in Note E, we capitalized software of $69.9 million and $13.6 million in 2016 and 2015, respectively. These assets are included in acquired intangible assets in the accompanying Consolidated Balance Sheets.

Goodwill, Acquired Intangible Assets and Long-lived Assets

Goodwill is the amount by which the purchase price in a business acquisition exceeds the fair values of net identifiable assets on the date of purchase.

Goodwill is evaluated for impairment annually, as of the end of the third quarter, or more frequently if events or changes in circumstances indicate that the asset might be impaired. Factors we consider important, on an overall company basis and reportable-segment basis, when applicable, that could trigger an impairment review include significant underperformance relative to historical or projected future operating results, significant changes in our use of the acquired assets or the strategy for our overall business, significant negative industry or economic trends, a significant decline in our stock price for a sustained period and a reduction of our market capitalization relative to net book value. We completed our annual goodwill impairment review as of July 2, 2016 and concluded that no impairment charge was required as of that date. To conduct these tests of goodwill, the fair value of the reporting unit is compared to its carrying value. If the reporting unit's carrying value exceeds its fair value, we record an impairment loss equal to the difference between the carrying value of goodwill and its implied fair value. We estimate the fair values of our reporting units using discounted cash flow valuation models. Those models require estimates of future revenues, profits, capital expenditures, working capital, terminal values based on revenue multiples, and discount rates for each reporting unit. We estimate these amounts by evaluating historical trends, current budgets, operating plans and industry data. The estimated fair value of each reporting unit was at least approximately twice its carrying value as of July 2, 2016.

Long-lived assets primarily include property and equipment and acquired intangible assets with finite lives (including purchased software, customer lists and trademarks). Purchased software is amortized over periods up to 11 years, customer lists are amortized over periods up to 12 years and trademarks are amortized over periods up to 12 years. We review long-lived assets for impairment when events or changes in business circumstances indicate that the carrying amount of the assets may not be fully recoverable or that the useful lives of those assets are no longer appropriate. Each impairment test is based on a comparison of the undiscounted cash flows to the recorded value of the asset or asset group. If impairment is indicated, the asset is written down to its estimated fair value based on a discounted cash flow analysis.

Advertising Expenses

Advertising costs are expensed as incurred. Total advertising expenses incurred were $2.1 million, $1.1 million and $2.2 million in 2016, 2015 and 2014, respectively.

Income Taxes

Our income tax expense includes U.S. and international income taxes. Certain items of income and expense are not reported in tax returns and financial statements in the same year. The tax effects of these differences are reported as deferred tax assets and liabilities. Deferred tax assets are recognized for the estimated future tax effects of deductible temporary differences and tax operating loss and credit carryforwards. Changes in deferred tax assets and liabilities are recorded in the provision for income taxes. We assess the likelihood that our deferred tax assets will be recovered from future taxable income and, to the extent we believe that it is more likely than not that all or a portion of deferred tax assets will not be realized, we establish a valuation allowance. To the extent we establish a valuation allowance or increase this allowance in a period, we include an expense within the tax provision in the Consolidated Statements of Operations.

Comprehensive Income (Loss)

Comprehensive income (loss) consists of net income (loss) and other comprehensive income (loss), which includes foreign currency translation adjustments, changes in unrecognized actuarial gains and losses (net of tax) related to pension benefits, unrealized gains and losses on hedging instruments and unrealized gains and losses on marketable securities. For the purposes of comprehensive income disclosures, we do not record tax provisions or benefits for the net changes in the foreign currency translation adjustment, as we intend to reinvest permanently undistributed earnings of our foreign subsidiaries. Accumulated other comprehensive loss is reported as a component of stockholders' equity and, as of September 30, 2016 and

2015, was comprised of cumulative translation adjustment losses of $71.2 million and $71.6 million, respectively, unrecognized actuarial losses related to pension benefits of $38.7 million ($27.4 million net of tax) and $28.3 million ($20.1 million net of tax), respectively, unrecognized loss on hedging instruments of $1.4 million ($1.2 million net of tax) and zero, respectively, and unrecognized losses on marketable securities of $0.1 million and zero, respectively.

Earnings per Share (EPS)

Basic EPS is calculated by dividing net income by the weighted average number of shares outstanding during the period. Unvested restricted shares, although legally issued and outstanding, are not considered outstanding for purposes of calculating basic earnings per share. Diluted EPS is calculated by dividing net income by the weighted average number of shares outstanding plus the dilutive effect, if any, of outstanding stock options, restricted shares and restricted stock units using the treasury stock method. The calculation of the dilutive effect of outstanding equity awards under the treasury stock method includes consideration of proceeds from the assumed exercise of stock options, unrecognized compensation expense and any tax benefits as additional proceeds. Due to the net loss generated in the year ended September 30, 2016, approximately 1.7 million restricted stock units have been excluded from the computation of diluted EPS as the effect would have been anti-dilutive.

The following table presents the calculation for both basic and diluted EPS:

	Year ended September 30,		
	2016	2015	2014
	(in thousands, except per share data)		
Net income (loss)	$ (54,465)	$ 47,557	$ 160,194
Weighted average shares outstanding	114,612	114,775	118,094
Dilutive effect of employee stock options, restricted shares and restricted stock units	—	1,237	1,890
Diluted weighted average shares outstanding	114,612	116,012	119,984
Basic earnings per share	$ (0.48)	$ 0.41	$ 1.36
Diluted earnings per share	$ (0.48)	$ 0.41	$ 1.34

Stock-Based Compensation

We measure the compensation cost of employee services received in exchange for an award of equity instruments based on the grant-date fair value of the award. That cost is recognized over the period during which an employee is required to provide service in exchange for the award. See Note K for a description of the types of stock-based awards granted, the compensation expense related to such awards and detail of equity-based awards outstanding. See Note G for detail of the tax benefit recognized in the Consolidated Statements of Operations related to stock-based compensation.

Related Party Transaction

On November 27, 2013, we entered into a consulting agreement with Professor Michael Porter, who was a director of PTC at the time. In consideration for providing consulting services, we made a restricted stock unit grant valued at approximately $0.2 million (6,213 shares) to Professor Porter, half of which vested on November 15, 2014 and the other half of which vested on March 4, 2015. Professor Porter earned $240,000 in fees for participation in strategy events on behalf of PTC under the agreement. The agreement and Professor Porter's tenure as director ended on March 4, 2015.

Recent Accounting Pronouncements

Income Taxes

In October 2016, the Financial Accounting Standards Board (FASB) issued ASU 2016-16, Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other Than Inventory (“ASU 2016-16”). The purpose of ASU 2016-16 is to simplify the income tax accounting of an intra-entity transfer of an asset other than inventory and to record its effect when the transfer occurs. The guidance is effective for annual reporting periods beginning after December 15, 2017, including interim reporting periods within those annual reporting periods and early adoption is permitted. We are currently assessing the potential impact of the adoption of ASU 2016-16 on our consolidated financial statements.

Cash Flows

In August 2016, the FASB issued ASU 2016-15 to clarify whether the following items should be categorized as operating, investing or financing in the statement of cash flows: (i) debt prepayments and extinguishment costs, (ii) settlement of zero-coupon debt, (iii) settlement of contingent consideration, (iv) insurance proceeds, (v) settlement of corporate-owned life insurance (COLI) and bank-owned life insurance (BOLI) policies, (vi) distributions from equity method investees, (vii) beneficial interests in securitization transactions, and (viii) receipts and payments with aspects of more than one class of cash flows. The amendments in this Update are effective for public business entities for fiscal years beginning after December 15, 2017, and interim periods within those fiscal years. Early adoption is permitted, including adoption in an interim period.

Financial Instruments - Credit Losses

In June 2016, the FASB issued Accounting Standards Update (ASU) No. 2016-13, Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments. This update introduces a current expected credit loss model for measuring expected credit losses for certain types of financial instruments held at the reporting date based on historical experience, current conditions and reasonable supportable forecasts. ASU 2016-13 replaces the current incurred loss model for measuring expected credit losses, requires expected losses on available-for-sale debt securities to be recognized through an allowance for credit losses rather than as reductions in the amortized cost of the securities, and provides for additional disclosure requirements. ASU 2016-13 is effective for interim and annual reporting periods beginning after December 15, 2019, our fiscal 2021, with early adoption permitted for interim and annual reporting periods beginning after December 15, 2018. We are currently evaluating the impact of the new guidance on our consolidated financial statements.

Stock Compensation

In March 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2016-09, Compensation - Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting. The ASU includes multiple provisions intended to simplify various aspects of the accounting for share-based payments, including accounting for income taxes, earnings per share, and forfeitures, as well as certain practical expedients for nonpublic entities. The ASU is effective for public companies in annual periods beginning after December 15, 2016, our fiscal 2018, and interim periods within those years. Early adoption is permitted in any interim period, with all adjustments applied as of the beginning of the fiscal year of adoption. We are currently evaluating the impact of the new guidance on our consolidated financial statements.

Leases

In February 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2016-02, Leases (Topic 842), which will replace the existing guidance in ASC 840, Leases. The updated standard aims to increase transparency and comparability among organizations by requiring lessees to recognize lease assets and lease liabilities on the balance sheet and to disclose important information about leasing arrangements. ASU 2016-02 is effective for annual periods beginning after December 15, 2018, our fiscal 2020, and interim periods within those annual periods. Early adoption is permitted and modified retrospective application is required. We are currently evaluating the impact of the new guidance on our consolidated financial statements.

Financial Instruments

In January 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2016-01, Financial Instruments-Overall: Recognition and Measurement of Financial Assets and Financial Liabilities, which requires equity investments to be measured at fair value with changes in fair value recognized in net income and simplifies the impairment assessment of equity investments without readily determinable fair values by requiring a qualitative assessment to identify impairment. Entities may choose a practical expedient, to estimate the fair value of certain equity securities that do not have readily determinable fair values. If the practical expedient is elected, these investments would be recorded at cost, less impairment and subsequently adjusted for observable price changes. The guidance also updates certain presentation and disclosure requirements. ASU 2016-01 is effective for financial statements issued for fiscal years beginning after December 15, 2017, our fiscal 2019, and interim periods within those fiscal years. We are currently evaluating the impact of the new guidance on our consolidated financial statements.

Deferred Taxes

In November 2015, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2015-17, Balance Sheet Classification of Deferred Taxes (Topic 740), to simplify the presentation of deferred income taxes. The amendments in this Update require that all deferred tax assets and liabilities, along with any related valuation allowance, be classified as noncurrent on the balance sheet. As a result, each jurisdiction will now only have one net noncurrent deferred tax asset or liability. The guidance does not change the existing requirement that permits offsetting only within a jurisdiction and companies are still prohibited from offsetting deferred tax liabilities from one jurisdiction against deferred tax assets of another jurisdiction. ASU 2015-17 is effective for public companies for fiscal years beginning after December 15, 2016, with early adoption permitted for all entities as of the beginning of an interim or annual reporting period. This guidance may be applied either prospectively or retrospectively (by reclassifying the comparative balance sheet). We adopted this new guidance in our first quarter ended January 2, 2016 and applied this guidance prospectively and therefore prior periods have not been retrospectively adjusted. At September 30, 2015, net current deferred tax assets and net current deferred tax liabilities were $36.8 million and $1.6 million, respectively.

Revenue Recognition

In May 2014, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2014-09, Revenue from Contracts with Customers: Topic 606 (ASU 2014-09), to supersede nearly all existing revenue recognition guidance under U.S. GAAP. The core principle of ASU 2014-09 is to recognize revenues when promised goods or services are transferred to customers in an amount that reflects the consideration that is expected to be received for those goods or services. ASU 2014-09 defines a five step process to achieve this core principle and, in doing so, it is possible more judgment and estimates may be required within the revenue recognition process than required under existing U.S. GAAP including identifying performance obligations in the contract, estimating the amount of variable consideration to include in the transaction price and allocating the transaction price to each separate performance obligation. In July 2015, the FASB approved a one-year delay in the effective date. ASU 2014-09 is effective for us in our first quarter of fiscal 2019 using either of two methods: (i) retrospective to each prior reporting period presented with the option to elect certain practical expedients as defined within ASU 2014-09; or (ii) retrospective with the cumulative effect of initially applying ASU 2014-09 recognized at the date of initial application and providing certain additional disclosures as defined per ASU 2014-09. Subsequently, the FASB has issued the following standards to provide additional clarification and implementation guidance on ASU 2014-09: ASU 2016-08, Revenue from Contracts with Customers (Topic 606): Principal versus Agent Considerations; ASU 2016-10, Revenue from Contracts with Customers (Topic 606): Identifying Performance Obligations and Licensing; and ASU 2016-12, Revenue from Contracts with Customers (Topic 606): Narrow-Scope Improvements and Practical Expedients. We are currently evaluating the impact of these new standards on our consolidated financial statements.

Debt Issuance Costs

In April 2015, the FASB issued ASU No. 2015-03, Interest-Imputation of Interest (Subtopic 835-30), to simplify the required presentation of debt issuance costs. The amended guidance requires that debt issuance costs be presented in the balance sheet as a direct reduction from the carrying amount of the related debt liability rather than as an asset. It is effective for financial statements issued for fiscal years beginning after December 15, 2015, our fiscal 2017, with early adoption permitted. The new guidance will be applied retrospectively to each prior period presented. See Note H. Debt for our debt balances at September 30, 2016 and 2015 net of the debt issuance costs.

Going Concern

In August 2014, the FASB issued ASU No. 2014-15, "Presentation of Financial Statements - Going Concern: Disclosure of Uncertainties about an Entity's Ability to Continue as a Going Concern," which requires management to evaluate whether there is substantial doubt about the entity's ability to continue as a going concern and, if so, provide certain footnote disclosures. This ASU is effective for annual periods ending after December 15, 2016, including interim reporting periods thereafter. We do not anticipate that adopting this standard will have an impact on the financial statements and are currently evaluating the potential impact to our footnote disclosures.

C. Restructuring Charges

Restructuring charges for 2016 were $76.3 million, $76.9 million related to the plan announced in October 2015 described below, offset by a $0.6 million credit related to prior year restructuring actions.

On October 23, 2015, we initiated a plan to restructure our workforce and consolidate select facilities in order to reduce our cost structure to enable us to invest in our identified growth opportunities. The restructuring is expected to result in a charge of up to $80.0 million. In 2016, we recorded restructuring charges of $74.9 million attributable to termination benefits associated with 810 employees. Additionally, we recorded charges of $1.3 million related to the closure of excess facilities. The majority of the remaining charges are associated with excess facilities and are expected to be recorded in the first and second quarters of 2017.

On April 4, 2015, we committed to a plan to restructure our workforce and consolidate select facilities to realign our global workforce to increase investment in our Internet of Things business and to reduce our cost structure through organizational efficiencies in the face of significant foreign currency depreciation relative to the U.S. Dollar and a more cautious outlook on global macroeconomic conditions. In 2015, we recorded restructuring charges of $42.0 million attributable termination benefits associated with 411 employees. Additionally, we recorded charges of $1.4 million related to the closure of excess facilities. The facility charge reflects estimated costs including gross lease commitments of approximately $2.3 million, net of estimated sublease income of $0.9 million. As of September 30, 2015, this restructuring plan was substantially completed.

In September 2014, in support of integrating businesses acquired and the continued evolution of our business model, we committed to a plan to restructure our workforce. As a result, we recorded a restructuring charge of $26.8 million associated with severance and related costs associated with 283 employees. Additionally, in 2014, we recorded restructuring charges of $1.6 million, primarily associated with the completion of the restructuring actions initiated in the fourth quarter of 2013.

The following table summarizes restructuring charges reserve activity for the three years ended September 30, 2016:

	Employee Severance and Related Benefits	Facility Closures and Other Costs	Consolidated Total
		(in thousands)	
Balance, October 1, 2013	$ 19,234	$ 295	$ 19,529
Charges to operations	27,918	488	28,406
Cash disbursements	(20,334)	(241)	(20,575)
Foreign currency impact	(983)	(7)	(990)
Balance, September 30, 2014	25,835	535	26,370
Charges to operations	41,997	1,412	43,409
Cash disbursements	(52,882)	(706)	(53,588)
Foreign currency impact	(864)	(73)	(937)
Balance, September 30, 2015	14,086	1,168	15,254
Charges to operations	74,929	1,344	76,273
Cash disbursements	(53,966)	(1,053)	(55,019)
Foreign currency impact	128	(28)	100
Balance, September 30, 2016	$ 35,177	$ 1,431	$ 36,608

The accrual for facility closures and related costs is included in accrued expenses and other current liabilities in the Consolidated Balance Sheets, and the accrual for employee severance and related benefits is included in accrued compensation and benefits in the Consolidated Balance Sheets.

D. Property and Equipment

Property and equipment consisted of the following:

	September 30, 2016	September 30, 2015
	(in thousands)	
Computer hardware and software	$ 267,928	$ 246,756
Furniture and fixtures	20,742	18,370
Leasehold improvements	43,769	38,005
Gross property and equipment	332,439	303,131
Accumulated depreciation and amortization	(265,326)	(237,969)
Net property and equipment	$ 67,113	$ 65,162

Depreciation expense was $28.8 million, $28.9 million and $27.1 million in 2016, 2015 and 2014, respectively.

E. Acquisitions

In 2016, we completed the acquisition of Kepware (on January 12, 2016) and Vuforia (on November 3, 2015), in 2015, we completed the acquisition of ColdLight (on May 7, 2015), and in 2014, we completed the acquisitions of Axeda (on August 11, 2014), Atego (on June 30, 2014) and ThingWorx (on December 30, 2013). The results of operations of these acquired businesses have been included in our consolidated financial statements beginning on their respective acquisition dates. Our results of operations prior to these acquisitions, if presented on a pro forma basis, would not differ materially from our reported results.

These acquisitions have been accounted for as business combinations. Assets acquired and liabilities assumed have been recorded at their estimated fair values as of the respective acquisition date. The fair values of intangible assets for Kepware, ColdLight and the 2014 acquisitions were based on valuations using an income approach, with estimates and assumptions provided by management of the acquired companies and PTC. The fair values of intangible assets for Vuforia were based on valuations using a cost approach which requires the use of significant estimates and assumptions, including estimating costs to reproduce an asset. The process for estimating the fair values of identifiable intangible assets as well as the Kepware, ColdLight and ThingWorx contingent consideration liabilities requires the use of significant estimates and assumptions, including estimating future cash flows and developing appropriate discount rates. The excess of the purchase price over the tangible assets, identifiable intangible assets and assumed liabilities was recorded as goodwill.

In accounting for these business combinations, we recorded net deferred tax liabilities of $21.6 million in 2014, primarily related to the tax effect of the acquired intangible assets other than goodwill that are not deductible for income tax purposes, partially offset by net operating loss carryforwards. As described in Note G, these net deferred tax liabilities reduced our net deferred tax asset balance and resulted in a tax benefit to decrease our valuation allowance in the U.S. and the U.K.

Acquisition-related costs were $3.5 million, $8.9 million and $12.7 million in 2016, 2015 and 2014, respectively. Acquisition-related costs include direct costs of completing an acquisition (e.g., investment banker fees and professional fees, including legal and valuation services) and expenses related to acquisition integration activities (e.g., professional fees, severance, and retention bonuses). In addition, subsequent adjustments to our initial estimated amounts of Kepware, ColdLight and ThingWorx contingent consideration, primarily net present value changes, are included within acquisition-related charges. These costs have been classified in general and administrative expenses in the accompanying Consolidated Statements of Operations.

2016 Acquisitions

Kepware

On January 12, 2016, we acquired all of the ownership interest in Kepware, Inc., for $99.4 million in cash (net of cash acquired of $0.6 million) and, $16.9 million representing the fair value of contingent consideration payable upon achievement of targets described below. We borrowed $100.0 million under our existing credit facility in January of 2016 to fund the acquisition.

The acquisition of Kepware's KEPServerEX® communication platform enhances our portfolio of Internet of Things (IoT) technology, and accelerates our entry into the factory setting and industrial IoT. At the time of the acquisition, Kepware had historical annualized revenues which were immaterial to our financial results. Kepware added approximately $16 million to our 2016 revenue and approximately $15 million in costs and expenses.

The former shareholders of Kepware are eligible to receive additional consideration of up to $18.0 million, which is contingent on the achievement of certain Financial Performance, Product Integration and Business Integration targets (as defined in the Stock Purchase Agreement) within 24 months from April 1, 2016. If such targets are achieved within the defined 12 month, 18 month and 24 month earn-out periods, the consideration corresponding to each target will be earned and payable in cash. Up to $9.6 million of the total contingent consideration is eligible to become payable in 2017, and the remainder, if subsequently earned, will become payable in 2018. In connection with accounting for the business combination, we recorded a liability of $16.9 million representing the fair value of the contingent consideration. The liability was valued using a discounted cash flow method and a probability weighted estimate of achievement of the targets. The estimated undiscounted range of outcomes for the contingent consideration was $16.9 million to $18.0 million at the acquisition date. As of September 30, 2016, our estimate of the liability was increased to $17.1 million. We will continue to assess the probability that the unearned milestones will be met and at what level each reporting period. The subsequent changes in the estimated fair value of the liability are reflected in earnings until the liability is fully settled.

The purchase price allocation resulted in $77.1 million of goodwill, which will be deductible for income tax purposes. Intangible assets of $34.5 million includes purchased software of $28.7 million, customer relationships of $5.2 million and trademarks of $0.6 million, which are being amortized over useful lives of 10 years, 10 years and 6 years, respectively, based upon the pattern in which economic benefits related to such assets are expected to be realized.

The resulting amount of goodwill reflects our expectations of the following benefits: 1) Kepware’s protocol translators and connectivity platform strengthen the ThingWorx technology platform and accelerate our entry into the factory setting and Industrial IoT (IIoT); 2) cross-selling opportunities for our integrated technology platforms in the critical infrastructure markets to drive revenue growth; and 3) Kepware’s 20 years of manufacturing experience strengthens our manufacturing talent and domain expertise and provides support for our manufacturing strategy initiatives.

Vuforia

On November 3, 2015, pursuant to an Asset Purchase Agreement, we acquired the Vuforia business from Qualcomm Connected Experiences, Inc., a subsidiary of Qualcomm Incorporated, for $64.8 million in cash (net of cash acquired of $4.5 million). We borrowed $50.0 million under our credit facility to finance this acquisition.

The acquisition of Vuforia's augmented reality (AR) technology platform enhances our technology portfolio and accelerates our strategy as a leading provider of technologies and solutions that blend the digital and physical worlds. At the time of the acquisition, Vuforia had approximately 80 employees and historical annualized revenues which were immaterial to our financial results.

The purchase price allocation resulted in $23.3 million of goodwill, $41.2 million of technology and $0.3 million of net tangible assets. The acquired technology is being amortized over a useful life of 6 years. The resulting amount of goodwill reflects the value of the synergies created by integrating Vuforia's augmented technology platform into PTC's IoT solutions.

The total purchase price for our 2016 acquisitions was allocated to assets and liabilities acquired as follows:

Purchase price allocation:	Kepware	Vuforia
	(in thousands)	
Goodwill	$ 77,081	$ 23,316
Identifiable intangible assets	34,500	41,200
Cash	590	4,466
Other assets and liabilities, net	4,729	261
Total allocation of purchase price consideration	116,900	69,243
Less: cash acquired	(590)	(4,466)
Total purchase price allocation, net of cash acquired	116,310	64,777
Less: contingent consideration	(16,900)	—
Net cash used for acquisitions of businesses	$ 99,410	$ 64,777

2015 Acquisition

ColdLight

On May 7, 2015, we acquired all of the ownership interest of ColdLight Solutions, LLC, a company that offered solutions for data machine learning and predictive analytics, for approximately $98.6 million in cash (net of cash acquired of $1.3 million).

The total purchase price for ColdLight was allocated to assets and liabilities acquired as follows:

Purchase price allocation:	(in thousands)
Goodwill	$ 85,288
Identifiable intangible assets	17,620
Cash	1,313
Other assets and liabilities, net	(516)
Total allocation of purchase price consideration	103,705
Less: cash acquired	(1,313)
Total purchase price allocation, net of cash acquired	102,392
Less: contingent consideration	(3,800)
Net cash used to acquire ColdLight	$ 98,592

The purchase price allocation resulted in $85.3 million of goodwill, which will be deductible for income tax purposes. Intangible assets of $17.6 million includes purchased software of $13.6 million, customer relationships of $3.5 million and trademarks of $0.5 million, which are being amortized over useful lives of 10 years, 9 years and 7 years, respectively, based upon the pattern in which economic benefits related to such assets are expected to be realized.

The resulting amount of goodwill reflects our expectations of the following benefits: (1) ColdLight provides a differentiated machine learning platform for critical data analytics in our solution portfolio; (2) ColdLight's Neuron® product suite can automate the analytics process, reducing the dependency on manual processes; (3) ColdLight is addressing challenging aspects of data analytics aligned with the PTC / ThingWorx analytics vision; (4) ColdLight has a presence in industries outside of PTC's traditional markets which create a foundation for us to pursue opportunities in non-traditional vertical markets.

The former shareholders of ColdLight are eligible to receive additional consideration (the earn-out) of up to $5.0 million, which is contingent upon achievement of certain technology milestones within two years of the acquisition. If an earn-out milestone is achieved, a portion of the contingent consideration becomes earned and payable in cash after each six-month period. In connection with accounting for the business combination, we recorded a liability of $3.8 million, representing the fair value of the contingent consideration. The liability was valued using a discounted cash flow method and a probability weighted estimate of achievement of the technology milestones. The estimated undiscounted range of outcomes for the contingent consideration was $3.8 million to $5.0 million at the acquisition date. As of September 30, 2016, our estimate of the liability was $2.5 million, net of $2.5 million in payments made in 2016. $1.9 million of the total payments represents the fair value of the liability recorded at acquisition date and is included in financing activities in the Consolidated Statements of Cash Flows. The remaining $0.6 million of the total payments represents changes in the estimated liability recorded at acquisition date and is included in operating activities in the Consolidated Statements of Cash Flow.

2014 Acquisitions

Axeda and Atego

In the fourth quarter of 2014, we acquired all of the outstanding shares of capital stock of Axeda (a privately-held U.S.-based company) and Atego Group Limited (a privately-held company with operations in the U.K., the U.S. and France) for a total of $212.0 million, net of $13.1 million of cash acquired. The acquisitions resulted in goodwill of $157.7 million, intangible assets of $86.9 million and deferred tax liabilities related to the intangible assets of $12.6 million.

ThingWorx

In the second quarter of 2014, we acquired ThingWorx, Inc. for $111.5 million (net of cash acquired of $0.1 million). The former shareholders of ThingWorx were eligible to receive additional consideration (the earn-out) of up to $18.0 million if certain profitability and bookings targets were achieved within two years of the acquisition from December 30, 2013 to January 1, 2016. In connection with accounting for the business combination, we recorded a liability representing the fair value of the contingent consideration. The liability was valued using a discounted cash flow method and a probability weighted estimate of achievement the financial targets.

The ThingWorx contingent earn-out first year payment criteria were attained in fiscal 2015. As such, $9.0 million of the total contingent consideration was paid in July 2015. Of this payment, $4.3 million represents the fair value of the first installment payment recorded at the acquisition date and is included in financing activities in the Consolidated Statements of Cash Flows. The remaining $4.7 million of this payment represents changes in the estimated liability recorded since the acquisition date and was included in operating activities in the Consolidated Statements of Cash Flows. The contingent earn-out second year payment criteria were attained in fiscal 2016. We paid the remaining $9.0 million of the total contingent consideration in April 2016. Of this payment, $8.7 million represents the fair value of the second installment payment liability recorded at the acquisition date and is included in financing activities in the Consolidated Statements of Cash Flows. The remaining $0.3 million of this payment represents changes in the estimated liability recorded since the acquisition date and is included in operating activities in the Consolidated Statements of Cash Flows.

F. Goodwill and Acquired Intangible Assets

At the start of 2016, we had two operating and reportable segments: (1) Software Products and (2) Services. In the third quarter of 2016, we changed our operating and reportable segments from two to three: (1) Solutions Group, (2) IoT Group and (3) Professional Services. We assess goodwill for impairment at the reporting unit level. Our reporting units are determined based on the components of our operating segments that constitute a business for which discrete financial information is available and for which operating results are regularly reviewed by segment management. Our reporting units are the same as our operating segments.

As of September 30, 2016, goodwill and acquired intangible assets in the aggregate attributable to our Solutions Group, IoT Group and Professional Services segment was $1,196.6 million, $252.8 million and $30.7 million, respectively. As of September 30, 2015, goodwill and acquired intangible assets in the aggregate attributable to our software products segment and services segment was $1,297.9 million and $62.4 million, respectively.

Goodwill is tested for impairment at least annually, or on an interim basis if an event occurs or circumstances change that would, more likely than not, reduce the fair value of the reporting segment below its carrying value. We completed our annual goodwill impairment review as of July 2, 2016 and concluded that no impairment charge was required as of that date. To conduct these tests of goodwill, the fair value of the reporting unit is compared to its carrying value. If the reporting unit's carrying value exceeds its fair value, we record an impairment loss equal to the difference between the carrying value of goodwill and its implied fair value. We estimate the fair values of our reporting units using discounted cash flow valuation models. Those models require estimates of future revenues, profits, capital expenditures, working capital, terminal values based on revenue multiples, and discount rates for each reporting unit. We estimate these amounts by evaluating historical trends, current budgets, operating plans and industry data. The estimated fair value of each reporting unit was approximately at least double its carrying value as of July 2, 2016. Through September 30, 2016, there have not been any events or changes in circumstances that indicate that the carrying values of goodwill or acquired intangible assets may not be recoverable.

Goodwill and acquired intangible assets consisted of the following:

	September 30, 2016			September 30, 2015		
	Gross Carrying Amount	Accumulated Amortization	Net Book Value	Gross Carrying Amount	Accumulated Amortization	Net Book Value
			(in thousands)			
Goodwill (not amortized)			$ 1,169,813			$ 1,069,041
Intangible assets with finite lives (amortized) (1):						
Purchased software	$ 354,595	$ 199,192	$ 155,403	$ 284,257	$ 174,887	$ 109,370
Capitalized software	22,877	22,877	—	22,877	22,877	—
Customer lists and relationships	355,698	206,515	149,183	349,938	174,017	175,921
Trademarks and trade names	19,007	13,323	5,684	18,534	12,759	5,775
Other	3,955	3,920	35	3,946	3,711	235
	$ 756,132	$ 445,827	$ 310,305	$ 679,552	$ 388,251	$ 291,301
Total goodwill and acquired intangible assets			$ 1,480,118			$ 1,360,342

(1) The weighted average useful lives of purchased software, capitalized software, customer lists and relationships, trademarks and trade names and other intangible assets with a remaining net book value are 9 years, 10 years, 10 years and 3 years, respectively.

The changes in the carrying amounts of goodwill from October 1, 2015 to September 30, 2016 are due to the impact of acquisitions (described in Note E) and to foreign currency translation adjustments related to those asset balances that are recorded in non-U.S. currencies.

Changes in goodwill presented by reportable segment were as follows:

	Software Products Segment	Services Segment	Total
		(in thousands)	
Balance, October 1, 2014	$ 959,768	$ 52,759	$ 1,012,527
Axeda adjustment of purchase price from escrow	(180)	—	(180)
Acquisition of ColdLight	85,288	—	85,288
Foreign currency translation adjustments	(28,463)	(131)	(28,594)
Balance, September 30, 2015	$ 1,016,413	$ 52,628	$ 1,069,041
Acquisition of Vuforia	23,316	—	23,316
Acquisition of Kepware	77,081	—	77,081
Foreign currency translation adjustments	228	(6)	222
Balance, July 2, 2016 prior to reallocation	$ 1,117,038	$ 52,622	$ 1,169,660

	Solutions Group	IoT Group	Professional Services	Total
		(in thousands)		
Balance, July 2, 2016 after reallocation	$ 1,050,013	$ 90,053	$ 29,594	$ 1,169,660
Foreign currency translation adjustments	137	12	4	153
Balance, September 30, 2016	$ 1,050,150	$ 90,065	$ 29,598	$ 1,169,813

The aggregate amortization expense for intangible assets with finite lives recorded for the years ended September 30, 2016, 2015 and 2014 was reflected in our Consolidated Statements of Operations as follows:

	Year ended September 30,		
	2016	2015	2014
		(in thousands)	
Amortization of acquired intangible assets	$ 33,198	$ 36,129	$ 32,127
Cost of software revenue	24,604	19,402	18,112
Total amortization expense	$ 57,802	$ 55,531	$ 50,239

The estimated aggregate future amortization expense for intangible assets with finite lives remaining as of September 30, 2016 is $58.0 million for 2017, $57.0 million for 2018, $49.9 million for 2019, $47.2 million for 2020, $41.8 million for 2021, and $56.5 million thereafter.

G. Income Taxes

Our income (loss) before income taxes consisted of the following:

	Year ended September 30,		
	2016	2015	2014
		(in thousands)	
Domestic	$ (156,166)	$ (110,867)	$ 17,038
Foreign	88,974	137,392	169,074
Total income before income taxes	$ (67,192)	$ 26,525	$ 186,112

Our (benefit) provision for income taxes consisted of the following:

	Year ended September 30,		
	2016	2015	2014
		(in thousands)	
Current:			
Federal	$ 2,417	$ 3,907	$ 12,792
State	571	599	2,062
Foreign	28,467	23,823	31,010
	31,455	28,329	45,864
Deferred:			
Federal	965	(20,809)	(13,200)
State	515	(566)	(2,085)
Foreign	(45,662)	(27,986)	(4,661)
	(44,182)	(49,361)	(19,946)
Total provision (benefit) for income taxes	$ (12,727)	$ (21,032)	$ 25,918

The reconciliation between the statutory federal income tax rate and our effective income tax rate is shown below:

	Year ended September 30,		
	2016	2015	2014
Statutory federal income tax rate	(35)%	35 %	35 %
Change in valuation allowance	57 %	63 %	(11)%
State income taxes, net of federal tax benefit	— %	7 %	1 %
Federal and state research and development credits	(9)%	(8)%	— %
Resolution of uncertain tax positions	— %	(11)%	— %
Foreign rate differences	(41)%	(213)%	(19)%
Foreign withholding tax	3 %	14 %	3 %
U.S. permanent items	4 %	34 %	4 %
Other, net	2 %	— %	1 %
Effective income tax rate	(19)%	(79)%	14 %

In 2016 and 2015, our effective tax rate was lower than the 35% statutory federal income tax rate due, in large part, to our corporate structure in which our foreign taxes are at an effective tax rate lower than the U.S. A significant amount of our foreign earnings is generated by our subsidiaries organized in Ireland and in 2016, 2015 and 2014, the foreign rate differential predominantly relates to these Irish earnings. Our foreign rate differential in 2016 and 2015 includes the continuing rate benefit from a business realignment completed on September 30, 2014 in which intellectual property was transferred between two wholly-owned foreign subsidiaries. The realignment allows us to more efficiently manage the distribution of our products to European customers. In 2016 and 2015, this realignment resulted in a tax benefit of approximately $28 million and $24 million, respectively. In 2016 the change in valuation allowance primarily relates to U.S. losses not benefitted and the release of valuation allowance totaling $3.1 million in two foreign subsidiaries. Additionally, our provision reflects a $6.0 million tax benefit related to a U.S. research and development tax credit which was offset by a corresponding provision to increase our U.S. valuation allowance.

Additionally, in 2015, U.S. permanent items include the tax effect of a $14.5 million expense related to a pending legal settlement. Other factors impacting the effective tax rate include: the release of a valuation allowance totaling $18.7 million relating to the U.S. pension plan termination, foreign withholding taxes of $3.8 million, a tax benefit of $3.1 million relating to the reassessment of our reserve requirements and a benefit of $1.4 million in conjunction with the reorganization of our Atego U.S. subsidiaries. Additionally, our provision reflects a $2.1 million tax benefit related to a retroactive extension of the U.S. research and development tax credit enacted in the first quarter of 2015. This benefit was offset by a corresponding provision to increase our U.S. valuation allowance.

In 2014, our effective tax rate was lower than the 35% statutory federal income tax rate due, in large part, to the reversal of a portion of the valuation allowance against U.S. deferred tax assets. We recorded benefits resulting from 2014 acquisitions as described below. Other factors impacting the effective tax rate include: our corporate structure in which our foreign taxes are at an effective tax rate lower than the U.S. rate, foreign withholding taxes of $5.1 million and the establishment of a valuation allowance totaling $3.5 million in two foreign subsidiaries.

Acquisitions in 2014 were accounted for as business combinations. Assets acquired, including the fair value of acquired tangible assets, intangible assets and assumed liabilities were recorded, and we recorded net deferred tax liabilities of $21.6 million in 2014, primarily related to the tax effect of the acquired intangible assets that are not deductible for income tax purposes. These deferred tax liabilities reduced our net deferred tax asset balance and resulted in a tax benefit of $18.1 million in 2014, to decrease our valuation allowance in jurisdictions where we have recorded a valuation allowance (primarily the U.S.). As these decreases in the valuation allowance are not part of the accounting for business combinations (the fair value of the assets acquired and liabilities assumed), they were recorded as an income tax benefit.

At September 30, 2016 and 2015, income taxes payable and income tax accruals recorded in accrued income taxes, other current liabilities, and other liabilities on the accompanying Consolidated Balance Sheets were $18.7 million ($6.3 million in accrued income taxes, $5.5 million in other current liabilities and $6.9 million in other liabilities) and $14.7 million ($4.0 million in accrued income taxes, $2.2 million in other current liabilities and $8.5 million in other liabilities), respectively. At September 30, 2016 and 2015, prepaid taxes recorded in prepaid expenses on the accompanying Consolidated Balance Sheets were $9.9 million and $8.2 million, respectively. We made net income tax payments of $25.5 million, $30.1 million and $25.5 million in 2016, 2015 and 2014, respectively.

The significant temporary differences that created deferred tax assets and liabilities are shown below:

	September 30,	
	2016	2015
	(in thousands)	
Deferred tax assets (1):		
Net operating loss carryforwards	$ 100,033	$ 71,533
Foreign tax credits	18,041	15,962
Capitalized research and development expense	22,504	31,690
Pension benefits	14,348	11,009
Deferred revenue	65,145	71,399
Stock-based compensation	19,846	16,777
Other reserves not currently deductible	25,993	21,940
Amortization of intangible assets	54,069	62,227
Other tax credits	41,381	37,270
Depreciation	3,002	3,465
Capital loss carryforward	8,019	8,040
Deferred interest	7,622	3,557
Other	14,778	6,559
Gross deferred tax assets	394,781	361,428
Valuation allowance	(235,503)	(198,168)
Total deferred tax assets	159,278	163,260
Deferred tax liabilities (1):		
Acquired intangible assets not deductible	(78,663)	(124,401)
Pension prepayments	(542)	(395)
Deferred revenue	(2,039)	(3,110)
Other	(2,092)	(3,598)
Total deferred tax liabilities	(83,336)	(131,504)
Net deferred tax assets	$ 75,942	$ 31,756

(1) See Note B. *Recent Accounting Pronouncements-Deferred Taxes* regarding a change in the balance sheet classification of our deferred taxes.

We have concluded, based on the weight of available evidence, that a full valuation allowance continues to be required against our U.S. net deferred tax assets as they are not more likely than not to be realized in the future. We will continue to reassess whether a valuation allowance is required each financial reporting period.

For U.S. tax return purposes, net operating loss (NOL) carryforwards and tax credits are generally available to be carried forward to future years, subject to certain limitations. At September 30, 2016, we had U.S. federal NOL carryforwards of $247.1 million that expire in 2018 to 2036. These include NOL carryforwards from acquisitions of $82.2 million. The utilization of these NOL carryforwards is limited as a result of the change in ownership rules under Internal Revenue Code Section 382. NOL's totaling $45.1 million relate to windfall tax benefits that have not been recognized, the impact of which will be recorded in APIC when realized.

As of September 30, 2016, we had Federal R&D credit carryforwards of $25.2 million, which expire beginning in 2021 and ending in 2036, and Massachusetts R&D credit carryforwards of $24.8 million, which expire beginning in 2017 and ending in 2031. We also had foreign tax credits of $18.0 million, which expire beginning in 2023 and ending in 2026. A full valuation allowance is recorded against these carryforwards. Federal R&D credits totaling $14.0 million relate to windfall tax benefits that have not been recognized, the impact of which will be recorded in APIC when realized.

We also have NOL carryforwards in non-U.S. jurisdictions totaling $102.4 million, the majority of which do not expire. We also have non-U.S. tax credit carryforwards of $7.5 million that expire beginning in 2027 and ending in 2035. There are limitations imposed on the utilization of such NOLs that could restrict the recognition of any tax benefits.

As of September 30, 2016, we have a valuation allowance of $209.0 million against net deferred tax assets in the U.S. and a valuation allowance of $26.5 million against net deferred tax assets in certain foreign jurisdictions. The valuation allowance recorded against net deferred tax assets of certain foreign jurisdictions is established primarily for our net operating loss carryforwards, the majority of which do not expire. There are limitations imposed on the utilization of such net operating losses that could restrict the recognition of any tax benefits.

The changes to the valuation allowance were primarily due to:

	Year ended September 30,		
	2016	2015	2014
		(in millions)	
Valuation allowance beginning of year	$ 198.2	$ 177.5	$ 156.5
Net release of valuation allowance (1)	(3.1)	(18.7)	(18.1)
Net increase/decrease in deferred tax assets with a full valuation allowance	39.8	39.4	14.1
Establish valuation allowance for acquired businesses	—	—	21.5
Establish valuation allowance in foreign jurisdictions	0.6	—	3.5
Valuation allowance end of year	$ 235.5	$ 198.2	$ 177.5

(1) In 2016, this is attributable to the release in two foreign jurisdictions. In 2015, this is attributable to a reduction in deferred tax assets associated with our U.S. pension plan, both of which are described above and in 2014 the recognition of deferred tax liabilities recorded in connection with accounting for acquisitions.

Our policy is to record estimated interest and penalties related to the underpayment of income taxes as a component of our income tax provision. In 2016, 2015 and 2014, we recorded interest expense of $0.5 million, $0.1 million and $0.3 million, respectively. In 2016, 2015 and 2014, we had no tax penalty expense in our income tax provision. As of September 30, 2016 and 2015, we had accrued $2.0 million and $1.5 million, respectively, of net estimated interest expense related to income tax accruals. We had no accrued tax penalties as of September 30, 2016, 2015 or 2014.

	Year ended September 30,		
Unrecognized tax benefits	2016	2015	2014
		(in millions)	
Unrecognized tax benefit beginning of year	$ 14.1	$ 15.0	$ 13.7
Tax positions related to current year:			
Additions	1.0	1.3	2.2
Tax positions related to prior years:			
Additions	0.4	0.8	0.3
Reductions	—	(3.0)	(0.1)
Settlements	—	—	(0.6)
Statute expirations	—	—	(0.5)
Unrecognized tax benefit end of year	$ 15.5	$ 14.1	$ 15.0

If all of our unrecognized tax benefits as of September 30, 2016 were to become recognizable in the future, we would record a benefit to the income tax provision of $13.9 million (which would be partially offset by an increase in the U.S. valuation allowance of $4.8 million) and a credit to additional paid-in capital (APIC) of $1.6 million. Although we believe our tax estimates are appropriate, the final determination of tax audits and any related litigation could result in favorable or unfavorable changes in our estimates. We anticipate the settlement of tax audits may be finalized within the next twelve months and could result in a decrease in our unrecognized tax benefits of up to $8.0 million.

In the fourth quarter of 2016, we received an assessment from the tax authorities in Korea related to an ongoing tax audit of approximately $12 million. The assessment relates to various tax issues but primarily to foreign withholding taxes. We intend to appeal and will vigorously defend our positions. We believe that it is more likely than not that our positions will be sustained upon appeal. Accordingly, we have not recorded a tax reserve for this matter. We paid this assessment in the first quarter of 2017.

In the normal course of business, PTC and its subsidiaries are examined by various taxing authorities, including the IRS in the United States. As of September 30, 2016, we remained subject to examination in the following major tax jurisdictions for the tax years indicated:

Major Tax Jurisdiction	Open Years
United States	2014 through 2016
Germany	2011 through 2016
France	2013 through 2016
Japan	2011 through 2016
Ireland	2012 through 2016

Additionally, net operating loss and tax credit carryforwards from certain earlier periods in these jurisdictions may be subject to examination to the extent they are utilized in later periods.

We incurred expenses related to stock-based compensation in 2016, 2015 and 2014 of $66.0 million, $50.2 million and $50.9 million, respectively. Accounting for the tax effects of stock-based awards requires that we establish a deferred tax asset as the compensation is recognized for financial reporting prior to recognizing the tax deductions. The tax benefit recognized in the Consolidated Statements of Operations related to stock-based compensation totaled $0.7 million, $0.7 million and $0.7 million in 2016, 2015 and 2014, respectively. Upon the settlement of the stock-based awards (i.e., exercise, vesting, forfeiture or cancellation), the actual tax deduction is compared with the cumulative financial reporting compensation cost and any excess tax deduction is considered a windfall tax benefit and is tracked in a "windfall tax benefit pool" to offset any future tax deduction shortfalls and will be recorded as increases to APIC in the period when the tax deduction reduces income taxes payable. In 2016, 2015 and 2014, we recorded windfall tax benefits of $0.1 million, $0.0 million and $10.4 million to APIC, respectively. We follow the with-and-without approach for the direct effects of windfall tax deductions to determine the timing of the recognition of benefits for windfall tax deductions. We follow the direct method for indirect effects. As of September 30, 2016, the tax effect of windfall tax deductions which had not yet reduced taxes payable was $33.4 million.

We have not provided for U.S. income taxes or foreign withholding taxes on foreign unrepatriated earnings as it is our current intention to permanently reinvest these earnings outside the U.S. unless it can be done with no significant tax cost, with the exception of a foreign holding company formed in 2014. In 2016, we incurred U.S. tax expense of $12 million on the repatriation of the 2016 earnings of this foreign holding company. This expense was offset by a change in the valuation allowance. If we decide to change this assertion in the future to repatriate any additional non-U.S. earnings, we may be required to establish a deferred tax liability on such earnings. The cumulative basis difference associated with the undistributed earnings of our subsidiaries totaled approximately $789 million and $684 million as of September 30, 2016 and 2015, respectively. The amount of unrecognized deferred tax liability on the undistributed earnings cannot be practicably determined at this time.

H. Debt

As of September 30, 2016 and 2015, we had the following long-term borrowing obligations:

	September 30, 2016	September 30, 2015
	(in thousands)	
6.000% Senior notes due 2024	$ 500,000	$ —
Credit facility-revolver	258,125	193,125
Credit facility-term loan	—	475,000
Total debt	758,125	668,125
Unamortized debt issuance costs	(10,709)	(7,587)
Total debt, net of issuance costs	$ 747,416	$ 660,538
Reported as		
Current portion of long-term debt	$ —	$ 50,000
Long-term debt	758,125	618,125
Total debt	$ 758,125	$ 668,125

Senior Unsecured Notes

In May 2016, we issued $500 million in aggregate principal amount of 6.0% senior, unsecured long-term debt at par value, due in 2024. We used the net proceeds from the sale of the notes to repay a portion of our outstanding revolving loan under our current credit facility. Interest is payable semi-annually on November 15 and May 15. The debt indenture includes covenants that limit our ability to, among other things, incur additional debt, grant liens on our properties or capital stock, enter into sale and leaseback transactions or asset sales, and make capital distributions. We were in compliance with all of the covenants as of September 30, 2016.

On and after May 15, 2019, we may redeem the senior notes at any time in whole or from time to time in part at specified redemption prices. In certain circumstances constituting a change of control, we will be required to make an offer to repurchase the senior notes at a purchase price equal to 101% of the aggregate principal amount of the notes, plus accrued and unpaid interest. Our ability to repurchase the senior notes in such event may be limited by law, by the indenture associated with the senior notes, by our then-available financial resources or by the terms of other agreements to which we may be party at such time. If we fail to repurchase the senior notes as required by the indenture, it would constitute an event of default under the indenture governing the senior notes which, in turn, may also constitute an event of default under other obligations.

As of September 30, 2016, the total estimated fair value of the Notes was approximately $536.3 million, which is based on quoted prices for the notes on that date.

Credit Agreement

In November 2015, we entered into a multi-currency credit facility with a syndicate of sixteen banks for which JPMorgan Chase Bank, N.A. acts as Administrative Agent. We use the credit facility for general corporate purposes, including acquisitions of businesses, share repurchases and working capital requirements. As of September 30, 2016, the fair value of our credit facility approximates its book value.

The credit facility initially consisted of a $1 billion revolving loan commitment, which was reduced to $900 million in June 2016 pursuant to an amendment to the Credit Agreement. The loan commitment may be increased by an additional $500 million (in the form of revolving loans or term loans, or a combination thereof) if the existing or additional lenders are willing to make such increased commitments. The revolving loan commitment does not require amortization of principal and may be repaid in whole or in part prior to the scheduled maturity date at our option without penalty or premium. The credit facility matures on September 15, 2019, when all remaining amounts outstanding will be due and payable in full.

PTC and certain eligible foreign subsidiaries are eligible borrowers under the credit facility. Any borrowings by PTC Inc. under the credit facility would be guaranteed by PTC Inc.'s material domestic subsidiaries that become parties to the subsidiary guaranty, if any. As of the filing of this Form 10-K, there are no subsidiary guarantors of the obligations under the credit facility. Any borrowings by eligible foreign subsidiary borrowers would be guaranteed by PTC Inc. and any subsidiary guarantors. As of the filing of this Form 10-K, no amounts under the credit facility have been borrowed by an eligible foreign subsidiary borrower. In addition, PTC and certain of its material domestic subsidiaries' owned property (including equity interests) is subject to first priority perfected liens in favor of the lenders of this credit facility. 100% of the voting equity interests of certain of PTC's domestic subsidiaries and 65% of its material first-tier foreign subsidiaries are pledged as collateral for the obligations under the credit facility.

Loans under the credit facility bear interest at variable rates which reset every 30 to 180 days depending on the rate and period selected by PTC as described below. As of September 30, 2016, the annual rate for borrowing outstanding was 2.56%. Interest rates on borrowings outstanding under the credit facility range from 1.25% to 1.75% above an adjusted LIBO rate for Euro currency borrowings or would range from 0.25% to 0.75% above the defined base rate (the greater of the Prime Rate, the FRBYN rate plus 0.5%, or an adjusted LIBO rate plus 1%) for base rate borrowings, in each case based upon PTC's total leverage ratio. Additionally, PTC may borrow certain foreign currencies at rates set in the same range above the respective London interbank offered interest rates for those currencies, based on PTC's total leverage ratio. A quarterly commitment fee on the undrawn portion of the credit facility is required, ranging from 0.175% to 0.30% per annum, based upon PTC's total leverage ratio.

The credit facility limited PTC's and its subsidiaries' ability to, among other things: incur liens or guarantee obligations; pay dividends (other than to PTC) and make other distributions; make investments and enter into joint ventures; dispose of assets; and engage in transactions with affiliates, except on an arms-length basis. Under the credit facility, PTC and its material domestic subsidiaries may not invest cash or property in, or loan to, PTC's foreign subsidiaries in aggregate amounts exceeding $75 million for any purpose and an additional $200 million for acquisitions of businesses. In addition, under the credit facility, PTC and its subsidiaries must maintain the following financial ratios:

- a total leverage ratio, defined as consolidated funded indebtedness to consolidated trailing four quarters EBITDA, not to exceed 4.00 to 1.00 as of the last day of any fiscal quarter;

- a senior secured leverage ratio, defined as senior consolidated total indebtedness (which excludes unsecured indebtedness) to the consolidated trailing four quarters EBITDA, not to exceed 3.00 to 1.00 as of the last day of any fiscal quarter; and
- a fixed charge coverage ratio, defined as the ratio of consolidated trailing four quarters EBITDA less consolidated capital expenditures to consolidated fixed charges, of not less than 3.50 to 1.00 as of the last day of any fiscal quarter.

As of September 30, 2016, our total leverage ratio was 3.55 to 1.00, our senior secured leverage ratio was 1.18 to 1.00 and our fixed charge coverage ratio was 7.14 to 1.00 and we were in compliance with all financial and operating covenants of the credit facility.

Any failure to comply with the financial or operating covenants of the credit facility would prevent PTC from being able to borrow additional funds, and would constitute a default, permitting the lenders to, among other things, accelerate the amounts outstanding, including all accrued interest and unpaid fees, under the credit facility and to terminate the credit facility. A change in control of PTC, as defined in the agreement, also constitutes an event of default, permitting the lenders to accelerate the indebtedness and terminate the credit facility.

We incurred $6.9 million in financing costs in connection with the Senior Notes in 2016. We incurred $7.9 million of origination costs in 2014 in connection with entering into prior credit facilities. These origination costs were recorded as deferred debt issuance costs when incurred and were being expensed over the remaining term of the obligations.

In 2016, 2015 and 2014, we paid $13.3 million, $10.1 million and $5.7 million, respectively, of interest on the credit facilities. The average interest rate on borrowings outstanding during 2016, 2015 and 2014 was approximately 3.0%, 1.7% and 1.6%, respectively.

I. Commitments and Contingencies

Leasing Arrangements

We lease office facilities under operating leases expiring at various dates through 2025. Certain leases require us to pay for taxes, insurance, maintenance and other operating expenses in addition to rent. Lease expense was $37.2 million, $36.9 million and $38.6 million in 2016, 2015 and 2014, respectively. At September 30, 2016, our future minimum lease payments under noncancellable operating leases are as follows:

Year ending September 30,	(in thousands)
2017	$ 39,994
2018	34,347
2019	27,150
2020	22,804
2021	14,943
Thereafter	16,776
Total minimum lease payments	$ 156,014

Amounts above include future minimum lease payments for our corporate headquarters facility located in Needham, Massachusetts. The lease for our headquarters facility was renewed in the first quarter of 2011 for an additional 10 years (through November 2022) with a ten year renewal option through November 2032. Under the terms of the lease, we are paying approximately $7.4 million in annual base rent plus operating expenses. The amended lease provides for $12.8 million in landlord funding for leasehold improvements which we completed in 2014. We capitalized these leasehold improvements and will amortize them to expense over the shorter of the lease term or their expected useful life. The $12.8 million of funding by the landlord is not included in the table above and reduces rent expense over the lease term.

As of September 30, 2016 and 2015, we had letters of credit and bank guarantees outstanding of $4.2 million (of which $1.2 million was collateralized) and $4 million (of which $1.1 million was collateralized), respectively, primarily related to our corporate headquarters lease.

Legal and Regulatory Matters

Korean Tax Audit

In July 2016, we received an assessment from the tax authorities in Korea related to an ongoing tax audit of approximately $12 million. See Note G. *Income Taxes* for additional information.

Follow-On China Investigation

The China Administration for Industry and Commerce initiated a follow-on investigation at our China subsidiary related to the China Investigation described below under Legal Proceedings. In October 2016, this matter was resolved for an amount that is not material to our results of operations; the associated liability is recorded in our 2016 financial results.

Legal Proceedings

On March 7, 2016, a putative class action lawsuit captioned *Matthew Crandall v. PTC Inc. et al*., No. 1:16-cv-10471, was filed against us and certain of our current and former officers and directors in the U.S. District Court for the District of Massachusetts ostensibly on behalf of purchasers of our stock during the period November 24, 2011 through July 29, 2015. The lawsuit, which seeks unspecified damages, interest, attorneys' fees and costs, alleges (among other things) that, during that period, PTC's public disclosures concerning investigations by the U.S. Securities and Exchange Commission and the U.S. Department of Justice into U.S. Foreign Corrupt Practices Act matters in China (the "China Investigation") were false and/or misleading. We have reached an agreement-in-principle with the plaintiff to settle this lawsuit for an amount that is not material to our results of operations and the associated liability has been accrued in our fiscal 2016 results. The settlement is conditioned on execution and final court approval of formal settlement documents. Accordingly, we cannot predict the outcome of this action nor when it will be resolved.

We are subject to various other legal proceedings and claims that arise in the ordinary course of business. We do not believe that resolving the legal proceedings and claims that we are currently subject to will have a material adverse impact on our financial condition, results of operations or cash flows. However, the results of legal proceedings cannot be predicted with certainty. Should any of these legal proceedings and claims be resolved against us, the operating results for a particular reporting period could be adversely affected.

Accruals

With respect to legal proceedings and claims, we record an accrual for a contingency when it is probable that a liability has been incurred and the amount of the loss can be reasonably estimated. For legal proceedings and claims for which the likelihood that a liability has been incurred is more than remote but less than probable, we estimate the range of possible outcomes. As of September 30, 2016 and 2015, we had a legal proceedings and claims accrual of $3.6 million and $30.5 million (including and accrual of $28.2 million for the China Investigation), respectively.

Guarantees and Indemnification Obligations

We enter into standard indemnification agreements in the ordinary course of our business. Pursuant to such agreements with our business partners or customers, we indemnify, hold harmless, and agree to reimburse the indemnified party for losses suffered or incurred by the indemnified party, generally in connection with patent, copyright or other intellectual property infringement claims by any third party with respect to our products, as well as claims relating to property damage or personal injury resulting from the performance of services by us or our subcontractors. The maximum potential amount of future payments we could be required to make under these indemnification agreements is unlimited. Historically, our costs to defend lawsuits or settle claims relating to such indemnity agreements have been minimal and we accordingly believe the estimated fair value of liabilities under these agreements is immaterial.

We warrant that our software products will perform in all material respects in accordance with our standard published specifications in effect at the time of delivery of the licensed products for a specified period of time. Additionally, we generally warrant that our consulting services will be performed consistent with generally accepted industry standards. In most cases, liability for these warranties is capped. If necessary, we would provide for the estimated cost of product and service warranties based on specific warranty claims and claim history; however, we have not incurred significant cost under our product or services warranties. As a result, we believe the estimated fair value of these liabilities is immaterial.

J. Stockholders' Equity

Preferred Stock

We may issue up to 5.0 million shares of our preferred stock in one or more series. 0.5 million of these shares are designated as Series A Junior Participating Preferred Stock. Our Board of Directors is authorized to fix the rights and terms for any series of preferred stock without additional shareholder approval.

Common Stock

Our Articles of Organization authorize us to issue up to 500 million shares of our common stock. Our Board of Directors has periodically authorized the repurchase of shares of our common stock. We were authorized to repurchase up to $100 million worth of shares with cash from operations in fiscal year 2014. Additionally, on August 4, 2014, our Board of Directors authorized us to repurchase up to an additional $600 million of our common stock through September 30, 2017. We intend to use cash from operations and borrowings under our credit facility to make such repurchases. In 2016, we did not repurchase any shares. We repurchased 2.7 million shares at a cost of $64.9 million in 2015 and 5.1 million shares at a cost of $224.9 million in 2014 (including $37.5 million held by the bank pending final settlement of the accelerated share repurchase ("ASR") agreement described below). All shares of our common stock repurchased are automatically restored to the status of authorized and unissued. Future repurchases of shares will reduce our cash balances.

On August 14, 2014, we entered into an accelerated share repurchase ("ASR") agreement with a major financial institution ("Bank"). The ASR allowed us to buy a large number of shares immediately at a purchase price determined by an average market price over a period of time. Under the ASR, we agreed to purchase $125.0 million of our common stock, in total, with an initial delivery to us in August 2014 of 2.3 million shares. We settled the ASR in December 2014 and the Bank delivered to us 1.1 million additional shares.

K. Equity Incentive Plan

Our 2000 Equity Incentive Plan (2000 Plan) provides for grants of nonqualified and incentive stock options, common stock, restricted stock, restricted stock units and stock appreciation rights to employees, directors, officers and consultants. We award restricted stock units as the principal equity incentive awards, including certain performance-based awards that are earned based on achieving performance criteria established by the Compensation Committee of our Board of Directors on or prior to the grant date. Each restricted stock unit represents the contingent right to receive one share of our common stock.

The fair value of restricted stock units granted in 2016, 2015 and 2014 was based on the fair market value of our stock on the date of grant. The weighted average fair value per share of restricted stock units granted in 2016, 2015 and 2014 was $37.25, $38.19 and $33.88, respectively. Pre-vesting forfeiture rates for purposes of determining stock-based compensation for 2016 were estimated by us to be 0% for directors and executive officers, 6% to 8% for vice president-level employees and 11% for all other employees. Pre-vesting forfeiture rates for purposes of determining stock-based compensation for 2015 and 2014 were estimated by us to be 0% for directors and executive officers, 2% to 4% for vice president-level employees and 7% for all other employees.

The following table shows total stock-based compensation expense recorded from our stock-based awards as reflected in our Consolidated Statements of Operations:

	Year ended September 30,		
	2016	2015	2014
		(in thousands)	
Cost of software revenue	$ 5,398	$ 4,296	$ 4,059
Cost of professional services revenue	5,393	5,871	6,351
Sales and marketing	14,659	14,189	13,441
Research and development	10,174	11,623	10,119
General and administrative	30,372	14,203	16,919
Total stock-based compensation expense	$ 65,996	$ 50,182	$ 50,889

The stock-based compensation expense in 2016 included $10 million of expense related to modifications of certain performance-based RSUs previously granted under our long-term incentive programs. The Compensation Committee of our Board of Directors amended these equity awards due to the impact of changes in our business model and strategy and foreign currency on our financial results.

As of September 30, 2016, total unrecognized compensation cost related to unvested restricted stock units expected to vest was approximately $81.9 million and the weighted average remaining recognition period for unvested awards was 17 months.

As of September 30, 2016, 5.1 million shares of common stock were available for grant under the 2000 Plan and 3.8 million shares of common stock were reserved for issuance upon the exercise of stock options and vesting of restricted stock units granted and outstanding.

Restricted stock unit activity for the year ended September 30, 2016	Shares	Weighted Average Grant Date Fair Value	Aggregate Intrinsic Value as of September 30, 2016
	(in thousands except grant date fair value data)		
Balance of nonvested outstanding restricted stock units October 1, 2015	3,654	$ 33.64	
Granted	2,484	$ 37.25	
Vested	(1,818)	$ 30.10	
Forfeited or not earned	(544)	$ 36.49	
Balance of nonvested outstanding restricted stock units September 30, 2016	3,776	$ 37.30	$ 167,314

	Restricted Stock Units		
Restricted stock unit grants	TSR Units (1)	Performance-based RSUs (2)	Service-based RSUs (2)
	(Number of Units in thousands)		
Year ended September 30, 2016	326	343	1,815

(1) The TSR units were granted to our executive officers pursuant to the terms described below.

(2) The service-based RSUs were issued to employees, our executive officers, our directors and a consultant. Executive officers may earn up to one or, for our CEO, two times the number of time-based RSUs (up to a maximum of 343 thousand shares) if certain performance conditions are met. Of the service-based RSUs, approximately 64 thousand shares will vest in one installment on or about the anniversary of the date of grant. Approximately 121 thousand shares will vest in two substantially equal annual installments on or about the anniversary of the date of grant. All other service-based RSUs will vest in three substantially equal annual installments on or about the anniversary of the date of grant. The performance-based RSUs will vest in three substantially equal installments on the later of November 15, 2016, November 15, 2017 and November 15, 2018, or the date the Compensation Committee determines the extent to which the applicable performance criteria have been achieved.

In the first quarter of 2016, we granted the target performance-based TSR units ("target RSUs") shown in the table above to our executive officers. These RSUs are eligible to vest based upon our total shareholder return relative to a peer group (the “TSR units”), measured annually over a three year period. The number of TSR units to vest over the three year period will be determined based on the performance of PTC stock relative to the stock performance of an index of PTC peer companies established as of the grant date, as determined at the end of three measurement periods ending on September 30, 2016, 2017 and 2018, respectively. The shares earned for each period will vest on November 15 following each measurement period, up to a maximum of two times the number of target RSUs (up to a maximum of 652 thousand shares). No vesting will occur in a period unless an annual threshold requirement is achieved. The employee must remain employed by PTC through the applicable vest date for any RSUs to vest. If the return to PTC shareholders is negative but still meets or exceeds the peer group indexed return, a maximum of 100% of the target RSUs will vest for the measurement period. TSR units not earned in either of the first two measurement periods are eligible to be earned in the third measurement period.

The weighted average fair value of the TSR units was $46.96 per target RSU on the grant date. The fair value of the TSR units was determined using a Monte Carlo simulation model, a generally accepted statistical technique used to simulate a range of possible future stock prices for PTC and the peer group. The method uses a risk-neutral framework to model future stock price movements based upon the risk-free rate of return, the volatility of each entity, and the pairwise correlations of each entity being modeled. The fair value for each simulation is the product of the payout percentage determined by PTC’s TSR rank against the peer group, the projected price of PTC stock, and a discount factor based on the risk-free rate.

The significant assumptions used in the Monte Carlo simulation model were as follows:

Average volatility of peer group	28.1%
Risk free interest rate	1.05%
Dividend yield	—%

Until July 2005, we generally granted stock options. For those options, the option exercise price was typically the fair market value at the date of grant, and they generally vested over four years and expired ten years from the date of grant. There were no options outstanding and exercisable at September 30, 2016.

Value of stock option and stock-based award activity	Year ended September 30, 2016	2015	2014
	(in thousands)		
Total intrinsic value of stock options exercised	$ 88	$ 182	$ 2,040
Total fair value of restricted stock unit awards vested	$ 63,655	$ 84,189	$ 79,660

In 2016, shares issued upon vesting of restricted stock units were net of 0.6 million shares retained by us to cover employee tax withholdings of $20.9 million. In 2015, shares issued upon vesting of restricted stock units were net of 0.8 million shares retained by us to cover employee tax withholdings of $29.2 million. In 2014, shares issued upon vesting of restricted stock and restricted stock units were net of 0.8 million shares retained by us to cover employee tax withholdings of $26.9 million.

L. Employee Benefit Plan

We offer a savings plan to eligible U.S. employees. The plan is intended to qualify under Section 401(k) of the Internal Revenue Code. Participating employees may defer a portion of their pre-tax compensation, as defined, but not more than statutory limits. We contribute 50% of the amount contributed by the employee, up to a maximum of 3% of the employee's earnings. Our matching contributions vest at a rate of 25% per year of service, with full vesting after 4 years of service. We made matching contributions of $5.4 million, $5.3 million, and $5.1 million in 2016, 2015 and 2014, respectively.

M. Pension Plans

We maintain several international defined benefit pension plans primarily covering certain employees of Computervision, which we acquired in 1998, CoCreate, which we acquired in 2008 and covering employees in Japan. Benefits are based upon length of service and average compensation with vesting after one to five years of service. The pension cost was actuarially computed using assumptions applicable to each subsidiary plan and economic environment. We adjust our pension liability related to our plans due to changes in actuarial assumptions and performance of plan investments, as shown below. Effective in 1998, benefits under one of the international plans were frozen indefinitely.

We maintained a U.S. defined benefit pension plan (the Plan) that covered certain persons who were employees of Computervision Corporation (acquired by us in 1998). Benefits under the Plan were frozen in 1990. In the second quarter of 2014, we began the process of terminating the Plan, which included settling Plan liabilities by offering lump sum distributions to plan participants and purchasing annuity contracts to cover vested benefits. We completed the termination in the fourth quarter of 2015. In connection with the termination, we contributed $25.5 million to the Plan and recorded a settlement loss of $66.3 million.

The following table presents the actuarial assumptions used in accounting for the pension plans:

	U.S. Plan 2016	2015	2014	International Plans 2016	2015	2014
Weighted average assumptions used to determine benefit obligations at September 30 measurement date:						
Discount rate	—%	—%	3.80%	1.3%	2.2%	2.4%
Rate of increase in future compensation	—%	—%	—%	2.8%	3.0%	3.0%
Weighted average assumptions used to determine net periodic pension cost for fiscal years ended September 30:						
Discount rate	—%	3.80%	4.90%	2.2%	2.4%	3.3%
Rate of increase in future compensation	—%	—%	—%	3.0%	3.0%	3.0%
Rate of return on plan assets	—%	1.35%	7.25%	5.7%	5.8%	5.7%

In selecting the expected long-term rate of return on assets, we considered the current investment portfolio and the investment return goals in the plans' investment policy statements. We, with input from the plans' professional investment managers and actuaries, also considered the average rate of earnings expected on the funds invested or to be invested to provide plan benefits. This process included determining expected returns for the various asset classes that comprise the plans' target asset allocation. This basis for selecting the long-term asset return assumptions is consistent with the prior year. Using generally accepted diversification techniques, the plans' assets, in aggregate and at the individual portfolio level, are invested so that the total portfolio risk exposure and risk-adjusted returns best meet the plans' long-term liabilities to employees. Plan asset allocations are reviewed periodically and rebalanced to achieve target allocation among the asset categories when necessary.

As of September 30, 2016, for the international plans, the weighted long-term rate of return assumption is 5.44%. These rates of return, together with the assumptions used to determine the benefit obligations as of September 30, 2016 in the table above, will be used to determine our 2017 net periodic pension cost, which we expect to be approximately $2.7 million.

The actuarially computed components of net periodic pension cost recognized in our Consolidated Statements of Operations for each year are shown below:

	U.S. Plan			International Plans		
	2016	2015	2014	2016	2015	2014
	(in thousands)					
Interest cost of projected benefit obligation	$ —	$ 4,591	$ 5,461	$ 1,374	$ 1,828	$ 2,442
Service cost	—	—	—	1,599	1,466	1,659
Expected return on plan assets	—	(1,364)	(7,151)	(3,305)	(3,364)	(2,506)
Amortization of prior service cost	—	—	—	(5)	(4)	(5)
Recognized actuarial loss	—	2,577	2,213	2,292	1,815	1,181
Settlement loss	—	66,332	—	—	—	—
Net periodic pension cost	$ —	$ 72,136	$ 523	$ 1,955	$ 1,741	$ 2,771

The following tables display the change in benefit obligation and the change in the plan assets and funded status of the plans as well as the amounts recognized in our Consolidated Balance Sheets:

	U.S. Plan		International Plans		Total	
	Year ended September 30,					
	2016	2015	2016	2015	2016	2015
	(in thousands)					
Change in benefit obligation:						
Projected benefit obligation—beginning of year	$ —	$ 134,453	$ 78,188	$ 84,106	$ 78,188	$ 218,559
Service cost	—	—	1,599	1,466	1,599	1,466
Interest cost	—	4,591	1,374	1,828	1,374	6,419
Actuarial loss	—	1,606	10,556	1,988	10,556	3,594
Foreign exchange impact	—	—	2,431	(9,515)	2,431	(9,515)
Participant contributions	—	—	147	198	147	198
Benefits paid	—	(5,300)	(1,600)	(1,883)	(1,600)	(7,183)
Settlements	—	(135,350)	—	—	—	(135,350)
Projected benefit obligation—end of year	$ —	$ —	$ 92,695	$ 78,188	$ 92,695	$ 78,188
Change in plan assets and funded status:						
Plan assets at fair value—beginning of year	$ —	$ 112,859	$ 57,961	$ 44,491	$ 57,961	$ 157,350
Actual return on plan assets	—	2,316	1,742	(438)	1,742	1,878
Employer contributions	—	25,475	1,978	21,225	1,978	46,700
Participant contributions	—	—	147	198	147	198
Foreign exchange impact	—	—	1,707	(5,632)	1,707	(5,632)
Settlements	—	(135,350)	—	—	—	(135,350)
Benefits paid	—	(5,300)	(1,600)	(1,883)	(1,600)	(7,183)
Plan assets at fair value—end of year	—	—	61,935	57,961	61,935	57,961
Projected benefit obligation—end of year	—	—	92,695	78,188	92,695	78,188
Underfunded status	$ —	$ —	$ (30,760)	$ (20,227)	$ (30,760)	$ (20,227)
Accumulated benefit obligation—end of year	$ —	$ —	$ 88,768	$ 74,928	$ 88,768	$ 74,928
Amounts recognized in the balance sheet:						
Non-current liability	$ —	$ —	$ (30,760)	$ (20,227)	$ (30,760)	$ (20,227)
Current liability	$ —	$ —	$ —	$ —	$ —	$ —
Amounts in accumulated other comprehensive loss:						
Unrecognized actuarial loss	$ —	$ —	$ 38,667	$ 28,339	$ 38,667	$ 28,339

We expect to recognize approximately $3.4 million of the unrecognized actuarial loss as of September 30, 2016 as a component of net periodic pension cost in 2017.

The following table shows change in accumulated other comprehensive loss:

	U.S. Plan		International Plans		Total	
	Year ended September 30,					
	2016	2015	2016	2015	2016	2015
	(in thousands)					
Accumulated other comprehensive loss-beginning of year	$ —	$ 68,256	$ 28,339	$ 27,669	$ 28,339	$ 95,925
Recognized during year - net actuarial (losses)	—	(2,577)	(2,288)	(1,811)	(2,288)	(4,388)
Occurring during year - settlement loss	—	(66,332)	—	—	—	(66,332)
Occurring during year - net actuarial losses	—	653	12,119	5,792	12,119	6,445
Foreign exchange impact	—	—	497	(3,311)	497	(3,311)
Accumulated other comprehensive loss- end of year	$ —	$ —	$ 38,667	$ 28,339	$ 38,667	$ 28,339

The following table shows the percentage of total plan assets for each major category of plan assets:

	International Plans	
	September 30,	
	2016	2015
Asset category:		
Equity securities	49%	53%
Fixed income securities	30%	32%
Commodities	4%	—%
Insurance company	16%	13%
Cash	1%	2%
	100%	100%

We periodically review the pension plans’ investments in the various asset classes. The current asset allocation target is 60% equity securities and 40% fixed income securities for the CoCreate plan in Germany, and 100% fixed income securities for the other international plans. The fixed income securities for the other international plans primarily include investments held with insurance companies with fixed returns. The plans’ investment managers are provided specific guidelines under which they are to invest the assets assigned to them. In general, investment managers are expected to remain fully invested in their asset class with further limitations on risk as related to investments in a single security, portfolio turnover and credit quality.

The German CoCreate plan's investment policy prohibits the use of derivatives associated with leverage and speculation or investments in securities issued by PTC, except through index-related strategies and/or commingled funds. An investment committee oversees management of the pension plans’ assets. Plan assets consist primarily of investments in mutual funds invested in equity and fixed income securities.

In 2016, 2015 and 2014 our actual return on plan assets was $1.7 million, $1.9 million and $15.9 million, respectively.

Based on actuarial valuations and additional voluntary contributions, we contributed $2.0 million, $46.7 million, and $12.9 million in 2016, 2015 and 2014, respectively, to the plans.

As of September 30, 2016, benefit payments expected to be paid over the next ten years are outlined in the following table:

	Future Benefit Payments
	(in thousands)
Year ending September 30,	
2017	$ 1,899
2018	2,314
2019	2,566
2020	2,861
2021	3,175
2022 to 2026	22,034

Fair Value of Plan Assets

The International Plan assets are comprised primarily of investments in a trust and an insurance company. The underlying investments in the trust are primarily publicly traded European DJ EuroStoxx50 equities and European governmental fixed income securities. They are classified as Level 1 because the underlying units of the trust are traded in open public markets. The fair value of the underlying investments in equity securities and fixed income are based upon publicly-traded exchange prices.

	September 30, 2016			
	Level 1	Level 2	Level 3	Total
	(in thousands)			
International plan assets:				
Fixed income securities:				
Government	$ 8,518	$ —	$ —	$ 8,518
Europe corporate investment grade	10,218	—	—	10,218
Europe large capitalization stocks	30,615	—	—	30,615
Commodities	2,709	—	—	2,709
Insurance company funds (1)	—	9,578	—	9,578
Cash	297	—	—	297
	$ 52,357	$ 9,578	$ —	$ 61,935

	September 30, 2015			
	Level 1	Level 2	Level 3	Total
	(in thousands)			
International plan assets:				
Fixed income securities:				
Government	$ 11,086	$ —	$ —	$ 11,086
Europe corporate investment grade	7,487	—	—	7,487
Europe large capitalization stocks	30,887	—	—	30,887
Insurance company funds (1)	—	7,668	—	7,668
Cash	833	—	—	833
	$ 50,293	$ 7,668	$ —	$ 57,961

(1) These investments are comprised primarily of funds invested with an insurance company in Japan with a guaranteed rate of return. The insurance company invests these assets primarily in government and corporate bonds.

N. Derivative Financial Instruments

As of September 30, 2016 and 2015, we had outstanding forward contracts for derivatives not designated as hedging instruments with notional amounts equivalent to the following:

Currency Hedged	September 30, 2016	September 30, 2015
	(in thousands)	
Canadian/U.S. Dollar	$ 14,685	$ 17,448
Euro/U.S. Dollar	174,120	82,917
British Pound/Euro	1,382	9,409
Israeli Sheqel/U.S. Dollar	7,271	4,607
Japanese Yen/Euro	32,782	25,133
Japanese Yen/U.S. Dollar	6,716	—
Swiss Franc/U.S. Dollar	730	5,149
All other	11,848	12,592
Total	$ 249,534	$ 157,255

The following table shows the effect of our non-designated hedges in the Consolidated Statements of Operations for the twelve months ended September 30, 2016 and 2015:

Derivatives Not Designated as Hedging Instruments	Location of Gain or (Loss) Recognized in Income	Net realized and unrealized gain or (loss) (excluding the underlying foreign currency exposure being hedged)		
		Twelve months ended		
		September 30, 2016	September 30, 2015	September 30, 2014
			(in thousands)	
Forward Contracts	Other Income (Expense)	$ (883)	$ 615	$ (3,769)

As of September 30, 2016 and 2015, we had outstanding forward contracts designated as cash flow hedges with notional amounts equivalent to the following:

Currency Hedged	September 30, 2016	September 30, 2015
	(in thousands)	
Euro / U.S. Dollar	$ 26,181	$ —
Japanese Yen / U.S. Dollar	8,800	—
SEK / U.S. Dollar	4,078	—
Total	$ 39,059	$ —

We had no derivative instruments designated as cash flow hedges in the Consolidated Statements of Operations for the twelve months ended September 30, 2015 and 2014. The following table shows the effect of the our derivative instruments designated as cash flow hedges in the Consolidated Statements of Operations for the twelve months ended September 30, 2016 (in thousands):

Derivatives Designated as Hedging Instruments	Gain or (Loss)Recognized in OCI-Effective Portion	Location of Gain or (Loss) Reclassified from OCI into Income-Effective Portion	Gain or (Loss) Reclassified from OCI into Income-Effective Portion	Location of Gain or (Loss) Recognized-Ineffective Portion	Gain or (Loss) Recognized-Ineffective Portion
	Twelve Months Ended		Twelve Months Ended		Twelve Months Ended
	September 30, 2016		September 30, 2016		September 30, 2016
Forward Contracts	$ (3,859)	Software Revenue	$ (2,436)	Other Income (Expense)	$ (24)

As of September 30, 2016, we estimated that approximately all values reported in accumulated other comprehensive income will be reclassified to income within the next twelve months.

In the event the underlying forecast transaction does not occur, or it becomes probable that it will not occur, the related hedge gains and losses on the cash flow hedge would be immediately reclassified to “Other Income (Expense)” on the Consolidated Statements of Operations. For the twelve months ended September 30, 2016, there were no such gains or losses.

The following table shows our derivative instruments measured at gross fair value as reflected in the Consolidated Balance Sheets:

	Fair Value of Derivatives Designated As Hedging Instruments		Fair Value of Derivatives Not Designated As Hedging Instruments	
	September 30, 2016	September 30, 2015	September 30, 2016	September 30, 2015
	(in thousands)		(in thousands)	
Derivative assets (a):				
Forward Contracts	$ 44	$ —	$ 216	$ 507
Derivative liabilities (b):				
Forward Contracts	$ 1,477	$ —	$ 1,693	$ 46

(a) All derivative assets are recorded in “other current assets” in the Consolidated Balance Sheets.

(b) All derivative liabilities are recorded in "accrued expenses and other current liabilities" in the Consolidated Balance Sheets.

Offsetting Derivative Assets and Liabilities

We have entered into master netting arrangements which allow net settlements under certain conditions. Although netting is permitted, it is currently our policy and practice to record all derivative assets and liabilities on a gross basis in the Consolidated Balance Sheets.

The following table sets forth the offsetting of derivative assets as of September 30, 2016:

	Gross Amounts Offset in the Consolidated Balance Sheets			Gross Amounts Not Offset in the Consolidated Balance Sheets		
September 30, 2016	Gross Amount of Recognized Assets	Gross Amounts Offset in the Consolidated Balance Sheets	Net Amounts of Assets Presented in the Consolidated Balance Sheets	Financial Instruments	Cash Collateral Received	Net Amount
			(in thousands)			
Forward Contracts	$ 260	$ —	$ 260	$ (260)	$ —	$ —

The following table sets forth the offsetting of derivative liabilities as of September 30, 2016:

September 30, 2016	Gross Amounts Offset in the Consolidated Balance Sheets		Net Amounts of Liabilities Presented in the Consolidated Balance Sheets	Gross Amounts Not Offset in the Consolidated Balance Sheets		Net Amount
	Gross Amount of Recognized Liabilities	Gross Amounts Offset in the Consolidated Balance Sheets		Financial Instruments	Cash Collateral Pledged	
			(in thousands)			
Forward Contracts	$ 3,170	$ —	$ 3,170	$ (260)	$ —	$ 2,910

Net gains and losses on foreign currency exposures, including realized and unrealized gains and losses on forward contracts, included in foreign currency net losses, were net losses of $1.9 million, $2.7 million and $4.5 million for 2016, 2015 and 2014, respectively. Net realized and unrealized gains and losses on forward contracts included in foreign currency net losses were a net loss of 0.5 million in 2016, a net gain of 0.6 million in 2015, and a net loss of 3.8 million in 2014.

O. Segment Information

We operate within a single industry segment-computer software and related services. Operating segments as defined under GAAP are components of an enterprise about which separate financial information is available that is evaluated regularly by the chief operating decision maker, or decision-making group, in deciding how to allocate resources and in assessing performance. Our chief operating decision maker is our President and Chief Executive Officer. We have three operating and reportable segments: (1) the Solutions Group, which includes license, subscription, support and cloud services revenue for our core CAD, SLM and PLM products; (2) the IoT Group, which includes license, subscription, support and cloud services revenue for our IoT, analytics and augmented reality solutions, and (3) Professional Services, which includes consulting, implementation and training revenue. Our reported segment profit includes revenue from third party sales of our products and services, less direct controllable segment costs. Direct costs of the segments include certain costs of revenue, research and development and certain marketing costs. Costs excluded from segment margin include cost of revenue, selling expenses, corporate marketing and general and administrative costs that are incurred in support of all of our segments and are not specifically allocated to our segments for management reporting. Additionally, the segment profit does not include stock-based compensation, amortization of intangible assets, restructuring charges and certain other identified costs that we do not allocate to the segments for purposes of evaluating their operational performance.

The revenue and profit attributable to our operating segments are summarized below. We do not produce asset information by reportable segment; therefore, it is not reported.

	Year ended September 30,		
	2016	2015	2014
		(in thousands)	
Solutions Group			
Revenue	$ 871,225	$ 980,274	$ 1,073,426
Direct costs	186,174	224,042	244,020
Profit	685,051	756,232	829,406
IoT Group			
Revenue	72,371	49,249	4,815
Direct costs	83,747	28,998	8,534
Profit (loss)	(11,376)	20,251	(3,719)
Professional Services			
Revenue	196,937	225,719	278,726
Direct costs	165,325	193,397	237,689
Profit	31,612	32,322	41,037
Total segment revenue	1,140,533	1,255,242	1,356,967
Total segment costs	435,246	446,437	490,243
Total segment profit	705,287	808,805	866,724
Other unallocated operating expenses (1)	666,028	723,780	641,742
Restructuring charges	76,273	43,409	28,406
Total operating income (loss)	(37,014)	41,616	196,576
Interest and other expense, net	30,178	15,091	10,464
Income (loss) before income taxes	$ (67,192)	$ 26,525	$ 186,112

(1) The Solutions Group segment includes depreciation of $5.4 million, $5.6 million and $5.7 million in 2016, 2015 and 2014, respectively. The IoT Group segment includes depreciation of $1.6 million, $1.0 million and $0.1 million in 2016, 2015 and 2014, respectively. The Professional Services segment includes depreciation of $2.0 million, $2.2 million and $2.3 million in 2016, 2015 and 2014, respectively. Unallocated departments includes depreciation of $19.7 million, $20.1 million and $19.0 million in 2016, 2015 and 2014, respectively.

We report revenue by the following four product areas:

- CAD: PTC Creo® and PTC Mathcad®.
- PLM: PLM solutions (primarily PTC Windchill®), PTC Integrity™ and Atego®.
- SLM: PTC Arbortext® and PTC Servigistics®.
- IoT: ThingWorx®, Axeda® and Vuforia.

	Year ended September 30,		
	2016	2015	2014
		(in thousands)	
CAD	$ 462,307	$ 511,582	$ 581,508
PLM	456,285	524,741	599,312
SLM	141,644	166,060	170,980
IoT	80,297	52,859	5,167
Total revenue	$ 1,140,533	$ 1,255,242	$ 1,356,967

Revenue and long-lived tangible assets for the geographic regions in which we operate is presented below.

	Year ended September 30,		
	2016	2015	2014
		(in thousands)	
Revenue:			
Americas (1)	$ 487,594	$ 530,311	$ 558,671
Europe (2)	424,268	467,805	528,090
Pacific Rim	123,766	139,165	148,151
Japan	104,905	117,961	122,055
Total revenue	$ 1,140,533	$ 1,255,242	$ 1,356,967

	September 30,		
	2016	2015	2014
		(in thousands)	
Long-lived tangible assets:			
Americas (3)	$ 48,281	$ 47,509	$ 51,027
Europe	6,915	7,424	7,020
Asia-Pacific	11,917	10,229	9,736
Total long-lived tangible assets	$ 67,113	$ 65,162	$ 67,783

(1) Includes revenue in the United States totaling $463.1 million, $500.6 million and $518.7 million for 2016, 2015 and 2014, respectively.
(2) Includes revenue in Germany totaling $167.2 million, $177.1 million and $200.3 million for 2016, 2015 and 2014, respectively.
(3) Substantially all of the Americas long-lived tangible assets are located in the United States.

Our international revenue is presented based on the location of our customer. We license products to customers worldwide. Our sales and marketing operations outside the United States are conducted principally through our international sales subsidiaries throughout Europe and the Asia-Pacific regions. Intercompany sales and transfers between geographic areas are accounted for at prices that are designed to be representative of unaffiliated party transactions.

P. Subsequent Events

Korea Tax Payment

In October 2016, we paid $12.0 million related the Korea tax assessment described in Note G. *Income Taxes.*

Restricted Stock Unit Grants

In November 2016, we granted the restricted stock units shown in the table below to employees, including some of our executive officers. The performance-based RSUs were granted to our executive officers. The RSUs granted to our executive officers are eligible to vest based upon our total shareholder return relative to a peer group target (the "TSR units"), measured annually over a three-year period that commenced on October 1, 2016. To the extent earned, these TSR units will vest in three substantially equal installments on the later of November 15, 2017, November 15, 2018 and November 15, 2019, or the date the Compensation Committee determines the extent to which the applicable performance criteria have been achieved for each performance period. RSUs not earned for a period may be earned in the third period. The number of TSR units that will vest will be based on the level of achievement up to a maximum of 495,000 shares, with no vesting if the annual threshold requirement is not achieved, or the employee is no longer with the Company at the end of the relevant performance period.

The time-based RSUs were issued to both employees and our executive officers. In addition, executive officers have opportunity to earn up to one or, for our CEO, two times the number of time-based RSUs (up to a maximum of 305,000 shares) if certain performance conditions are met. The time-based RSUs will vest in three substantially equal annual installments on November 15, 2017, 2018 and 2019. The performance-based RSUs will vest in three substantially equal installments on the later of November 15, 2017, November 15, 2018 and November 15, 2019, or the date the Compensation Committee determines the extent to which the applicable performance criteria have been achieved.

	TSR units	Performance-Based RSUs	Time-Based RSUs
		(in thousands)	
Maximum number of RSUs eligible to vest	495	316	711
Intrinsic value on grant date based on the maximum number of RSUs eligible to vest	$ 23,482	$ 14,991	$ 33,731

Borrowings

In November 2016, we borrowed $60 million under our credit facility to fund working capital requirements, including 2016 year end incentive-based compensation accruals.

SELECTED CONSOLIDATED FINANCIAL DATA

You should read the following selected consolidated financial data in conjunction with Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our consolidated financial statements and the related notes appearing elsewhere in this Annual Report.

The Consolidated Statements of Operations data for the years ended September 30, 2016, 2015, and 2014 and the Consolidated Balance Sheets data as of September 30, 2016 and 2015 are derived from our audited consolidated financial statements appearing elsewhere in this Annual Report. The Consolidated Statements of Operations data for the years ended September 30, 2013 and 2012 and the Consolidated Balance Sheet data as of September 30, 2014, 2013 and 2012 are derived from our audited consolidated financial statements that are not included in this Annual Report. The historical results are not necessarily indicative of results in any future period.

FIVE-YEAR SUMMARY OF SELECTED FINANCIAL DATA (1)
(in thousands, except per share data)

	2016	2015	2014	2013	2012
Revenue	$ 1,140,533	$ 1,255,242	$ 1,356,967	$ 1,293,541	$ 1,255,679
Gross margin	814,868	920,508	983,284	920,502	883,551
Operating income (loss) (2)	(37,014)	41,616	196,576	127,324	128,096
Net income (loss) (2) (3)	(54,465)	47,557	160,194	143,769	(35,398)
Earnings (loss) per share—Basic (2) (3)	(0.48)	0.41	1.36	1.20	(0.30)
Earnings (loss) per share—Diluted (2) (3)	(0.48)	0.41	1.34	1.19	(0.30)
Total assets	2,352,253	2,209,913	2,199,954	1,828,906	1,791,634
Working capital (4)	(11,930)	87,419	105,500	151,603	397,408
Long-term liabilities	855,068	732,482	719,398	373,813	512,631
Stockholders' equity	842,666	860,171	853,889	926,480	797,259

QUARTERLY FINANCIAL INFORMATION (UNAUDITED)
(in thousands, except per share data)

	September 30, 2016	July 2, 2016	April 2, 2016	January 2, 2016
Revenue	$ 288,237	$ 288,652	$ 272,627	$ 291,017
Gross margin	205,381	206,182	192,436	210,870
Operating income (loss) (2)	(33,075)	7,596	1,758	(13,292)
Net income (loss) (2) (3)	(28,473)	3,073	(5,173)	(23,892)
Earnings (loss) per share (2) (3):				
Basic	$ (0.25)	$ 0.03	$ (0.05)	$ (0.21)
Diluted	$ (0.25)	$ 0.03	$ (0.05)	$ (0.21)
Common Stock prices: (5)				
High	$ 44.75	$ 39.44	$ 34.20	$ 37.09
Low	$ 36.57	$ 31.58	$ 27.06	$ 30.53

	September 30, 2015	July 4, 2015	April 4, 2015	January 3, 2015
Revenue	$ 312,568	$ 303,113	$ 314,119	$ 325,442
Gross margin	236,206	223,737	228,065	232,500
Operating income (loss) (2)	(21,610)	21,607	3,988	37,631
Net income (loss) (2) (3)	(5,553)	17,435	5,392	30,284
Earnings (loss) per share (2) (3):				
Basic	$ (0.05)	$ 0.15	$ 0.05	$ 0.26
Diluted	$ (0.05)	$ 0.15	$ 0.05	$ 0.26
Common Stock prices: (5)				
High	$ 41.48	$ 42.75	$ 37.06	$ 39.38
Low	$ 30.97	$ 36.09	$ 31.15	$ 33.61

(1) The consolidated financial position and results of operations data reflect our acquisitions of Kepware on January 12, 2016 for $99.4 million in cash, Vuforia on November 3, 2015 for $64.8 million in cash, ColdLight on May 7, 2015 for $98.6 million in cash, Axeda on August 11, 2014 for $165.9 million in cash, ThingWorx on December 30, 2013 for $111.5 million in cash and Servigistics on October 2, 2012 for $220.8 million in cash, as well as certain other less significant businesses during these periods. Results of operations for the acquired businesses have been included in the Consolidated Statements of Operations since their acquisition dates.

(2) Operating income (loss) and net income (loss) in 2016 includes pre-tax restructuring charges of $76.3 million ($31.7 million in the fourth quarter, $2.8 million in the third quarter, $4.6 million in the second quarter and $37.2 million in the first quarter). Operating income and net income in 2015 includes a pre-tax U.S pension settlement loss of $66.3 million recorded in the fourth quarter, a $28.2 million charge related to a legal accrual and pre-tax restructuring charges of $43.4 million ($0.8 million in the fourth quarter, $4.4 million in the third quarter, $38.5 million in the second quarter and ($0.3) million in the first quarter). Operating income and net income in 2014 includes pre-tax restructuring charges of $28.4 million ($26.8 million in the fourth quarter, $0.5 million in the third quarter and $1.1 million in the first quarter). Operating income and net income in 2013 includes pre-tax restructuring charges of $52.2 million ($17.9 million in the fourth quarter, $3.1 million in the third quarter, $15.8 million in the second quarter and $15.4 million in the first quarter). Operating income and net income (loss) in 2012 includes pre-tax restructuring charges of $24.9 million.

(3) In 2015, net income includes an $18.7 million tax benefit related to settlement of our U.S pension plan recorded in the fourth quarter. Net income in 2014 and 2013 includes tax benefits totaling $18.1 million ($9.1 million in the fourth quarter and $8.9 million in the second quarter) and $44.6 million ($12.0 million in the fourth quarter and $32.6 million in the first quarter), respectively, related to the reversal of a portion of the valuation allowance in the U.S. related to the impact on deferred taxes in accounting for acquisitions and accounting for the U.S. pension plan. The net loss in 2012 includes a net tax charge of $124.5 million recorded in the fourth quarter ended September 30, 2012 to establish a valuation allowance against our U.S. net deferred tax assets.

(4) Working capital in 2012 includes funds borrowed under our credit facility to fund our acquisition of Servigistics, (approximately $220 million) which closed on October 2, 2012.

(5) The common stock prices are based on the Nasdaq Global Select Market daily high and low sale prices. Our common stock is traded on the Nasdaq Global Select Market under the symbol "PTC".

DIRECTORS

Robert Schechter
Chairman of the Board
Chairman and Chief Executive Officer (Retired), NMS Communications Corporation, a software company

Janice Chaffin
Group President, Consumer Business Unit (Retired), Symantec Corporation, an enterprise software company

Phillip Fernandez
Venture Partner, Shasta Ventures, a venture capital firm

Donald Grierson
Chief Executive Officer (Retired), ABB Vetco International, an oil services business

James Heppelmann
President and Chief Executive Officer, PTC

Klaus Hoehn
Vice President, Advanced Technology and Engineering, Deere & Company, a manufacturing company

Paul Lacy
President (Retired), Kronos Incorporated, an enterprise software company

Renato Zambonini
President and Chief Executive Officer (Retired), Cognos Incorporated, an enterprise software company

CORPORATE OFFICERS

James Heppelmann
President and Chief Executive Officer

Andrew Miller
Executive Vice President, Chief Financial Officer

Barry Cohen
Executive Vice President, Strategy

Matthew Cohen
Executive Vice President, Customer Success

Anthony DiBona
Executive Vice President, Renewal Sales

Robert Gremley
Executive Vice, Technology Platforms Group

Craig Hayman
Executive Vice President, Solutions Group

Aaron von Staats
Corporate Vice President, General Counsel and Secretary

Shareholders and Stock Listing

Our common stock is traded on the Nasdaq Global Select Market under the symbol PTC. On September 30, 2016, our common stock was held by 1,308 stockholders of record.

Dividends

We have not paid dividends on our common stock and have historically retained earnings for use in our business. We review our policy with respect to the payment of dividends from time to time. However, there can be no assurance that we will pay any dividends in the future.

Investor Information

You may obtain a copy of any of the exhibits to our Annual Report on Form 10-K free of charge. These documents are available on our website at www.ptc.com or by contacting PTC Investor Relations.

Requests for information about PTC should be directed to:

Investor Relations
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140 Kendrick Street
Needham, MA 02494-2714
Telephone: 781.370.5000
Email: ir@ptc.com

Annual Meeting

The annual meeting of stockholders will be held at the time and location stated below.

Wednesday, March 1, 2017
8:00 a.m., local time

PTC Headquarters
140 Kendrick Street
Needham, Massachusetts 02494

Internet Access

www.ptc.com

General Outside Counsel

Locke Lord LLP, Boston, Massachusetts

Independent Accountants

PricewaterhouseCoopers LLP, Boston, Massachusetts

Transfer Agent and Registrar

American Stock Transfer & Trust Company, New York, NY

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