

PTC INC.
Form 10-Q
May 11, 2017

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

FORM 10-Q

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

For the quarterly period ended April 1, 2017
Commission File Number: 0-18059

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

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

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

Large accelerated filer Accelerated filer Non-accelerated filer Smaller reporting company
(Do not check if a smaller reporting company)

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

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

There were 115,521,649 shares of our common stock outstanding on May 9, 2017.

PTC Inc.
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 For the Quarter Ended April 1, 2017

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PART I—FINANCIAL INFORMATION

ITEM 1. UNAUDITED CONDENSED FINANCIAL STATEMENTS

PTC Inc.

CONSOLIDATED BALANCE SHEETS

(in thousands, except per share data)

(unaudited)

	April 1, 2017	September 30, 2016
ASSETS		
Current assets:		
Cash and cash equivalents	\$243,316	\$ 277,935
Short term marketable securities	23,555	18,695
Accounts receivable, net of allowance for doubtful accounts of \$1,230 and \$1,012 at April 1, 2017 and September 30, 2016, respectively	142,620	161,357
Prepaid expenses	71,068	52,819
Other current assets	191,164	131,783
Total current assets	671,723	642,589
Property and equipment, net	63,429	67,113
Goodwill	1,161,731	1,169,813
Acquired intangible assets, net	279,846	310,305
Long term marketable securities	24,636	30,921
Deferred tax assets	99,087	89,692
Other assets	33,296	35,296
Total assets	\$2,333,748	\$ 2,345,729
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ 18,381	\$ 18,022
Accrued expenses and other current liabilities	83,534	84,141
Accrued compensation and benefits	91,651	145,633
Accrued income taxes	8,494	6,303
Deferred revenue	481,885	400,420
Total current liabilities	683,945	654,519
Long term debt	711,976	751,601
Deferred tax liabilities	15,630	13,754
Deferred revenue	10,587	13,237
Other liabilities	64,266	69,952
Total liabilities	1,486,404	1,503,063
Commitments and contingencies (Note 14)		
Stockholders' equity:		
Preferred stock, \$0.01 par value; 5,000 shares authorized; none issued	—	—
Common stock, \$0.01 par value; 500,000 shares authorized; 115,808 and 114,968 shares issued and outstanding at April 1, 2017 and September 30, 2016, respectively	1,158	1,150
Additional paid-in capital	1,623,056	1,598,548
Accumulated deficit	(667,324)	(657,079)
Accumulated other comprehensive loss	(109,546)	(99,953)
Total stockholders' equity	847,344	842,666
Total liabilities and stockholders' equity	\$2,333,748	\$ 2,345,729

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

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PTC Inc.

CONSOLIDATED STATEMENTS OF OPERATIONS

(in thousands, except per share data)

(unaudited)

	Three months ended		Six months ended	
	April 1, 2017	April 2, 2016	April 1, 2017	April 2, 2016
Revenue:				
Subscription	\$65,780	\$23,659	\$120,142	\$45,835
Support	141,718	160,625	293,196	332,381
Total recurring revenue	207,498	184,284	413,338	378,216
Perpetual license	27,372	39,689	61,751	87,452
Total subscription, support and license revenue	234,870	223,973	475,089	465,668
Professional services	45,170	48,654	91,278	97,976
Total revenue	280,040	272,627	566,367	563,644
Cost of revenue:				
Cost of subscription, support and license revenue	43,131	38,613	86,078	75,427
Cost of professional services revenue	38,699	41,578	77,867	84,912
Total cost of revenue	81,830	80,191	163,945	160,339
Gross margin	198,210	192,436	402,422	403,305
Operating expenses:				
Sales and marketing	87,777	87,177	178,467	169,606
Research and development	57,710	56,610	115,624	114,279
General and administrative	36,800	33,916	73,495	72,483
Amortization of acquired intangible assets	7,946	8,396	16,013	16,746
Restructuring charges	464	4,579	6,749	41,726
Total operating expenses	190,697	190,678	390,348	414,840
Operating income (loss)	7,513	1,758	12,074	(11,535)
Interest expense	(11,725)	(4,760)	(22,040)	(11,347)
Interest income and other expense, net	3,156	(567)	2,407	(233)
Loss before income taxes	(1,056)	(3,569)	(7,559)	(23,115)
Provision for income taxes	48	1,604	2,686	5,950
Net loss	\$(1,104)	\$(5,173)	\$(10,245)	\$(29,065)
Loss per share—Basic	\$(0.01)	\$(0.05)	\$(0.09)	\$(0.25)
Loss per share—Diluted	\$(0.01)	\$(0.05)	\$(0.09)	\$(0.25)
Weighted average shares outstanding—Basic	115,709	114,563	115,498	114,354
Weighted average shares outstanding—Diluted	115,709	114,563	115,498	114,354

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

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PTC Inc.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS
(in thousands)
(unaudited)

	Three months ended		Six months ended	
	April 1, 2017	April 2, 2016	April 1, 2017	April 2, 2016
Net loss	\$(1,104)	\$(5,173)	\$(10,245)	\$(29,065)
Other comprehensive income (loss), net of tax:				
Unrealized hedge gain (loss) arising during the period, net of tax of \$0.1 million and \$0 million in the second quarter of 2017 and 2016, respectively, and \$0.4 million and \$0 million in the first six months of 2017 and 2016, respectively	(515)	(5,637)	2,522	(3,994)
Net hedge (gain) loss reclassified into earnings, net of tax of \$0.1 million and \$0 in the second quarter of 2017 and 2016, respectively, and \$0.1 million and \$0 million in the first six months of 2017 and 2016, respectively	(496)	13	(852)	(833)
Change in unrealized gain (loss) on hedging instruments	(1,011)	(5,624)	1,670	(4,827)
Foreign currency translation adjustment, net of tax of \$0 for each period	4,992	15,247	(13,660)	4,743
Unrealized gain (loss) on marketable securities	68	—	(71)	—
Amortization of net actuarial pension loss included in net income, net of tax of \$0.2 million in both the first quarter of 2017 and 2016, and \$0.4 million and \$0.3 million in the first six months of 2017 and 2016, respectively	574	400	1,090	802
Change in unamortized pension income (loss) during the period related to changes in foreign currency	(312)	(881)	1,378	(331)
Total other comprehensive income (loss)	4,311	9,142	(9,593)	387
Comprehensive income (loss)	\$ 3,207	\$ 3,969	\$(19,838)	\$(28,678)

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

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PTC Inc.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)
(unaudited)

	Six months ended	
	April 1, 2017	April 2, 2016
Cash flows from operating activities:		
Net loss	\$(10,245)	\$(29,065)
Adjustments to reconcile net loss to net cash provided by operating activities:		
Depreciation and amortization	42,683	42,904
Stock-based compensation	39,565	38,025
Excess tax benefits from stock-based awards	(139)	(56)
Non-cash portion of restructuring charges	260	—
Other non-cash items, net	479	204
Changes in operating assets and liabilities, excluding the effects of acquisitions:		
Accounts receivable	15,373	63,617
Accounts payable, accrued expenses and other current liabilities	11,183	(25,907)
Accrued compensation and benefits	(51,769)	8,215
Deferred revenue	27,457	24,019
Accrued and deferred income taxes	(14,680)	(8,826)
Other current assets and prepaid expenses	(11,424)	(1,882)
Other noncurrent assets and liabilities	(20,332)	(1,109)
Net cash provided by operating activities	28,411	110,139
Cash flows from investing activities:		
Additions to property and equipment	(14,789)	(8,866)
Purchases of short- and long-term marketable securities	(3,420)	—
Proceeds from sales and maturities of short- and long-term marketable securities	4,700	—
Acquisitions of businesses, net of cash acquired	—	(164,191)
Proceeds from sales of investments	15,218	—
Net cash provided by (used in) investing activities	1,709	(173,057)
Cash flows from financing activities:		
Borrowings	100,000	170,000
Repayments of borrowings under credit facility	(140,000)	—
Proceeds from issuance of common stock	3,978	1
Excess tax benefits from stock-based awards	139	56
Credit facility origination costs	(184)	(1,050)
Contingent consideration	(2,711)	(1,250)
Payments of withholding taxes in connection with vesting of stock-based awards	(19,166)	(15,471)
Net cash provided by (used in) financing activities	(57,944)	152,286
Effect of exchange rate changes on cash and cash equivalents	(6,795)	5,671
Net increase (decrease) in cash and cash equivalents	(34,619)	95,039
Cash and cash equivalents, beginning of period	277,935	273,417
Cash and cash equivalents, end of period	\$243,316	\$368,456

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

PTC Inc.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS

(unaudited)

1. Basis of Presentation

General

The accompanying unaudited condensed consolidated financial statements include the accounts of PTC Inc. and its wholly owned subsidiaries and have been prepared by management in accordance with accounting principles generally accepted in the United States of America and in accordance with the rules and regulations of the Securities and Exchange Commission regarding interim financial reporting. Accordingly, they do not include all of the information and footnotes required by generally accepted accounting principles for complete financial statements. While we believe that the disclosures presented are adequate in order to make the information not misleading, these unaudited quarterly financial statements should be read in conjunction with our annual consolidated financial statements and related notes included in our Annual Report on Form 10-K for the fiscal year ended September 30, 2016. In the opinion of management, the accompanying unaudited condensed consolidated financial statements contain all adjustments, consisting only of those of a normal recurring nature, necessary for a fair statement of our financial position, results of operations and cash flows at the dates and for the periods indicated. Unless otherwise indicated, all references to a year mean our fiscal year, which ends on September 30. The September 30, 2016 Consolidated Balance Sheet included herein is derived from our audited consolidated financial statements.

Our fiscal year ends on September 30th. Our fiscal quarters end on a Saturday following a thirteen week calendar, and may result in different quarter end dates year to year. The second quarter of 2017 ended on April 1, 2017 and the second quarter of 2016 ended on April 2, 2016. The results of operations for the three and six months ended April 1, 2017 are not necessarily indicative of the results expected for the remainder of the fiscal year.

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.

In an effort to create more effective and efficient operations and to improve customer and product focus, we implemented changes to our organizational structure, and consequently, 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, 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 Internet of Things (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 earnings in Note 11. Segment Information have been reclassified to conform to the current period presentation.

Recent Accounting Pronouncements

Goodwill

In January 2017, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2017-04 to simplify the accounting for goodwill impairment. The guidance removes Step 2 of the goodwill impairment test, which requires a hypothetical purchase price allocation. A goodwill impairment will now be the amount by which a reporting unit's carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. The guidance will be applied prospectively and is effective for annual reporting periods ending December 31, 2020 and thereafter with early adoption permitted. We are currently evaluating the impact of the new guidance on our consolidated financial statements.

Income Taxes

In October 2016, the 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, our fiscal 2019, including interim reporting periods within those annual reporting periods and early adoption is permitted. We are currently evaluating the impact of the new guidance 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, our fiscal 2019, and interim periods within those fiscal years. Early adoption is permitted, including adoption in an interim period. We are currently evaluating the impact of the new guidance on our consolidated financial statements.

Financial Instruments - Credit Losses

In June 2016, the FASB issued 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 FASB issued 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. 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 FASB issued 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 FASB issued 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.

Revenue Recognition

In May 2014, the FASB issued 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. We adopted this new guidance in our first quarter ended December 31, 2016 and applied this guidance retrospectively. As a result, the debt issuance costs of \$6.5 million previously included in other long-term assets on the Consolidated Balance Sheet as of September 30, 2016 have been reclassified.

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.

2. Deferred Revenue and Financing Receivables

Deferred Revenue

Deferred revenue primarily relates to software agreements billed to customers for which the subscription and support services have not yet been provided. The liability associated with performing these subscription and support services is included in deferred revenue and, if not yet paid, the related customer receivable is included in prepaid expenses and other current assets. Billed but uncollected support and subscription-related amounts included in other current assets at April 1, 2017 and September 30, 2016 were \$185.5 million and \$126.3 million, respectively.

Financing Receivables

We periodically provide extended payment terms to credit-worthy customers for software purchases 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.

As of April 1, 2017 and September 30, 2016, amounts due from customers for contracts with original payment terms greater than twelve months (financing receivables) totaled \$5.8 million and \$7.1 million, respectively, all of which was due within twelve months and included in accounts receivable in the Consolidated Balance Sheets.

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 April 1, 2017 and September 30, 2016, 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 the six months ended April 1, 2017 or April 2, 2016. We write off uncollectible trade and financing receivables when we have exhausted all collection avenues.

3. Restructuring Charges

On October 23, 2015, we initiated a plan to restructure our workforce and consolidate select facilities in order to reduce our cost structure and to realign our investments with what we believe to be our higher growth opportunities. The actions resulted in total restructuring charges of \$83.7 million, primarily associated with termination benefits associated with 795 employees. In the first and second quarters of 2017, we recorded additional charges of \$6.3 million and \$0.4 million, respectively, of which \$3.9 million is related to the closure of excess facilities. As of April 1,

2017, this restructuring plan was substantially complete, with all employee-related charges recorded. We expect to record an additional \$3 million in

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restructuring charges in the third quarter of 2017 related to closing a facility, portions of which had been previously restructured.

Additionally, in 2016 and the first six months of 2017, we recorded credits of \$0.6 million and \$0.1 million, respectively, related to prior restructuring actions included in charge to operations.

The following table summarizes restructuring accrual activity for the six months ended April 1, 2017:

	Employee Facility severance closures and and related related benefits costs (in thousands)		Total
October 1, 2016	\$35,177	\$ 1,431	\$36,608
Charge to operations, net	2,861	3,888	6,749
Cash disbursements	(28,060)	(880)	(28,940)
Other non-cash charges	—	(260)	(260)
Foreign exchange impact	(1,002)	(6)	(1,008)
Accrual, April 1, 2017	\$8,976	\$4,173	\$13,149

The following table summarizes restructuring accrual activity for the six months ended April 2, 2016:

	Employee Facility severance closures and and related related benefits costs (in thousands)		Total
October 1, 2015	\$14,086	\$ 1,168	\$15,254
Charges to operations, net	41,362	364	41,726
Cash disbursements	(41,183)	(585)	(41,768)
Foreign exchange impact	252	10	262
Accrual, April 2, 2016	\$14,517	\$957	\$15,474

Of the accrual for facility closures and related costs, \$2.2 million is included in accrued expenses and other current liabilities and \$2.0 million is included in other liabilities in the Consolidated Balance Sheets. The accrual for facility closures assumed sublease income of \$2.2 million over the remaining lease periods. The accrual for employee severance and related benefits is included in accrued compensation and benefits in the Consolidated Balance Sheets.

4. Stock-based Compensation

We measure the cost of employee services received in exchange for restricted stock unit (RSU) awards based on the fair value of RSU awards on the date of grant. That cost is recognized over the period during which an employee is required to provide service in exchange for the award.

Our equity incentive plan provides for grants of nonqualified and incentive stock options, common stock, restricted stock, RSUs and stock appreciation rights to employees, directors, officers and consultants. We award RSUs as the principal equity incentive awards, including certain performance-based awards that are earned based on achievement of performance criteria established by the Compensation Committee of our Board of Directors. Each RSU represents the contingent right to receive one share of our common stock.

Our employee stock purchase plan (ESPP), initiated in the fourth quarter of 2016, allows eligible employees to contribute up to 10% of their base salary, up to a maximum of \$25,000 per year and subject to any other plan limitations, toward the purchase of our common stock at a discounted price. The purchase price of the shares on each purchase date is equal to 85% of the lower of the fair market value of our common stock on the first and last trading days of each offering period. The ESPP is qualified under Section 423 of the Internal Revenue Code. We estimate the fair value of each purchase right under the ESPP on the date of grant using the Black-Scholes option valuation model

and use the straight-line attribution approach to record the expense over the six-month offering period.

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Restricted stock unit activity for the six months ended April 1, 2017	Shares	Weighted Average Grant Date Fair Value (Per Share)
	(in thousands)	
Balance of outstanding restricted stock units October 1, 2016	3,776	\$ 37.30
Granted	1,457	\$ 50.78
Vested	(1,125)	\$ 35.83
Forfeited or not earned	(583)	\$ 37.31
Balance of outstanding restricted stock units April 1, 2017	3,525	\$ 43.34

Grant Period	Restricted Stock Units		Service-based RSUs (3)
	Target TSR Units (1) (Number of Units in thousands)	Performance-based RSUs (2)	
First six months of 2017	358	325	773

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

(2) The performance-based RSUs were granted to our executive officers and are eligible to vest based on the achievement of performance criteria for fiscal 2017 established by the Compensation Committee at the time of grant. Shares not earned will be forfeited. The shares earned will vest in three substantially equal installments on November 15, 2017, November 15, 2018 and November 15, 2019.

(3) The service-based RSUs were granted to employees and our executive officers. All service-based RSUs will vest in three substantially equal annual installments on or about the anniversary of the date of grant.

In the first six months of 2017, 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, 2017, 2018 and 2019, 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 499 thousand shares). No vesting will occur in a period unless an annual threshold requirement is achieved. The employee, subject to certain retirement provisions, must remain employed by PTC through the applicable vest date for any RSUs to vest, but in no event will any RSUs vest if the performance criteria are not achieved. 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 \$68.02 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	29.3 %
Risk free interest rate	0.99 %
Dividend yield	— %

Compensation expense recorded for our stock-based awards was classified in our Consolidated Statements of Operations as follows:

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	Three months ended		Six months ended	
	April 1, 2017	April 2, 2016	April 1, 2017	April 2, 2016
	(in thousands)			
Cost of software revenue	\$1,669	\$1,100	\$3,106	\$3,005
Cost of professional services revenue	1,539	1,279	2,995	2,730
Sales and marketing	4,130	3,777	7,751	8,059
Research and development	3,951	2,534	6,948	5,047
General and administrative	10,288	6,146	18,765	19,184
Total stock-based compensation expense	\$21,577	\$14,836	\$39,565	\$38,025

The stock-based compensation expense in the second quarter and first six months of 2017 includes \$0.7 million and \$1.3 million, respectively, related to the ESPP. The stock-based compensation expense in the first quarter of 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.

5. Earnings per Share (EPS) and Common Stock

EPS

Basic EPS is calculated by dividing net income by the weighted average number of shares outstanding during the period. Diluted EPS is calculated by dividing net income by the weighted average number of shares outstanding plus the dilutive effect, if any, of outstanding RSUs using the treasury stock method. The calculation of the dilutive effect of outstanding equity awards under the treasury stock method includes consideration of unrecognized compensation expense and any tax benefits as additional proceeds.

Calculation of Basic and Diluted EPS	Three months ended		Six months ended	
	April 1, 2017	April 2, 2016	April 1, 2017	April 2, 2016
	(in thousands, except per share data)			
Net loss	\$(1,104)	\$(5,173)	\$(10,245)	\$(29,065)
Weighted average shares outstanding—Basic	115,709	114,563	115,498	114,354
Dilutive effect of restricted stock units	—	—	—	—
Weighted average shares outstanding—Diluted	115,709	114,563	115,498	114,354
Loss per share—Basic	\$(0.01)	\$(0.05)	\$(0.09)	\$(0.25)
Loss per share—Diluted	\$(0.01)	\$(0.05)	\$(0.09)	\$(0.25)

For the six months ended April 1, 2017 and April 2, 2016 diluted net loss per share is the same as basic net loss per share as the effects of our potential common stock equivalents are antidilutive. Total antidilutive shares were 1.8 million and 2.1 million for the six months ended April 1, 2017 and April 2, 2016, respectively.

Common Stock Repurchases

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. On August 4, 2014, our Board of Directors authorized us to repurchase up to \$600 million of our common stock through September 30, 2017. We have repurchased \$189.9 million of our common stock under this authorization. We did not repurchase any shares in the second quarter and first six months of 2017 and 2016. We have resumed share repurchases early in the third quarter of 2017. All shares of our common stock repurchased are automatically restored to the status of authorized and unissued.

6. Acquisitions

Acquisition-related costs were \$0.6 million and \$0.7 million for the second quarter and first six months of 2017, respectively and \$1.1 million and \$2.3 million for the second quarter and first six months of 2016, respectively. Acquisition-related costs include direct costs of potential and completed acquisitions (e.g., investment banker fees and professional fees,

including legal and valuation services) and expenses related to acquisition integration activities (e.g., professional fees and severance). In addition, subsequent adjustments to our initial estimated amount of contingent consideration associated with specific acquisitions are included within acquisition-related charges. These costs have been classified in general and administrative expenses in the accompanying Consolidated Statements of Operations.

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 2016 to fund the acquisition.

The results of operations of Kepware have been included in our consolidated financial statements beginning on the acquisition date. Our results of operations prior to this acquisition, if presented on a pro forma basis, would not differ materially from our reported results.

The acquisition of Kepware has been accounted for as a business combination. Assets acquired and liabilities assumed were recorded at their estimated fair values as of the acquisition date. The fair values of intangible assets were based on valuations using an income approach, with estimates and assumptions provided by management of Kepware and PTC. The process for estimating the fair values of identifiable intangible assets and the contingent consideration liability 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. 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 3, 2016 to April 2, 2018. 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 will 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 is \$16.9 million to \$18.0 million. We assess the probability that the targets will be met and at what level each reporting period. Subsequent changes in the estimated fair value of the liability are reflected in earnings until the liability is fully settled. As of April 1, 2017, our estimate of the liability was \$15.4 million, after a \$1.8 million payment made in December 2016.

The purchase price allocation resulted in \$77.1 million of goodwill, which will be deductible for income tax purposes, and intangible assets of \$34.5 million. Intangible assets include purchased software of \$28.7 million, customer relationships of \$5.2 million and trademarks of \$0.6 million, which are being amortized over weighted average 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, PTC 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 million under our credit facility to finance this acquisition. At the time of the acquisition, Vuforia had approximately 80 employees and historical annualized revenues were not material.

The acquisition of Vuforia has been accounted for as a business combination. Assets acquired and liabilities assumed have been recorded at their estimated fair values as of the acquisition date. The fair values of intangible assets 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 excess of the purchase price over the tangible assets, identifiable intangible assets and assumed liabilities was recorded as goodwill.

The purchase price allocation resulted in \$23.3 million of goodwill, \$41.2 million of technology and \$4.7 million of net tangible assets. The acquired technology is being amortized over a useful life of 6 years. All of the acquired goodwill was allocated to our software products segment and will be deductible for income tax purposes. The resulting amount of goodwill reflects the value of the synergies created by integrating Vuforia's augmented technology platform into IoT solutions.

7. Goodwill and Intangible Assets

Through the second quarter of 2016, we had two operating and reportable segments: (1) Software Products and (2) Services. Effective with the beginning of 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 April 1, 2017, goodwill and acquired intangible assets in the aggregate attributable to our Solutions Group, IoT Group and Professional Services segment were \$1,169.7 million, \$241.5 million and \$30.4 million, respectively. As of September 30, 2016, goodwill and acquired intangible assets in the aggregate attributable to our Solutions Group, IoT Group and Professional Services segment were \$1,196.6 million, \$252.8 million and \$30.7 million, respectively. Acquired intangible assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying value of the asset may not be recoverable. We evaluate 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 that could trigger an impairment review include significant under-performance 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.

Goodwill and acquired intangible assets consisted of the following:

	April 1, 2017			September 30, 2016		
	Gross Carrying Amount	Accumulated Amortization	Net Book Value	Gross Carrying Amount	Accumulated Amortization	Net Book Value
Goodwill (not amortized)			\$1,161,731			\$1,169,813
Intangible assets with finite lives (amortized)						
(1):						
Purchased software	\$351,671	\$209,295	\$142,376	\$354,595	\$199,192	\$155,403
Capitalized software	22,877	22,877	—	22,877	22,877	—
Customer lists and relationships	350,994	218,841	132,153	355,698	206,515	149,183
Trademarks and trade names	18,843	13,526	5,317	19,007	13,323	5,684
Other	3,878	3,878	—	3,955	3,920	35
	\$748,263	\$468,417	\$279,846	\$756,132	\$445,827	\$310,305
Total goodwill and acquired intangible assets			\$1,441,577			\$1,480,118

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

Goodwill

Changes in goodwill presented by reportable segments were as follows:

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	Solutions Group	IoT Group	Professional Services	Total
	(in thousands)			
Balance, October 1, 2016	\$1,050,150	\$90,065	\$ 29,598	\$1,169,813
Foreign currency translation adjustment	(7,255)	(623)	(204)	(8,082)
Balance, April 1, 2017	\$1,042,895	\$89,442	\$ 29,394	\$1,161,731

Amortization of Intangible Assets

The aggregate amortization expense for intangible assets with finite lives was classified in our Consolidated Statements of Operations as follows:

	Three months ended		Six months ended	
	April 1, 2017	April 2, 2016	April 1, 2017	April 2, 2016
	(in thousands)			
Amortization of acquired intangible assets	\$7,946	\$8,396	\$16,013	\$16,746
Cost of software revenue	6,389	6,725	12,777	11,852
Total amortization expense	\$14,335	\$15,121	\$28,790	\$28,598

8. 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 is 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 April 1, 2017 and September 30, 2016 were as follows:

	April 1, 2017			
	Level 1	Level 2	Level 3	Total
	(in thousands)			
Financial assets:				
Cash equivalents	\$62,889	\$—	\$—	\$62,889
Marketable securities				
Certificates of deposit	—	682	—	682
Commercial paper	—	7,490	—	7,490
Corporate notes/bonds	37,617	—	—	37,617
U.S. government agency securities	—	2,402	—	2,402
Forward contracts	—	1,607	—	1,607
	\$100,506	\$12,181	\$—	\$112,687
Financial liabilities:				
Contingent consideration related to acquisitions	\$—	\$—	\$16,668	\$16,668
Forward contracts	—	2,762	—	2,762
	\$—	\$2,762	\$16,668	\$19,430
September 30, 2016				
	Level 1	Level 2	Level 3	Total
	(in thousands)			
Financial assets:				
Cash equivalents	\$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 to acquisitions	\$—	\$—	\$19,570	\$19,570
Forward contracts	—	3,170	—	3,170
	\$—	\$3,170	\$19,570	\$22,740

Changes in the fair value of Level 3 contingent consideration liability associated with our acquisitions of ColdLight and Kewware were as follows:

	Contingent Consideration		
	(in thousands)		
	ColdLight	Kewware	Total
Balance, October 1, 2016	\$2,500	\$17,070	\$19,570
Change in present value of contingent consideration	—	148	148
Payment of contingent consideration	(1,250)	(1,800)	(3,050)
Balance, April 1, 2017	\$1,250	\$15,418	\$16,668

	Contingent Consideration (in thousands)			
	ThingWorx	WorldLight	Keypire	Total
Balance, October 1, 2015	\$9,000	\$ 4,000	\$—	\$13,000
Addition to contingent consideration	—	—	16,900	16,900
Change in present value of contingent consideration	—	540	—	540
Payment of contingent consideration	—	(1,250)	—	(1,250)
Balance, April 2, 2016	\$9,000	\$ 3,290	\$16,900	\$29,190

Of the total, \$12.0 million of the contingent consideration liabilities is included in accrued expenses and other current liabilities, with the remaining \$4.7 million in other liabilities in the Consolidated Balance Sheet as of April 1, 2017. Of the \$3.1 million payments in the first six months of 2017, \$2.7 million represents the fair value of the liabilities recorded at the acquisition date and is included in financing activities in the Consolidated Statements of Cash Flows. In the first six months of 2016, we paid \$1.3 million of contingent consideration, which equaled the fair value of the liabilities recorded at the acquisition date.

9. Marketable Securities

The amortized cost and fair value of marketable securities as of April 1, 2017 and September 30, 2016 were as follows:

	April 1, 2017			
	Amortized cost	Gross unrealized gains	Gross unrealized losses	Fair value
	(in thousands)			
Certificates of deposit	\$682	\$ —	—\$ —	\$682
Commercial paper	7,492	—	(2)	7,490
Corporate notes/bonds	37,801	—	(184)	37,617
US government agency securities	2,409	—	(7)	2,402
	\$48,384	\$ —	—\$ (193)	\$48,191
	September 30, 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.

The following table presents our available-for-sale marketable securities by contractual maturity date, as of April 1, 2017 and September 30, 2016.

	April 1, 2017		September 30, 2016	
	Amortized cost	Fair value	Amortized cost	Fair value
	(in thousands)			
Due in one year or less	\$23,492	\$23,449	\$18,585	\$18,549

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Due after one year through three years	24,892	24,742	31,153	31,067
	\$48,384	\$48,191	\$49,738	\$49,616

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10. Derivative Financial Instruments

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.

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 interest and other expense, net. As of April 1, 2017 and September 30, 2016, we had outstanding forward contracts with notional amounts equivalent to the following:

Currency Hedged	April 1, 2017	September 30, 2016
	(in thousands)	
Canadian / U.S. Dollar	\$8,475	\$ 14,685
Swiss Franc / Euro	11,956	—
Chinese Yuan offshore / Euro	9,762	—
Euro / U.S. Dollar	206,995	174,120
Japanese Yen / Euro	15,062	32,782
Israeli Shekel / U.S. Dollar	7,504	7,271
Japanese Yen / U.S. Dollar	2,585	6,716
Swedish Krona / U.S. Dollar	4,973	3,852
Danish Krona / U.S. Dollar	3,089	1,183
All other	7,585	8,925
Total	\$277,986	\$ 249,534

The following table shows the effect of our non-designated hedges in the Consolidated Statements of Operations for the three and six months ended April 1, 2017 and April 2, 2016:

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)			
		Three months ended April 1, 2017	Six months ended April 2, 2016	Three months ended April 1, 2017	Six months ended April 2, 2016
Forward Contracts	Interest and other expense, net	\$238	\$ 428	\$(8,091)	\$(586)

In the three and six months ended April 1, 2017, foreign currency losses, net were \$1.0 million and \$2.5 million, respectively. In the three and six months ended April 2, 2016, foreign currency losses, net were \$1.0 million and \$0.9 million, respectively.

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 is 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 it into earnings in the 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.

As of April 1, 2017 and September 30, 2016, we had outstanding forward contracts designated as cash flow hedges with notional amounts equivalent to the following:

Currency Hedged	April 1, September 30,	
	2017	2016
	(in thousands)	
Euro / U.S. Dollar	\$53,116	\$ 26,181
Japanese Yen / U.S. Dollar	16,499	8,800
SEK / U.S. Dollar	3,722	4,078
Total	\$73,337	\$ 39,059

The following table shows the effect of our derivative instruments designated as cash flow hedges in the Consolidated Statements of Operations for the six months ended April 1, 2017 and April 2, 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	
	Three Months Ended			Three Months Ended			Three Months Ended	
	April 1, 2017	April 2, 2016		April 1, 2017	April 2, 2016		April 1, 2017	April 2, 2016
Forward Contracts	\$ (589)	\$ (5,637)	Subscription, support and license revenue	\$ 567	\$ (13)	Interest and other expense, net	\$ (4)	\$ (37)
	Six months ended			Six months ended			Six months ended	
	April 1, 2017	April 2, 2016		April 1, 2017	April 2, 2016		April 1, 2017	April 2, 2016
Forward Contracts	\$2,882	\$ (3,994)	Subscription, support and license revenue	\$ 974	\$ 833	Interest and other expense, net	\$ 5	\$ (37)

As of April 1, 2017, we estimated that all amounts reported in accumulated other comprehensive income will be reclassified to income within the next twelve months.

In the event that an 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 interest and other expense, net on the Consolidated Statements of Operations. For the three and six months ended April 1, 2017 and April 2,

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:

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	Fair Value of Derivatives Designated As Hedging Instruments April 1, 2017 2016 (in thousands)		Fair Value of Derivatives Not Designated As Hedging Instruments April 1, 2017 2016 (in thousands)	
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Derivative assets (1):

Forward Contracts	\$ 526	\$ 44	\$ 1,081	\$ 216
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Derivative liabilities (2):

Forward Contracts	\$ 45	\$ 1,477	\$ 2,717	\$ 1,693
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(1) As of April 1, 2017 \$1,597 thousand current derivative assets are recorded in other current assets, and \$10 thousand long term derivative assets are recorded in other assets in the Consolidated Balance Sheets. As of September 30, 2016, all derivative assets were recorded in other current assets in the Consolidated Balance Sheet.

(2) As of April 1, 2017, \$2,758 thousand current derivative liabilities are recorded in accrued expenses and other current liabilities, and \$4 thousand long term derivative liabilities are recorded in other liabilities in the Consolidated Balance Sheets. As of September 30, 2016, all derivative liabilities were 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 April 1, 2017:

	Gross Amounts Offset in the Consolidated Balance Sheets		Gross Amounts Not Offset in the Consolidated Balance Sheets			
As of April 1, 2017	Gross Amount of Recognized Assets (in thousands)	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
Forward Contracts	\$ 1,607	\$ —	—\$ 1,607	\$ (1,607)	\$ —	\$ —

The following table sets forth the offsetting of derivative liabilities as of April 1, 2017:

	Gross Amounts Offset in the Consolidated Balance Sheets		Gross Amounts Not Offset in the Consolidated Balance Sheets			
As of April 1, 2017	Gross Amount of	Gross Amounts Offset in the	Net Amounts of Liabilities Presented in	Financial Instruments	Cash Collateral Pledged	Net Amount

	Recognized Liabilities Sheets	Consolidated the Balance Consolidated Balance Sheets		
	(in thousands)			
Forward Contracts	\$2,762 \$	—\$ 2,762	\$ (1,607) \$	—\$ 1,155

11. 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.

	Three months ended		Six months ended	
	April 1, 2017	April 2, 2016	April 1, 2017	April 2, 2016
	(in thousands)			
Solutions Group				
Revenue	\$213,148	\$206,718	\$431,884	\$435,312
Direct costs	45,258	45,839	91,190	95,583
Profit	167,890	160,879	340,694	339,729
IoT Group				
Revenue	21,722	17,255	43,205	30,356
Direct costs	23,147	22,786	46,597	39,223
Loss	(1,425)	(5,531)	(3,392)	(8,867)
Professional Services				
Revenue	45,170	48,654	91,278	97,976
Direct costs	37,269	40,424	75,093	82,439
Profit	7,901	8,230	16,185	15,537
Total segment revenue	280,040	272,627	566,367	563,644
Total segment costs	105,674	109,049	212,880	217,245
Total segment profit	174,366	163,578	353,487	346,399
Other unallocated operating expenses	166,389	157,241	334,664	316,208
Restructuring charges	464	4,579	6,749	41,726
Total operating income (loss)	7,513	1,758	12,074	(11,535)
Interest expense	(11,725)	(4,760)	(22,040)	(11,347)
Interest income and other expense, net	3,156	(567)	2,407	(233)
Loss before income taxes	\$(1,056)	\$(3,569)	\$(7,559)	\$(23,115)

12. Income Taxes

In the second quarter and first six months of 2017, our effective tax rate was (5)% on a pre-tax loss of \$1.1 million, and (36)% on a pre-tax loss of \$7.6 million, respectively, compared to (45)% on pre-tax loss of \$3.6 million and (26)% on a pre-tax loss \$23.1 million in the second quarter and first six months of 2016, respectively. In the second quarter and first six months of 2017 and 2016, our effective tax rate was lower than the 35% statutory federal income tax rate due to our corporate structure in which our foreign taxes are at a net effective tax rate lower than the U.S. rate. A significant amount of our foreign earnings is generated by our subsidiaries organized in Ireland. In 2017 and 2016, the foreign rate differential predominantly relates to these Irish earnings. Our foreign rate differential in 2017 and 2016 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. For the second quarter and first six months of 2017 and 2016, this realignment resulted in tax benefits of approximately \$4 million, and \$12 million and \$4 million and \$7 million, respectively. Also, in the second quarter and first six months of 2017, we recorded a tax benefit of \$1.8 million related to a favorable agreement in a foreign jurisdiction. Additionally, in the first six months of 2016, our provision reflects a tax benefit of \$2.6 million related to a retroactive

extension of the U.S. research and development tax credit enacted in the first quarter of 2016. This benefit was offset by a corresponding provision to increase our U.S. 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 our valuation allowance requirements each financial reporting period.

In the normal course of business, PTC and its subsidiaries are examined by various taxing authorities, including the Internal Revenue Service in the U.S. 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.

As of April 1, 2017 and September 30, 2016, we had unrecognized tax benefits of \$14.3 million and \$15.5 million, respectively. If all of our unrecognized tax benefits as of April 1, 2017 were to become recognizable in the future, we would record a benefit to the income tax provision of \$12.6 million, which would be partially offset by an increase in the U.S. valuation allowance of \$5.1 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 believe it is reasonably possible that within the next 12 months the amount of unrecognized tax benefits related to the resolution of multi-jurisdictional tax positions could be reduced by up to \$6 million as audits close and statutes of limitations expire.

In the fourth quarter of 2016, we received an assessment of approximately \$12 million from the tax authorities in Korea related to a tax audit. The assessment relates to various tax issues but primarily to foreign withholding taxes. We have appealed 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 and have recorded the amount in other assets, pending resolution of the appeal.

13. Debt

At April 1, 2017 and September 30, 2016, we had the following long-term borrowing obligations:

	April 1, 2017	September 30, 2016
	(in thousands)	
6.000% Senior notes due 2024	\$500,000	\$ 500,000
Credit facility-revolver	218,125	258,125
Total debt	718,125	758,125
Unamortized debt issuance costs for the Senior notes (1)	(6,149)	(6,524)
Total debt, net of issuance costs	\$711,976	\$ 751,601

Reported as

Current portion of long-term debt	\$—	\$—
Long-term debt	718,125	758,125
Total debt	\$718,125	\$ 758,125

(1) Unamortized debt issuance costs related to the credit facility were \$2.5 million and \$4.2 million as of April 1, 2017 and September 30, 2016, respectively, and were included in other assets.

Senior 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 April 1, 2017.

On or 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 would 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 April 1, 2017, the total estimated fair value of the Notes was approximately \$528.3 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 April 1, 2017, 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 and further reduced to \$600 million in March 2017 pursuant to amendments to the Credit Agreement. The March 2017 amendment also increased the maximum permissible leverage ratio, defined as consolidated total indebtedness to the consolidated trailing four quarters EBITDA, from 4.00 to 1.00 to 4.50 to 1.00. 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-Q, 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-Q, 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.

As of April 1, 2017, we had \$218.1 million in loans outstanding 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 April 1, 2017, the annual interest rate for borrowing outstanding was 2.82%. 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 FRBNY 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 limits 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 \$75.0 million for any purpose and an additional \$200.0 million for acquisitions of businesses. In addition, under the credit facility, PTC and its subsidiaries must maintain the following financial ratios:

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- a total leverage ratio, defined as consolidated total indebtedness to the consolidated trailing four quarters EBITDA, not to exceed 4.50 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 April 1, 2017, our total leverage ratio was 3.25 to 1.00, our senior secured leverage ratio was 0.98 to 1.00 and our fixed charge coverage ratio was 5.23 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.

Interest expense was \$11.7 million and \$22.0 million for the second quarter and first six months of 2017, respectively, and \$4.8 million and \$11.3 million for the second quarter and first six months 2016, respectively.

14. Commitments and Contingencies

Legal and Regulatory Matters

Korean Tax Audit

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

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. The parties have agreed to settle this lawsuit for an amount that is not material to our results of operations and the associated liability was accrued in our fiscal 2016 results. A joint stipulation of settlement received preliminary court approval on March 23, 2017 and a hearing to consider final approval is scheduled for July 13, 2017. We cannot predict the outcome of that hearing.

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 April 1, 2017, we had a legal proceedings and claims accrual of \$2.6 million.

Accounts Receivable

Accounts receivable as of April 1, 2017 includes an amount invoiced under a multi-year contract for which the period of performance, and related revenue recognized, has spanned a number of years (with no revenue recognized in the second quarter of 2017). The invoiced amount is being disputed by the customer. We intend to vigorously pursue collection of the full invoiced amount. If we are unsuccessful in collecting the full invoiced amount, there could be a write-down of accounts receivable and professional services revenue, which could range from \$0 to \$17.3 million.

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 accordingly we 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.

15. Subsequent Events

Common Stock Repurchases

In the third quarter of 2017, we resumed our share repurchase program. Through May 10, 2017, we have repurchased \$19 million of our common stock.

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Forward-Looking Statements

Statements in this Quarterly Report on Form 10-Q that are not historic facts, including statements about our third quarter and full fiscal 2017 targets and other future financial and growth expectations, and anticipated tax rates, are forward-looking statements that involve risks and uncertainties that could cause actual results to differ materially from those projected. These risks include: the macroeconomic and/or global manufacturing climates may not improve or may deteriorate; customers may not purchase our solutions when or at the rates we expect; our businesses, including our Internet of Things (IoT) business, may not expand and/or generate the revenue we expect; foreign currency exchange rates may vary from our expectations and thereby affect our reported revenue and expense; the mix of revenue between license & subscription solutions, support and professional services could be different than we expect, which could impact our EPS results; our customers may purchase more of our solutions as subscriptions than we expect, which would adversely affect near-term revenue, operating margins, and EPS; customers may not purchase subscriptions at the rate we expect, which could impact our ability to achieve expected subscription bookings and delay our exit from the revenue and earnings trough associated with our subscription business model transition (the "subscription trough"); sales of our solutions as subscriptions may not have the longer-term effect on revenue that we expect; our workforce realignment may not achieve the expense savings we expect and may adversely affect our operations; we may be unable to generate sufficient operating cash flow to return 40% of free cash flow to shareholders and other uses of cash or our credit facility limits could preclude share repurchases; and any repatriation of cash held outside the U.S., which constitutes a significant portion of our cash, could be subject to significant taxes. In addition, our assumptions concerning our future GAAP and non-GAAP effective income tax rates are based on estimates and other factors that could change, including the geographic mix of our revenue, expenses and profits and loans and cash repatriations from foreign subsidiaries; as well as other risks and uncertainties described below throughout or referenced in Part II, Item 1A. Risk Factors of this report.

Operating and Non-GAAP Measures

Our discussion of results includes discussion of our operating measures (including "subscription bookings" and "license and subscription bookings") and non-GAAP financial measures. You can find an explanation of these measures in Results of Operations - Subscription Measures and Results of Operations - Non-GAAP Financial Measures below.

Business Overview

PTC is a global computer software and services company. We are organized in two primary businesses: the Internet of Things and Solutions.

Internet of Things (IoT)

IoT and Augmented Reality

Our IoT portfolio is comprised of our IoT, analytics and augmented reality software. This software enables connectivity, rapid application development, machine learning and predictive analysis, and augmented reality software applications for smart, connected products, factory operations, and other environments.

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 and post-sales service processes. This transformation is taking shape across all manufacturing and industrial sectors.

Solutions

Our Solutions portfolio is comprised of our innovative Computer-Aided Design (CAD), Product Lifecycle Management (PLM) and Service Lifecycle Management (SLM) solutions for manufacturers to create, operate, and service smart, connected products.

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 service parts management, product intelligence, connected service, predictive service, and remote diagnostics.

Executive Overview

Our transition to a subscription business model continued to gain momentum in the second quarter of 2017; subscription revenue grew 178% over the second quarter of 2016 and subscription bookings were 71% of total bookings, compared to 54% in the second quarter of 2016. License and subscription bookings in the second quarter and first six months of 2017 grew 11% and 20% over the second quarter of 2016 and first six months of 2016, respectively. Approximately 88% of our total license, subscription and support revenue in the second quarter of 2017 was recurring, up from 82% a year ago. Total revenue in the quarter grew 3% over the second quarter of 2016, the first quarter in which revenue has increased year over year since we began our subscription transition in 2015, which evidences our exit from the subscription trough.

Given the continued growth of subscription bookings, revenue and earnings continued to be adversely affected relative to prior periods. We ended the quarter with a cash balance of \$243 million and marketable securities of \$48 million. We generated \$76 million of cash from operations in the second quarter of 2017, which includes restructuring payments of \$13 million. At April 1, 2017, the balance outstanding under our credit facility was \$218 million and total debt outstanding was \$718 million. In the second quarter of 2017, we repaid \$20 million, net of borrowings, under the credit facility.

Results for the Second Quarter

Revenue was up year over year, despite continued growth in the mix of subscription bookings, which has had an adverse impact on perpetual license revenue and support revenue. The modest revenue growth is indicative of the maturity of the transition to a subscription business model. The continued decline in professional services revenue is consistent with our strategy to migrate more service engagements to our partners, to deliver products that require less consulting and training services, and with our transition to subscription licensing, for which deals tend to be smaller than perpetual license deals and require less associated services.

Revenue	Three months ended			Constant Currency Change	Six months ended			Constant Currency Change
	April 1, 2017	April 2, 2016	Change		April 1, 2017	April 2, 2016	Change	
	(in millions)							
Subscription	\$65.8	\$23.7	178 %	180 %	\$120.1	\$45.8	162 %	162 %
Support	141.7	160.6	(12)%	(11)%	293.2	332.4	(12)%	(12)%
Total recurring revenue	207.5	184.3	13 %	13 %	413.3	378.2	9 %	9 %
Perpetual license	27.4	39.7	(31)%	(31)%	61.8	87.5	(29)%	(29)%
Total subscription, support and license revenue	234.9	224.0	5 %	5 %	475.1	465.7	2 %	2 %
Professional services	45.2	48.7	(7)%	(7)%	91.3	98.0	(7)%	(7)%
Total revenue	\$280.0	\$272.6	3 %	3 %	\$566.4	\$563.6	— %	1 %

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Earnings Measures	Three months ended			Six months ended		
	April 1, 2017	April 2, 2016	Change	April 1, 2017	April 2, 2016	Change
Operating Margin	2.7 %	0.6 %		2.1 %	(2.0)%	
Loss Per Share	\$(0.01)	\$(0.05)	(79)%	\$(0.09)	\$(0.25)	(65)%
Non-GAAP Operating Margin ⁽¹⁾	16.0 %	14.0 %		15.7%	17.8 %	
Non-GAAP Earnings Per Share ⁽¹⁾	\$0.30	\$0.23	30 %	\$0.56	\$0.74	(24)%

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

Operating margin improvement in the second quarter of 2017 reflects higher revenue and lower restructuring costs. Our GAAP earnings reflect restructuring charges of \$0.5 million and \$7 million for the second quarter and first six months of 2017, respectively, compared to \$5 million and \$42 million for second quarter and first six months of 2016. Future Expectations, Strategies and Risks

Despite recent improvements in certain global macroeconomic factors, we continue to remain cautious about the strength of the global macroeconomic environment. Our transition to a subscription model was a headwind for revenue and earnings in the first half of 2017, which headwind we expect will be reduced in the second half of the year with our exit from the subscription trough. Changes in foreign currency rates can have a significant impact on our results and, relative to the prior year, may negatively impact results in the remainder of fiscal 2017.

Our 2017 initiatives are to: 1) focus on driving sustainable growth, 2) continue to expand our subscription-based licensing, and 3) continue to control costs and improve margins.

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 Solutions business.

Subscription

Through 2015, 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 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 have converted their support contracts to subscriptions in 2016 and the first half of 2017, and we expect there will be continued opportunities to convert existing support contracts to subscription contracts in the remainder of 2017 and beyond due to the renewal cycles of some of those contracts. In the second quarter and first six months of 2017, subscription bookings were 71% and 68% of total bookings, compared to 54% and 42% in the second quarter and first six months of 2016.

The transition to a subscription licensing model has had an adverse impact on revenue, operating margin and EPS relative to periods in which we primarily sold perpetual licenses. In the second quarter of 2017, total revenue was higher than in the second quarter of 2016, the first quarter that revenue increased year over year since we began the subscription transition, which evidences our exit from the subscription transition trough. However, until the transition of our customer base to subscription is completed, revenue and earnings will continue to be adversely impacted.

Given the subscription adoption rates we have seen in the Americas and Western Europe, we recently announced that, effective January 1, 2018, new software licenses for our core solutions and ThingWorx platform will be available only by subscription in the Americas and Western Europe. We plan to continue to offer both perpetual and subscription licenses to customers outside of the Americas and Western Europe until such time as we believe a change may be appropriate. The announcement could affect customer purchasing decisions, particularly in the affected regions, as customers may accelerate purchases of perpetual licenses before January 1, 2018 or, conversely, may delay purchases.

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, and we substantially completed facility-related restructuring actions in the first half of 2017. We expect to record an additional \$3 million in restructuring charges in the third quarter of 2017 related to closing a facility, portions of which had been previously restructured. As of April 1, 2017, under the program we had incurred aggregate

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restructuring charges of approximately \$84 million. Of that amount, \$0.4 million was recorded in the second quarter of 2017.

We expect that the cost savings associated with the headcount and facility reductions will be offset by certain planned cost increases and investments in other areas of our business. As a result, we do not expect net operating expense reductions in 2017, as compared to 2016 levels.

Results of Operations

The following table shows the financial measures that we consider the most significant indicators of the performance of our business. In addition to operating income, operating margin, and diluted earnings per share as calculated under GAAP, the table also includes non-GAAP operating income, non-GAAP operating margin, and non-GAAP diluted earnings per share for the reported periods. We discuss the non-GAAP measures in detail, including items excluded from the measures, and provide a reconciliation to the comparable GAAP measures under Non-GAAP Financial Measures below. Any reference to "software revenue" in the discussion that follows means the sum of subscription revenue, support revenue and perpetual license revenue. Any references to "subscription revenue" include cloud services revenue.

	Three months ended		Percent Change 2016 to 2017		Six months ended		Percent Change 2016 to 2017	
	April 1, 2017	April 2, 2016	Actual	Constant Currency	April 1, 2017	April 2, 2016	Actual	Constant Currency
	(Dollar amounts in millions, except per share data)							
Subscription	\$65.8	\$23.7	178 %	180 %	\$120.1	\$45.8	162 %	162 %
Support	141.7	160.6	(12) %	(11) %	293.2	332.4	(12) %	(12) %
Total recurring revenue	207.5	184.3	13 %	13 %	413.3	378.2	9 %	9 %
Perpetual license	27.4	39.7	(31) %	(31) %	61.8	87.5	(29) %	(29) %
Total subscription, support and license revenue	234.9	224.0	5 %	5 %	475.1	465.7	2 %	2 %
Professional services	45.2	48.7	(7) %	(7) %	91.3	98.0	(7) %	(7) %
Total revenue	280.0	272.6	3 %	3 %	566.4	563.6	— %	1 %
Total cost of revenue	81.8	80.2	2 %		163.9	160.3	2 %	
Gross margin	198.2	192.4	3 %		402.4	403.3	— %	
Operating expenses	190.7	190.7	— %		390.3	414.8	(6) %	
Total costs and expenses	272.5	270.9	1 %	1 %	554.3	575.2	(4) %	(3) %
Operating income (loss)	7.5	1.8	327 %	297 %	\$12.1	\$(11.5)	(205) %	(172) %
Non-GAAP operating income ⁽¹⁾	\$45.0	\$38.3	18 %	16 %	\$89.3	\$100.4	(11) %	(13) %
Operating margin	2.7 %	0.6 %			2.1 %	(2.0) %		
Non-GAAP operating margin ⁽¹⁾	16.0 %	14.0 %			15.7 %	17.8 %		
Diluted loss per share	\$(0.01)	\$(0.05)			\$(0.09)	\$(0.25)		
Non-GAAP diluted earnings per share ⁽²⁾	\$0.30	\$0.23			\$0.56	\$0.74		
Cash flow from operations	\$76.4	\$48.9			\$28.4	\$110.1		

(1) See Non-GAAP Financial Measures below for a reconciliation of our GAAP results to our non-GAAP measures.

(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 2017 and 2016 non-GAAP tax provisions are being calculated assuming there is no valuation allowance. Income tax adjustments 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. For the three and six months ended April 1, 2017 and April 2, 2016 our non-GAAP tax provision is based on our annual expected non-GAAP tax rate applied to our year-to-date non-GAAP earnings.

Subscription Measures

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 recognized ratably over the subscription term), we use bookings for internal planning, forecasting and reporting of new license and subscription sales and cloud services transactions.

Bookings

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. In 2016, and for the second quarter and first six months of 2017, the average subscription contract term was approximately two years.

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.

We define license and subscription bookings as subscription bookings (as described above) plus perpetual license bookings plus any monthly software rental bookings during the period.

License and subscription bookings for the second quarter of 2017 were \$95 million, up 11% over the second quarter of 2016. On a year to date basis, license and subscription bookings were \$185 million, up 20% over the first six months of 2016.

We define total ACV as subscription ACV (as described above) plus the annualized value of incremental monthly software rental bookings during the period.

Total subscription ACV increased 43% over the second quarter of 2016 to \$34 million, and increased 85% over the first half of 2016 to \$63 million.

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 had been perpetual licenses, nor does the annualized value of monthly software rental bookings represent the value of any such booking.

Annualized Recurring Revenue (ARR)

Annualized Recurring Revenue (ARR) for a given quarter is calculated by dividing the non-GAAP subscription and support software revenue for the quarter by the number of days in the quarter and multiplying by 365. ARR should be viewed independently of revenue and deferred revenue as it is an operating measure and is not intended to be combined with or to replace either of those items. ARR is not a forecast and does not include perpetual license or professional services revenues.

ARR was approximately \$834 million for the second quarter of 2017, which increased 12% compared to the second quarter of fiscal 2016.

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. Because we report our results of operations in U.S. Dollars, currency translation, particularly changes in the Euro and Yen relative to the U.S. Dollar, affects our reported results. If actual results for the second quarter and first six months of 2017 had been converted into U.S. Dollars based on the foreign currency exchange rates in effect for the second quarter and first six months of 2016, revenue would have been higher by \$1.6 million and \$0.4, respectively, costs and expenses would have been higher by \$1.5 million and \$2.6 million, respectively, and operating income would have been higher by \$0.1 million for the second quarter of 2017, and lower by \$2.2 million for the first six months of 2017. Our constant currency disclosures are calculated by multiplying the actual results for the first six months of 2017 by the exchange rates in effect for the comparable period of 2016 excluding the effect of any hedging.

Revenue from Acquired Businesses

The results of operations of acquired businesses have been included in our consolidated financial statements beginning on their respective acquisition dates. Kepware, acquired in the second quarter of 2016, contributed approximately \$6.5 million and \$13.1 million to our software revenue in the second quarter and first six months of 2017, respectively. As Kepware was acquired early in the second quarter of 2016, results for the second quarter of both 2017 and 2016 include Kepware revenue.

Allocations and Reclassifications

In 2016, we launched Navigate, a ThingWorx-based PLM solution. In 2017, revenue and bookings for Navigate are being allocated 50% to Solutions and 50% to IoT; 2016 reported amounts have been reclassified to conform to the current presentation. The impact of the reclassification on 2016 revenue was immaterial.

Deferred Revenue and Backlog (Unbilled Deferred Revenue)

We define unbilled deferred revenue as contractually committed orders for license, subscription and support 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.

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April 30, April 2,
2017 2016 2016

(Dollar amounts in millions)

Deferred revenue	\$492	\$ 414	\$ 447
Unbilled deferred revenue	389	369	211
Total	\$881	\$ 783	\$ 658

Total billed and unbilled deferred revenue increased 34% year over year and 7% sequentially 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 revenue is recognized.

Revenue

We report our revenue by line of business (as described above), by business group (Solutions and IoT Groups), and by geographic region (Americas, Europe, and Asia Pacific). Results include combined revenue from direct sales and our channel.

Revenue by Line of Business	% of Total Revenue			
	Three months ended		Six months ended	
	April 2017	April 2, 2016	April 2, 2017	April 2, 2016
Subscription	23%	9 %	21%	8 %
Support	51%	59 %	52%	59 %
Perpetual license	10%	15 %	11%	16 %
Professional services	16%	18 %	16%	17 %

Revenue by Business Group	Three months ended				Six months ended			
	April 1, 2017	April 2, 2016	Percent Change Actual	Percent Change Constant Currency	April 1, 2017	April 2, 2016	Percent Change Actual	Percent Change Constant Currency
(Dollar amounts in millions)								
Solutions Group								
Subscription	\$51.8	\$13.5	283 %	286 %	\$93.8	\$24.9	276 %	277 %
Support	138.9	157.8	(12)%	(12)%	287.6	327.6	(12)%	(12)%
Total recurring revenue	190.7	171.3	11 %	12 %	381.4	352.5	8 %	8 %
Perpetual license	22.4	35.4	(37)%	(37)%	50.5	82.8	(39)%	(39)%
Total subscription, support and license revenue	213.1	206.7	3 %	3 %	431.9	435.3	(1)%	(1)%
Professional services	43.3	46.7	(7)%	(7)%	87.0	93.9	(7)%	(7)%
Total revenue	\$256.5	\$253.4	1 %	2 %	\$518.9	\$529.2	(2)%	(2)%
IoT Group								
Subscription	\$14.0	\$10.1	38 %	38 %	\$26.3	\$20.9	26 %	26 %
Support	2.8	2.8	(2)%	(2)%	5.6	4.8	17 %	17 %
Total recurring revenue	16.7	13.0	29 %	30 %	31.9	25.7	24 %	24 %
Perpetual license	5.0	4.3	16 %	16 %	11.3	4.7	142 %	142 %
Total subscription, support and license revenue	21.7	17.3	26 %	26 %	43.2	30.4	42 %	42 %
Professional services	1.8	1.9	(5)%	(5)%	4.3	4.1	5 %	5 %
Total revenue	\$23.5	\$19.2	23 %	23 %	\$47.5	\$34.4	38 %	38 %

Subscription, Support and License Revenue Performance

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. Our subscription revenue line includes an immaterial amount of cloud services for which revenue is generally recognized ratably over the term of the contract.

Solutions Group

Total Solutions Group revenue for the second quarter of 2017 grew year over year for the first time since the end of 2014, illustrating that we have exited the subscription trough. The decline in Solutions Group revenue for the first six months of 2017 compared to the first six months of 2016 was driven by higher subscription mix, as customers purchased fewer perpetual licenses and associated support contracts, a portion of existing support contracts converted to subscriptions, and there were fewer support win-backs in the channel as we launched a new win-back reactivation program in the third quarter of 2016, where customers re-activate on a subscription basis.

Total subscription, support and license revenue in the second quarter of 2017, compared to the second quarter of 2016, grew in CAD, PLM and SLM. CAD bookings in the second quarter of 2017 grew in the double-digits, and we experienced growth in core PLM in line with market growth rates, offset by a decline in SLM bookings.

IoT Group

IoT Group revenue grew (even with higher subscription mix) in the second quarter of 2017 driven by continued adoption and expansion of the ThingWorx platform. IoT revenue growth in the second quarter of 2017 was substantially all organic as we completed the Kepware acquisition early in the second quarter of 2016. In the second quarter of 2017, IoT Group bookings grew above the market growth rate, which we believe is 30% to 40%. IoT software revenue increased 26% in the second quarter of 2017 compared to the second quarter of 2016.

Professional Services Revenue Performance

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 the second quarter of 2017 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 in part due to our efforts to expand our service partner program under which service engagements are referred to third-party service providers, in part due to changes in how we deliver services to customers, and in part due to the increase in subscription deals, which tend to be smaller than historical perpetual license deals and to, correspondingly, generate less demand for associated services. Over time, we anticipate that we will continue to offer solutions that require less services and, as a result, we do not expect that professional services revenue will increase proportionately with license and subscription revenue.

Revenue by Geographic Region

	Three months ended		Percent Change		Six months ended		Percent Change	
	April 1, 2017	April 2, 2016	Actual	Constant Currency	April 1, 2017	April 2, 2016	Actual	Constant Currency
(Dollar amounts in millions)								
Subscription, support and license revenue by region:								
Americas	\$106.5	\$98.6	8 %	8 %	\$213.5	\$206.7	3 %	3 %
Europe	\$81.7	\$80.4	2 %	5 %	\$165.3	\$166.4	(1) %	2 %
Asia Pacific	\$46.6	\$45.1	3 %	— %	\$96.3	\$92.6	4 %	1 %

	Three months ended		Six months ended	
	April 1, 2017	April 2, 2016	April 1, 2017	April 2, 2016
Total revenue by region as a % of total revenue:				
Americas	44 %	43 %	44 %	43 %
Europe	36 %	37 %	36 %	37 %
Asia Pacific	20 %	19 %	20 %	19 %

A significant percentage of our annual revenue comes from large customers in the broader manufacturing space. As a result, total subscription, support and license 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.

We remain cautious regarding the state of the global macroeconomic environment. Although recent PMI data indicates potential modest improvements in North America and Europe, it is too early for us to conclude that this has caused, or will cause, a change in buying behavior within our customer base. We believe that our recent performance has been driven by improved execution in a somewhat weak macro-environment, which we do not expect will change materially over the short term.

Americas

Bookings in the Americas in the second quarter of 2017 compared to the second quarter of 2016 grew by 15% on a constant currency basis, with subscription revenue growing 164% year over year on a constant currency basis.

Bookings in the Americas in the first six months of 2017 compared to the first six months of 2016 grew by 36% on a constant currency basis, with subscription revenue growing by 136% year over year on a constant currency basis.

Europe

Bookings in Europe in the second quarter of 2017 compared to the second quarter of 2016 grew by 24% on a constant currency basis, with subscription revenue growing 153% year over year on a constant currency basis. Bookings in Europe in the first six months of 2017 compared to the first six months of 2016 grew by 26% on a constant currency basis, with subscription revenue growing by 149% year over year on a constant currency basis.

Asia Pacific

Bookings in Asia Pacific in the second quarter of 2017 compared to the second quarter of 2016 declined by 6% on a constant currency basis, with subscription revenue growing 493% year over year on a constant currency basis.

Bookings in Asia Pacific in the first six months of 2017 compared to the first six months of 2016 declined by 4% on a

constant currency basis, with subscription revenue growing by 558% year over year on a constant currency basis. Bookings performance in Japan has historically been volatile and declined as compared to the second quarter and first six months of fiscal 2016.

Gross Margin	Three months ended			Six months ended		
	April 1, 2017	April 2, 2016	Percent Change	April 1, 2017	April 2, 2016	Percent Change
	(Dollar amounts in millions)					
Gross margin	\$198.2	\$192.4	3 %	\$402.4	\$403.3	—%
Non-GAAP gross margin (1)	208.4	202.5	3 %	422.7	422.2	—%
Gross margin as a % of revenue:						
Subscription, support and license gross margin	82	% 83	%	82	% 84	%
Professional services	14	% 15	%	15	% 13	%
Gross margin as a % of total revenue	71	% 71	%	71	% 72	%
Non-GAAP gross margin as a % of total revenue (1)	74	% 74	%	74	% 75	%

(1) Non-GAAP measures are reconciled to GAAP results under Non-GAAP Financial Measures below.

Gross margin as a percentage of total revenue in the second quarter and first six months of 2017 compared to the second quarter and first six months of 2016 reflects lower perpetual license revenue and an increase in cloud services revenue, which has lower margins than perpetual license, subscription and support revenue. Support revenue comprised 51% and 52% of our total revenue in the second quarter and first six months of 2017, respectively, compared to 59% in the second quarter and first six months of 2016.

	Three months ended			Six months ended		
	April 1, 2017	April 2, 2016	Percent Change	April 1, 2017	April 2, 2016	Percent Change
	(Dollar amounts in millions)					

Costs and expenses:

Cost of subscription, support and license revenue	\$43.1	\$38.6	12 %	\$86.1	\$75.4	14 %
Cost of professional services revenue	38.7	41.6	(7) %	77.9	84.9	(8) %
Sales and marketing	87.8	87.2	1 %	178.5	169.6	5 %
Research and development	57.7	56.6	2 %	115.6	114.3	1 %
General and administrative	36.8	33.9	9 %	73.5	72.5	1 %
Amortization of acquired intangible assets	7.9	8.4	(5) %	16.0	16.7	(4) %
Restructuring charges	0.5	4.6	(90) %	6.7	41.7	(84) %
Total costs and expenses	\$272.5	\$270.9	1 %	\$554.3	\$575.2	(4) %
Total headcount at end of period	5,902	5,705	3 %			

Costs and expenses in the second quarter of 2017 compared to the second quarter of 2016 increased primarily as a result of the following:

- \$6.7 million increase in stock-based compensation expense; and
- \$3.7 million increase in salary expense due to increased headcount.

Offset by:

- \$4.1 million decrease in restructuring charges;
- a \$4.7 million decrease in commission and bonus expense, due to changes in our commission plans for 2017 and because a portion of 2017 annual bonuses will be settled in stock, which portion has been recorded in stock-based compensation;
- a decrease in professional services costs as more service engagements were migrated to our partners, our commitment to deliver products that require less consulting and training services, and to our transition to subscription licensing, which deals tend to be smaller than perpetual license deals and require less associated services.

Costs and expenses for the first six months of 2017 compared to the first six months of 2016 decreased primarily as a result of the following:

- \$35.0 million decrease in restructuring charges;

Offset by:

- a \$5.6 million increase in cloud services hosting costs;
- a \$4.3 million increase in total compensation, benefit costs and travel expenses;
- a \$3.9 million increase in expense primarily related to our LiveWorx event to be held in May 2017.

Cost of Subscription, Support and License Revenue (Cost of Software)	Three months ended			Six months ended		
	April 1, 2017	April 2, 2016	Percent Change	April 1, 2017	April 2, 2016	Percent Change
	(Dollar amounts in millions)					
Cost of subscription, support and license revenue	\$43.1	\$38.6	12 %	\$86.1	\$75.4	14 %
% of total revenue	15 %	14 %		15 %	13 %	
% of total subscription, support and license revenue	18 %	17 %		18 %	16 %	
Software headcount at end of period	950	798	19 %			

Our cost of software 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, and computer equipment 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 the subscription mix percentage, the product mix sold, the effect of fixed and variable royalties, headcount and the level of amortization of acquired software intangible assets. Amortization of acquired purchased software totaled \$6.4 million and \$6.7 million in the second quarters of 2017 and 2016, respectively, and \$12.8 million and \$11.9 million in the first six months of 2017 and 2016, respectively. In the second quarter and first six months of 2017 compared to the second quarter and first six months of 2016, total compensation, benefit costs and travel expenses increased 20% (\$4.0 million) and 20% (\$8.2 million), respectively, primarily as a result of more headcount supporting our cloud services business.

Cost of Professional Services Revenue	Three months ended			Six months ended		
	April 1, 2017	April 2, 2016	Percent Change	April 1, 2017	April 2, 2016	Percent Change
	(Dollar amounts in millions)					
Cost of professional services revenue	\$38.7	\$41.6	(7) %	\$77.9	\$84.9	(8) %
% of total revenue	14 %	15 %		14 %	15 %	
% of total professional services revenue	86 %	85 %		85 %	87 %	
Professional services headcount at end of period	869	981	(11) %			

Our cost of professional services revenue includes costs such as salaries, benefits, and computer equipment and facilities for our training and consulting personnel, and third-party subcontractor fees. In the second quarter and first six months of 2017 compared to the second quarter and first six months of 2016, total compensation, benefit costs and travel expenses decreased 11% (\$3.1 million) and 13% (\$7.9 million), respectively. Offsetting this decrease, in the second quarter and first six months of 2016, the cost of third-party consulting services increased 19% (\$1.4 million) and 24% (\$3.5 million), respectively. The decrease in compensation-related costs is due to lower professional services revenue, which we expect will continue to decrease.

Sales and Marketing	Three months ended			Six months ended		
	April 1, 2017	April 2, 2016	Percent Change	April 1, 2017	April 2, 2016	Percent Change
	(Dollar amounts in millions)					
Sales and marketing	\$87.8	\$87.2	1 %	\$178.5	\$169.6	5 %
% of total revenue	31 %	32 %		32 %	30 %	
Sales and marketing headcount at end of period	1,467	1,373	7 %			

Our sales and marketing expenses primarily include salaries and benefits, sales commissions, advertising and marketing programs, travel and facility costs. In the second quarter and first six months of 2017 compared to the second quarter and first six months of 2016, total compensation, benefit costs and travel expenses decreased 1% (\$0.5 million) and increased 2% (\$2.8 million), respectively. In the first six months of 2017 compared to the first six months of 2016, event costs increased \$3.2 million due to our annual LiveWorx event to be held in May 2017.

Research and Development	Three months ended			Six months ended		
	April 1, 2017	April 2, 2016	Percent Change	April 1, 2017	April 2, 2016	Percent Change
	(Dollar amounts in millions)					
Research and development	\$57.7	\$56.6	2 %	\$115.6	\$114.3	1 %
% of total revenue	21 %	21 %		20 %	20 %	
Research and development headcount at end of period	1,954	1,890	3 %			

Our research and development expenses consist principally of salaries and benefits, costs of computer equipment and facility expenses. Major research and development activities include developing new products and releases and updates of our software that enhance functionality and add features. Research and development costs for the second quarter and first six months of 2017 compared to the second quarter and first six months of 2016 increased in part due to an increase in hosting service costs as we develop more products in and for the cloud (\$0.4 million for the quarter and \$0.8 million for the first six months). In the second quarter and first six months of 2017 compared to the second quarter and first six months of 2016, total compensation, benefit costs and travel expenses were relatively flat despite the increase in headcount as we transferred research and development activities to lower cost geographic regions.

General and Administrative	Three months ended			Six months ended		
	April 1, 2017	April 2, 2016	Percent Change	April 1, 2017	April 2, 2016	Percent Change
	(Dollar amounts in millions)					
General and administrative	\$36.8	\$33.9	9 %	\$73.5	\$72.5	1 %
% of total revenue	13 %	12 %		13 %	13 %	
General and administrative headcount at end of period	662	663	— %			

Our general and administrative 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. In the second quarter and first six months of 2017 compared to the second quarter and first six months of 2016, total compensation, benefit costs and travel expenses increased 21% (\$5.1 million) and 2% (\$1.1 million), respectively. The increase in total compensation primarily relates to increased stock-based compensation expense resulting from a one-time accelerated vest and severance accrual for a former employee.

Amortization of Acquired Intangible Assets	Three months ended			Six months ended		
	April 1, 2017	April 2, 2016	Percent Change	April 1, 2017	April 2, 2016	Percent Change
	(Dollar amounts in millions)					
Amortization of acquired intangible assets	\$7.9	\$8.4	(5)%	\$16.0	\$16.7	(4)%
% of total revenue	3 %	3 %		3 %	3 %	

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 in the second quarter and first six months of 2017 compared to the second quarter and first six months of 2016 is due to certain assets being fully amortized as well as the impact of exchange rates.

Restructuring Charges	Three months ended	Six months ended
	April 2, 2017	April 2, 2016
	April 2, 2017	April 2, 2016

(in millions)

Restructuring charges \$0.5 \$ 4.6 \$6.7 \$ 41.7

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On October 23, 2015, we committed to a plan to restructure our global workforce and consolidate select facilities in order to reduce our cost structure and to realign our investments with our identified growth opportunities. As of April 1, 2017, we were materially complete with those actions and had incurred total restructuring charges of approximately \$84 million. We expect to record an additional \$3 million in restructuring charges in the third quarter of 2017 related to closing an already partially restructured leased facility. We expect that the expense reductions will be offset by planned cost increases, investments in our business and the anticipated effects of foreign currency fluctuations, which effect is contemplated in our most recent financial targets for fiscal 2017. In the second quarter and first six months of 2017, we recorded charges of \$0.4 million and \$6.7 million, respectively, of which \$3.9 million related to the closure of excess facilities.

In the second quarter and first six months of 2017, we made cash payments related to restructuring charges of \$13.1 million and \$28.9 million, compared to \$25.1 million and \$41.8 million in the second quarter and first six months 2016. At April 1, 2017, accrued restructuring totaled \$13.1 million, of which we expect to pay \$11.1 million within the next twelve months.

Interest Expense	Three months ended		Six months ended	
	April 1, 2017	April 2, 2016	April 1, 2017	April 2, 2016
	(in millions)			

Interest expense (11.7) (4.8) (22.0) (11.3)

The increase in interest expense in the second quarter and first six months of 2017 compared to the second quarter and first six months of 2016 was due to the 6% senior notes issued in the third quarter of 2016, partially offset by lower amounts outstanding under our credit facility. We had \$718 million of total debt at April 1, 2017, compared to \$838 million at April 2, 2016. We modified our credit facility in March 2017 to decrease the loan commitment to \$600 million from \$900 million, which will reduce the associated commitment fees by approximately \$0.9 million per year.

Interest Income and Other Expense, net	Three months ended		Six months ended	
	April 1, 2017	April 2, 2016	April 1, 2017	April 2, 2016
	(in millions)			
Interest income	\$0.7	\$0.7	\$1.6	\$1.6
Other expense, net	2.4	(1.3)	0.8	(1.9)
Total interest and other expense, net	\$3.2	\$(0.6)	\$2.4	\$(0.2)

Interest income and other expense, net includes interest income, foreign currency net losses and other non-operating gains and losses. Foreign currency net losses include costs of forward 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. We use foreign currency forward contracts to reduce our exposure to fluctuations in foreign exchange rates.

Income Taxes	Three months ended		Six months ended	
	April 1, 2017	April 2, 2016	April 1, 2017	April 2, 2016
	(Dollar amounts in millions)			
Pre-tax income (loss)	\$(1.1)	\$(3.6)	\$(7.6)	\$(23.1)
Tax provision	—	1.6	2.7	6.0
Effective income tax rate	(5)%	(45)%	(36)%	(26)%

In the second quarter and first six months of 2017 and 2016, our effective tax rate was lower than the 35% statutory federal income tax rate due to our corporate structure in which our foreign taxes are at a net effective tax rate lower than the U.S. rate. A significant amount of our foreign earnings is generated by our subsidiaries organized in Ireland. In 2017 and 2016, the foreign rate differential predominantly relates to these Irish earnings. Our foreign rate

differential in 2017 and 2016 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. For the second quarters and first six months of 2017 and 2016, this realignment resulted in tax benefits of approximately \$4 million and \$12 million, and \$4 million and \$7 million, respectively. Also, in the second quarter and first six months of 2017, we recorded a tax benefit of \$1.8 million related to a favorable agreement in a foreign jurisdiction. Additionally, for the first six months of 2016, our provision reflects a tax benefit

of \$2.6 million related to a retroactive extension of the U.S. research and development tax credit enacted in the first quarter of 2016. This benefit was offset by a corresponding provision to increase our U.S. valuation allowance.

Changes to tax laws have been proposed by the Executive and Legislative branches of the U.S. government. Some of the proposed changes, if enacted into law, could have a material impact to our effective tax rate.

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.

In the normal course of business, PTC and its subsidiaries are examined by various taxing authorities, including the Internal Revenue Service in the U.S. 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.

In the fourth quarter of 2016, we received an assessment of \$12 million from the tax authorities in Korea related to a tax audit. The assessment relates to various tax issues but primarily to foreign withholding taxes. We have appealed 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, pending resolution of the appeal.

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 or loss per share—GAAP diluted earnings or loss per share

The non-GAAP 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, 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, and investors should consider, non-GAAP measures in conjunction with our GAAP results.

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 for the one year period 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 and to our employee stock purchase program. 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. Subsequent adjustments to our initial estimated amount of contingent consideration associated with specific acquisitions are also included within acquisition-related charges. We do not include these costs when reviewing our

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operating results internally. The occurrence and amount of these costs will vary depending on the timing and size of acquisitions.

Restructuring charges include excess facility restructuring charges and severance costs resulting from reductions of personnel driven by modifications to our business strategy. We do not include these costs when reviewing our operating results internally. 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. It also 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 do not include when reviewing our operating results internally.

We use these non-GAAP 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 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 measures also affords investors a view of our operating results that may be more easily compared to the results of other companies in our industry that use similar financial measures to supplement their GAAP results.

The items excluded from the non-GAAP measures often have a material impact on our financial results and many of such items recur. Accordingly, the non-GAAP measures included in this Quarterly 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 measures to its most closely comparable GAAP measure on our financial statements.

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	Three months ended		Six months ended	
	April 1, 2017	April 2, 2016	April 1, 2017	April 2, 2016
	(in millions, except per share amounts)			
GAAP revenue	\$280.0	\$272.6	\$566.4	\$563.6
Fair value of acquired deferred revenue	0.7	1.1	1.6	1.6
Non-GAAP revenue	\$280.7	\$273.7	\$568.0	\$565.2
GAAP gross margin	\$198.2	\$192.4	\$402.4	\$403.3
Fair value of acquired deferred revenue	0.7	1.1	1.6	1.6
Fair value of acquired deferred costs	(0.1)	(0.1)	(0.2)	(0.3)
Stock-based compensation	3.2	2.4	6.1	5.7
Amortization of acquired intangible assets included in cost of revenue	6.4	6.7	12.8	11.9
Non-GAAP gross margin	\$208.4	\$202.5	\$422.7	\$422.2
GAAP operating income (loss)	\$7.5	\$1.8	\$12.1	\$(11.5)
Fair value of acquired deferred revenue	0.7	1.1	1.6	1.6
Fair value of acquired deferred costs	(0.1)	(0.1)	(0.2)	(0.3)
Stock-based compensation	21.6	14.8	39.6	38.0
Amortization of acquired intangible assets included in cost of revenue	6.4	6.7	12.8	11.9
Amortization of acquired intangible assets	7.9	8.4	16.0	16.7
Acquisition-related charges included in general and administrative expenses	0.6	1.1	0.7	2.3
Restructuring charges	0.5	4.6	6.7	41.7
Non-GAAP operating income	\$45.0	\$38.3	\$89.3	\$100.4
GAAP net loss	\$(1.1)	\$(5.2)	\$(10.2)	\$(29.1)
Fair value of acquired deferred revenue	0.7	1.1	1.6	1.6
Fair value of acquired deferred costs	(0.1)	(0.1)	(0.2)	(0.3)
Stock-based compensation	21.6	14.8	39.6	38.0
Amortization of acquired intangible assets included in cost of revenue	6.4	6.7	12.8	11.9
Amortization of acquired intangible assets	7.9	8.4	16.0	16.7
Acquisition-related charges included in general and administrative expenses	0.6	1.1	0.7	2.3
Restructuring charges	0.5	4.6	6.7	41.7
Non-operating credit facility refinancing costs	1.2	—	1.2	2.4
Income tax adjustments ⁽¹⁾	(2.8)	(5.2)	(2.6)	(0.3)
Non-GAAP net income	\$34.8	\$26.2	\$65.5	\$84.9
GAAP diluted loss per share	\$(0.01)	\$(0.05)	\$(0.09)	\$(0.25)
Fair value of acquired deferred revenue	0.01	0.01	0.01	0.01
Stock-based compensation	0.18	0.13	0.34	0.33
Amortization of acquired intangible assets	0.12	0.13	0.25	0.25
Acquisition-related charges included in general and administrative expenses	—	0.01	0.01	0.02
Restructuring charges	—	0.04	0.06	0.36
Non-operating credit facility refinancing costs	0.01	—	0.01	0.02
Income tax adjustments ⁽¹⁾	(0.02)	(0.05)	(0.02)	—
Non-GAAP diluted earnings per share	\$0.30	\$0.23	\$0.56	\$0.74

Operating margin impact of non-GAAP adjustments:

	Three months ended		Six months ended	
	April 1, 2017	April 2, 2016	April 1, 2017	April 2, 2016
GAAP operating margin	2.7 %	0.6 %	2.1 %	(2.0) %
Fair value of acquired deferred revenue	0.2 %	0.4 %	0.3 %	0.3 %
Fair value of acquired deferred costs	— %	— %	— %	— %
Stock-based compensation	7.7 %	5.4 %	7.0 %	6.7 %
Amortization of acquired intangible assets	5.1 %	5.5 %	5.1 %	5.1 %
Acquisition-related charges included in general and administrative expenses	0.2 %	0.4 %	0.1 %	0.4 %
Restructuring charges	0.2 %	1.7 %	1.2 %	7.4 %
Non-GAAP operating margin	16.0 %	14.0 %	15.7 %	17.8 %

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 2017 and 2016 non-GAAP tax provisions are being calculated assuming there is no valuation allowance. Income tax (1) adjustments 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. For the three and six months ended April 1, 2017 and April 2, 2016 our non-GAAP tax provision is based on our annual expected non-GAAP tax rate applied to our year-to-date non-GAAP earnings.

Critical Accounting Policies and Estimates

The financial information included in Item 1 reflects no material changes in our critical accounting policies and estimates as set forth under the heading Critical Accounting Policies and Estimates in Part II, Item 7: Management's Discussion and Analysis of Financial Condition and Results of Operations of our 2016 Annual Report on Form 10-K.

Recent Accounting Pronouncements

In accordance with recently issued accounting pronouncements, we will be required to comply with certain changes in accounting rules and regulations. Refer to Note 1. Basis of Presentation to the Condensed Consolidated Financial Statements in this Form 10-Q for all recently issued accounting pronouncements. We are currently evaluating the impact of the new guidance on our consolidated financial statements. Outlined below are the recent accounting pronouncements that we believe may have the most significant impact to us.

Stock Compensation

In March 2016, the FASB issued 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. 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.

Leases

In February 2016, the FASB issued 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.

Revenue Recognition

In May 2014, the FASB issued 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.

Liquidity and Capital Resources

	April 1, 2017	April 2, 2016
	(in thousands)	
Cash and cash equivalents	\$243,316	\$368,456
Marketable securities	48,191	—
Total	\$291,507	\$368,456

	Six months ended	
	April 1, 2017	April 2, 2016
	(in thousands)	
Cash provided by operating activities	\$28,411	\$110,139
Cash provided (used) by investing activities	1,709	(173,057)
Cash provided (used) by financing activities	(57,944)	152,286
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 \$48 million with an average maturity of 18 months. At April 1, 2017, cash and cash equivalents totaled \$243 million, down from \$278 million at September 30, 2016, reflective of \$28.4 million in operating cash flows and \$15.2 million from proceeds of sale of investments, offset by \$40.0 million net repayments made under our credit facility, \$19.2 million used to pay withholding taxes on stock-based awards that vested in the period, and \$14.8 million used for capital expenditures.

Cash provided by operating activities

Cash provided by operating activities was \$28.4 million in the first six months of 2017, compared to \$110.1 million provided by the operating activities in the first six months of 2016. The decrease is primarily due to cash collections from accounts receivable which were lower by approximately \$40 million (due to higher 2016 collections of receivables with extended payment terms and a higher subscription mix in 2017), an increase in bonus and commission payments of approximately \$37 million, our first bond interest payment of \$15 million and a \$12 million payment related to the Korean tax audit, partially offset by \$28 million paid in 2016 to resolve the SEC and DOJ investigation in China.

Net loss for the first six months of 2017 and 2016 was \$10 million and \$29 million, respectively.

Cash used by investing activities

	Six months ended	
	April 1, 2017	April 2, 2016
	(in thousands)	
Cash used by investing activities included the following:		
Additions to property and equipment	\$(14,789)	\$(8,866)
Acquisitions of businesses, net of cash acquired	—	(164,191)
Purchases of short- and long-term marketable securities	\$(3,420)	\$—
Proceeds from maturities of short- and long-term marketable securities	4,700	—
Proceeds from sales and maturities of investments	15,218	—
	\$1,709	\$(173,057)

In the first six months of 2017, we used \$14.8 million for expenditures for property and equipment consisting primarily of computer equipment, software, office equipment and facility improvements, offset by \$15.2 million of proceeds from the sales of investments and \$1.3 million of net proceeds from sales of marketable securities. In the first six months of 2016, we used cash of \$164.2 million (net of cash acquired) to acquire Vuforia and Kepware.

Cash used by financing activities

	Six months ended	
	April 1, 2017	April 2, 2016
	(in thousands)	
Cash used by financing activities included the following:		
Net borrowings (repayments) of debt	\$ (40,000)	\$ 170,000
Payments of withholding taxes in connection with vesting of stock-based awards	(19,166)	(15,471)
Proceeds from issuance of common stock	3,978	1
Excess tax benefits from stock-based awards	139	56
Contingent consideration	(2,711)	(1,250)
Credit facility origination costs	(184)	(1,050)
	\$ (57,944)	\$ 152,286

In the first six months of 2017 we repaid \$40 million under the credit facility. We also paid \$19.2 million of withholding taxes in connection with vesting of stock based awards and paid \$2.7 million in contingent consideration associated with the ColdLight and Kepware acquisitions. In January 2017, we borrowed \$40 million under our credit facility to fund working capital requirements, and repaid \$60 million in March 2017. In the first six months of 2016, we borrowed \$170 million under the credit facility to acquire Vuforia and Kepware.

Credit Agreement

In November 2015, we entered into a multi-currency credit facility with a syndicate of banks. As a result of an amendment to the credit facility in March 2017, the revolving loan commitment was reduced to \$600 million from \$900 million. The revolving loan commitment may be increased by an additional \$500 million if the existing or additional lenders are willing to make such increased commitments. Due to the decrease in the loan commitment amount under the credit facility, associated annual commitment fees will decline by approximately \$0.9 million. Outstanding revolving loan amounts may be repaid in whole or in part, without penalty or premium, prior to the September 15, 2019 maturity date, when all remaining amounts outstanding will be due and payable in full. As of April 1, 2017, the fair value of our credit facility approximates its book value.

We and certain of our foreign subsidiaries may borrow under the credit facility. Any amounts borrowed by us would be guaranteed by our material domestic subsidiaries that become parties to the subsidiary guaranty, if any. Any amounts borrowed by one of our foreign subsidiaries would be guaranteed by us and any subsidiary guarantors. As of the filing of this Form 10-Q, there are no subsidiary guarantors and no amounts have been borrowed under the credit facility by a foreign subsidiary. The credit facility is secured by our assets and those of some of our U.S. subsidiaries (which include equity interests in some of our other subsidiaries).

As of April 1, 2017, we had \$218.1 million in revolving loans outstanding 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 us. As of April 1, 2017, the weighted average annual interest rate for amounts outstanding was 2.82%. A quarterly commitment fee on the undrawn portion of the credit facility is required, ranging from 0.175% to 0.30% per year based on our total leverage ratio.

The credit facility limits our and our subsidiaries' ability to, among other things: incur liens or guarantee obligations; pay dividends and make other distributions; make investments and enter into joint ventures; dispose of assets; engage in transactions with foreign subsidiaries and engage in transactions with affiliates, except on an arms-length basis. In addition, the credit facility requires us to maintain the financial ratios set forth below.

	Ratio as of April 1, 2017
Total Leverage Ratio	
Ratio of consolidated total indebtedness to the consolidated trailing four quarters EBITDA, not to exceed 4.50 to 1.00 as of the last day of any fiscal quarter.	3.25 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 quarter, to be not less than 3.50 to 1.00.	5.23 to 1.00
Senior Secured Leverage Ratio	
Ratio of senior consolidated total indebtedness (which excludes unsecured indebtedness) to consolidated trailing four quarters EBITDA as of the last day of any fiscal quarter, not to exceed 3.00 to 1.00.	0.98 to 1.00

As part of the March 2017 amendment, the permitted total leverage ratio was increased to 4.50 to 1.00 from 4.00 to 1.00. The increase in the permitted leverage ratio allows for greater capacity to offset lower EBITDA as a result of our transition to subscription. The effect of our subscription transition, in which revenue and operating margin have declined, and, accordingly, consolidated EBITDA calculated under the credit facility has declined, has resulted in an increase in our total leverage ratio and resulted in a reduction in capacity. Pursuant to the amended leverage ratio, as of the end of the second quarter of 2017 we could borrow only \$280 million of the \$382 million not borrowed under the credit facility.

As of April 1, 2017, 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 us 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 Inc., as defined in the agreement, also constitutes an event of default, permitting the lenders to accelerate the indebtedness and terminate the credit facility.

The terms and conditions of the credit facility are described in Note 13 to the Financial Statements.

Outstanding Notes

On May 12, 2016, we issued \$500 million of 6.00% senior unsecured notes due 2024. Interest on the notes is payable twice per year, with the first payment made on November 15, 2016.

We may redeem the notes, in whole or in part, subject to certain conditions, including in some cases a payment of premium, prior to their maturity date. In addition, if we undergo a change of control, we will be required to make an offer to purchase all the notes at a price equal to 101% of the principal amount of the 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 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 the notes then outstanding and accrued interest. As of April 1, 2017, we were in compliance with all such covenants.

Share Repurchases

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. On August 4, 2014, our Board of Directors authorized us to repurchase \$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 the first six months of 2017, we did not repurchase any shares; we have resumed repurchases early in the third quarter of 2017. All shares of our common stock repurchased are automatically restored to the status of authorized and unissued.

Future Expectations

Our transition to a subscription licensing model has had, and will continue to have, an adverse impact on revenue, operating margin and EPS relative to periods in which we primarily sold perpetual licenses until the expected transition of our customer base to subscription is completed. This also affects consolidated EBITDA as calculated under our credit facility and, as a result of the Total Leverage Ratio under the facility, limits the amount we can borrow under the facility. As of the end of the second quarter, only \$260 million of the \$382 million not borrowed under the credit facility was available to us due to those financial covenants. Notwithstanding the effect of the subscription transition and those limitations, we believe that existing cash and cash equivalents, together with cash generated from operations and amounts available under the credit facility, will be sufficient to meet our working capital and capital expenditure requirements through at least the next twelve months and to meet our known long-term capital requirements.

Our expected uses of cash could change, our cash position could be reduced and we could incur additional debt obligations if we decided to purchase our outstanding shares or to retire debt or to engage in strategic transactions, any of which could be commenced, suspended or completed at any time. Any such purchases or retirement of debt will depend on prevailing market conditions, our liquidity requirements, contractual restrictions and other factors. We also 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. The amounts involved in any share or debt repurchases or strategic transactions may be material.

We ended the quarter with a cash balance of \$243 million and marketable securities of \$48 million. We have substantial cash requirements in the United States and a significant portion of our cash is generated and held outside the U.S. At April 1, 2017, we had cash and cash equivalents of \$46 million in the U.S., \$110 million in Europe, \$65 million in Asia Pacific (including India), and \$22 million in other non-U.S. countries. All of the marketable securities are held in Europe. We believe that the combination of our existing U.S. cash and cash equivalents, marketable securities, and future U.S. operating cash flows and cash available under our credit facility, will be sufficient to meet our ongoing U.S. operating expenses and known capital requirements.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

There have been no significant changes in our market risk exposure as described in Item 7A: Quantitative and Qualitative Disclosures about Market Risk of our 2016 Annual Report on Form 10-K.

ITEM 4. CONTROLS AND PROCEDURES

Evaluation of Effectiveness 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.

We evaluated, under the supervision and with the participation of management, including our principal executive and principal financial officers, the effectiveness of the design and operation of our disclosure controls and procedures as

of the end of the period covered by this quarterly report. Based on this evaluation, our principal executive officer and principal financial officer concluded that our disclosure controls and procedures were effective at the reasonable assurance level as of April 1, 2017.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) that occurred during the quarter ended April 1, 2017 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

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PART II—OTHER INFORMATION

ITEM 1. 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. The parties have agreed to settle this lawsuit for an amount that is not material to our results of operations and the associated liability was accrued in our fiscal 2016 results. A joint stipulation of settlement received preliminary court approval on March 23, 2017 and a hearing to consider final approval is scheduled for July 13, 2017. We cannot predict the outcome of that hearing.

ITEM 1A. RISK FACTORS

In addition to other information set forth in this report, you should carefully consider the factors described in Part I. Item 1A. Risk Factors in our 2016 Annual Report on Form 10-K, which could materially affect our business, financial condition or future results. The risks described in our 2016 Annual Report on Form 10-K are not the only risks we face. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial also may materially adversely affect our business, financial condition and/or operating results.

ITEM 6. EXHIBITS

- 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 Amendment No. 4 dated January 13, 2017 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 10.1 to our Quarterly Report on Form 10-Q for the fiscal quarter ended December 31, 2016 (File No. 0-18059) and incorporated herein by reference).
- 10.2 Amendment No. 5 dated March 24, 2017 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 to our Current Report on Form 8-K filed on March 30, 2017 (File No. 0-18059) and incorporated by reference).

31.1 Certification of the Chief Executive Officer Pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a).

31.2 Certification of the Chief Financial Officer Pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a).

32* Certification of Periodic Financial Report Pursuant to 18 U.S.C. Section 1350.

The following materials from PTC Inc.'s Quarterly Report on Form 10-Q for the quarter ended April 1, 2017 formatted in XBRL (eXtensible Business Reporting Language): (i) Condensed Consolidated Balance Sheets as of April 1, 2017 and September 30, 2016; (ii) Condensed Consolidated Statements of Operations for the three and six months ended April 1, 2017 and April 2, 2016; (iii) Condensed Consolidated Statements of Comprehensive Income for the three and six months ended April 1, 2017 and April 2, 2016; (iv) Condensed Consolidated Statements of Cash Flows for the six months ended April 1, 2017 and April 2, 2016; and (v) Notes to Condensed Consolidated Financial Statements.

*Indicates that the exhibit is being furnished, not filed, with this report.

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

PTC Inc.

By: /S/ ANDREW MILLER

Andrew Miller

Executive Vice President and Chief Financial
Officer (Principal Financial Officer)

Date: May 11, 2017