PTC INC.
Form 10-Q
February 07, 2019

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 December 29, 2018
Commission File Number: 0-18059

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

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

121 Seaport Boulevard, Boston, MA 02210
(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 þ 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 þ 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 þ	Accelerated filer ¨	Non-accelerated filer ¨ (Do not check if a smaller reporting company)	Smaller reporting company ¨
			Emerging growth company ¨

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ¨ No þ
There were 118,627,720 shares of our common stock outstanding on February 5, 2019.

PTC Inc.
INDEX TO FORM 10-Q
For the Quarter Ended December 29, 2018

		Page Number
Part I—FINANCIAL INFORMATION		
Item 1.	Unaudited Condensed Consolidated Financial Statements:	
	Consolidated Balance Sheets as of December 29, 2018 and September 30, 2018	1
	Consolidated Statements of Operations for the three months ended December 29, 2018 and December 30, 2017	2
	Consolidated Statements of Comprehensive Income (Loss) for the three months ended December 29, 2018 and December 30, 2017	3
	Consolidated Statements of Cash Flows for the three months ended December 29, 2018 and December 30, 2017	4
	Consolidated Statements of Stockholders' Equity for the three months ended December 29, 2018 and December 30, 2017	5
	Notes to Condensed Consolidated Financial Statements	6
Item 2.	Management’s Discussion and Analysis of Financial Condition and Results of Operations	31
Item 3.	Quantitative and Qualitative Disclosures about Market Risk	54
Item 4.	Controls and Procedures	54
Part II—OTHER INFORMATION		
Item 1A.	Risk Factors	55
Item 6.	Exhibits	55
Signature		56

PART I—FINANCIAL INFORMATION

ITEM 1. UNAUDITED CONDENSED CONSOLIDATED FINANCIAL STATEMENTS

PTC Inc.
CONSOLIDATED BALANCE SHEETS
(in thousands, except per share data)
(unaudited)

	December 29, 2018	September 30, 2018
ASSETS		
Current assets:		
Cash and cash equivalents	$ 276,990	$ 259,946
Short-term marketable securities	25,598	25,836
Accounts receivable, net of allowance for doubtful accounts of $564 and $607 at December 29, 2018 and September 30, 2018, respectively	385,670	129,297
Prepaid expenses	63,045	48,997
Other current assets	48,682	169,708
Total current assets	799,985	633,784
Property and equipment, net	107,359	80,613
Goodwill	1,230,901	1,182,457
Acquired intangible assets, net	205,084	200,202
Long-term marketable securities	30,054	30,115
Deferred tax assets	201,149	165,566
Other assets	178,437	36,285
Total assets	$ 2,752,969	$ 2,329,022
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 57,249	$ 53,473
Accrued expenses and other current liabilities	83,721	74,388
Accrued compensation and benefits	74,483	101,784
Accrued income taxes	405	18,044
Deferred revenue	325,111	487,590
Total current liabilities	540,969	735,279
Long-term debt	778,484	643,268
Deferred tax liabilities	36,261	5,589
Deferred revenue	10,197	11,852
Other liabilities	65,889	58,445
Total liabilities	1,431,800	1,454,433
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; 118,657 and 117,981 shares issued and outstanding at December 29, 2018 and September 30, 2018, respectively	1,187	1,180
Additional paid-in capital	1,553,875	1,558,403
Accumulated deficit	(138,785)	(599,409)
Accumulated other comprehensive loss	(95,108)	(85,585)
Total stockholders' equity	1,321,169	874,589
Total liabilities and stockholders' equity	$ 2,752,969	$ 2,329,022

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

PTC Inc.
CONSOLIDATED STATEMENTS OF OPERATIONS
(in thousands, except per share data)
(unaudited)

	Three months ended	
	December 29, 2018	December 30, 2017
Revenue:		
License	$105,322	$ 119,518
Support and cloud services	187,921	145,672
Total software revenue	293,243	265,190
Professional services	41,446	41,454
Total revenue	334,689	306,644
Cost of revenue:		
Cost of license revenue	12,563	12,114
Cost of support and cloud services revenue	31,197	34,502
Total cost of software revenue	43,760	46,616
Cost of professional services revenue	33,592	36,419
Total cost of revenue	77,352	83,035
Gross margin	257,337	223,609
Operating expenses:		
Sales and marketing	104,218	99,375
Research and development	60,782	63,972
General and administrative	37,864	35,020
Amortization of acquired intangible assets	5,936	7,821
Restructuring and other charges, net	18,493	105
Total operating expenses	227,293	206,293
Operating income	30,044	17,316
Interest expense	(10,276)	(10,047)
Other income (expense), net	655	(798)
Income before income taxes	20,423	6,471
Benefit for income taxes	(562)	(7,406)
Net income	$20,985	$ 13,877
Earnings per share—Basic	$0.18	$ 0.12
Earnings per share—Diluted	$0.18	$ 0.12
Weighted average shares outstanding—Basic	118,323	115,731
Weighted average shares outstanding—Diluted	119,638	117,656

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

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

	Three months ended	
	December 29, 2018	December 30, 2017
Net income	$20,985	$ 13,877
Other comprehensive income (loss), net of tax:		
Realized and unrealized hedge gain (loss) arising during the period, net of tax of $0 million and $0.1 million in the first quarter of 2019 and 2018, respectively	(2,129)	(913)
Net hedge (gain) loss reclassified into earnings, net of tax of $0.1 million in the first quarter of 2019 and $0.1 million in the first quarter of 2018	(549)	573
Unrealized loss on hedging instruments	(2,678)	(340)
Foreign currency translation adjustment, net of tax of $0 for each period	(7,569)	5,229
Unrealized gain (loss) on marketable securities, net of tax of $0 for each period	13	(179)
Amortization of net actuarial pension loss included in net income, net of tax of $0.2 million and $0.2 million in the first quarter of 2019 and 2018, respectively	430	371
Change in unamortized pension loss during the period related to changes in foreign currency	281	(263)
Other comprehensive income (loss)	(9,523)	4,818
Comprehensive income	$11,462	$ 18,695

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

3

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

	Three months ended December 29, 2018	December 30, 2017
Cash flows from operating activities:		
Net income	$ 20,985	$ 13,877
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation and amortization	20,053	21,046
Stock-based compensation	29,407	18,331
Other non-cash items, net	(5)	361
Changes in operating assets and liabilities, excluding the effects of acquisitions:		
Accounts receivable	24,025	21,603
Accounts payable and accrued expenses	(9,628)	(12,885)
Accrued compensation and benefits	(27,504)	(40,172)
Deferred revenue	(21,820)	22,055
Accrued income taxes	(21,668)	(14,272)
Other current assets and prepaid expenses	849	(8,575)
Other noncurrent assets and liabilities	6,520	4,146
Net cash provided by operating activities	21,214	25,515
Cash flows from investing activities:		
Additions to property and equipment	(30,332)	(6,377)
Purchase of intangible asset	—	(2,500)
Purchases of short- and long-term marketable securities	(6,736)	(4,248)
Proceeds from maturities of short-	7,007	3,740

and long-term marketable securities						
Acquisitions of businesses, net of cash acquired	(69,556	)		—		
Settlement of net investment hedges	(1,595	)		—		
Net cash used in investing activities	(101,212	)		(9,385	)	
Cash flows from financing activities:						
Borrowings under credit facility	155,000			50,000		
Repayments of borrowings under credit facility	(20,000	)		(20,000	)	
Proceeds (costs) from issuance of common stock	(4,640	)		—		
Contingent consideration	(1,575	)		(3,176	)	
Payments of withholding taxes in connection with stock-based awards	(33,788	)		(33,488	)	
Net cash provided by (used in) financing activities	94,997			(6,664	)	
Effect of exchange rate changes on cash, cash equivalents and restricted cash	2,041			2,598		
Net increase in cash, cash equivalents, and restricted cash	17,040			12,064		
Cash, cash equivalents, and restricted cash, beginning of period	261,093			281,209		
Cash, cash equivalents, and restricted cash, end of period	$	278,133		$	293,273	

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

PTC Inc.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(in thousands)
(unaudited)

	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Amount				
Balance as of September 30, 2018	117,981	$1,180	$1,558,403	$(599,409)	$ (85,585)	$874,589
ASU 2016-16 adoption	—	—	—	72,261	—	72,261
ASC 606 adoption	—	—	—	367,378	—	367,378
Common stock issued for employee stock-based awards	1,056	11	(11)	—	—	—
Shares surrendered by employees to pay taxes related to stock-based awards	(380)	(4)	(33,784)	—	—	(33,788)
Common stock issued	—	—	(140)			(140)
Compensation expense from stock-based awards	—	—	29,407	—	—	29,407
Net income	—	—	—	20,985	—	20,985
Unrealized loss on cash flow hedges, net of tax	—	—	—	—	(385)	(385)
Unrealized loss on net investment hedges, net of tax	—	—	—	—	(2,293)	(2,293)
Foreign currency translation adjustment	—	—	—	—	(7,569)	(7,569)
Unrealized loss on available-for-sale securities, net of tax	—	—	—	—	13	13
Change in pension benefits, net of tax	—	—	—	—	711	711
Balance as of December 29, 2018	118,657	$1,187	$1,553,875	$(138,785)	$ (95,108)	$1,321,169

	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Amount				
Balance as of September 30, 2017	115,333	$1,153	$1,609,030	$(650,840)	$ (73,907)	$885,436
ASU 2016-09 adoption	—	—	681	(556)	—	125
Common stock issued for employee stock-based awards	1,317	13	(13)	—	—	—
Shares surrendered by employees to pay taxes related to stock-based awards	(524)	(5)	(33,483)	—	—	(33,488)
Compensation expense from stock-based awards	—	—	18,331	—	—	18,331
Net income	—	—	—	13,877	—	13,877
Unrealized loss on cash flow hedges, net of tax	—	—	—	—	(340)	(340)
Foreign currency translation adjustment	—	—	—	—	5,229	5,229
Unrealized loss on available-for-sale securities, net of tax	—	—	—	—	(179)	(179)
Change in pension benefits, net of tax	—	—	—	—	108	108
Balance as of December 30, 2017	116,126	$1,161	$1,594,546	$(637,519)	$ (69,089)	$889,099

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 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, 2018. 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. The September 30, 2018 Consolidated Balance Sheet included herein is derived from our audited consolidated financial statements.

Unless otherwise indicated, all references to a year mean our fiscal year, which ends on September 30. Our fiscal quarters end on a Saturday following a thirteen-week calendar, and may result in different quarter end dates year to year. The first quarter of 2019 ended on December 29, 2018 and the first quarter of 2018 ended on December 30, 2017. The results of operations for the three months ended December 29, 2018 are not necessarily indicative of the results expected for the remainder of the fiscal year.

Changes in Presentation and Reclassifications

On October 1, 2018, we adopted ASU No. 2014-09, Revenue from Contracts with Customers: Topic 606 (ASC 606). Results for reporting periods beginning on or after October 1, 2018 are presented under ASC 606, while prior period amounts are not adjusted and continue to be reported in accordance with the guidance provided by ASC 985-605, Software-Revenue Recognition and revenues for non-software deliverables in accordance with ASC 605-25, Revenue Recognition, Multiple-Element Arrangements (ASC 605). In connection with the adoption, we changed our presentation of the statement of operations to reflect revenue and associated costs as license, support and cloud services, and professional services. For the prior year period, all components of subscription licenses (including support) are included in license revenue. Prior to our adoption of 606, revenues from subscription licenses and support thereon were not separated and were previously included in subscription revenue in our consolidated statement of operations since we did not have VSOE of fair value for support on subscription sales. In addition, revenue and costs associated with our cloud services, which are immaterial and were previously reported in subscription revenue, are classified as support and cloud services for all periods presented.

Effective at the beginning of fiscal 2019, in accordance with the adoption of ASU 2017-07, Compensation-Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost, all non-service net periodic pension costs are now presented in Other income (expense), net on the Consolidated Statement of Operations. The prior period non-service net periodic pension cost amounts have been reclassified for comparability.

Effective at the beginning of fiscal 2019, in accordance with the adoption of ASU 2016-18, Statement of Cash Flows (Topic 230): Restricted Cash, restricted cash is now included with cash and cash equivalents in the net cash increase (decrease), beginning of period total amount and end of period total amount on the Consolidated Statements of Cash Flows. The prior period restricted cash amounts have been reclassified for comparability. As of December 29, 2018 and September 30, 2018, $1.1 million of restricted cash was included in other current assets.

Recent Accounting Pronouncements

Recently Adopted Accounting Pronouncements

Revenue Recognition

On October 1, 2018, we adopted ASC 606, which supersedes substantially all existing revenue recognition guidance under U.S. GAAP. We adopted ASC 606 using the modified retrospective method, under which the cumulative effect of initially applying ASC 606 was recorded as a reduction to accumulated deficit with no restatement of comparative periods.

The core principle of ASC 606 is to recognize revenue when promised goods or services are transferred to a customer in an amount that reflects the consideration that is expected to be received for those goods or services. Under the new guidance, an entity is required to evaluate revenue recognition through a five-step process: (1) identifying a contract with a customer; (2) identifying the performance obligations in the contract; (3) determining the transaction price; (4) allocating the transaction price to the performance obligations in the contract; and (5) recognizing revenue when (or as) the entity satisfies a performance obligation. The standard also requires disclosure of the nature, amount, timing and uncertainty of revenue and cash flows arising from contracts with customers. In applying the principles of ASC 606, more judgment and estimates are required within the revenue recognition process than is required under previous U.S. GAAP, including identifying performance obligations, estimating the amount of variable consideration to include in the transaction price, and estimating the value of each performance obligation to allocate the total transaction price to each separate performance obligation.

The most significant impact of ASC 606 relates to accounting for our subscription arrangements that include term-based on-premise software licenses bundled with support. Under previous GAAP (through September 30, 2018), revenue attributable to these subscription licenses was recognized ratably over the term of the arrangement because VSOE does not exist for the undelivered support element as it is not sold separately. Under the new standard, the requirement to have VSOE for undelivered elements to enable the separation of revenue for the delivered software licenses is eliminated. Accordingly, under the new standard we recognize as revenue a portion of the subscription fee upon delivery of the software license. Revenue recognition related to our perpetual licenses and related support contracts, professional services and cloud offerings is substantially unchanged, with support and cloud revenue being recorded ratably over the contract term. Due to the complexity of certain of our contracts, the actual revenue recognition treatment required under the new standard may be dependent on contract-specific terms and, therefore, may vary in some instances.

Upon implementation of the new standard in fiscal 2019, we made prospective revisions to contract terms with our customers that will result in shortening the initial, non-cancellable term of our multi-year subscriptions to one year for contract periods that begin on or after October 1, 2018. This change will result in annual contractual periods for most of our software subscriptions, the license portion of which will be recognized at the beginning of each annual contract period upon delivery of the licenses and the support portion of which will be recognized ratably over the one-year contractual period. As a result, we anticipate one year of subscription revenue will be recognized for each contract each year; however, more of the revenue will be recognized in the quarter that the contract period begins and less will be recognized in the subsequent three quarters of the contract than under ASC 605.

Under the modified retrospective method, we evaluated each contract that was ongoing on October 1, 2018 as if that contract had been accounted for under ASC 606 from contract inception. Some license revenue related to subscription arrangements that would have been recognized in future periods under current GAAP was recast under ASC 606 as if the revenue had been recognized in prior periods. Under this transition method, we did not adjust historical reported revenue amounts. Instead, the revenue that would have been recognized under this method prior to the adoption date was recorded as an adjustment to accumulated deficit and will not be recognized as revenue in future periods as previously expected. Because license revenue associated with subscription contracts is recognized up front instead of over time under ASC 606, a material portion of our deferred revenue was adjusted to accumulated deficit upon adoption.

Another significant provision under ASC 606 includes the capitalization and amortization of costs associated with obtaining a contract, such as sales commissions. Prior to October 1, 2018, we expensed commissions in the period incurred. Under ASC 606, direct and incremental costs to acquire a contract are capitalized and amortized using a systematic basis over the pattern of transfer of the goods and services to which the asset relates.

Refer to Note 2. Revenue from Contracts with Customers for further detail about the impact of the adoption of ASC 606 and further disclosures.

Income Taxes

7

In October 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2016-16, Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other Than Inventory. 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. We adopted this amendment beginning in the first quarter of 2019 using the modified retrospective method with a cumulative effect adjustment to accumulated deficit of $72.3 million, with a corresponding increase of $75.3 million to deferred tax assets, $6.0 million decrease to income tax assets and a $3.0 million decrease to income tax liabilities. The adjustment primarily relates to deductible amortization of intangible assets in Ireland. Post adoption, our effective tax rate no longer includes the benefit of this amortization.

Pension Accounting

In March 2017, the FASB issued ASU 2017-07, Compensation-Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost, which provides guidance on the capitalization, presentation and disclosure of net benefit costs related to postretirement benefit plans. We adopted the new guidance in the first quarter of 2019 on a full retrospective basis, which resulted in the retrospective reclassification of $0.2 million of non-service net periodic pension cost for the three months ended December 30, 2017 from line items within cost of revenue and operating expenses into Other income (expense), net on the Consolidated Statement of Operations.

Equity Investments

In January 2016, the FASB issued ASU 2016-01, Recognition and Measurement of Financial Assets and Financial Liabilities, which provides guidance for the recognition, measurement, presentation, and disclosure of financial assets and liabilities and requires equity securities to be measured at fair value, unless the measurement alternative method has been elected for equity investments without readily determinable fair values. Adoption of this guidance in the first quarter of fiscal 2019 did not have a material impact on our consolidated financial statements.

Restricted Cash

In November 2016, the FASB issued ASU 2016-18, Statement of Cash Flows (Topic 230): Restricted Cash. The new guidance requires that a statement of cash flows explain the change during the period in the total of cash, cash equivalents and amounts generally described as restricted cash or restricted cash equivalents. Therefore, amounts generally described as restricted cash and restricted cash equivalents should be included with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the Statement of Cash Flows. Adoption of this guidance in the first quarter of fiscal 2019 did not have a material impact on our consolidated financial statements.

Pending Accounting Pronouncements

Derivative Financial Instruments

In August 2017, the FASB issued ASU No. 2017-12, "Derivatives and Hedging (Topic 815) Targeted Improvements to Accounting for Hedging Activities", which amends and simplifies existing guidance to allow companies to more accurately present the economic effects of risk management activities in the financial statements. The guidance is effective for annual reporting periods beginning after December 15, 2018 (our fiscal 2020) 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.

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.

2. Revenue from Contracts with Customers

Upon adoption of ASC 606, we recorded a decrease in accumulated deficit of $431.9 million ($367.4 million, net of tax) due to the cumulative effect of the ASC 606 adoption, with the impact primarily derived from revenue related to on-premise subscription software licenses.

Nature of Products and Services

Our sources of revenue include: (1) subscription, (2) perpetual license, (3) perpetual support and (4) professional services. Revenue is derived from the licensing of computer software products and from related support contracts. We enter into contracts that include combinations of products, support and professional services, which are accounted for as separate performance obligations with differing revenue recognition patterns.

Performance Obligation	When Performance Obligation is Typically Satisfied
Term-based subscriptions	
On-premise software licenses	Point in Time: Upon the later of when the software is made available or the subscription term commences
Support and cloud-based offerings	Over Time: Ratably over the contractual term; commencing upon the later of when the software is made available or the subscription term commences
Perpetual software licenses	Point in Time: when the software is made available
Support for perpetual software licenses	Over Time: Ratably over the contractual term
Professional services	Over time: As services are provided

Judgments and Estimates

Our contracts with customers for subscriptions typically include commitments to transfer term-based on-premise software licenses bundled with support and/or cloud services. On-premise software is determined to be a distinct performance obligation from support which is sold for the same term of the subscription. For subscription arrangements which include cloud services, we assessed whether the cloud component was highly interrelated with on-premise term software licenses. Other than a limited population of subscriptions, the cloud component is not currently deemed to be interrelated with the on-premise term software and, as a result, cloud services will be accounted for as a distinct performance obligation from the software and support components of the subscription. Judgment is required to allocate the transaction price to each performance obligation. We use the estimated standalone selling price method to allocate the transaction price for items that are not sold separately. The estimated standalone selling price is determined using all information reasonably available to us, including market conditions and other observable inputs. The corresponding revenues are recognized as the related performance obligations are satisfied. We determined that 50% to 55% of the estimated standalone selling price for subscriptions that contain distinct license and support performance obligations are attributable to software licenses and 45% to 50%, depending upon the product offering, is attributable to support for those licenses.

Our standard multi-year, non-cancellable on-premise subscription contracts provide customers with an annual right to exchange software within the original subscription with other software. Although the exchange right is limited to software products within a similar product grouping, the exchange right is not limited to products with substantially similar features and functionality as those originally delivered. We determined that this right to exchange previously delivered software for different software represents variable consideration to be accounted for as a liability. We have identified a standard portfolio of contracts with common characteristics and applied the expected value method of determining variable consideration associated with this right. Additionally, where there are isolated situations that are outside of the standard portfolio of contracts due to contract size, longer contract duration, or other unique contractual terms, we used the most likely amount method to determine the amount of variable consideration. In both circumstances, the amount of variable consideration included in the transaction price is constrained by an amount where it is probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved. As of December 29, 2018, the total refund liability was $23.6 million, primarily associated with the annual right to exchange on-premise subscription software.

Contract Assets and Contract Liabilities

	December 29, 2018	October 1, 2018, as adjusted
	(in thousands)	
Contract asset	$14,513	$26,265
Deferred revenue	$335,119	$357,490

As of December 29, 2018, our contract assets are expected to be transferred to receivables within the next 12 months and therefore are included in other current assets. Approximately $12.2 million of the October 1, 2018 contract asset balance was transferred to receivables during the current period as a result of the right to payment becoming unconditional. The majority of both the contract asset balance and the amounts transferred to receivables relates to two large professional services contracts with invoicing terms based on performance milestones. Additions to contract assets of approximately $0.4 million related to revenue recognized in the period, net of period billings. There were no impairments of contract assets during the three months ended December 29, 2018.

During the three months ended December 29, 2018, $153.7 million of revenue that was included in the deferred revenue opening balance was recognized. There were additional deferrals of $131.3 million, which were primarily related to new billings.

Costs to Obtain or Fulfill a Contract

The new revenue recognition standard requires the capitalization of certain incremental costs of obtaining a contract, which impacts the period in which we record our commission expense. Prior to our adoption of the new revenue standard, we recognized commissions expense as incurred. Under the new revenue recognition standard, we are required to recognize these expenses over the period of benefit associated with these costs. This results in a deferral of certain commission expenses each period. Upon adoption, we reduced our accumulated deficit by $70.0 million and recognized an offsetting asset for deferred commission related to contracts that were not completed prior to October 1, 2018.

We recognize an asset for the incremental costs of obtaining a contract with a customer if the benefit of those costs is expected to be longer than one year. These deferred costs are amortized proportionately related to revenue over five years, which is generally longer than the term of the initial contract because of anticipated renewals as commissions for renewals are not commensurate with commissions related to our initial contracts. As of December 29, 2018, deferred costs of $19.9 million were included in other current assets and $52.5 million were included in other assets (non-current).

As the revenue recognition pattern has changed under ASC 606, the costs to fulfill contracts has also changed to match this pattern of expense recognition. As of October 1, 2018, this resulted in a $2.8 million increase in our accumulated deficit with recognition of an offsetting current liability.

Remaining Performance Obligations

Our contracts with customers include amounts allocated to performance obligations that will be satisfied at a later date. As of December 29, 2018, amounts allocated to these remaining performance obligations are $938 million, of which we expect to recognize 90% over the next 24 months with the remaining amount thereafter.

Disaggregation of Revenue

	Three months ended		
Revenue	As Reported ASC 606 December 29, 2018	ASC 605 December 29, 2018	As Reported ASC 605 December 30, 2017
	(in thousands)		
Subscription license	$63,517		
Subscription support & cloud services	77,424		
Total Subscription	140,941	$148,413	$100,008
Perpetual support	110,497	109,225	131,197
Total recurring revenue	251,438	257,638	231,205
Perpetual license	41,805	41,750	33,985
Total software revenue	293,243	299,388	265,190
Professional services	41,446	39,369	41,454
Total revenue	$334,689	$338,757	$306,644

For further disaggregation of revenue by geographic region and product area see Note 11. Segment and Geographical Information.

Practical Expedients

We elected certain practical expedients with the adoption of the new revenue standard. We do not account for significant financing components if the period between revenue recognition and when the customer pays for the products or services will be one year or less. Additionally, we recognize revenue equal to the amount we have a right to invoice, when the amount corresponds directly with the value to the customer of our performance date.

Transition Disclosures

In accordance with the modified retrospective method transition requirements, we will present the financial statement line items impacted and adjusted to compare to presentation under ASC 605 for each of the interim and annual periods during the first year of adoption of ASC 606.

The following tables present our Balance Sheets and Statements of Operations as reported under ASC 606 for the current period with comparative periods reported under ASC 605:

	As Reported ASC 606	ASC 605	As Reported ASC 605
	December 29, 2018	December 29, 2018	September 30, 2018
ASSETS			
Current assets:			
Cash and cash equivalents	$276,990	$276,990	$259,946
Short-term marketable securities	25,598	25,598	25,836
Accounts receivable (1)	385,670	138,989	129,297
Prepaid expenses	63,045	63,045	48,997
Other current assets (2)	48,682	143,104	169,708
Total current assets	799,985	647,726	633,784
Property and equipment, net	107,359	107,359	80,613
Goodwill	1,230,901	1,230,901	1,182,457
Acquired intangible assets, net	205,084	205,084	200,202
Long-term marketable securities	30,054	30,054	30,115
Deferred tax assets (3)	201,149	234,558	165,566
Other assets (4)	178,437	34,328	36,285
Total assets	$2,752,969	$2,490,010	$2,329,022
LIABILITIES AND STOCKHOLDERS' EQUITY			
Current liabilities:			
Accounts payable	$57,249	$57,249	$53,473
Accrued expenses and other current liabilities (5)	83,721	56,897	74,388
Accrued compensation and benefits	74,483	74,483	101,784
Accrued income taxes (3)	405	4,958	18,044
Deferred revenue (6)	325,111	484,613	487,590
Total current liabilities	540,969	678,200	735,279
Long-term debt	778,484	778,484	643,268
Deferred tax liabilities (3)	36,261	5,731	5,589
Deferred revenue (6)	10,197	8,324	11,852
Other liabilities	65,889	65,889	58,445
Total liabilities	1,431,800	1,536,628	1,454,433
Stockholders' equity:			
Preferred stock	—	—	—
Common stock	1,187	1,187	1,180
Additional paid-in capital	1,553,875	1,553,875	1,558,403
Accumulated deficit	(138,785)	(507,900)	(599,409)
Accumulated other comprehensive loss	(95,108)	(93,780)	(85,585)
Total stockholders' equity	1,321,169	953,382	874,589
Total liabilities and stockholders' equity	$2,752,969	$2,490,010	$2,329,022

The changes in balance sheet accounts due to the adoption of 606 are due primarily to the following:

(1) Up front license recognition under our subscription contracts and billed but uncollected support and subscription receivables that had corresponding deferred revenue, which were included in other current assets prior to our adoption of 606.

(2) Contract assets and capitalized commission costs.

(3)

The tax effect of the accumulated deficit impact related to the acceleration of revenue and deferral of costs (primarily commissions).

(4) The long-term portion of unbilled receivables due to the acceleration of license revenue on multi-year subscription contracts and the long-term portion of capitalized commission costs.

(5) Refund liability, primarily associated with the annual right to exchange on-premise subscription software described above in Judgments and Estimates.

(6) The decrease in deferred revenue recorded to accumulated deficit upon adoption of ASC 606 primarily related to on-premise subscription software licenses.

	Three months ended		
	As Reported ASC 606 December 29, 2018	ASC 605 December 29, 2018	As Reported ASC 605 December 30, 2017
Revenue:			
License [1]	$105,322	$173,905	$119,518
Support and cloud services [1]	187,921	125,483	145,672
Total software revenue	293,243	299,388	265,190
Professional services	41,446	39,369	41,454
Total revenue	334,689	338,757	306,644
Cost of revenue:			
Cost of license revenue	12,563	12,347	12,114
Cost of support and cloud services revenue	31,197	30,630	34,502
Total cost of software revenue	43,760	42,977	46,616
Cost of professional services revenue	33,592	32,219	36,419
Total cost of revenue [2]	77,352	75,196	83,035
Gross margin	257,337	263,561	223,609
Operating expenses:			
Sales and marketing [3]	104,218	107,304	99,375
Research and development	60,782	60,782	63,972
General and administrative	37,864	37,864	35,020
Amortization of acquired intangible assets	5,936	5,936	7,821
Restructuring and other charges, net	18,493	18,493	105
Total operating expenses	227,293	230,379	206,293
Operating income	30,044	33,182	17,316
Interest expense	(10,276)	(10,276)	(10,047)
Other income (expense), net	655	548	(798)
Income before income taxes	20,423	23,454	6,471
Provision (benefit) for income taxes [4]	(562)	4,206	(7,406)
Net income	$20,985	$19,248	$13,877

(1) The reduction in license revenue and increase in support revenue is a result of the support component of subscription licenses which is included in license revenue under ASC 605. Additionally, license revenue decreased by approximately $65 million as a result of the revenue recorded to accumulated deficit, which would have been recognized during the quarter, partially offset by approximately $59 million of upfront license revenue recognition on new and renewal bookings.

(2) Cost of revenue under ASC 606 is higher under ASC 606 due to the treatment of deferred professional services costs under the new accounting guidance, partially offset by the timing of revenue recognition under ASC 606 resulting in lower associated royalty costs.

(3) Sales and marketing costs are lower under ASC 606 due to the amortization of commissions costs capitalized upon adoption of ASC 606, offset by the deferral of ongoing commission expenses under the new accounting guidance.

(4) The benefit for income taxes under ASC 606 includes indirect effects of the adoption.

3. Restructuring and Other Charges

Restructuring and other charges, net includes restructuring charges (credits) and headquarters relocation charges.

Restructuring Charges (Credits)

In October 2018, we initiated a restructuring plan to realign our workforce to shift investment to support Industrial Internet of Things and Augmented Reality strategic high growth opportunities. As this is a realignment of resources rather than a cost-savings initiative, we do not expect this realignment to result in significant cost savings. The

restructuring plan was completed in the first quarter of 2019 and resulted in restructuring charges of $16.3 million for termination benefits associated with approximately 240

employees, substantially all of which we expect will be paid in fiscal 2019. We also recorded $0.3 million of charges related to prior restructuring actions.

The following table summarizes restructuring accrual activity for the three months ended December 29, 2018:

	Employee severance and related benefits	Facility closures and related costs	Total
	(in thousands)		
October 1, 2018	$—	$2,415	$2,415
Charges to operations, net	16,343	243	16,586
Cash disbursements	(8,019)	(264)	(8,283)
Foreign exchange impact	32	(59)	(27)
Accrual, December 29, 2018	$8,356	$2,335	$10,691

The following table summarizes restructuring accrual activity for the three months ended December 30, 2017:

	Employee severance and related benefits	Facility closures and related costs	Total
	(in thousands)		
October 1, 2017	$1,736	$4,508	$6,244
Charges (credit) to operations, net	(212)	317	105
Cash disbursements	(198)	(537)	(735)
Foreign exchange impact	17	(18)	(1)
Accrual, December 30, 2017	$1,343	$4,270	$5,613

Of the accrual for facility closures and related costs, as of December 29, 2018, $1.3 million is included in accrued expenses and other current liabilities and $1.0 million is included in other liabilities in the Consolidated Balance Sheets. The accrual for facility closures is net of assumed sublease income of $1.9 million. The accrual for employee severance and related benefits is included in accrued compensation and benefits in the Consolidated Balance Sheets.

Of the accrual for facility closures and related costs, as of December 30, 2017 $2.2 million is included in accrued expenses and other current liabilities and $2.1 million is included in other liabilities in the Consolidated Balance Sheets.

Other - Headquarters Relocation Charges

Headquarters relocation charges represent accelerated depreciation expense associated with exiting our Needham headquarters facility and relocating to our new worldwide headquarters in the Boston Seaport District, which occurred in January 2019. Because our prior headquarters lease will not expire until November 2022, we are seeking to sublease that space, but have not yet done so. As a result, we will bear overlapping rent obligations for those premises and, in the second quarter of 2019, we expect to incur a restructuring charge of approximately $24 million, based on the net present value of remaining lease commitments net of estimated sublease income. From a cash perspective, the free rent and estimated sublease income on the Seaport headquarters total approximately $30 million, as compared to the estimated cash outflows of $29 million on the prior headquarters (rent obligations and operating expenses net of estimated sublease income). Restructuring charges could increase and estimated cash outflows could increase if we are unable to sublease our prior headquarters as we expect. Additionally, we will incur other costs associated with the move which will be recorded as incurred. In the first quarter of 2019 we recorded $1.9 million of accelerated depreciation expense related to shortening the estimated useful lives of leasehold improvements related to the Needham location.

4. Stock-based Compensation

Our equity incentive plan provides for grants of nonqualified and incentive stock options, common stock, restricted stock, restricted stock units (RSUs) and stock appreciation rights to employees, directors, officers and consultants. We award RSUs as the principal equity incentive awards, including 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.

We measure the cost of employee services received in exchange for 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. We account for forfeitures as they occur, rather than estimate expected forfeitures.

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 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.

Restricted stock unit activity for the three months ended December 29, 2018	Shares	Weighted Average Grant Date Fair Value (Per Share)
	(in thousands)	
Balance of outstanding restricted stock units October 1, 2018	3,284	$ 65.93
Granted (1)	979	$ 81.34
Vested	(1,056)	$ 53.40
Forfeited or not earned	(266)	$ 63.60
Balance of outstanding restricted stock units December 29, 2018	2,941	$ 75.85

(1) Restricted stock granted includes 141,000 shares from prior period TSR awards that were earned upon achievement of the performance criteria and vested in November 2018.

	Restricted Stock Units	
Grant Period	Performance-based RSUs (1)	Service-based RSUs (2)
	(Number of Units in thousands)	
First three months of 2019	344	494

(1) Substantially all the performance-based RSUs were granted to our executive officers. Approximately 145,000 shares are eligible to vest based upon annual performance measures over a three-year period. RSUs not earned for a period may be earned in the third period. To the extent earned, those performance-based RSUs will vest in three substantially equal installments on November 15, 2019, November 15, 2020 and November 15, 2021, or the date the Compensation Committee determines the extent to which the applicable performance criteria have been achieved for each performance period. An additional 199,000 performance-based RSU's are eligible to vest based upon a 2019 performance measure, which RSUs will be forfeited to the extend the performance measure is not achieved. These RSUs will vest, to the extent earned, in three substantially equal installments on November 15, 2019, 2020 and 2021.

(2) The service-based RSUs were granted to employees, including our executive officers. Substantially all service-based RSUs will vest in three substantially equal annual installments on or about the anniversary of the date of grant.

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

	Three months ended	
	December 29, 2018	December 30, 2017
	(in thousands)	
Cost of license revenue	$322	$ (90)
Cost of support and cloud services revenue	975	1,311
Cost of professional services revenue	1,814	1,706
Sales and marketing	9,722	4,879
Research and development	4,900	2,960
General and administrative	11,674	7,565
Total stock-based compensation expense	$29,407	$ 18,331

Stock-based compensation expense in the first quarter of 2019 and 2018 includes $1.3 million and $1.1 million, respectively, related to the ESPP.

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 as additional proceeds.

Calculation of Basic and Diluted EPS	Three months ended	
	December 29, 2018	December 30, 2017
	(in thousands, except per share data)	
Net income	$20,985	$ 13,877
Weighted average shares outstanding—Basic	118,323	115,731
Dilutive effect of restricted stock units	1,315	1,925
Weighted average shares outstanding—Diluted	119,638	117,656
Earnings per share—Basic	$0.18	$ 0.12
Earnings per share—Diluted	$0.18	$ 0.12

There were no antidilutive shares for the three months ended December 29, 2018 and 0.3 million of antidilutive shares for the three months ended December 30, 2017.

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 authorized us to repurchase up to $1,500 million of our common stock in the period October 1, 2017 through September 30, 2020. We did not repurchase any shares in the first quarter of either 2019 or 2018, but resumed repurchases in the second quarter of 2019 as described in Note 15. Subsequent Events. All shares of our common stock repurchased are automatically restored to the status of authorized and unissued.

6. Acquisitions

Acquisition-related costs in the first quarter of 2019 totaled $0.4 million, compared to less than $0.1 million in the first quarter of 2018. 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 are

classified in general and administrative expenses in the accompanying Consolidated Statements of Operations.

Frustum

On November 19, 2018, we acquired Frustum Inc. for $69.6 million (net of cash acquired of $0.7 million). We financed the acquisition with borrowings under our credit facility. Frustum is engaged in next-generation computer-aided design, including generative design, an approach that leverages artificial intelligence to generate design options. At the time of the acquisition, Frustum had approximately 12 employees and historical annualized revenues were not material. We do not expect the acquisition to add material revenue in fiscal 2019.

The acquisition of Frustum 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 discounted cash flow model which requires the use of significant estimates and assumptions, including estimating future revenues and costs. 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 $53.8 million of goodwill, $17.9 million of purchased software and $2.1 million of other net liabilities. The acquired technology is being amortized over a useful life of 15 years based on the expected benefit pattern of the assets. The acquired goodwill was allocated to our software products segment and will not be deductible for income tax purposes. The resulting amount of goodwill reflects the expected value that will be created by integrating Frustum generative design technology into our CAD solutions.

7. Goodwill and Intangible Assets

We have two operating and reportable segments: (1) Software Products and (2) 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 December 29, 2018, goodwill and acquired intangible assets in the aggregate attributable to our Software Products segment was $1,405.9 million and our Professional Services segment was $30.1 million. As of September 30, 2018, goodwill and acquired intangible assets in the aggregate attributable to our Software Products segment was $1,352.4 million and our Professional Services segment was $30.2 million. 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 completed our annual goodwill impairment review as of June 30, 2018 based on a qualitative assessment. Our qualitative assessment included company specific (financial performance and long-range plans), industry, and macroeconomic factors, and consideration of the fair value of each reporting unit relative to its carrying value at the last valuation date. Based on our qualitative assessment, we believe it is more likely than not that the fair values of our reporting units exceed their carrying values and no further impairment testing is required.

Goodwill and acquired intangible assets consisted of the following:

	December 29, 2018			September 30, 2018		
	Gross Carrying Amount	Accumulated Amortization	Net Book Value	Gross Carrying Amount	Accumulated Amortization	Net Book Value
	(in thousands)					
Goodwill (not amortized)			$1,230,901			$1,182,457
Intangible assets with finite lives (amortized) (1):						
Purchased software	$379,653	$ 259,850	$119,803	$362,679	$ 254,059	$108,620
Capitalized software	22,877	22,877	—	22,877	22,877	—
Customer lists and relationships	355,412	274,239	81,173	357,586	270,272	87,314
Trademarks and trade names	18,987	14,879	4,108	19,054	14,786	4,268
Other	3,981	3,981	—	4,003	4,003	—
	$780,910	$ 575,826	$205,084	$766,199	$ 565,997	$200,202
Total goodwill and acquired intangible assets			$1,435,985			$1,382,659

(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 10 years, 10 years, and 11 years, respectively.

Goodwill

Changes in goodwill presented by reportable segments were as follows:

	Software Products	Professional Services	Total
	(in thousands)		
Balance, October 1, 2018	$1,152,720	$ 29,737	$1,182,457
Frustum acquisition	53,777	—	53,777
Foreign currency translation adjustment	(5,199)	(134)	(5,333)
Balance, December 29, 2018	$1,201,298	$ 29,603	$1,230,901

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	
	December 29, 2018	December 30, 2017
	(in thousands)	
Amortization of acquired intangible assets	$5,936	$ 7,821
Cost of license revenue	6,717	6,675
Total amortization expense	$12,653	$ 14,496

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. GAAP prescribes 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 of 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 December 29, 2018 and September 30, 2018 were as follows:

	December 29, 2018			
	Level 1	Level 2	Level 3	Total
	(in thousands)			
Financial assets:				
Cash equivalents	$89,023	$—	$—	$89,023
Marketable securities				
Certificates of deposit	—	220	—	220
Commercial paper	—	1,956	—	1,956
Corporate notes/bonds	52,480	—	—	52,480
U.S. government agency securities	—	995	—	995
Forward contracts	—	1,216	—	1,216
	$141,503	$4,387	$—	$145,890
Financial liabilities:				
Contingent consideration related to acquisitions	$—	$—	$—	$—
Forward contracts	—	584	—	584
	$—	$584	$—	$584

	September 30, 2018			
	Level 1	Level 2	Level 3	Total
	(in thousands)			
Financial assets:				
Cash equivalents	$93,058	$—	$—	$93,058
Marketable securities				
Certificates of deposit	—	219	—	219
Corporate notes/bonds	54,737	—	—	54,737
U.S. government agency securities	—	995	—	995
Forward contracts	—	2,889	—	2,889
	$147,795	$4,103	$—	$151,898
Financial liabilities:				
Contingent consideration related to acquisitions	$—	$—	$1,575	$1,575
Forward contracts	—	3,419	—	3,419
	$—	$3,419	$1,575	$4,994

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

	Contingent Consideration
	(in thousands)
	Other
Balance, October 1, 2018	$ 1,575
Payment of contingent consideration	(1,575)
Balance, December 29, 2018	$ —

	Contingent Consideration (in thousands) Kepware
Balance, October 1, 2017	$ 8,400
Payment of contingent consideration	(3,757)
Balance, December 30, 2017	$ 4,643

In the Consolidated Balance Sheet as of December 29, 2018, there is no accrued contingent consideration. In the Consolidated Balance Sheet as of December 30, 2017, there was $4.6 million of the contingent consideration liability included in accrued expenses and other current liabilities.

Of the $1.6 million payments in the first three months of 2019, $1.6 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. Of the $3.8 million payments in the first three months of 2018, $3.2 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.

9. Marketable Securities

The amortized cost and fair value of marketable securities as of December 29, 2018 and September 30, 2018 were as follows:

	December 29, 2018			
	Amortized cost	Gross unrealized gains	Gross unrealized losses	Fair value
	(in thousands)			
Certificates of deposit	$221	$ —	$ (1)	$220
Commercial paper	1,961	—	(5)	1,956
Corporate notes/bonds	52,868	6	(394)	52,480
U.S. government agency securities	1,000	—	(5)	995
	$56,050	$ 6	$ (405)	$55,651

	September 30, 2018			
	Amortized cost	Gross unrealized gains	Gross unrealized losses	Fair value
	(in thousands)			
Certificates of deposit	$220	$ —	$ (1)	$219
Corporate notes/bonds	55,140	—	(403)	54,737
U.S. government agency securities	1,004	—	(9)	995
	$56,364	$ —	$ (413)	$55,951

Our investment portfolio consists of certificates of deposit, commercial paper, corporate notes/bonds and government securities that have a maximum maturity of two years. The longer the duration of these securities, the more susceptible they are to changes in market interest rates and bond yields. All unrealized losses are due to changes in market interest rates, bond yields and/or credit ratings.

We review our investments to identify and evaluate investments that have an indication of possible impairment. We concluded that, at December 29, 2018, the unrealized losses were temporary. The following tables summarize the fair value and gross unrealized losses aggregated by category and the length of time that individual securities have been in a continuous unrealized loss position as of December 29, 2018 and September 30, 2018.

	December 29, 2018					
	Less than twelve months		Greater than twelve months		Total	
	Fair Value	Gross unrealized	Fair Value	Gross unrealized	Fair Value	Gross unrealized

		loss		loss		loss
	(in thousands)					
Certificates of deposit	$—	$ —	$220	$ (1)	$220	$ (1)
Commercial paper	1,956	(5)	—	—	1,956	(5)
Corporate notes/bonds	22,303	(119)	27,695	(275)	49,998	(394)
U.S. government agency securities	—	—	995	(5)	995	(5)
	$24,259	$ (124)	$28,910	$ (281)	$53,169	$ (405)

	September 30, 2018					
	Less than twelve months		Greater than twelve months		Total	
	Fair Value	Gross unrealized loss	Fair Value	Gross unrealized loss	Fair Value	Gross unrealized loss
	(in thousands)					
Certificates of deposit	$219	$ (1)	$—	$ —	$219	$ (1)
Corporate notes/bonds	24,067	(70)	30,670	(333)	54,737	(403)
U.S. government agency securities	—	—	995	(9)	995	(9)
	$24,286	$ (71)	$31,665	$ (342)	$55,951	$ (413)

The following table presents our available-for-sale marketable securities by contractual maturity date as of December 29, 2018 and September 30, 2018.

	December 29, 2018		September 30, 2018	
	Amortized cost	Fair value	Amortized cost	Fair value
	(in thousands)		(in thousands)	
Due in one year or less	$25,544	$25,430	$25,792	$25,670
Due after one year through three years	30,506	30,221	30,572	30,281
	$56,050	$55,651	$56,364	$55,951

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, Israel, India 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 income and other expense, net.

As of December 29, 2018 and September 30, 2018, we had outstanding forward contracts with notional amounts equivalent to the following:

Currency Hedged	December 29, 2018	September 30, 2018
	(in thousands)	
Canadian / U.S. Dollar	7,195	7,334
Euro / U.S. Dollar	249,703	297,730
British Pound / U.S. Dollar	7,616	7,074
Israeli Sheqel / U.S. Dollar	7,424	9,778
Japanese Yen / U.S. Dollar	27,810	37,456
Swiss Franc / U.S. Dollar	12,875	11,944
Danish Kroner/ U.S. Dollar	3,067	1,902
Swedish Kronor / U.S. Dollar	13,562	18,207
Chinese Renminbi / U.S. Dollar	8,981	9,010
All other	9,282	5,521
Total	$347,515	$ 405,956

The following table shows the effect of our non-designated hedges in the Consolidated Statements of Operations for the three months ended December 29, 2018 and December 30, 2017:

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	
		December 29, 2018	December 30, 2017
		(in thousands)	
Forward Contracts	Interest income and other expense, net	$ (987)	$ 587

In the three months ended December 29, 2018 and December 30, 2017, foreign currency losses, net were $0.2 million and $1.5 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 15 months.

Cash flow hedge relationships are designated at inception, and effectiveness is assessed prospectively and retrospectively using regression analysis monthly. 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 December 29, 2018 and September 30, 2018, we had outstanding forward contracts designated as cash flow hedges with notional amounts equivalent to the following:

Currency Hedged	December 29, 2018	September 30, 2018
	(in thousands)	
Euro / U.S. Dollar	$ —	$ 8,495
Japanese Yen / U.S. Dollar	—	2,193
Swedish Kronor / U.S. Dollar	—	1,708
Total	$ —	$ 12,396

The following table shows the effect of our derivative instruments designated as cash flow hedges in the Consolidated Statements of Operations for the three months ended December 29, 2018 and December 30, 2017 (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	
	December 29, 2018	December 30, 2017		December 29, 2018	December 30, 2017		December 29, 2018	December 30, 2017
Forward Contracts	$ 187	$ (1,044)	Total software revenue	$ 627	$ (655)	Interest income and other expense, net	$ —	$ (19)

As of December 29, 2018, we estimated that all amounts reported in accumulated other comprehensive income will be reclassified to income within the next twelve months.

If 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 income and other expense, net on the Consolidated Statements of Operations. For the three months ended December 29, 2018 and December 30, 2017, there were no such gains or losses.

Net Investment Hedges

We translate balance sheet accounts of subsidiaries with foreign functional currencies into the U.S. Dollar using the exchange rate at each balance sheet date. Resulting translation adjustments are reported as a component of accumulated other comprehensive income on the Consolidated Balance Sheet. We designate certain foreign exchange forward contracts as net investment hedges against exposure on translation of balance sheet accounts of Euro functional subsidiaries. Net investment hedges partially offset the impact of foreign currency translation adjustment recorded in accumulated other comprehensive income on the Consolidated Balance Sheet. All foreign exchange forward contracts are carried at fair value on the Consolidated Balance Sheet and the maximum duration of foreign exchange forward contracts is approximately three months.

Net investment hedge relationships are designated at inception, and effectiveness is assessed retrospectively on a quarterly basis using net equity position of Euro functional subsidiaries. As the forward contracts are highly effective in offsetting exchange rate exposure, we record changes in these net investment hedges in accumulated other comprehensive income and subsequently reclassify them to foreign currency translation adjustment in accumulated other comprehensive income at the time of forward contract maturity. Changes in the fair value of foreign exchange forward contracts due to changes in time value are excluded from 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 December 29, 2018 and September 30, 2018, we had outstanding forward contracts designated as net investment hedges with notional amounts equivalent to the following:

Currency Hedged	December 29, 2018	September 30, 2018
	(in thousands)	
Euro / U.S. Dollar	$ 140,492	$ —
Total	$ 140,492	$ —

The following table shows the effect of our derivative instruments designated as net investment hedges in the Consolidated Statements of Operations for the three months ended December 29, 2018 and December 30, 2017 (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) Excluded from Effectiveness Testing	Gain or (Loss) Recognized-Ineffective Portion	
	Three months ended			Three months ended			Three months ended	
	December 29, 2018	December 30, 2017		December 29, 2018	December 30, 2017		December 29, 2018	December 30, 2017
Forward Contracts	$ (698)	$ —	Accumulated other comprehensive income (loss)	$ 773	$ —	Interest income and other expense, net	$ 486	$ —

As of December 29, 2018, we estimate that all amounts reported in accumulated other comprehensive income will be reclassified to income within the next three months.

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

	Fair Value of Derivatives Designated As Hedging Instruments		Fair Value of Derivatives Not Designated As Hedging Instruments	
	December 29, 2018	September 30, 2018	December 29, 2018	September 30, 2018
	(in thousands)		(in thousands)	
Derivative assets (1):				
Forward Contracts	$ 5	$ 440	$ 1,211	$ 2,449
Derivative liabilities (2):				
Forward Contracts	$ 217	$ —	$ 367	$ 3,419

(1) As of December 29, 2018 and September 30, 2018, $1,216 thousand and $2,889 thousand, current derivative assets, respectively, are recorded in other current assets, in the Consolidated Balance Sheets.

(2) As of December 29, 2018 and September 30, 2018 $584 thousand and $3,419 thousand current derivative liabilities, respectively, are recorded in accrued expenses and other current liabilities in the Consolidated Balance Sheets.

Offsetting Derivative Assets and Liabilities

We have entered into master netting arrangements that 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 December 29, 2018:

As of December 29, 2018	Gross Amount of Recognized Assets	Gross Amounts Offset in the Consolidated Balance Sheets	Net Amounts of Assets Presented in the Consolidated Balance Sheets	Gross Amounts Not Offset in the Consolidated Balance Sheets		
				Financial Instruments	Cash Collateral Received	Net Amount
	(in thousands)					
Forward Contracts	$1,216	$ —	$ 1,216	$ (584)	$ —	$ 632

The following table sets forth the offsetting of derivative liabilities as of December 29, 2018:

As of December 29, 2018	Gross Amount of Recognized Liabilities	Gross Amounts Offset in the Consolidated Balance Sheets	Net Amounts of Liabilities Presented in the Consolidated Balance Sheets	Gross Amounts Not Offset in the Consolidated Balance Sheets		
				Financial Instruments	Cash Collateral Pledged	Net Amount
	(in thousands)					
Forward Contracts	$584	$ —	$ 584	$ (584)	$ —	$ —

11. Segment and Geographical Information

Effective with the beginning of fiscal 2018, we changed our segments, see Note 1. Basis of Presentation for additional 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 two operating and reportable segments: (1) Software Products, which includes license, subscription and related support revenue (including updates and technical support) for all our products; and (2) Professional Services, which includes consulting, implementation and training services. We do not allocate sales & marketing or general and administrative expense to our operating segments as these activities are managed on a consolidated basis. Additionally, 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		
	As Reported ASC 606	ASC 605	As Reported ASC 605
	December 29, 2018	December 29, 2018	December 30, 2017
	(in thousands)		
Software Products			
Revenue	$293,243	$299,388	$ 265,190
Operating Costs (1)	91,628	90,845	99,732
Profit	201,615	208,543	165,458
Professional Services			
Revenue	41,446	39,369	41,454
Operating Costs (2)	31,863	30,490	34,817
Profit	9,583	8,879	6,637
Total segment revenue	334,689	338,757	306,644
Total segment costs	123,491	121,335	134,549
Total segment profit	211,198	217,422	172,095
Unallocated operating expenses:			
Sales and marketing expenses	94,496	97,583	94,496
General and administrative expenses	25,771	25,770	27,448
Restructuring charges, net	16,586	16,586	105
Restructuring and headquarters relocation charges, net	1,907	1,907	—
Intangibles amortization	12,653	12,653	14,496
Stock-based compensation	29,407	29,407	18,331
Other unallocated operating expenses (income) (3)	334	334	(97)
Total operating income	30,044	33,182	17,316
Interest expense	(10,276)	(10,276)	(10,047)
Other income (expense), net	655	548	(798)
Income before income taxes	$20,423	$23,454	$ 6,471

(1) Operating costs for the Software Products segment includes all costs of software revenue and research and development costs, excluding stock-based compensation and intangible amortization.
(2) Operating costs for the Professional Services segment includes all cost of professional services revenue, excluding stock-based compensation, intangible amortization and fair value adjustments for deferred services costs.
(3) Other unallocated operating expenses include acquisition-related and other transactional costs, pension plan termination-related costs and fair value adjustments for deferred services costs.

We report revenue by the following two product groups:

	Three months ended		
	As Reported ASC 606	ASC 605	As Reported ASC 605
	December 29, 2018	December 29, 2018	December 30, 2017
	(in thousands)		
Solutions	$299,434	$298,351	$ 277,669
IoT	35,255	40,406	28,975
Total revenue	$334,689	$338,757	$ 306,644

Our international revenue is presented based on the location of our customer. Revenue for the geographic regions in which we operate is presented below.

	Three months ended		
	As Reported ASC 606	ASC 605	As Reported ASC 605
	December 29, 2018	December 29, 2018	December 30, 2017
	(in thousands)		
Revenue:			
Americas	$141,853	$134,897	$ 127,007
Europe	111,352	120,157	121,466
Asia-Pacific	81,484	83,703	58,171
Total revenue	$334,689	$338,757	$ 306,644

12. Income Taxes

In the first quarter of 2019, our effective tax rate was (3)% on pre-tax income of $20.4 million, compared to (114)% on pre-tax income of $6.5 million in the first quarter of 2018. In the first three months of 2019 and 2018, our effective tax rate was lower than the statutory federal income tax rate of 21% due to U.S. tax reform (as described below), our corporate structure in which our foreign taxes are at a net effective tax rate lower than the U.S. rate, the excess tax benefit related to stock-based compensation and, in the first quarter of 2019, the reduction of a valuation allowance of $1.8 million as the result of the Frustum acquisition. Additionally, in the first quarter of 2019 our effective rate includes the indirect effects of the adoption of ASC 606. A significant amount of our foreign earnings is generated by our subsidiaries organized in Ireland. In 2019 and 2018, the foreign rate differential predominantly relates to these Irish earnings.

On December 22, 2017, the United States enacted tax reform legislation through the Tax Cuts and Jobs Act, (the "Tax Act"), which significantly changed existing U.S. tax laws by a reduction of the corporate tax rate, the implementation of a new system of taxation for non-U.S. earnings, the imposition of a one-time tax on the deemed repatriation of undistributed earnings of non-U.S. subsidiaries, and the expansion of the limitations on the deductibility of executive compensation and interest expense. As we have a September 30 fiscal year-end, there is a blended U.S. statutory federal rate of approximately 24.5% for our fiscal year ending September 30, 2018 and 21% for subsequent fiscal years. The Tax Act also provides that net operating losses generated in years ending after December 31, 2017 may be carried forward indefinitely and can no longer be carried back, and that net operating losses generated in years beginning after December 31, 2017 can only reduce taxable income by up to 80% when utilized in a future period. The Tax Act includes a provision to tax global intangible low-tax income (GILTI) of foreign subsidiaries and a base erosion anti-abuse tax (BEAT) measure that taxes certain payments between a U.S. corporation and its foreign subsidiaries. The GILTI and BEAT provisions were effective for us beginning October 1, 2018. Our accounting policy is to treat tax on GILTI as a current period cost included in tax expense in the year incurred.

In the first quarter of 2018, we provided no federal income taxes payable as a result of the deemed repatriation of undistributed earnings as the tax was offset by a combination of current year losses and existing attributes which had a full valuation allowance recorded against the related deferred tax assets. We recorded state income taxes payable of $7.1 million on the deemed repatriation. This was

subsequently reduced to $1.5 million to reflect additional guidance on the state implications of the Tax Act. We also recorded a deferred tax benefit of $14.2 million for the impact of the Tax Act on our net U.S. deferred income tax balances. This was primarily attributable to the reduction of the federal tax rate on the net deferred tax liability in the U.S., and the ability to realize net operating losses from the reversal of existing deferred tax assets which can now be carried forward indefinitely and can therefore be netted against deferred tax liabilities for indefinite lived intangible assets.

The U.S. Securities and Exchange Commission issued rules that allow for a period of up to one year after the enactment date of the Tax Act to finalize the recording of the related tax impacts. We finalized recording the impacts of the Tax Act in the quarter ended December 29, 2018 and did not record any significant adjustments.

In October 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2016-16, Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other Than Inventory. 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. We adopted this amendment beginning in the first quarter of 2019 using the modified retrospective method with a cumulate effect adjustment to accumulated deficit of $72.3 million, with a corresponding increase of $75.3 million to deferred tax assets, $6.0 million decrease to income tax assets and a $3.0 million decrease to income tax liabilities. The adjustment primarily relates to deductible amortization of intangible assets in Ireland. Post adoption, our effective tax rate no longer includes the benefit of this amortization.

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 December 29, 2018 and September 30, 2018, we had unrecognized tax benefits of $10.3 million and $9.8 million, respectively. If all our unrecognized tax benefits as of December 29, 2018 were to become recognizable in the future, we would record a benefit to the income tax provision of $10.3 million, which would be partially offset by an increase in the U.S. valuation allowance of $3.8 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 $2 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 South Korea. The assessment relates to various tax issues, primarily foreign withholding taxes. We have appealed and intend to vigorously defend our positions. We believe that upon completion of a multi-level appeal process it is more likely than not that our positions will be sustained. 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 process.

13. Debt

At December 29, 2018 and September 30, 2018, we had the following long-term debt obligations:

	December 29, 2018	September 30, 2018
	(in thousands)	
6.000% Senior notes due 2024	$500,000	$ 500,000
Credit facility revolver	283,125	148,125
Total debt	783,125	648,125
Unamortized debt issuance costs for the Senior notes (1)	(4,641)	(4,857)
Total debt, net of issuance costs (2)	$778,484	$ 643,268

(1) Unamortized debt issuance costs related to the credit facility were $3.6 million and $3.8 million as of December 29, 2018 and September 30, 2018, respectively, and were included in other assets.

(2) As of December 29, 2018 and September 30, 2018, all debt was included in long-term debt.

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 the covenants as of December 29, 2018.

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

As of December 29, 2018, the total estimated fair value of the Notes was approximately $503.8 million, based on quoted prices for the notes on that date.

Credit Agreement

We maintain 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 December 29, 2018, the fair value of our credit facility approximates its book value.

In September 2018, we amended and restated the credit facility to increase the revolving loan commitment from $600 million to $700 million and amend other provisions, including replacing the fixed charge coverage ratio with an interest coverage ratio. 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 13, 2023, when all remaining amounts outstanding will be due and payable in full.

PTC and certain eligible foreign subsidiaries are eligible to borrow 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 $90.0 million were borrowed by an eligible foreign subsidiary borrower. In addition, owned property (including equity interests) of PTC and certain of its material domestic subsidiaries' owned property is subject to first priority perfected liens in favor of the lenders under this credit facility. 100% of the voting equity interests of certain of PTC’s domestic subsidiaries and 65% of its material first-tier foreign subsidiaries are pledged as collateral for the obligations under the credit facility.

Loans under the credit facility bear interest at variable rates which reset every 30 to 180 days depending on the rate and period selected by PTC as described below. As of December 29, 2018, the

annual rate for borrowings outstanding was 4.2%. 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 NYFRB 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 $100.0 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:

- a total leverage ratio, defined as consolidated funded indebtedness to 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
- an interest coverage ratio, defined as the ratio of consolidated trailing four quarters EBITDA to consolidated trailing four quarters of cash basis interest expense, of not less than 3.00 to 1.00 as of the last day of any fiscal quarter.

As of December 29, 2018, our total leverage ratio was 2.30 to 1.00, our senior secured leverage ratio was 0.86 to 1.00 and our interest coverage ratio was 7.24 to 1.00 and we were in compliance with all financial and operating covenants of the credit facility.

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

We incurred $2.9 million in financing costs in connection with the September 2018 credit facility amendment and restatement. These origination costs are recorded as deferred debt issuance costs and are included in other assets. Financing costs are expensed over the remaining term of the obligations.

In both the first quarter of 2019 and 2018, we paid $16.7 million of interest on our debt. The average interest rate on borrowings outstanding during the first quarter of 2019 and 2018 was approximately 5.4% and 5.0%, 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

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 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 December 29, 2018, we estimate approximately $0.5 million to $4.2 million in legal proceedings and claims, of which we had accrued $0.4 million.

Guarantees and Indemnification Obligations

We enter into standard indemnification agreements in the ordinary course of our business. Under 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, claims relating to property damage or personal injury resulting from the performance of services by us or our subcontractors and data breaches. The maximum potential amount of future payments we could be required to make under indemnification agreements for intellectual property and damage and injury claims is unlimited; the maximum potential amount for indemnification for data breaches is capped in those contracts. 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

Restructuring

In the second quarter of 2019, we will record a restructuring charge related to our move to our new headquarters facility. See Note 3. Restructuring and Other Charges for further discussion.

Debt Repayment

In January 2019, we repaid $25.0 million under our revolving credit facility.

Common Stock Repurchases

In the second quarter of 2019, we resumed our share repurchase program. We expect to repurchase approximately $65 million of our common stock in the quarter.

Departure of Executive Officer

On January 23, 2019, we announced that Andy Miller, our Executive Vice President and Chief Financial Officer, will be retiring in 2019. The effective date of his departure is not known at this time, and is expected to occur after a successor has been appointed. His departure may have an impact on the timing and amount of stock-based compensation expense for outstanding unvested awards.

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 future financial and growth expectations and targets 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 deteriorate (due to, among other factors, the U.S. government shutdown, the focus on technology transactions with non-U.S. entities and potential expanded prohibitions, and ongoing trade tensions and tariffs); customers may not purchase our solutions or convert existing support contracts to subscription when or at the rates we expect; our businesses, including our Internet of Things (IoT) business and

31

Augmented Reality businesses, may not expand and/or generate the revenue we expect; our adoption of the ASC 606 revenue recognition standard will increase the volatility of our revenue results as a significant portion of subscription revenue is recognized at the time of delivery, rather than being recognized ratably over the commitment period; 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 transition to subscription-only licensing could adversely affect sales and revenue; sales of our solutions as subscriptions may not have the longer-term effect on revenue and earnings that we expect; bookings associated with minimum ACV commitments under our Strategic Alliance Agreement with Rockwell Automation may not result in subscription contracts sold through to end-user customers; our strategic initiatives and investments may not generate the revenue we expect; we may be unable to expand our partner ecosystem as we expect and our partners may not generate the revenue we expect; 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 or other matters could preclude share repurchases. 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, as well as other risks and uncertainties described below throughout or referenced in Part II, Item 1 A. Risk Factors of this report.

Business Overview

PTC is a global software and services company that delivers solutions to enable our industrial customers' digital transformations, helping them to better design, manufacture, operate, and service their products. Our Internet of Things (IoT) solutions are focused on Smart Connected Operations (SCO), Smart Connected Products (SCP), and Smart Connected Systems, that enable companies to connect factories and plants, smart products, and enterprise systems, bridging the physical and digital worlds, to transform their businesses. Our Solutions portfolio of innovative Computer-Aided Design (CAD) and Product Lifecycle Management (PLM) solutions enable manufacturers to create, innovate, operate, and service products.

Operating and Non-GAAP Financial Measures

Our discussion of results includes discussion of our operating measures (including “license and subscription bookings” and other subscription-related measures) and non-GAAP financial measures. Our operating measures and non-GAAP financial measures, including the reasons we use those measures, are described below in Results of Operations - Operating Measures and Results of Operations - Non-GAAP Financial Measures, respectively. You should read those sections to understand those operating and non-GAAP financial measures.

Revenue Sources and Recognition

We sell subscription and perpetual licenses to our software, support for perpetual licenses, cloud services and professional services.

Subscription revenue is comprised of time-based licenses whereby customers use our software and receive related support for a specified term. Results for reporting periods beginning on or after October 1, 2018 are presented under the Accounting Standards Update No. 2014-09, Revenue from Contracts with Customers: Topic 606 (ASC 606), while prior period amounts are not adjusted and continue to be reported in accordance with the guidance provided by ASC 985-605, Software-Revenue Recognition and revenues for non-software deliverables in accordance with ASC 605-25, Revenue Recognition, Multiple-Element Arrangements (ASC 605). Through 2018, revenue for our subscription contracts was recognized ratably over the term of the contract under the ASC 605 accounting standard; this differs from how revenue for such contracts is recognized under ASC 606. Under ASC 606, revenue is recognized for each performance obligation that can be separately identified under the contract. Accordingly, our on-premise subscription contracts are unbundled into multiple performance obligations (i.e., license, cloud and support). The license portion of such subscription contracts (approximately 50% to 55%) is recognized upfront and the cloud and support portions (approximately 45% to 50%) are recognized ratably over the term. Our subscription revenue includes an immaterial amount of Software as a Service (SaaS) and cloud services for which revenue is generally recognized ratably over the term of the contract.

Perpetual licenses are a perpetual right to use the software, for which revenue is generally recognized up front upon shipment to the customer. Support revenue is comprised of contracts to

32

maintain new and/or previously purchased perpetual licenses, for which revenue is recognized ratably over the term of the contract. Professional services engagements typically result from sales of new licenses, and for which revenue is recognized over the term of the engagement.

The effects of our adoption of ASC 606, including adjustments to accumulated deficit related to billed and unbilled deferred revenue, are described in “Recent Accounting Pronouncements” in Note 1. Basis of Presentation and in Note 2. Revenue from Contracts with Customers in the Notes to Consolidated Financial Statements in this Quarterly Report.

Executive Overview

Our revenue results in the quarter reflect the adoption of subscription licensing by our customers and the compounding effect of the subscription business model as subscription revenue recurs and new subscription revenue is added. Subscription revenue, software revenue and total revenue were all up over the first quarter of 2018. Perpetual license revenue was higher than anticipated (up 23% year over year) due to last time purchases of perpetual licenses and some large strategic deals in Asia Pacific where perpetual licenses were still available through the end of the quarter. Our revenue results drove our operating margin results for the quarter despite increases in sales and marketing, general and administrative expenses and restructuring charges, with operating margin and EPS up over the prior-year period.

	Three months ended				
				Percent Change	
Revenue	As Reported ASC 606 December 29, 2018	ASC 605 December 29, 2018	As Reported ASC 605 December 30, 2017	ASC 605 Change	Constant Currency
	(in millions)				
License	$105.3	$ 173.9	$ 119.5	46 %	48 %
Support and cloud services	187.9	125.5	145.7	(14)%	(13)%
Total software revenue	293.2	299.4	265.2	13 %	15 %
Professional services	41.4	39.4	41.5	(5)%	(2)%
Total revenue	$334.7	$ 338.8	$ 306.6	10 %	12 %

	Three months ended			Percent Change	
Revenue	As Reported ASC 606 December 29, 2018	ASC 605 December 29, 2018	As Reported ASC 605 December 30, 2017	ASC 605 Change	Constant Currency
	(in millions)				
Subscription license	$63.5				
Subscription support & cloud services	77.4				
Total Subscription	140.9	$ 148.4	$ 100.0	48 %	50 %
Perpetual support	110.5	109.2	131.2	(17)%	(15)%
Total recurring revenue	251.4	257.6	231.2	11 %	13 %
Perpetual license	41.8	41.8	34.0	23 %	27 %
Total software revenue	293.2	299.4	265.2	13 %	15 %
Professional services	41.4	39.4	41.5	(5)%	(2)%
Total revenue	$334.7	$ 338.8	$ 306.6	10 %	12 %

	Three months ended		
Earnings Measures	As Reported ASC 606 December 29, 2018	ASC 605 December 29, 2018	As Reported ASC 605 December 30, 2017
Operating Margin	9.0 %	9.8 %	5.6 %
Earnings Per Share	$0.18	$ 0.16	$ 0.12
Non-GAAP Operating Margin[(1)]	27.2 %	27.8 %	16.5 %
Non-GAAP Earnings Per Share[(1)]	$0.56	$ 0.57	$ 0.31

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

We ended the first quarter of 2019 with cash, cash equivalents and marketable securities of $333 million, up from $316 million at the end of 2018. We generated $21 million of cash from operations in the first quarter of 2019 compared to $26 million in the first quarter of 2018. Cash from operations for the first quarter of 2019 includes $8 million of restructuring payments compared to $1 million in the year ago period. Cash used by investing activities for the first quarter of 2019 includes $70 million, net of cash acquired, used to acquire Frustum Inc., an artificial design and generative design technology platform, and $30 million of capitalized expenditures used primarily for construction costs at our new headquarters building in the Boston Seaport District. At December 29, 2018, the balance outstanding under our credit facility was $283 million and total debt outstanding was $783 million.

Operating Measures

We provide these measures to help investors understand the progress of our subscription transition. These measures are not necessarily indicative of revenue for the period or any future period.

License and Subscription Bookings

License and subscription bookings for the first quarter of 2019 were $101 million, down 3% from the year ago period due to the impact of final perpetual license purchases in Asia Pacific and due to what we believe were execution issues, including those associated with the realignment of our sales force in the quarter. Subscription bookings as a percent of total license and subscription bookings were significantly lower than in the prior-year period due to the significant number of last time perpetual license purchases in Asia Pacific before they were discontinued on January 1, 2019.

Subscription ACV

Subscription ACV was $29 million for the quarter, down from $34 million in the year-ago period, reflecting the impact of execution issues described above.

Annualized Recurring Revenue (ARR)

ARR was approximately $1,045 million as of the end of the first quarter of 2019, an increase of 13% compared to the first quarter of 2018 and the eighth consecutive quarter of double-digit year-over-year growth.

Deferred Revenue and Backlog (Unbilled Deferred Revenue)

Deferred revenue primarily relates to software agreements invoiced to customers for which the revenue has not yet been recognized. Unbilled deferred revenue (backlog) is the aggregate of booked orders for license, support and subscription (including multi-year subscription contracts with start dates after October 1, 2018 that are subject to a limited annual cancellation right, of which approximately $90 million was cancellable at December 29, 2018) for which the associated revenue has not been recognized and the customer has not yet been invoiced. We do not record unbilled deferred revenue on our Consolidated Balance Sheets; such amounts are recorded as Deferred Revenue when we invoice the customer. We provide this view of Deferred Revenue and Backlog to enable investors to understand the significant contractual commitments we have to customers, and to provide a view of future revenue that we expect will be recognized, even if those commitments are not reflected on our balance sheet.

	As Reported ASC 606 (1)	ASC 605	As Reported ASC 605	As Reported ASC 605
	December 29, 2018	December 29, 2018	September 30, 2018	December 30, 2017
	(Dollar amounts in millions)			
Deferred revenue (billed)	$335	$ 493	$ 499	$ 431
Unbilled deferred revenue	642	864	911	738
Total	$977	$ 1,357	$ 1,410	$ 1,169

(1) Upon adoption of ASC 606, approximately $366 million of total deferred revenue was recorded as a decrease to accumulated deficit with an offsetting $218 million increase to unbilled accounts receivable, a $142 million decrease to deferred revenue and a $6 million increase in other assets net of liabilities.

Of the unbilled deferred revenue balance at December 29, 2018, we expect to invoice customers approximately $520 million within the next twelve months. Unbilled deferred revenue under ASC 605 grew 16% year-over-year due to the high volume of new subscription bookings. Many of our new subscription bookings are for multiple years and are typically billed annually at the start of each annual subscription period. The average contract duration was approximately 2 years for new subscription contracts in 2018 and 2017.

We expect that the amount of deferred revenue and unbilled deferred revenue will fluctuate from quarter to quarter due to the specific timing, duration and size of customer subscription and support agreements, varying billing cycles of such agreements, the specific timing of customer renewals (which are typically for one year), foreign currency fluctuations, the timing of when deferred revenue is recognized as revenue and the timing of our fiscal quarter ends. The effects of our adoption of ASC 606, including the adjustments to accumulated deficit related to billed and unbilled deferred revenue, are described in Note 2. Revenue from Contracts with Customers in the Notes to Consolidated Financial Statements.

Future Expectations, Strategies and Risks

Our 2019 strategic goals are to deliver sustainable growth, expand subscription licensing and expand our margins.

Sustainable Growth	We are focused on continuing to drive bookings growth both in the high-growth Industrial IoT and AR markets and in our core CAD and PLM markets. We expect that IoT and AR adoption rates will continue to expand and will be the most significant drivers of growth.
Expand Subscription Licensing	Our goal is to continue to increase the percentage of licenses sold as subscriptions to increase our recurring revenue. Effective January 1, 2019, new software licenses for our core solutions and ThingWorx solutions are available only by subscription worldwide. Kepware will continue to be available under perpetual license. We expect our subscription mix to increase by 1100 to 1300 basis points in 2019.
Cost Controls and Margin Expansion	Our goal is to drive continued margin expansion over the long term. We continue to proactively manage our cost structure and invest in what we believe are high return opportunities in our business. With the growth opportunities in Industrial IoT and AR, and other strategic initiatives we've undertaken, as well as our continued commitment to operating margin improvement, we realigned our workforce in the beginning of 2019 to shift investment to support these strategic, high growth opportunities. We expect to deliver continued operating margin expansion in 2019 and beyond, as we realize the compounding benefit of our maturing subscription business.

Our results have been impacted, and we expect will continue to be impacted, by our ability to close large transactions. The amount of bookings and revenue, particularly license and subscriptions, attributable to large transactions, and the number of such transactions, may vary significantly from quarter to quarter based on customer purchasing decisions and macroeconomic conditions. Such transactions may have long lead times as they often follow a lengthy product selection and evaluation process and, for existing customers, are influenced by contract expiration cycles. This may cause volatility in our results. In addition, our adoption of the ASC 606 revenue recognition standard will increase the volatility of our revenue results as a significant portion of subscription revenue is recognized at the time of delivery, rather than being recognized ratably over the commitment period.

Second Quarter Restructuring Charge

In the second quarter of 2019, we moved into our new worldwide headquarters in the Boston Seaport District and vacated our prior headquarters space. Because our prior headquarters lease will not expire until November 2022, we are seeking to sublease that space, but have not yet done so. As a result, we will bear overlapping rent obligations for those premises and, in the second quarter of 2019, expect to incur a restructuring charge of approximately $24 million, based on the net present value of remaining lease commitments net of estimated sublease income. From a cash perspective, the free rent and estimated sublease income on the Seaport headquarters total approximately $30 million, as compared to the estimated cash outflows of $29 million on the prior headquarters (rent obligations and operating expenses net of estimated sublease income). Restructuring charges could increase and estimated cash outflows could increase if we are unable to sublease our prior headquarters as we expect. Additionally, we will incur other costs associated with the move which will be recorded as incurred.

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 providing operating income, operating margin, and diluted earnings per share as calculated under GAAP, we provide non-GAAP operating income, non-GAAP operating margin, and non-GAAP diluted earnings per share for the reported periods. These non-GAAP financial measures exclude fair value adjustments related to acquired deferred revenue, acquired deferred costs, stock-based compensation expense, amortization of acquired intangible assets, acquisition-related costs, restructuring charges, and the related tax effects of the preceding items, as well as the tax items identified. These non-GAAP financial measures provide investors another view of our operating results that is aligned with management budgets and with performance measures in our incentive compensation plans. Investors should use these non-GAAP financial measures only in conjunction with our GAAP results.

	Three months ended			Percent Change	
	As Reported ASC 606	ASC 605	As Reported ASC 605	ASC 605	
	December 29, 2018	December 29, 2018	December 30, 2017	Actual	Constant Currency
	(Dollar amounts in millions, except per share data)				
Subscription	$140.9	$148.4	$ 100.0	48 %	50 %
Perpetual support	110.5	109.2	131.2	(17)%	(15)%
Total recurring revenue	251.4	257.6	231.2	11 %	13 %
Perpetual license	41.8	41.8	34.0	23 %	27 %
Total software revenue	293.2	299.4	265.2	13 %	15 %
Professional services	41.4	39.4	41.5	(5)%	(2)%
Total revenue	334.7	338.8	306.6	10 %	12 %
Total cost of revenue	77.4	75.2	83.0	(9)%	
Gross margin	257.3	263.6	223.6	18 %	
Operating expenses	227.3	230.4	206.3	12 %	
Total costs and expenses	304.6	305.6	289.3	6 %	8 %
Operating income	30.0	33.2	17.3	92 %	90 %
Non-GAAP operating income [1]	$91.2	$94.3	$ 50.5	87 %	88 %
Operating margin	9.0 %	9.8 %	5.6 %		
Non-GAAP operating margin [1]	27.2 %	27.8 %	16.5 %		
Diluted earnings per share	$0.18	$0.16	$ 0.12		
Non-GAAP diluted earnings per share [2]	$0.56	$0.57	$ 0.31		
Cash flow from operations [3]	$21.2	$21.2	$ 25.5		

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

(2) We have recorded a full valuation allowance against our U.S. net deferred tax assets. As we are profitable on a non-GAAP basis, the 2019 and 2018 non-GAAP tax provisions are 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. We recorded the impact of the Tax Cuts and Jobs Act in our Q1 2018 GAAP earnings, resulting in a non-cash benefit of approximately $7 million. We have excluded this benefit from our non-GAAP results.

(3) Cash flow from operations for the first quarter of 2019 includes $8 million of restructuring payments. Cash flow from operations for the first quarter of 2018 includes $1 million of restructuring payments.

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, Yen, Shekel, and Rupee relative to the U.S. Dollar, affects our reported results. If actual results under ASC 605 for the first quarter of 2019 had been converted into U.S. Dollars based on the foreign currency exchange rates in effect for the first quarter of 2018, revenue would have been higher by $7.2 million, costs and expenses would have been higher by $5.7 million, and operating income would have been higher by $1.6 million. Our constant currency disclosures are calculated by multiplying the actual results for the first three months of 2019 by the exchange rates in effect for the comparable period of 2018, excluding the effect of any hedging.

Revenue

We discuss our revenue results by line of business, by product group and by geographic region below.

Revenue by Line of Business

Software

Software revenue consists of subscription, support, and perpetual license revenue. Recurring software revenue consists of subscription and support revenue and approximates 75% of total revenue for the three months ended December 29, 2018. Our subscription revenue includes an immaterial amount of Software as a Service (SaaS) and cloud services. As our mix of subscription sales relative to perpetual license sales has increased, perpetual license revenue and support revenue have declined and are expected to continue to decline as customers purchase our solutions as subscriptions and convert existing perpetual licenses with support contracts to subscriptions. As our subscription business matures, recurring software revenue growth is expected to accelerate due to the compounding benefit of a subscription business model.

Professional Services

Professional services engagements typically result from sales of new licenses; revenue is recognized over the term of the engagement. Professional services revenue was down 5% (2% constant currency) in the first quarter compared to the year-ago period. These results are in line with our expectation that professional services revenue will trend flat-to-down over time due to our strategy to expand margins by migrating more services engagements to our partners and delivering products that require less consulting and training services.

Revenue by Product Group

	Three months ended				
				Percent Change	
	As Reported ASC 606	ASC 605	As Reported ASC 605	ASC 605	
	December 29, 2018	December 29, 2018	December 30, 2017	Actual	Constant Currency
	(Dollar amounts in millions)				
Solutions Products					
Software revenue	261.6	265.1	238.8	11 %	13 %
Professional services	37.9	33.3	38.9	(14)%	(12)%
Total revenue	$299.4	$ 298.4	$ 277.7	7 %	9 %
IoT Products					
Software revenue	31.7	34.3	26.4	30 %	31 %
Professional services	3.6	6.1	2.6	138 %	144 %
Total revenue	$35.3	$ 40.4	$ 29.0	39 %	41 %

Solutions Group

Solutions recurring software revenue under ASC 605 in the first quarter grew 9% over the first quarter of 2018 (11% on a constant currency basis), due in part to strong CAD bookings. Last time perpetual license purchases in Asia Pacific also benefited first quarter software revenue.

Solutions professional services revenue for the first quarter of 2019 declined compared to the year-ago period due to our strategy to limit the amount of professional services we provide.

IoT Group

IoT software revenue under ASC 605 in the first quarter of 2019 reflects 35% constant currency recurring IoT software revenue growth, reflecting the strong bookings growth over the past two years and the compounding benefit of our maturing subscription model.

IoT professional services revenue increased in the first quarter of 2019, due in part to implementation and adoption services we provide to our IoT customers as part of our efforts to help their IoT initiatives be successful.

Revenue by Geographic Region

Total ASC 605 revenue grew in the Americas and Asia Pacific for the first quarter of 2019 compared to the year-ago period, while total revenue in Europe was relatively flat.

	Three months ended						
				Percent Change			
	As Reported ASC 606	ASC 605	As Reported ASC 605	ASC 605			
	December 29, 2018	December 29, 2018	December 30, 2017	Actual		Constant Currency	
	(Dollar amounts in millions)						
Americas							
Software revenue	129.5	122.6	113.0	9	%	9	%
Professional services	12.3	12.3	14.0	(12	)%	(12	)%
Total revenue	$141.9	$ 134.9	$ 127.0	6	%	6	%
Europe							
Software revenue	89.4	100.4	100.9	—	%	2	%
Professional services	22.0	19.7	20.6	(4	)%	1	%
Total revenue	$111.4	$ 120.2	$ 121.5	(1	)%	1	%
Asia Pacific							
Software revenue	74.4	76.4	51.4	49	%	53	%
Professional services	7.1	7.3	6.8	7	%	10	%
Total revenue	$81.5	$ 83.7	$ 58.2	44	%	48	%

Americas

Strong license and subscription bookings have been driving revenue growth in the Americas.

Europe

In the first quarter of 2019, recurring software revenue grew 11% on a constant currency basis over the year ago period, despite one fewer day in the quarter negatively impacting growth by just over 100bps. Perpetual license revenue declined 63% on a constant currency basis due to the perpetual license end of life in Europe as of January 1, 2018.

Asia Pacific

In the first quarter of 2019, Asia Pacific recurring software revenue grew more than 20% on a constant currency basis compared to the year ago period. Perpetual license revenue more than doubled due to last time purchases associated with the discontinuation of perpetual licenses there as of January 1, 2019, as well the impact from some large strategic competitive wins.

Gross Margin

	Three months ended			
	As Reported ASC 606	ASC 605	As Reported ASC 605	ASC 605
	December 29, 2018	December 29, 2018	December 30, 2017	Percent Change
	(Dollar amounts in millions)			
Gross margin	$257.3	$263.6	$223.6	18 %
Non-GAAP gross margin [1]	267.4	273.6	233.5	17 %
Gross margin as a % of revenue:				
License gross margin	88 %	93 %	90 %	
Support and cloud gross margin	83 %	76 %	76 %	
Professional services gross margin	19 %	18 %	12 %	
Gross margin as a % of total revenue	77 %	78 %	73 %	
Non-GAAP gross margin as a % of total revenue [1]	80 %	81 %	76 %	

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

The increase in total gross margin in the first quarter 2019 compared to the first quarter of 2018 reflects higher software revenue driven by the maturing subscription model. Total revenue in first quarter of 2019 grew 10% over the first quarter of 2018. Margins for license and subscription are beginning to expand as the subscription model matures and revenue that has been deferred begins to contribute to each quarterly period. Support gross margins are down in the first quarter of 2019 compared to the first quarter of 2018 primarily due to a decrease in perpetual support revenue of 17%. The support revenue decrease is associated with an increase in our subscription mix and the conversion of existing customers from perpetual licenses with support contracts to subscription.

Professional services gross margin increased 600 bps for the first quarter of 2019 compared to the first quarter of 2018 due to cost management. Professional services revenue declined 5% in the first quarter of 2019, compared to the year ago period. The decline in professional services revenue is in line with our strategy to migrate more services engagements to our partners and to deliver products that require less consulting and training services.

Total Costs and Expenses

	Three months ended			
	As Reported ASC 606	ASC 605	As Reported ASC 605	ASC 605
	December 29, 2018	December 29, 2018	December 30, 2017	Percent Change
	(Dollar amounts in millions)			
Costs and expenses:				
Cost of license revenue	$12.6	$ 12.3	$ 12.1	2 %
Cost of support and cloud services revenue	31.2	30.6	34.5	(11)%
Cost of professional services revenue	33.6	32.2	36.4	(12)%
Sales and marketing	104.2	107.3	99.4	8 %
Research and development	60.8	60.8	64.0	(5)%
General and administrative	37.9	37.9	35.0	8 %
Amortization of acquired intangible assets	5.9	5.9	7.8	(24)%
Restructuring and other charges, net	18.5	18.5	0.1	17,512 %
Total costs and expenses	$304.6	$ 305.6	$ 289.3	6 %
Total headcount at end of period	5,909	5,909	6,036	(2)%

ASC 605 costs and expenses in the first quarter of 2019 compared to ASC 605 costs and expenses in the first quarter of 2018 increased primarily as a result of the following:

- a $16.5 million increase in restructuring charges related to our 2019 workforce realignment,
- a $2.4 million increase in total compensation, benefit costs and travel expenses, primarily driven by an $11.1 million increase in stock-based compensation, offset by a $9.5 million decrease in bonus, salary and travel expenses, and
- a $1.9 million increase in cloud services hosting costs,

primarily offset by:

- a $1.8 million decrease in amortization of intangible assets,
- a $1.5 million decrease in meeting costs, and
- a $1.3 million decrease in professional service fees.

Costs and expenses for the first quarter of 2019 compared to the year-ago period include a $5.7 million decrease due to changes in foreign currency exchange rates.

Cost of License Revenue	Three months ended			
	As Reported ASC 606	ASC 605	As Reported ASC 605	ASC 605
	December 29, 2018	December 29, 2018	December 30, 2017	Percent Change
	(Dollar amounts in millions)			
Cost of license revenue	$12.6	$ 12.3	$ 12.1	2 %
% of total revenue	4 %	4 %	4 %	
% of total license revenue	12 %	7 %	10 %	

Our cost of license 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 cost of subscription licensing. Costs associated with providing post-contract support such as providing software updates and technical support for both our subscription offerings and our perpetual licenses are included in cost of support and cloud service revenue. Cost of license revenue as a percent of license 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.

Cost of license revenue under ASC 606 is higher than under ASC 605 due to the timing of revenue recognition under ASC 606 resulting in higher associated royalty costs. Under ASC 605, the support component of subscription revenue is included in license revenue, which drives down cost of license as a percentage of total license revenue.

Cost of license revenue in the first quarter of 2019 compared to the first quarter of 2018 increased primarily due to increased royalty costs.

Cost of license revenue as a percentage of license revenue under ASC 605 decreased in the first quarter of 2019 compared to the year-ago period due to higher revenue as we realize the benefit of our maturing subscription model.

Cost of Support and Cloud Service Revenue	Three months ended			
	As Reported ASC 606	ASC 605	As Reported ASC 605	ASC 605
	December 29, 2018	December 29, 2018	December 30, 2017	Percent Change
	(Dollar amounts in millions)			
Cost of support and cloud services revenue	$31.2	$ 30.6	$ 34.5	(11)%
% of total revenue	9 %	9 %	11 %	
% of total support and cloud services revenue	17 %	24 %	24 %	

Our cost of support and cloud services revenue includes costs associated with providing post-contract support such as providing software updates and technical support for both our subscription offerings and our perpetual licenses, cost of cloud services, and cost of software as service revenue. Cost of support and cloud services revenue consists of costs such as salaries, benefits, and computer equipment and facilities associated with customer support and the release of support updates (including related royalty costs).

Under ASC 605, the support component of subscription revenue is included in license revenue, which drives up the cost of support and cloud services as a percentage of total support and cloud services revenue.

In the first quarter of 2019 compared to the first quarter of 2018, total compensation, benefit costs and travel expenses decreased by 10% ($2.0 million), due to lower headcount.

Cost of Professional Services Revenue

	Three months ended			
	As Reported ASC 606	ASC 605	As Reported ASC 605	ASC 605
	December 29, 2018	December 29, 2018	December 30, 2017	Percent Change
	(Dollar amounts in millions)			
Cost of professional services revenue	$33.6	$ 32.2	$ 36.4	(12)%
% of total revenue	10 %	9 %	12 %	
% of total professional services revenue	81 %	82 %	88 %	

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.

Cost of professional services revenue is higher under ASC 606 than under ASC 605 due to the treatment of deferred professional services costs under the new accounting guidance.

In the first quarter of 2019 compared to the first quarter of 2018, total compensation, benefit costs and travel expenses decreased by 14% ($3.8 million), due to lower headcount, partially offset by higher third-party subcontractor fees, which increased by 9% ($0.5 million).

Sales and Marketing

	Three months ended			
	As Reported ASC 606	ASC 605	As Reported ASC 605	ASC 605
	December 29, 2018	December 29, 2018	December 30, 2017	Percent Change
	(Dollar amounts in millions)			
Sales and marketing	$104.2	$ 107.3	$ 99.4	8 %
% of total revenue	31 %	32 %	32 %	

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

Sales and marketing costs are lower under ASC 606 than under ASC 605 due to the deferral of ongoing commission expenses, offset by the amortization of commissions costs capitalized upon adoption of ASC 606.

In the first quarter of 2019 compared to the first quarter of 2018, total compensation, benefit costs and travel expenses increased 11% ($8.2 million) due to an increase in headcount, salary increases and stock-based compensation increases.

Research and Development

	Three months ended			
	As Reported ASC 606	ASC 605	As Reported ASC 605	ASC 605
	December 29, 2018	December 29, 2018	December 30, 2017	Percent Change
	(Dollar amounts in millions)			
Research and development	$60.8	$ 60.8	$ 64.0	(5)%
% of total revenue	18 %	18 %	21 %	

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. In the first quarter of 2019 compared to the first quarter of 2018, total compensation, benefit costs and travel expenses decreased 4% ($2.2 million) primarily due to a decrease in headcount.

44

General and Administrative

	Three months ended			
	As Reported ASC 606	ASC 605	As Reported ASC 605	ASC 605
	December 29, 2018	December 29, 2018	December 30, 2017	Percent Change
	(Dollar amounts in millions)			
General and administrative	$37.9	$ 37.9	$ 35.0	8 %
% of total revenue	11 %	11 %	11 %	

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 first quarter of 2019 compared to the first quarter of 2018 total compensation, benefit costs and travel expenses increased by 9% ($2.4 million), primarily due to higher stock-based compensation expense, offset by lower bonus expenses due to a portion of the annual bonus being payable in stock for 2019.

Amortization of Acquired Intangible Assets

	Three months ended			
	As Reported ASC 606	ASC 605	As Reported ASC 605	ASC 605
	December 29, 2018	December 29, 2018	December 30, 2017	Percent Change
	(Dollar amounts in millions)			
Amortization of acquired intangible assets	$5.9	$ 5.9	$ 7.8	(24)%
% of total revenue	2 %	2 %	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 first quarter of 2019 compared to the first quarter of 2018 is due to certain assets being fully amortized as well as the impact of foreign currency exchange rates.

Restructuring and Other Charges, Net

	Three months ended		
	As Reported ASC 606	ASC 605	As Reported ASC 605
	December 29, 2018	December 29, 2018	December 30, 2017
	(in millions)		
Restructuring charges (credits), net	$16.6	$ 16.6	$ 0.1
Headquarters relocation charges	1.9	1.9	—
Restructuring and Other Charges, Net	$18.5	$ 18.5	$ 0.1

In October 2018, we initiated a restructuring plan to realign our workforce to shift investment to support Industrial Internet of Things and Augmented Reality strategic opportunities. As this is a realignment of resources rather than a cost-savings initiative, we do not expect this realignment will result in significant cost savings. In the first quarter of 2019, we recorded restructuring charges of $16.6 million primarily related to our fiscal 2019 restructuring plan. In the first quarter of 2019, we made cash payments related to restructuring charges of $8.3 million. At December 29, 2018, accrued restructuring totaled $10.7 million, of which we expect to pay $9.7 million within the next twelve months.

The headquarters relocation charges include accelerated depreciation expense associated with exiting our prior headquarters facility and relocating to our new worldwide headquarters in the Boston Seaport District, which occurred in January 2019. Because our prior headquarters lease will not expire until November 2022, we are seeking to

sublease that space, but have not yet done so. As a result, we will bear overlapping rent obligations for those premises and, in the second quarter of 2019, expect to incur a restructuring charge of approximately $24 million, based on the net present value of remaining lease commitments net of estimated sublease income. From a cash perspective, the free rent and

estimated sublease income on Seaport headquarters total approximately $30 million, as compared to the estimated cash outflows of $29 million on the prior headquarters (rent obligations and operating expenses net of estimated sublease income). Restructuring charges could increase and estimated cash outflows could increase if we are unable to sublease our prior headquarters as we expect. Additionally, we will incur other costs associated with the move which will be recorded as incurred.

Interest Expense

	Three months ended		
	As Reported ASC 606	ASC 605	As Reported ASC 605
	December 29, 2018	December 29, 2018	December 30, 2017
	(in millions)		
Interest expense	$ (10.3)	$ (10.3)	$ (10.0)

Interest expense includes interest under our credit facility and senior notes. We had $783 million of total debt at December 29, 2018, compared to $748 million at December 30, 2017.

Other Income (Expense), net

	Three months ended		
	As Reported ASC 606	ASC 605	As Reported ASC 605
	December 29, 2018	December 29, 2018	December 30, 2017
	(in millions)		
Interest income	$ 1.0	$ 1.0	$ 0.7
Other expense, net	(0.3)	(0.4)	(1.5)
Other income (expense), net	$ 0.7	$ 0.5	$ (0.8)

Other income (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 currency exchange rates.

Income Taxes

	Three months ended		
	As Reported ASC 606	ASC 605	As Reported ASC 605
	December 29, 2018	December 29, 2018	December 30, 2017
	(Dollar amounts in millions)		
Income before income taxes	$ 20.4	$ 23.5	$ 6.5
Provision (benefit) for income taxes	(0.6)	4.2	(7.4)
Effective income tax rate	(3)%	18 %	(114)%

In the first three months of 2019 and 2018, our effective tax rate was lower than the statutory federal income tax rate of 21% due to U.S. tax reform (as described below), our corporate structure in which our foreign taxes are at a net effective tax rate lower than the U.S. rate, the excess tax benefit related to stock-based compensation and, in the first quarter of 2019, the reduction of a valuation allowance of $1.8 million as the result of the Frustum acquisition. Additionally, ASC 606 includes indirect effects of the adoption at the beginning of our first quarter of fiscal 2019. A significant amount of our foreign earnings is generated by our subsidiaries organized in Ireland. In 2019 and 2018, the foreign rate differential predominantly relates to these Irish earnings.

On December 22, 2017, the United States enacted tax reform legislation through the Tax Cuts and Jobs Act, (the "Tax Act"), which significantly changed existing U.S. tax laws by a reduction of the corporate tax rate, the implementation of a new system of taxation for non-U.S. earnings, the imposition of a one-time tax on the deemed repatriation of undistributed earnings of non-U.S. subsidiaries, and the expansion of the limitations on the deductibility of executive compensation and interest expense. As we have a September 30 fiscal year-end, there is a blended U.S. statutory federal rate of approximately 24.5% for our fiscal year ending September 30, 2018 and 21% for subsequent fiscal years. The Tax Act also

provides that net operating losses generated in years ending after December 31, 2017 may be carried forward indefinitely and can no longer be carried back, and that net operating losses generated in years beginning after December 31, 2017 can only reduce taxable income by up to 80% when utilized in a future period. The Tax Act includes a provision to tax global intangible low-tax income (GILTI) of foreign subsidiaries and a base erosion anti-abuse tax (BEAT) measure that taxes certain payments between a U.S. corporation and its foreign subsidiaries. The GILTI and BEAT provisions were effective for us beginning October 1, 2018. Our accounting policy is to treat tax on GILTI as a current period cost included in tax expense in the year incurred.

In the first quarter of 2018, we provided no federal income taxes payable as a result of the deemed repatriation of undistributed earnings as the tax was offset by a combination of current year losses and existing attributes which had a full valuation allowance recorded against the related deferred tax assets. We recorded state income taxes payable of $7.1 million on the deemed repatriation. This was subsequently reduced to $1.5 million to reflect additional guidance on the state implications of the Tax Act. We also recorded a deferred tax benefit of $14.2 million for the impact of the Tax Act on our net U.S. deferred income tax balances. This was primarily attributable to the reduction of the federal tax rate on the net deferred tax liability in the U.S., and the ability to realize net operating losses from the reversal of existing deferred tax assets which can now be carried forward indefinitely and can therefore be netted against deferred tax liabilities for indefinite lived intangible assets.

The U.S. Securities and Exchange Commission issued rules that allow for a period of up to one year after the enactment date of the Tax Act to finalize the recording of the related tax impacts. We finalized recording the impacts of the Tax Act in the quarter ended December 29, 2018 and did not record any significant adjustments.

In October 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2016-16, Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other Than Inventory. 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. We adopted this amendment beginning in the first quarter of 2019 using the modified retrospective method with a cumulate effect adjustment to accumulated deficit of $72.3 million, with a corresponding increase of $75.3 million to deferred tax assets, a $6.0 million decrease to income tax assets and a $3.0 million decrease to income tax liabilities. The adjustment primarily relates to deductible amortization of intangible assets in Ireland. Post adoption, our effective tax rate no longer includes the benefit of this amortization.

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 approximately $12 million from the tax authorities in South Korea. The assessment relates to various tax issues, primarily foreign withholding taxes. We have appealed and intend to vigorously defend our positions. We believe that upon completion of a multi-level appeal process it is more likely than not that our positions will be sustained. 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 process.

Operating Measures

Subscription Bookings and Subscription ACV

Given the difference in revenue recognition between the sale of a perpetual software license and a subscription, we use bookings for internal planning, forecasting and reporting of new license and subscription sales and cloud services transactions.

In order to normalize between perpetual and subscription licenses, we define subscription bookings as the subscription annualized contract value (subscription ACV) of new subscription contracts multiplied by a conversion factor of 2. We arrived at the conversion factor of 2 by considering many variables, including pricing, support, length of term, and renewal rates. In 2018 and 2017, the average subscription contract term was approximately two years.

We define subscription ACV as the total value of a new subscription contract (which may include annual values that increase over time) divided by the term of the contract (in days), multiplied by 365. If the term of the subscription contract is less than a year, and is not associated with an existing contract, the booking is equal to the total contract value. Beginning in the third quarter of 2018, minimum ACV commitments under our Strategic Alliance Agreement with Rockwell Automation are included in subscription ACV if the period-to-date minimum ACV commitment exceeds actual ACV sold under the Agreement.

We define license and subscription bookings as subscription bookings plus perpetual license bookings.

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

Annualized Recurring Revenue (ARR)

Annualized Recurring Revenue (ARR) for a given quarter is calculated by dividing the ASC 605 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.

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 financial measures exclude fair value adjustments related to acquired deferred revenue and deferred costs, stock-based compensation expense, amortization of acquired intangible assets, acquisition-related charges, restructuring and headquarters relocation charges, pension plan termination-related costs, 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 from our non-GAAP financial measures. Investors should consider non-GAAP measures only 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 periods after an acquisition do 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 and other transactional 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. Other transactional charges include third-party costs related to structuring unusual transactions. We do not include these costs when reviewing our 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.

Headquarters relocation charges include non-cash accelerated depreciation expense recorded in anticipation of exiting our current headquarters facility due to changes in the estimated useful lives of fixed assets. We do not include these costs when reviewing our operating results internally.

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.

	Three months ended		
	As Reported ASC 606	ASC 605	As Reported ASC 605
	December 29, 2018	December 29, 2018	December 30, 2017
	(in millions, except per share amounts)		
GAAP revenue	$334.7	$338.8	$306.6
Fair value of acquired deferred revenue	0.3	0.3	0.4
Non-GAAP revenue	$335.0	$339.0	$307.0
GAAP gross margin	$257.3	$263.6	$223.6
Fair value of acquired deferred revenue	0.3	0.3	0.4
Fair value of acquired deferred costs	(0.1)	(0.1)	(0.1)
Stock-based compensation	3.1	3.1	2.9
Amortization of acquired intangible assets included in cost of revenue	6.7	6.7	6.7
Non-GAAP gross margin	$267.4	$273.6	$233.5
GAAP operating income	$30.0	$33.2	$17.3
Fair value of acquired deferred revenue	0.3	0.3	0.4
Fair value of acquired deferred costs	(0.1)	(0.1)	(0.1)
Stock-based compensation	29.4	29.4	18.3
Amortization of acquired intangible assets included in cost of revenue	6.7	6.7	6.7
Amortization of acquired intangible assets	5.9	5.9	7.8
Acquisition-related and other transactional charges included in general and administrative expenses	0.4	0.4	—
Headquarters relocation charges	1.9	1.9	—
Restructuring charges, net	16.6	16.6	0.1
Non-GAAP operating income	$91.2	$94.3	$50.5
GAAP net income	$21.0	$19.2	$13.9
Fair value of acquired deferred revenue	0.3	0.3	0.4
Fair value of acquired deferred costs	(0.1)	(0.1)	(0.1)
Stock-based compensation	29.4	29.4	18.3
Amortization of acquired intangible assets included in cost of revenue	6.7	6.7	6.7
Amortization of acquired intangible assets	5.9	5.9	7.8
Acquisition-related and other transactional charges included in general and administrative expenses	0.4	0.4	—
Headquarters relocation charges	1.9	1.9	—
Restructuring charges, net	16.6	16.6	0.1
Income tax adjustments [(1)]	(14.9)	(12.1)	(11.0)
Non-GAAP net income	$67.3	$68.3	$36.1
GAAP diluted earnings per share	$0.18	$0.16	$0.12
Stock-based compensation	0.25	0.25	0.16
Amortization of acquired intangible assets	0.11	0.11	0.12
Headquarters relocation charges	0.02	0.02	—
Restructuring charges, net	0.14	0.14	—

Income tax adjustments [1]	(0.12)	(0.10)	(0.09)
Non-GAAP diluted earnings per share	$0.56	$0.57	$ 0.31

(1) We have recorded a full valuation allowance against our U.S. net deferred tax assets. As we are profitable on a non-GAAP basis, the 2019 and 2018 non-GAAP tax provisions are 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. We recorded the impact of the Tax Cuts and Jobs Act in our Q1 2018 GAAP earnings, resulting in a non-cash benefit of approximately $7 million. We have excluded this benefit from our non-GAAP results.

Operating margin impact of non-GAAP adjustments:

	Three months ended					
	As Reported ASC 606		ASC 605		As Reported ASC 605	
	December 29, 2018		December 29, 2018		December 30, 2017	
GAAP operating margin	9.0	%	9.8	%	5.6	%
Fair value of acquired deferred revenue	0.1	%	0.1	%	0.1	%
Stock-based compensation	8.8	%	8.7	%	6.0	%
Amortization of acquired intangible assets	3.8	%	3.7	%	4.7	%
Acquisition-related and other transactional charges included in general and administrative expenses	0.1	%	0.1	%	—	%
Headquarters relocation charges	0.6	%	0.6	%	—	%
Restructuring charges, net	5.0	%	4.9	%	—	%
Non-GAAP operating margin	27.2	%	27.8	%	16.5	%

Critical Accounting Policies and Estimates

On October 1, 2018, we adopted ASU No. 2014-09, Revenue from Contracts with Customers: Topic 606 (ASC 606). Refer to Note 1. Basis of Presentation and Note 2. Revenue from Contracts with Customers to the Condensed Consolidated Financial Statements of this Quarterly Report on Form 10-Q for estimates related to our adoption of ASC 606. The financial information included in Item 1 reflects no other 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 2018 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 some of which are expected to have a material impact on our consolidated financial statements. Refer to Note 1. Basis of Presentation to the Condensed Consolidated Financial Statements of this Quarterly Report on Form 10-Q for all recently issued accounting pronouncements, which is incorporated herein by reference.

Liquidity and Capital Resources

	December 29, 2018	December 30, 2017
	(in thousands)	
Cash and cash equivalents	$278,133	$ 293,273
Restricted cash	1,143	1,594
Short- and long-term marketable securities	55,652	50,567
Total	$333,785	$ 343,840

	Three months ended	
	December 29, 2018	December 30, 2017
	(in thousands)	
Cash provided by operating activities	$21,214	$ 25,515
Cash used by investing activities	(101,212)	(9,385)

Cash provided (used) by financing activities	94,997	(6,664)

Cash, cash equivalents and restricted cash

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 $56 million with an average maturity of 12 months. At December 29, 2018, cash and cash equivalents totaled $277 million, compared to $260 million at September 30, 2018, reflecting $21 million in operating cash flows and $135 million in net borrowings under our credit facility, offset by $70 million used for the Frustum acquisition, $34 million used to pay withholding taxes on stock-based awards, $30 million used to acquire capital assets, $5 million of fees associated with the $1 billion investment in PTC by Rockwell Automation, $2 million used for settlement of net investment hedges, and $2 million used to pay for contingent consideration.

A significant portion of our cash is generated and held outside the U.S. At December 29, 2018, we had cash and cash equivalents of $15 million in the U.S., $113 million in Europe, $119 million in Asia Pacific (including India), and $30 million in other non-U.S. countries. All the marketable securities are held in Europe. We have substantial cash requirements in the United States, but we believe that the combination of our existing U.S. cash and cash equivalents, marketable securities, our ability to repatriate cash to the U.S. more cost effectively with the recent U.S. tax law changes, 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.

Cash provided by operating activities

Cash provided by operating activities was $21 million in the first three months of 2019, compared to $26 million in the first three months of 2018. The decrease is primarily due to higher tax payments in the first three months of 2019 compared to the year-ago period.

Net income for the first three months of 2019 and 2018 was $21 million and $14 million, respectively.

Cash used by investing activities

	Three months ended	
	December 29, 2018	December 30, 2017
	(in thousands)	
Cash provided (used) by investing activities included the following:		
Additions to property and equipment	$(30,332)	$ (6,377)
Acquisitions of businesses, net of cash acquired	(69,556)	—
Purchase of intangible asset	—	(2,500)
Purchases of short- and long-term marketable securities	(6,736)	(4,248)
Proceeds from maturities of short- and long-term marketable securities	7,007	3,740
Settlement of net investment hedges	(1,595)	—
	$(101,212)	$ (9,385)

The increase in property, plant and equipment payments is primarily attributable to expenditures made for construction of our new worldwide headquarters in the Boston Seaport District (a portion of which is offset by landlord reimbursements included in cash from operations above). In the first three months of 2019 we also used $69.6 million to acquire Frustum.

Cash provided (used) by financing activities

	Three months ended	
	December 29, 2018	December 30, 2017
	(in thousands)	
Cash used by financing activities included the following:		
Net borrowings (repayments) of debt	$135,000	$ 30,000
Payments of withholding taxes in connection with stock-based awards	(33,788)	(33,488)
Costs from issuance of common stock	(4,640)	—
Contingent consideration	(1,575)	(3,176)
	$94,997	$ (6,664)

The net borrowings in the first three months of 2019 reflect borrowings of $155 million under our credit facility to fund the Frustum acquisition and working capital requirements, offset by repayments of $20

52

million. In the first three months of 2019 we paid $33.8 million in withholding taxes in connection with stock-based awards, paid $4.6 million of fees associated with the $1 billion investment in PTC by Rockwell Automation, and made $1.6 million in contingent consideration payments.

Credit Agreement

In September 2018, we amended and restated our existing credit facility to increase the revolving loan commitment from $600 million to $700 million and amend other provisions. The credit facility is a multi-currency credit facility with a syndicate of sixteen banks for which JPMorgan Chase Bank, N.A. acts as Administrative Agent. Outstanding revolving loan amounts may be repaid in whole or in part, without penalty or premium, prior to the September 13, 2023 maturity date, when all remaining amounts outstanding will be due and payable in full.

We use the credit facility for general corporate purposes, including acquisitions of businesses, share repurchases and working capital requirements. As of December 29, 2018, we had $283.1 million in revolving loans outstanding under the credit facility, the fair value of which approximated its book value. As of December 29, 2018, we have approximately $417 million undrawn, of which $401 million would be available to borrow, the availability of which is reduced by letters of credit and certain other long-term liabilities.

Any borrowings by PTC Inc. or certain of our foreign subsidiaries under the credit facility would be guaranteed, respectively, by our material domestic subsidiaries that become parties to the subsidiary guaranty, if any, and/or by PTC Inc. Borrowings are also secured by first priority liens on property of PTC and certain of our material domestic subsidiaries, including 100% of the voting equity interests of certain of our domestic subsidiaries and 65% of our material first-tier foreign subsidiaries. Loans under the credit facility bear interest at variable rates that reset every 30 to 180 days depending on the rate and period selected by us and based upon our total leverage ratio. As of December 29, 2018, the weighted average annual interest rate for amounts outstanding was 5.4%. We are currently evaluating the anticipated impact of the phase-out of LIBOR in 2021, which may be material. We also pay a quarterly commitment fee on the undrawn portion of the credit facility ranging from 0.175% to 0.30% per year based on our total leverage ratio.

The credit facility imposes customary covenants that limit our ability to incur liens or guarantee obligations, pay dividends and make other distributions, make investments and engage in certain other transactions. In addition, we and our material domestic subsidiaries may not invest in, or loan to, our foreign subsidiaries in aggregate amounts exceeding $100 million for any purpose and an additional $200 million for acquisitions of businesses. We also must maintain the following financial ratios:

	Required Ratio	Ratio as of December 29, 2018
Total Leverage Ratio Ratio of consolidated total indebtedness to the consolidated trailing four quarters EBITDA.	Not > 4.50:1.00	2.30 to 1.00
Interest Coverage Ratio Ratio of consolidated trailing four quarters EBITDA to consolidated trailing four quarters cash basis interest expense.	> 3.00:1.00	7.24 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 > 3.00:1.00	0.86 to 1.00

As of December 29, 2018, we were in compliance with all financial and operating covenants of the credit facility. Any failure to comply with such covenants would prevent us from being able to borrow additional funds, and would constitute a default, permitting the lenders to, among other things, accelerate the amounts outstanding and terminate the credit facility.

The terms and conditions of the credit facility are described in Note 12. Income Taxes in 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 in May and November.

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 December 29, 2018, 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 authorized us to repurchase up to $1,500 million of our common stock in the period October 1, 2017 through September 30, 2020. We did not repurchase any stock under the current authorization in the first quarter of 2019 or 2018. We resumed our share repurchase program in the second quarter of 2019 and expect to repurchase $65 million of our common stock in the second quarter, plus additional material amounts over the remainder of the year. We intend to use cash from operations and borrowings under our credit facility to make such repurchases. All shares of our common stock repurchased are automatically restored to the status of authorized and unissued.

Future Expectations

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 (which we expect to be $40 million in 2019, net of expected landlord funding of leasehold improvements) and fund our intended share repurchases 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 decide 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 debt repurchases or strategic transactions may be material.

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 2018 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 December 29, 2018.

Changes in Internal Control over Financial Reporting

Effective October 1, 2018, we adopted Accounting Standards Update No. 2014-09, Revenue from Contracts with Customers, as amended (ASC 606). In connection with our adoption of ASC 606, we implemented changes to our systems, processes, policies and internal controls. These changes will have a material effect on our internal control over financial reporting in 2019.

There were no other changes in our internal control over financial reporting identified in management's evaluation pursuant to Rules 13a or 15(d) of the Exchange Act that occurred during the period ended December 29, 2018 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II—OTHER INFORMATION

ITEM 1A. RISK FACTORS

In addition to other information set forth in this report, you should carefully consider the risk factors described in Part I. Item 1A. Risk Factors in our 2018 Annual Report on Form 10-K, which could materially affect our business, financial condition or future results. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial also may materially and 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).
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.
101	The following materials from PTC Inc.'s Quarterly Report on Form 10-Q for the quarter ended December 29, 2018 formatted in XBRL (eXtensible Business Reporting Language): (i) Condensed Consolidated Balance Sheets as of December 29, 2018 and September 30, 2018; (ii) Condensed Consolidated Statements of Operations for the three months ended December 29, 2018 and December 30, 2017; (iii) Condensed Consolidated Statements of Comprehensive Income for the three months ended December 29, 2018 and December 30, 2017; (iv) Condensed Consolidated Statements of Cash Flows for the three months ended December 29, 2018 and December 30, 2017; (v) Consolidated Statements of Stockholders' Equity for the three months ended December 29, 2018 and December 30, 2017; and (vi) 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: February 7, 2019