
**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

FORM 10-Q

(Mark One)

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

For the quarterly period ended December 31, 2018

or

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

For the transition period from _____ to _____

Commission file number: 001-34630

ASPEN TECHNOLOGY, INC.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of incorporation or organization)

04-2739697

(I.R.S. Employer Identification No.)

20 Crosby Drive

Bedford, Massachusetts

(Address of principal executive offices)

01730

(Zip Code)

(781) 221-6400

(Registrant's telephone number, including area code)

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

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

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

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting company

Emerging growth company

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

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

As of January 16, 2019, there were 69,645,841 shares of the registrant's common stock (par value \$0.10 per share) outstanding.

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SIGNATURES

aspenONE is one of our registered trademarks. All other trade names, trademarks and service marks appearing in this Form 10-Q are the property of their respective owners.

Our fiscal year ends on June 30th, and references to a specific fiscal year are to the twelve months ended June 30th of such year (for example, "fiscal 2019" refers to the year ending June 30, 2019).

PART I - FINANCIAL INFORMATION

Item 1. Financial Statements.

Consolidated Financial Statements (unaudited)

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
(Unaudited)

	Three Months Ended December 31,		Six Months Ended December 31,	
	2018	2017	2018	2017
	As Adjusted		As Adjusted	
(Dollars in Thousands, Except per Share Data)				
Revenue:				
License	\$ 93,368	\$ 56,975	\$ 157,123	\$ 135,865
Maintenance	41,038	40,729	84,077	80,993
Services and other	6,017	7,826	13,392	15,159
Total revenue	<u>140,423</u>	<u>105,530</u>	<u>254,592</u>	<u>232,017</u>
Cost of revenue:				
License	1,819	1,233	3,484	2,464
Maintenance	5,286	4,250	9,279	8,802
Services and other	7,634	6,606	15,203	13,555
Total cost of revenue	<u>14,739</u>	<u>12,089</u>	<u>27,966</u>	<u>24,821</u>
Gross profit	<u>125,684</u>	<u>93,441</u>	<u>226,626</u>	<u>207,196</u>
Operating expenses:				
Selling and marketing	26,310	23,928	53,122	47,444
Research and development	20,317	19,790	41,373	39,279
General and administrative	15,299	19,618	31,383	34,655
Total operating expenses	<u>61,926</u>	<u>63,336</u>	<u>125,878</u>	<u>121,378</u>
Income from operations	<u>63,758</u>	<u>30,105</u>	<u>100,748</u>	<u>85,818</u>
Interest income	7,485	6,239	14,554	12,545
Interest (expense)	(2,164)	(1,261)	(3,978)	(2,467)
Other (expense), net	(578)	(238)	(451)	(854)
Income before income taxes	<u>68,501</u>	<u>34,845</u>	<u>110,873</u>	<u>95,042</u>
Provision for (benefit from) income taxes	9,284	(97,187)	13,591	(77,510)
Net income	<u>\$ 59,217</u>	<u>\$ 132,032</u>	<u>\$ 97,282</u>	<u>\$ 172,552</u>
Net income per common share:				
Basic	\$ 0.84	\$ 1.83	\$ 1.38	\$ 2.37
Diluted	\$ 0.83	\$ 1.81	\$ 1.36	\$ 2.35
Weighted average shares outstanding:				
Basic	70,428	72,342	70,708	72,683
Diluted	71,148	73,036	71,600	73,333

See accompanying Notes to these unaudited consolidated financial statements.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(Unaudited)

	Three Months Ended December 31,		Six Months Ended December 31,	
	2018	2017	2018	2017
		As Adjusted		As Adjusted
		(Dollars in Thousands)		
Net income	\$ 59,217	\$ 132,032	\$ 97,282	\$ 172,552
Other comprehensive income (loss):				
Foreign currency translation adjustments	(895)	73	(1,317)	1,474
Total other comprehensive income (loss)	(895)	73	(1,317)	1,474
Comprehensive income	\$ 58,322	\$ 132,105	\$ 95,965	\$ 174,026

See accompanying Notes to these unaudited consolidated financial statements.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(Unaudited)

	December 31, 2018	June 30, 2018
	As Adjusted (Dollars in Thousands, Except Share Data)	
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 54,428	\$ 96,165
Accounts receivable, net	56,586	41,810
Current contract assets	321,135	304,378
Contract costs	23,046	20,500
Prepaid expenses and other current assets	10,330	10,509
Prepaid income taxes	921	2,601
Total current assets	466,446	475,963
Property, equipment and leasehold improvements, net	8,311	9,806
Computer software development costs, net	691	646
Goodwill	74,802	75,590
Intangible assets, net	32,889	35,310
Non-current contract assets	366,581	340,622
Non-current deferred tax assets	1,651	11,090
Other non-current assets	1,075	1,297
Total assets	\$ 952,446	\$ 950,324
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ 5,249	\$ 4,230
Accrued expenses and other current liabilities	36,688	39,515
Income taxes payable	43,573	1,698
Borrowings under credit agreement	220,000	170,000
Current deferred revenue	23,145	15,150
Total current liabilities	328,655	230,593
Non-current deferred revenue	18,167	12,354
Deferred income taxes	157,238	214,125
Other non-current liabilities	16,192	17,068
Commitments and contingencies (Note 16)		
Series D redeemable convertible preferred stock, \$0.10 par value—		
Authorized— 3,636 shares as of December 31, 2018 and June 30, 2018		
Issued and outstanding— none as of December 31, 2018 and June 30, 2018	—	—
Stockholders' equity:		
Common stock, \$0.10 par value— Authorized—210,000,000 shares		
Issued— 103,395,683 shares at December 31, 2018 and 103,130,300 shares at June 30, 2018		
Outstanding— 69,803,177 shares at December 31, 2018 and 71,186,701 shares at June 30, 2018	10,340	10,313
Additional paid-in capital	725,493	715,475
Retained earnings	1,162,790	1,065,507
Accumulated other comprehensive income	70	1,388
Treasury stock, at cost—33,592,506 shares of common stock at December 31, 2018 and 31,943,599 shares at June 30, 2018	(1,466,499)	(1,316,499)
Total stockholders' equity	432,194	476,184
Total liabilities and stockholders' equity	\$ 952,446	\$ 950,324

See accompanying Notes to these unaudited consolidated financial statements.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(Unaudited)

	Common Stock		Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Income	Treasury Stock		Total Stockholders' Equity
	Number of Shares	\$0.10 Par Value				Number of Shares	Cost	
(Dollars in Thousands, Except Share Data)								
June 30, 2018, As Adjusted	<u>103,130,300</u>	<u>\$ 10,313</u>	<u>\$ 715,475</u>	<u>\$ 1,065,507</u>	<u>\$ 1,388</u>	<u>31,943,599</u>	<u>\$ (1,316,499)</u>	<u>\$ 476,184</u>
Comprehensive income (loss):								
Net income	—	—	—	38,066	—	—	—	38,066
Other comprehensive income (loss)	—	—	—	—	(423)	—	—	(423)
Exercise of stock options	90,009	9	3,702	—	—	—	—	3,711
Issuance of restricted stock units	58,829	6	(3,290)	—	—	—	—	(3,284)
Repurchase of common stock	—	—	—	—	—	473,376	(50,000)	(50,000)
Stock-based compensation	—	—	8,865	—	—	—	—	8,865
September 30, 2018	<u>103,279,138</u>	<u>\$ 10,328</u>	<u>\$ 724,752</u>	<u>\$ 1,103,573</u>	<u>\$ 965</u>	<u>32,416,975</u>	<u>\$ (1,366,499)</u>	<u>\$ 473,119</u>
Comprehensive income (loss):								
Net income	—	—	—	59,217	—	—	—	59,217
Other comprehensive income (loss)	—	—	—	—	(895)	—	—	(895)
Exercise of stock options	15,902	2	757	—	—	—	—	759
Issuance of restricted stock units	100,643	10	(6,351)	—	—	—	—	(6,341)
Repurchase of common stock	—	—	—	—	—	1,175,531	(100,000)	(100,000)
Stock-based compensation	—	—	6,335	—	—	—	—	6,335
December 31, 2018	<u>103,395,683</u>	<u>\$ 10,340</u>	<u>\$ 725,493</u>	<u>\$ 1,162,790</u>	<u>\$ 70</u>	<u>33,592,506</u>	<u>\$ (1,466,499)</u>	<u>\$ 432,194</u>

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited)

	Six Months Ended December 31,	
	2018	2017
	As Adjusted (Dollars in Thousands)	
Cash flows from operating activities:		
Net income	\$ 97,282	\$ 172,552
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation and amortization	4,049	3,358
Net foreign currency losses	318	990
Stock-based compensation	15,200	11,869
Deferred income taxes	(47,474)	(90,781)
Provision for (recovery from) bad debts	827	(28)
Other non-cash operating activities	217	207
Changes in assets and liabilities:		
Accounts receivable	(16,464)	(333)
Contract assets	(41,928)	(40,927)
Contract costs	(2,546)	(59)
Prepaid expenses, prepaid income taxes, and other assets	1,744	959
Accounts payable, accrued expenses, income taxes payable and other liabilities	37,718	(1,792)
Deferred revenue	14,154	(1,253)
Net cash provided by operating activities	<u>63,097</u>	<u>54,762</u>
Cash flows from investing activities:		
Purchases of property, equipment and leasehold improvements	(180)	(156)
Payments for business acquisitions	—	(10,800)
Payments for capitalized computer software costs	(189)	(356)
Net cash used in investing activities	<u>(369)</u>	<u>(11,312)</u>
Cash flows from financing activities:		
Exercises of stock options	4,466	3,548
Repurchases of common stock	(147,423)	(105,037)
Payments of tax withholding obligations related to restricted stock	(9,654)	(3,467)
Deferred business acquisition payments	(1,200)	(2,600)
Proceeds from credit agreement	50,000	11,000
Payments of credit agreement issuance costs	—	(351)
Net cash used in financing activities	<u>(103,811)</u>	<u>(96,907)</u>
Effect of exchange rate changes on cash and cash equivalents	(654)	206
Decrease in cash and cash equivalents	(41,737)	(53,251)
Cash and cash equivalents, beginning of period	96,165	101,954
Cash and cash equivalents, end of period	<u>\$ 54,428</u>	<u>\$ 48,703</u>
Supplemental disclosure of cash flow information:		
Income taxes paid, net	\$ 17,827	\$ 29,742
Interest paid	3,541	2,039
Supplemental disclosure of non-cash investing and financing activities:		
Change in purchases of property, equipment and leasehold improvements included in accounts payable and accrued expenses	\$ 5	\$ (44)
Change in repurchases of common stock included in accounts payable and accrued expenses	2,577	(5,037)

See accompanying Notes to these unaudited consolidated financial statements.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO UNAUDITED CONSOLIDATED FINANCIAL STATEMENTS

1. Interim Unaudited Consolidated Financial Statements

The accompanying interim unaudited consolidated financial statements of Aspen Technology, Inc. and its subsidiaries have been prepared on the same basis as our annual consolidated financial statements. We have omitted certain information and footnote disclosures normally included in our annual consolidated financial statements. Such interim unaudited consolidated financial statements have been prepared in conformity with U.S. Generally Accepted Accounting Principles (GAAP), as defined in the Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) Topic 270, *Interim Reporting*, for interim financial information and with the instructions to Rule 10-01 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required by GAAP for complete financial statements. It is suggested that these unaudited consolidated financial statements be read in conjunction with the audited consolidated financial statements for the year ended June 30, 2018, which are contained in our Annual Report on Form 10-K, as previously filed with the U.S. Securities and Exchange Commission (SEC). In the opinion of management, all adjustments, consisting of normal and recurring adjustments, considered necessary for a fair presentation of the financial position, results of operations, and cash flows at the dates and for the periods presented have been included and all intercompany accounts and transactions have been eliminated in consolidation. The results of operations for the three and six months ended December 31, 2018 are not necessarily indicative of the results to be expected for the subsequent quarter or for the full fiscal year.

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

Unless the context requires otherwise, references to we, our and us refer to Aspen Technology, Inc. and its subsidiaries.

2. Significant Accounting Policies

(a) Principles of Consolidation

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

(b) Significant Accounting Policies

Our significant accounting policies are described in Note 2 to the consolidated financial statements included in our Annual Report on Form 10-K for the fiscal year ended June 30, 2018. We adopted Accounting Standards Update (ASU) No. 2014-09, *Revenue from Contracts with Customers* ("Topic 606") and ASU No. 2017-01, *Business Combinations (Topic 805) - Clarifying the Definition of a Business* effective July 1, 2018. Refer to Note 2 (f), "New Accounting Pronouncements Adopted in Fiscal 2019," for further information regarding the adoption of Topic 606 and ASU No. 2017-01. There were no other material changes to our significant accounting policies during the three and six months ended December 31, 2018.

(c) Loss Contingencies

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

(d) Foreign Currency Transactions

Foreign currency exchange gains and losses generated from the settlement and remeasurement of transactions denominated in currencies other than the functional currency of our subsidiaries are recognized in our results of operations as incurred as a component of other (expense), net. Net foreign currency exchange losses were \$(0.6) million and \$(0.5) million during the three and six months ended December 31, 2018, respectively, and \$(0.2) million and \$(0.9) million during the three and six months ended December 31, 2017, respectively.

(e) Research and Development Expense

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

We acquired no technology during the three and six months ended December 31, 2018 and 2017, respectively.

(f) New Accounting Pronouncements Adopted in Fiscal 2019

In January 2017, the FASB issued ASU No. 2017-01, *Business Combinations (Topic 805) - Clarifying the Definition of a Business*. The amendment changes the definition of a business to assist entities in evaluating when a set of transferred assets and activities constitutes a business. We adopted ASU No. 2017-01 effective July 1, 2018. The adoption of ASU No. 2017-01 did not have a material effect on our consolidated financial statements or related disclosures.

In May 2014, the FASB issued Topic 606, which supersedes the revenue recognition requirements in *Revenue Recognition (Topic 605)*, and requires entities to recognize revenue when they transfer promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. Under the new guidance, an entity is required to evaluate revenue recognition through a five-step process. In applying the principles of Topic 606, more judgment and estimates are required within the revenue recognition process than were required under previous U.S. GAAP, including identifying performance obligations in the contract, estimating the amount of variable consideration to include in the transaction price, and allocating the transaction price to each separate performance obligation.

We adopted Topic 606 effective July 1, 2018 using the full retrospective method, which required us to adjust the prior periods presented. The adoption of Topic 606 impacted the timing of the license portion of the revenue recognized from our term contracts. Under the new standard, for arrangements that include term-based software licenses bundled with maintenance and support, we are now required to recognize as revenue a portion of the arrangement fee upon delivery of the software license. We recognize as revenue a portion of the arrangement fee related to maintenance and support, professional services, and training over time as the services are provided. Additionally, under the new standard, we capitalize certain direct and incremental commission costs to obtain a contract and amortize such costs over the expected period of benefit, rather than expensing them as incurred in the period that the commissions are earned. See Note 3, "Revenue from Contracts with Customers," to our Unaudited Consolidated Financial Statements for more information on our accounting policies as a result of the adoption of Topic 606.

(g) Recently Issued Accounting Pronouncements

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

In March 2018, the FASB issued ASU No. 2018-05, *Income Taxes (Topic 740) - Amendments to SEC Paragraphs Pursuant to SEC Staff Accounting Bulletin No. 118*. The amendment provides guidance on accounting for the impact of the Tax Cuts and Jobs Act (the "Tax Act") and allows entities to complete the accounting under ASC 740 within a one-year measurement period from the Tax Act enactment date. This standard is effective upon issuance. The Tax Act has several significant changes that impact all taxpayers, including a transition tax, which is a one-time tax charge on accumulated, undistributed foreign earnings. The calculation of accumulated foreign earnings requires an analysis of each foreign entity's financial results going back to 1986. We have concluded that we will not be subject to the transition tax associated with our accumulated, undistributed foreign earnings.

In August 2018, the FASB issued ASU No. 2018-13, *Fair Value Measurement (Topic 820) - Disclosure Framework - Changes to the Disclosure Requirements for Fair Value Measurement*. The amendment modifies, removes, and adds certain disclosure requirements on fair value measurements. The ASU is effective for annual periods, including interim periods within those annual periods, beginning after December 15, 2019. The amendments on changes in unrealized gains and losses, the range and weighted average of significant unobservable inputs used to develop Level 3 fair value measurements, and the narrative description of measurement uncertainty should be applied prospectively for only the most recent interim or annual period presented in the initial fiscal year of adoption. All other amendments should be applied retrospectively to all periods presented upon their effective date. Early adoption is permitted. We are currently evaluating the impact of ASU No. 2018-13 on our consolidated financial statements.

In August 2018, the FASB issued ASU 2018-15, *Intangibles - Goodwill and Other - Internal-Use Software (Subtopic 350-40) - Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement that is a Service Contract*. The amendment aligns the requirements for capitalizing implementation costs incurred in a hosting arrangement that

is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software (and hosting arrangements that include an internal use software license). The accounting for the service element of a hosting arrangement that is a service contract is not affected by the amendment. The ASU is effective for annual periods, including interim periods within those annual periods, beginning after December 15, 2019. We adopted ASU No. 2018-15 effective October 1, 2018. The adoption of ASU No. 2018-15 did not have a material effect on our consolidated financial statements or related disclosures.

3. Revenue from Contracts with Customers

In accordance with Topic 606, we account for a customer contract when both parties have approved the contract and are committed to perform their respective obligations, each party's rights can be identified, payment terms can be identified, the contract has commercial substance, and it is probable that we will collect substantially all of the consideration to which we are entitled. Revenue is recognized when, or as, performance obligations are satisfied by transferring control of a promised product or service to a customer.

Nature of Products and Services

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

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

We determine revenue recognition through the following steps:

- Identification of the contract, or contracts, with a customer;
- Identification of the performance obligations in the contract;
- Determination of the transaction price;
- Allocation of the transaction price to the performance obligations in the contract; and
- Recognition of revenue when, or as, we satisfy a performance obligation.

Term-based Arrangements: Term-based arrangements consist of on-premise term licenses as well as maintenance.

Term licenses

License revenue consists primarily of product and related revenue from our aspenONE licensing model and point product arrangements.

When a customer elects to license our products under our aspenONE licensing model, the customer receives, for the term of the arrangement, the right to all software products in the licensed aspenONE software suite. When a customer elects to license point products, the customer receives, for the term of the arrangement, the right to license specified products in the licensed aspenONE software suite. Revenue from initial product licenses is recognized upfront upon delivery.

Maintenance

When a customer elects to license our products under our aspenONE licensing model, our Premier Plus SMS offering is included for the entire term of the arrangement and the customer receives, for the term of the arrangement, the right to any updates that may be introduced into the licensed aspenONE software suite. When a customer elects to license point products, our Premier Plus SMS offering is included for the entire term of the arrangement and the customer receives, for the term of the arrangement, the right to any updates that may be introduced related to the specified products licensed. Maintenance represents a stand-ready obligation and, due to our obligation to provide unspecified future software updates on a when-and-if available basis as well as telephone support services, we are required to recognize revenue ratably over the term of the arrangement.

Services and Other Revenue

Professional Services Revenue

Professional services are provided to customers on a time-and-materials ("T&M") or fixed-price basis. The obligation to provide professional services is generally satisfied over time, with the customer simultaneously receiving and consuming the benefits as we satisfy our performance obligation. For professional services, revenue is recognized by measuring progress toward the completion of our obligations. We recognize professional services fees for our T&M contracts based upon hours worked and contractually agreed-upon hourly rates. Revenue from fixed-price engagements is recognized using the proportional performance method based on the ratio of costs incurred to the total estimated project costs. The use of the proportional performance method is dependent upon our ability to reliably estimate the costs to complete a project. We use historical experience as a basis for future estimates to complete current projects. Additionally, we believe that costs are the best available measure of performance. Out-of-pocket expenses which are reimbursed by customers are recorded as revenue.

Training Revenue

We provide training services to our customers, including on-site, Internet-based, public and customized training. The obligation to provide training services is generally satisfied over time, with the customer simultaneously receiving and consuming the benefits as we satisfy our performance obligation. Revenue is recognized in the period in which the services are performed.

Contracts with Multiple Performance Obligations

Our contracts generally contain more than one of the products and services listed above, each of which is separately accounted for as a distinct performance obligation.

Allocation of consideration: We allocate total contract consideration to each distinct performance obligation in an arrangement on a relative standalone selling price basis. The standalone selling price reflects the price we would charge for a specific product or service if it was sold separately in similar circumstances and to similar customers.

If the arrangement contains professional services and other products or services, we allocate to the professional service obligation a portion of the total contract consideration based on the standalone selling price of professional services that is observed from consistently priced standalone sales.

The standalone selling price for term licenses, which are always sold with maintenance, is the price for the combined license and maintenance bundle. The amount assigned to the license and maintenance bundle is separated into license and maintenance amounts using the respective standalone selling prices represented by the value relationship between the software license and maintenance.

When two or more contracts are entered into at or near the same time with the same customer, we evaluate the facts and circumstances associated with the negotiation of those contracts. Where the contracts are negotiated as a package, we will account for them as a single arrangement and allocate the consideration for the combined contracts among the performance obligations accordingly.

Standalone selling price: When available, we use directly observable transactions to determine the standalone selling prices for performance obligations. Generally, directly observable data is not available for term licenses and maintenance. When term licenses are sold together with maintenance in a bundled arrangement, we estimate a standalone selling price for these distinct performance obligations using relevant information, including our overall pricing objectives and strategies and historical pricing data, and taking into consideration market conditions and other factors, such as customer type and geography.

Other policies and judgments

Payment terms and conditions vary by contract type, although terms generally include a requirement of payment annually over the term of the license arrangement. Therefore, we generally receive payment from a customer after the performance obligation related to the license has been satisfied, and therefore, our contracts generally contain a significant financing component. The significant financing component is calculated utilizing an interest rate that derives the net present value of the performance obligations delivered on an upfront basis based on the allocation of consideration. We have instituted a customer portfolio approach in assigning interest rates. The rates are determined at contract inception and are based on the credit characteristics of the customers within each portfolio.

Contract modifications

We sometimes enter into agreements to modify previously executed contracts, which constitute contract modifications. We assess each of these contract modifications to determine (i) if the additional products and services are distinct from the products and services in the original arrangement; and (ii) if the amount of consideration expected for the added products and services reflects the stand-alone selling price of those products and services, as adjusted for contract-specific circumstances. A contract modification meeting both criteria is accounted for as a separate contract. A contract modification not meeting both criteria is considered a change to the original contract and is accounted for on either (i) a prospective basis as a termination of the existing contract and the creation of a new contract; or (ii) a cumulative catch-up basis. Generally, our contract modifications meet both criteria and are accounted for as a separate contract, as adjusted for contract-specific circumstances.

Disaggregation of Revenue

We disaggregate our revenue by region, type of performance obligation, timing of revenue recognition, and segment as follows:

	Three Months Ended December 31,		Six Months Ended December 31,	
	2018	2017	2018	2017
	As Adjusted		As Adjusted	
	(Dollars in Thousands)			
Revenue by region:				
United States	\$ 41,525	\$ 35,949	\$ 80,753	\$ 89,027
Europe	46,471	34,121	75,417	60,539
Other (1)	52,427	35,460	98,422	82,451
	<u>\$ 140,423</u>	<u>\$ 105,530</u>	<u>\$ 254,592</u>	<u>\$ 232,017</u>
Revenue by type of performance obligation:				
Term licenses	\$ 93,368	\$ 56,975	\$ 157,123	\$ 135,865
Maintenance	41,038	40,729	84,077	80,993
Professional services and other	6,017	7,826	13,392	15,159
	<u>\$ 140,423</u>	<u>\$ 105,530</u>	<u>\$ 254,592</u>	<u>\$ 232,017</u>
Revenue by segment:				
Subscription and software	\$ 134,406	\$ 97,704	\$ 241,200	\$ 216,858
Services and other	6,017	7,826	13,392	15,159
	<u>\$ 140,423</u>	<u>\$ 105,530</u>	<u>\$ 254,592</u>	<u>\$ 232,017</u>

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

Contract Balances

The difference in the opening and closing balances of our contract assets and deferred revenue primarily results from the timing difference between our performance and the customer's payment. We fulfill our obligations under a contract with a customer by transferring products and services in exchange for consideration from the customer. We recognize a contract asset when we transfer products or services to a customer and the right to consideration is conditional on something other than the passage of time. Accounts receivable are recorded when the customer has been billed or the right to consideration is unconditional. We recognize deferred revenue when we have received consideration or an amount of consideration is due from the customer and we have a future obligation to transfer products or services.

Our contract assets (liabilities) were as follows as of December 31, 2018 and June 30, 2018:

	<u>December 31, 2018</u>	<u>June 30, 2018</u>
		As Adjusted
	(Dollars in Thousands)	
Contract assets	\$ 687,716	\$ 645,000
Deferred revenue	(41,312)	(27,504)
	<u>\$ 646,404</u>	<u>\$ 617,496</u>

Contract assets and deferred revenue are presented net at the contract level for each reporting period.

The change in deferred revenue in the six months ended December 31, 2018, excluding the impact of the netting of contract assets and deferred revenue, was primarily due to an increase in new billings in advance of revenue recognition, partially offset by \$7.2 million of revenue recognized that was included in deferred revenue at June 30, 2018.

Contract Costs

We pay commissions for new product sales as well as for renewals of existing contracts. Commissions paid to obtain renewal contracts are not commensurate with the commissions paid for new product sales and therefore, a portion of the commissions paid for new contracts relate to future renewals.

We account for new product sales commissions using a portfolio approach and allocate the cost of commissions in proportion to the allocation of transaction price of license and maintenance performance obligations, including assumed renewals. Commissions allocated to the license and license renewal components are expensed at the time the license revenue is recognized. Commissions allocated to maintenance are capitalized and amortized on a straight-line basis over a period of four to eight years for new contracts, reflecting our estimate of the expected period that we will benefit from those commissions.

Amortization of capitalized contract costs is included in sales and marketing expenses in our Condensed Consolidated Statement of Operations.

Transaction Price Allocated to Remaining Performance Obligations

The following table includes the aggregate amount of the transaction price allocated as of December 31, 2018 to the performance obligations that are unsatisfied (or partially unsatisfied) at the end of the reporting period:

	Year Ended June 30,					
	2019	2020	2021	2022	2023	Thereafter
	(Dollars in Thousands)					
License	\$ 30,126	\$ 32,680	\$ 27,050	\$ 9,425	\$ 2,423	\$ 1,585
Maintenance	82,016	139,991	103,811	68,173	40,263	20,891
Services and other	37,763	7,082	1,408	941	598	196

Impact to Prior Period Information

The following table presents the effect of the adoption of Topic 606 on select consolidated statements of operations line items for the three and six months ended December 31, 2017:

Three Months Ended December 31, 2017

	As Previously Reported	Adjustments	As Adjusted
(Dollars in Thousands, Except per Share Data)			
Consolidated Statements of Operations:			
License revenue	\$ —	\$ 56,975	\$ 56,975
Maintenance revenue	—	40,729	40,729
Subscription and software revenue	117,658	(117,658)	—
Services and other revenue	7,244	582	7,826
Gross profit	112,813	(19,372)	93,441
Selling and marketing expense	24,380	(452)	23,928
General and administrative expense	14,178	5,440	19,618
Income from operations	54,465	(24,360)	30,105
Interest income	40	6,199	6,239
Provision for (benefit from) income taxes	14,928	(112,115)	(97,187)
Net income	\$ 38,078	\$ 93,954	\$ 132,032
Net income per common share:			
Basic	\$ 0.53		\$ 1.83
Diluted	\$ 0.52		\$ 1.81
Weighted average shares outstanding:			
Basic	72,342		72,342
Diluted	73,036		73,036

Six Months Ended December 31, 2017

	As Previously Reported	Adjustments	As Adjusted
(Dollars in Thousands, Except per Share Data)			
Consolidated Statements of Operations:			
License revenue	\$ —	\$ 135,865	\$ 135,865
Maintenance revenue	—	80,993	80,993
Subscription and software revenue	233,414	(233,414)	—
Services and other revenue	14,269	890	15,159
Gross profit	222,862	(15,666)	207,196
Selling and marketing expense	47,951	(507)	47,444
General and administrative expense	27,854	6,801	34,655
Income from operations	107,778	(21,960)	85,818
Interest income	181	12,364	12,545
Provision for (benefit from) income taxes	31,805	(109,315)	(77,510)
Net income	\$ 72,833	\$ 99,719	\$ 172,552
Net income per common share:			
Basic	\$ 1.00		\$ 2.37
Diluted	\$ 0.99		\$ 2.35
Weighted average shares outstanding:			
Basic	72,683		72,683
Diluted	73,333		73,333

The following table presents the effect of the adoption of Topic 606 on select consolidated balance sheet line items as of June 30, 2018:

	June 30, 2018		
	As Previously Reported	Adjustments	As Adjusted
	(Dollars in Thousands)		
Consolidated Balance Sheets:			
ASSETS			
Current contract assets	\$ —	\$ 304,378	\$ 304,378
Contract costs	—	20,500	20,500
Accounts receivable, net	21,910	19,900	41,810
Non-current contract assets	—	340,622	340,622
LIABILITIES AND STOCKHOLDERS' EQUITY			
Current deferred revenue	286,845	(271,695)	15,150
Non-current deferred revenue	28,259	(15,905)	12,354
Deferred income taxes	—	214,125	214,125
Other non-current liabilities	18,492	(1,424)	17,068
Retained earnings	\$ 305,208	\$ 760,299	\$ 1,065,507

The adoption of Topic 606 had no impact on our total cash flows or net cash provided by operating activities. The impacts of adoption resulted in offsetting shifts in cash flows throughout the components of net income and various changes in working capital balances. The following table presents the effect of the adoption of Topic 606 on select consolidated statement of cash flows line items for the six months ended December 31, 2017:

	Six Months Ended December 31, 2017		
	As Previously Reported	Adjustments	As Adjusted
	(Dollars in Thousands)		
Consolidated Statements of Cash Flows:			
Cash flows from operating activities:			
Net income	\$ 72,833	\$ 99,719	\$ 172,552
Adjustments to reconcile net income to net cash provided by operating activities:			
Deferred income taxes	4,296	(95,077)	(90,781)
Changes in assets and liabilities:			
Contract assets	—	(40,927)	(40,927)
Contract costs	—	(59)	(59)
Accounts receivable	3,656	(3,989)	(333)
Deferred revenue	(41,586)	40,333	(1,253)
Net cash provided by operating activities	\$ 54,762	\$ —	\$ 54,762

4. Fair Value

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

Cash equivalents of \$1.0 million and \$5.0 million as of December 31, 2018 and June 30, 2018, respectively, were reported at fair value utilizing quoted market prices in identical markets, or “Level 1 inputs.” Our cash equivalents consist of short-term money market instruments.

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

5. Accounts Receivable, Net

Our accounts receivable, net of the related allowance for doubtful accounts, were as follows as of December 31, 2018 and June 30, 2018:

	December 31, 2018	June 30, 2018
	As Adjusted	
	(Dollars in Thousands)	
Accounts receivable, gross	\$ 60,116	\$ 44,513
Allowance for doubtful accounts	(3,530)	(2,703)
Accounts receivable, net	<u>\$ 56,586</u>	<u>\$ 41,810</u>

As of December 31, 2018, we had no customer receivable balances that individually represented 10% or more of our net accounts receivable.

6. Property and Equipment

Property, equipment and leasehold improvements consisted of the following as of December 31, 2018 and June 30, 2018:

	December 31, 2018	June 30, 2018
	(Dollars in Thousands)	
Property, equipment and leasehold improvements, at cost:		
Computer equipment	\$ 8,322	\$ 8,344
Purchased software	24,269	24,225
Furniture & fixtures	6,836	6,850
Leasehold improvements	12,026	12,023
Property, equipment and leasehold improvements, at cost	<u>51,453</u>	<u>51,442</u>
Accumulated depreciation	(43,142)	(41,636)
Property, equipment and leasehold improvements, net	<u>\$ 8,311</u>	<u>\$ 9,806</u>

During the three months ended December 31, 2018, we wrote off fully depreciated property, equipment and leasehold improvements that were no longer in use with gross book values of less than \$0.1 million.

7. Acquisitions

Apex Optimisation

On February 5, 2018, we completed the acquisition of all the outstanding shares of Apex Optimisation and affiliates (“Apex”), a provider of software which aligns Advanced Process Control with Planning and Scheduling to unify production optimization, for a total cash consideration of \$23.0 million. The purchase price consisted of \$18.4 million of cash paid at closing and an additional \$4.6 million to be held back until February 2020 as security for certain representations, warranties, and obligations of the sellers. The holdback is recorded in other non-current liabilities in our consolidated balance sheet.

A preliminary allocation of the purchase price is as follows. The valuation of the net assets acquired and the deferred tax liabilities are considered preliminary as of December 31, 2018:

	Amount
	(Dollars in Thousands)
Liabilities assumed, net	\$ (1,164)
Identifiable intangible assets:	
Technology-related	4,500
Customer relationships	3,800
Goodwill	17,483
Deferred tax liabilities	(1,619)
Total assets acquired, net	\$ 23,000

We used the relief from royalty and income approaches to derive the fair value of the technology-related and customer relationship intangible assets, respectively. The weighted-average discount rate (or rate of return) used to determine the value of the Apex intangible assets was 28% and the effective tax rate used was 21%. The technology-related and customer relationship intangible assets are each being amortized on a straight-line basis over their estimated useful lives of seven years.

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

8. Intangible Assets

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

Intangible assets consisted of the following as of December 31, 2018 and June 30, 2018:

	Gross Carrying Amount	Accumulated Amortization	Effect of Currency Translation	Net Carrying Amount
	(Dollars in Thousands)			
December 31, 2018:				
Technology and patents	\$ 35,644	\$ (7,002)	\$ (108)	\$ 28,534
Customer relationships	4,979	(688)	(90)	4,201
Non-compete agreements	553	(399)	—	154
Total	\$ 41,176	\$ (8,089)	\$ (198)	\$ 32,889
June 30, 2018:				
Technology and patents	\$ 35,898	\$ (5,182)	\$ (254)	\$ 30,462
Customer relationships	5,181	(377)	(202)	4,602
Non-compete agreements	553	(307)	—	246
Total	\$ 41,632	\$ (5,866)	\$ (456)	\$ 35,310

Total amortization expense related to intangible assets is included in cost of license revenue and operating expenses and amounted to approximately \$1.2 million and \$2.2 million for the three and six months ended December 31, 2018, respectively, and approximately \$0.5 million and \$1.1 million for the three and six months ended December 31, 2017, respectively.

Future amortization expense as of December 31, 2018 is expected to be as follows:

<u>Year Ended June 30,</u>	<u>Amortization Expense</u> <u>(Dollars in Thousands)</u>
2019	\$ 2,309
2020	4,688
2021	4,733
2022	4,672
2023	4,587
Thereafter	11,900
Total	\$ 32,889

9. Goodwill

The changes in the carrying amount of goodwill for our subscription and software reporting segment during the six months ended December 31, 2018 were as follows:

	<u>Gross Carrying Amount</u>	<u>Accumulated Impairment Losses</u>	<u>Effect of Currency Translation</u>	<u>Net Carrying Amount</u>
	<u>(Dollars in Thousands)</u>			
June 30, 2018:	\$ 142,316	\$ (65,569)	\$ (1,157)	\$ 75,590
Foreign currency translation	—	—	(788)	(788)
December 31, 2018:	\$ 142,316	\$ (65,569)	\$ (1,945)	\$ 74,802

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

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

We have elected December 31st as the annual impairment assessment date and perform additional impairment tests if triggering events occur. We performed our annual impairment test for the subscription and software reporting unit as of December 31, 2018 and, based upon the results of our qualitative assessment, determined that it was not likely that its fair value was less than its carrying amount. As such, we did not recognize impairment losses as a result of our analysis. If an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying value, goodwill will be evaluated for impairment between annual tests.

10. Accrued Expenses and Other Liabilities

Accrued expenses and other current liabilities consisted of the following as of December 31, 2018 and June 30, 2018:

	December 31, 2018	June 30, 2018
	(Dollars in Thousands)	
Payroll and payroll-related	\$ 17,710	\$ 21,796
Royalties and outside commissions	3,837	3,333
Professional fees	2,021	1,695
Deferred acquisition payments	500	1,700
Other	12,620	10,991
Total accrued expenses and other current liabilities	<u>\$ 36,688</u>	<u>\$ 39,515</u>

Other non-current liabilities consisted of the following as of December 31, 2018 and June 30, 2018:

	December 31, 2018	June 30, 2018
	As Adjusted (Dollars in Thousands)	
Deferred rent	\$ 5,804	\$ 6,442
Uncertain tax positions	4,059	4,510
Deferred acquisition payments	4,600	4,294
Other	1,729	1,822
Total other non-current liabilities	<u>\$ 16,192</u>	<u>\$ 17,068</u>

11. Credit Agreement

On February 26, 2016, we entered into a \$250.0 million Credit Agreement (the "Credit Agreement") with JPMorgan Chase Bank, N.A., as administrative agent, Silicon Valley Bank, as syndication agent, and the lenders and other parties named therein (the "Lenders"). On August 9, 2017, we entered into an Amendment to increase the Credit Agreement to \$350.0 million. The indebtedness evidenced by the Credit Agreement matures on February 26, 2021. Prior to the maturity of the Credit Agreement, any amounts borrowed may be repaid and, subject to the terms and conditions of the Credit Agreement, borrowed again in whole or in part without penalty. We had \$220.0 million and \$170.0 million in outstanding borrowings under the Credit Agreement as of December 31, 2018 and June 30, 2018, respectively.

Borrowings under the Credit Agreement bear interest at a rate equal to either, at our option, the sum of (a) the highest of (1) the rate of interest publicly announced by JPMorgan Chase Bank, N.A. as its prime rate in effect, (2) the Federal Funds Effective Rate plus 0.5%, and (3) the one-month Adjusted LIBO Rate plus 1.0%, plus (b) a margin initially of 0.5% for the first full fiscal quarter ending after the date of the Credit Agreement and thereafter based on our Leverage Ratio; or the Adjusted LIBO Rate plus a margin initially of 1.5% for the first full fiscal quarter ending after the date of the Credit Agreement and thereafter based on our Leverage Ratio. We must also pay, on a quarterly basis, an unused commitment fee at a rate of between 0.2% and 0.3% per annum, based on our Leverage Ratio. The interest rates as of December 31, 2018 were 3.81% on \$159.0 million of our outstanding borrowings, 3.88% on \$50.0 million of our outstanding borrowings, and 3.85% on the remaining \$11.0 million of our outstanding borrowings.

All borrowings under the Credit Agreement are secured by liens on substantially all of our assets. The Credit Agreement contains affirmative and negative covenants customary for facilities of this type, including restrictions on: incurrence of additional debt; liens; fundamental changes; asset sales; restricted payments; and transactions with affiliates. The Credit Agreement contains financial covenants regarding maintenance as of the end of each fiscal quarter, commencing with the quarter ending June 30, 2016, of a maximum Leverage Ratio of 3.0 to 1.0 and a minimum Interest Coverage Ratio of 3.0 to 1.0. As of December 31, 2018 we were in compliance with these covenants.

12. Stock-Based Compensation

The weighted average estimated fair value of option awards granted was \$26.80 and \$31.54 during the three and six months ended December 31, 2018, respectively, and \$16.65 and \$16.86 during the three and six months ended December 31, 2017, respectively.

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

	Six Months Ended December 31,	
	2018	2017
Risk-free interest rate	2.8%	1.7%
Expected dividend yield	0.0%	0.0%
Expected life (in years)	4.6	4.6
Expected volatility factor	26.6%	28.1%

The stock-based compensation expense under all equity plans and its classification in the unaudited consolidated statements of operations for the three and six months ended December 31, 2018 and 2017 are as follows:

	Three Months Ended December 31,		Six Months Ended December 31,	
	2018	2017	2018	2017
(Dollars in Thousands)				
Recorded as expenses:				
Cost of maintenance	\$ 391	\$ —	\$ 537	\$ —
Cost of services and other	288	324	606	774
Selling and marketing	1,194	1,006	2,526	1,891
Research and development	1,637	1,891	3,932	3,788
General and administrative	2,825	2,234	7,599	5,416
Total stock-based compensation	\$ 6,335	\$ 5,455	\$ 15,200	\$ 11,869

A summary of stock option and restricted stock unit ("RSU") activity under all equity plans for the six months ended December 31, 2018 is as follows:

	Stock Options				Restricted Stock Units	
	Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (Years)	Aggregate Intrinsic Value (in 000's)	Shares	Weighted Average Grant Date Fair Value
Outstanding at June 30, 2018	1,369,442	\$ 45.93	7.23	\$ 64,103	621,700	\$ 53.64
Granted	271,749	114.72			630,528	114.94
Settled (RSUs)	—				(260,604)	59.12
Exercised	(105,911)	42.20			—	
Cancelled / Forfeited	(67,659)	67.00			(58,694)	66.11
Outstanding at December 31, 2018	1,467,621	\$ 57.97	7.22	\$ 43,905	932,930	\$ 92.76
Vested and exercisable at December 31, 2018	841,676	\$ 43.97	6.10	\$ 33,458	—	
Vested and expected to vest as of December 31, 2018	1,400,561	\$ 57.17	7.15	\$ 42,752	876,747	\$ 93.82

The weighted average grant-date fair value of RSUs granted was \$105.71 and \$114.94 during the three and six months ended December 31, 2018, respectively, and \$66.52 and \$63.24 during the three and six months ended December 31, 2017, respectively. The total fair value of shares vested from RSU grants was \$15.1 million and \$25.0 million during the three and

six months ended December 31, 2018, respectively, and \$4.9 million and \$10.2 million during the three and six months ended December 31, 2017, respectively.

At December 31, 2018, the total future unrecognized compensation cost related to stock options was \$11.3 million and is expected to be recorded over a weighted average period of 2.8 years. At December 31, 2018, the total future unrecognized compensation cost related to RSUs was \$35.7 million and is expected to be recorded over a weighted average period of 2.8 years.

The total intrinsic value of options exercised was \$0.7 million and \$6.8 million during the three and six months ended December 31, 2018, respectively, and \$1.3 million and \$2.9 million during the three and six months ended December 31, 2017, respectively. We received cash proceeds from option exercises of \$0.4 million and \$4.5 million during the three and six months ended December 31, 2018, respectively, and \$1.1 million and \$3.5 million during the three and six months ended December 31, 2017, respectively. We withheld withholding taxes on vested RSUs of \$6.3 million and \$9.6 million during the three and six months ended December 31, 2018, respectively, and \$1.8 million and \$3.4 million during the three and six months ended December 31, 2017, respectively.

At December 31, 2018, common stock reserved for future issuance or settlement under equity compensation plans was 9.9 million shares.

During the six months ended December 31, 2018, we granted performance-based long-term incentive awards ("performance awards") to certain of our executives, including our named executive officers. The performance period for each performance award is either of the following two-year periods: (i) fiscal year 2019 - fiscal year 2020, or (ii) fiscal year 2020 - fiscal year 2021. Participants receive RSUs on the grant date associated with achievement of all performance targets. The performance targets for the performance awards are based on meeting annual spend growth, defined as an estimate of the annualized value of our portfolio of term license arrangements, as of a specific date, and the performance goals set out in the executive bonus plan for each fiscal year, such as free cash flow. If the performance targets are met during one of the two performance periods and the participant remains actively employed by us, the RSUs convert to time-based vesting wherein fifty percent of the awards immediately vest, and the remaining fifty percent are subject to additional service vesting over a three-year period. In general, if the performance targets are not met, or if the participant is no longer actively employed by us prior to the performance targets being met, the participant forfeits all of the RSUs.

During the six months ended December 31, 2018, we granted 382,373 RSUs in connection with the performance awards. As of December 31, 2018, all of the RSUs issued in connection with the performance awards are unvested and outstanding.

We record compensation expense for the performance awards based on the fair value of the awards, in an amount proportionate to the service time rendered by the participant, when it is probable that the achievement of the goals will be met. The fair value of the performance awards granted during the six months ended December 31, 2018 was estimated using the closing price on the date of grant as well as the estimated probable achievement levels of the performance metrics. If the performance-based conditions are not met, no compensation cost is recognized and any recognized compensation cost is reversed. As of December 31, 2018, we concluded that the performance metrics related to the performance awards were not probable of achievement; therefore, no compensation expense was recognized during the six months ended December 31, 2018.

On July 26, 2018, our Board of Directors approved the Aspen Technology, Inc. 2018 Employee Stock Purchase Plan (the "ESPP"). The ESPP is intended to be a qualified employee stock purchase plan under Section 423 of the Internal Revenue Code of 1986, or the IRC. The ESPP was approved at our Annual Meeting of Stockholders on December 7, 2018. The ESPP currently provides for a purchase price equal to 85% of the lower of (a) the fair market value of the common stock on the first trading day of each ESPP offering period and (b) the fair market value of the common stock on the last day of the offering period. Our initial offering period is for January 1, 2019 through June 30, 2019.

13. Stockholders' Equity

Stock Repurchases

On January 22, 2015, our Board of Directors approved a share repurchase program (the "Share Repurchase Program") for up to \$450.0 million worth of our common stock. On April 26, 2016, June 8, 2017, April 18, 2018, and December 6, 2018, the Board of Directors approved a \$400.0 million, \$200.0 million, \$200.0 million, and \$100.0 million increase in the Share Repurchase Program, respectively. The timing and amount of any shares repurchased are based on market conditions and other factors. All shares of our common stock repurchased have been recorded as treasury stock under the cost method.

During the three and six months ended December 31, 2018, we repurchased 1,175,531 and 1,648,907 shares of our common stock in the open market for \$100.0 million and \$150.0 million, respectively. As of December 31, 2018, the total remaining value under the Share Repurchase Program was approximately \$296.3 million.

Accumulated Other Comprehensive Income

As of December 31, 2018 and June 30, 2018, accumulated other comprehensive income was comprised of foreign currency translation adjustments of less than \$0.1 million and \$1.4 million, respectively.

14. Net Income Per Share

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

The calculations of basic and diluted net income per share and basic and dilutive weighted average shares outstanding for the three and six months ended December 31, 2018 and 2017 are as follows:

	Three Months Ended December 31,		Six Months Ended December 31,	
	2018	2017	2018	2017
	As Adjusted		As Adjusted	
	(Dollars and Shares in Thousands, Except per Share Data)			
Net income	\$ 59,217	\$ 132,032	\$ 97,282	\$ 172,552
Weighted average shares outstanding	70,428	72,342	70,708	72,683
Dilutive impact from:				
Employee equity awards	720	694	892	650
Dilutive weighted average shares outstanding	71,148	73,036	71,600	73,333
Income per share				
Basic	\$ 0.84	\$ 1.83	\$ 1.38	\$ 2.37
Dilutive	\$ 0.83	\$ 1.81	\$ 1.36	\$ 2.35

For the three and six months ended December 31, 2018 and 2017, certain employee equity awards were anti-dilutive based on the treasury stock method. The following employee equity awards were excluded from the calculation of dilutive weighted average shares outstanding because their effect would be anti-dilutive as of December 31, 2018 and 2017:

	Three Months Ended December 31,		Six Months Ended December 31,	
	2018	2017	2018	2017
	(Shares in Thousands)			
Employee equity awards	867	388	812	664

Included in the table above are options to purchase 255,390 and 254,354 shares of our common stock during the three and six months ended December 31, 2018, respectively, which were not included in the computation of dilutive weighted average shares outstanding, because their exercise prices ranged from \$93.59 per share to \$116.00 per share and were greater than the average market price of our common stock during the period then ended. These options were outstanding as of December 31, 2018 and expire at various dates through October 23, 2028.

15. Income Taxes

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

On December 22, 2017, the President of the United States signed into law Public Law No. 115-97, commonly referred to as the Tax Cuts and Jobs Act (the "Tax Act"), following its passage by the United States Congress. The Tax Act made significant changes to U.S. federal income tax laws, including reduction of the corporate tax rate from 35.0% to 21.0%, and the implementation of a territorial tax system resulting in a one-time transition tax on the unremitted earnings of our foreign subsidiaries. The Tax Act also contains additional provisions that are effective for us in fiscal year 2019, including a new deduction for Foreign-Derived Intangible Income ("FDII"), the repeal of the domestic production activity deduction, a new tax on Global Intangible Low-Taxed Income ("GILTI"), and increased limitations on the deductibility of certain executive compensation.

Our effective tax rate was 13.4% and 12.3% during the three and six months ended December 31, 2018, respectively, and (279.0)% and (81.5)% during the three and six months ended December 31, 2017, respectively. Our effective tax rate increased for the three and six months ended December 31, 2018 compared to the same period in 2017 due to the tax benefit recorded for the three and six months ended December 31, 2017 for the revaluation of our deferred tax liabilities resulting from the adoption of Topic 606. We adopted Topic 606 effective July 1, 2018 using the full retrospective method, which coincided with the reduction of federal income tax rates due to the enactment of the Tax Act. The reduction in the corporate tax rate from 35.0% to the blended tax rate of 21.0% reduced our deferred tax liabilities established under Topic 606, which resulted in an income tax benefit for the three and six months ended December 31, 2017.

The Tax Act has several significant changes that impact all taxpayers, including a transition tax, which is a one-time tax charge on accumulated, undistributed foreign earnings. The calculation of accumulated foreign earnings requires an analysis of each foreign entity's financial results going back to 1986. We have concluded that we will not be subject to the transition tax associated with our accumulated, undistributed foreign earnings. We do not provide deferred taxes on unremitted earnings of our foreign subsidiaries as we intend to indefinitely reinvest those earnings.

The Tax Act also included a new provision designed to tax global intangible low-taxed income ("GILTI"). Under U.S. GAAP, we are allowed to make an accounting policy choice to either (i) treat taxes due on future U.S. inclusions in taxable income related to GILTI as a current-period expense when incurred (the "period cost method"); or (ii) factor in such amounts into the measurement of our deferred taxes (the "deferred method"). Our selection of an accounting policy related to the GILTI tax provisions depends, in part, on analyzing our global income to determine whether we expect to have future U.S. inclusions in taxable income related to GILTI and, if so, what the impact is expected to be. While our future global operations depend on a number of different factors, we do expect to have future U.S. inclusions in taxable income related to GILTI. Further, we have made a policy decision to record GILTI tax as a current-period expense when incurred.

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

16. Commitments and Contingencies

Operating Leases

We lease certain facilities under non-cancellable operating leases with terms in excess of one year. Rental expense on leased facilities under operating leases was approximately \$2.1 million and \$4.1 million during the three and six months ended December 31, 2018, respectively, and approximately \$2.0 million and \$4.1 million during the three and six months ended December 31, 2017, respectively.

Standby letters of credit for \$3.9 million and \$3.5 million secure our performance on professional services contracts, certain facility leases and potential liabilities as of December 31, 2018 and June 30, 2018, respectively. The letters of credit expire at various dates through fiscal 2025.

17. Segment Information

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

The subscription and software segment is engaged in the licensing of process optimization and asset performance management software solutions and associated support services, and includes our license and maintenance revenue. The services and other segment includes professional services and training, and includes our services and other revenue. We do not track assets or capital expenditures by operating segments. Consequently, it is not practical to present assets, capital expenditures, depreciation or amortization by operating segments.

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

	Subscription and Software	Services and Other	Total
	(Dollars in Thousands)		
Three Months Ended December 31, 2018			
Segment revenue	\$ 134,406	\$ 6,017	\$ 140,423
Segment expenses (1)	(53,732)	(7,634)	(61,366)
Segment profit	\$ 80,674	\$ (1,617)	\$ 79,057
Three Months Ended December 31, 2017, As Adjusted			
Segment revenue	\$ 97,704	\$ 7,826	\$ 105,530
Segment expenses (1)	(49,201)	(6,606)	(55,807)
Segment profit	\$ 48,503	\$ 1,220	\$ 49,723
Six Months Ended December 31, 2018			
Segment revenue	\$ 241,200	\$ 13,392	\$ 254,592
Segment expenses (1)	(107,258)	(15,203)	(122,461)
Segment profit	\$ 133,942	\$ (1,811)	\$ 132,131
Six Months Ended December 31, 2017, As Adjusted			
Segment revenue	\$ 216,858	\$ 15,159	\$ 232,017
Segment expenses (1)	(97,989)	(13,555)	(111,544)
Segment profit	\$ 118,869	\$ 1,604	\$ 120,473

(1) Our reportable segments' operating expenses include expenses directly attributable to the segments. Segment expenses include selling and marketing and research and development expenses. Segment expenses do not include allocations of general and administrative; interest income, net; and other (expense), net.

Reconciliation to Income before Income Taxes

The following table presents a reconciliation of total segment profit to income before income taxes for the three and six months ended December 31, 2018 and 2017:

	Three Months Ended December 31,		Six Months Ended December 31,	
	2018	2017	2018	2017
	As Adjusted		As Adjusted	
	(Dollars in Thousands)			
Total segment profit for reportable segments	\$ 79,057	\$ 49,723	\$ 132,131	\$ 120,473
General and administrative expense	(15,299)	(19,618)	(31,383)	(34,655)
Interest income, net	5,321	4,978	10,576	10,078
Other (expense), net	(578)	(238)	(451)	(854)
Income before income taxes	<u>\$ 68,501</u>	<u>\$ 34,845</u>	<u>\$ 110,873</u>	<u>\$ 95,042</u>

Item 2. Management’s Discussion and Analysis of Financial Condition and Results of Operations.

You should read the following discussion in conjunction with our unaudited consolidated financial statements and related notes thereto contained in this report. In addition to historical information, this discussion contains forward-looking statements that involve risks and uncertainties. You should read “Item 1A. Risk Factors” of Part II for a discussion of important factors that could cause our actual results to differ materially from our expectations.

Our fiscal year ends on June 30th, and references in this Quarterly Report to a specific fiscal year are to the twelve months ended June 30th of such year (for example, “fiscal 2019” refers to the year ending on June 30, 2019).

Business Overview

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

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

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

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

We have approximately 2,200 customers globally. Our customers consist of companies engaged in the process and other capital-intensive industries such as energy, chemicals, engineering and construction, as well as pharmaceuticals, transportation, power, metals and mining, pulp and paper, and consumer packaged goods.

Business Segments

We have two operating and reportable segments: i) subscription and software and ii) services and other. The subscription and software segment is engaged in the licensing of process optimization and asset performance management software solutions and associated support services, and includes our license and maintenance revenue. The services and other segment includes professional services and training, and includes our services and other revenue.

Key Components of Operations

Revenue

We generate revenue primarily from the following sources:

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

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

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

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

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

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

Cost of Revenue

Cost of License. Our cost of license revenue consists of (i) royalties, (ii) amortization of capitalized software and intangibles, and (iii) distribution fees.

Cost of Maintenance. Our cost of maintenance revenue consists of costs of providing Premier Plus SMS bundled with our aspenONE licensing and point product arrangements.

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

Operating Expenses

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

Research and Development Expenses. Research and development expenses consist primarily of personnel expenses related to the creation of new software products, enhancements and engineering changes to existing products.

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

Other Income and Expenses

Interest Income. Interest income is recorded for financing components under Accounting Standards Update (ASU) No. 2014-09, *Revenue from Contracts with Customers* ("Topic 606"). When a contract includes a significant financing component because we generally receive payments in arrears, we are in the position of providing financing to the customer. As a result, we decrease the amount of revenue recognized and increase interest income by a corresponding amount. Interest income also includes the accretion of interest on investments in short-term money market instruments.

Interest (Expense). Interest (expense) is primarily related to our Credit Agreement.

Other (Expense), Net. Other (expense), net is comprised primarily of foreign currency exchange gains (losses) generated from the settlement and remeasurement of transactions denominated in currencies other than the functional currency of our operating units.

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

Key Business Metrics

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

- Annual spend;
- Total contract value;
- Bookings;
- Free cash flow; and
- Non-GAAP operating income.

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

Annual Spend

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

Annual spend increases as a result of new term license agreements with new or existing customers, renewals or modifications of existing term license agreements that result in higher license fees due to price escalation or an increase in the number of tokens (units of software usage) or products licensed, and escalation of annual payments in our active term license contracts.

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

We estimate that annual spend grew by approximately 3.0% during the second quarter of fiscal 2019, from \$498.4 million at September 30, 2018 to \$513.1 million at December 31, 2018, and by approximately 4.9% during the first six months of fiscal 2019, from \$489.3 million at June 30, 2018.

Total Contract Value

Total Contract Value ("TCV") is the value of all payments received or to be received under all active term license agreements, including escalation. TCV is an annual metric and will be included in our Annual Report on Form 10-K for the fiscal year ended June 30, 2019.

Bookings

Bookings is the total value of customer term license contracts signed in the current period, less the value of such contracts signed in the current period where the initial licenses are not yet deemed delivered, plus term license contracts signed in a previous period for which the initial licenses are deemed delivered in the current period.

Bookings increased from \$85.9 million during the three months ended December 31, 2017 to \$154.8 million during the three months ended December 31, 2018. Bookings increased from \$210.3 million during the six months ended December 31, 2017 to \$250.9 million during the six months ended December 31, 2018.

Free Cash Flow

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

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

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

	Six Months Ended December 31,	
	2018	2017
	As Adjusted (Dollars in Thousands)	
Net cash provided by operating activities	\$ 63,097	\$ 54,762
Purchases of property, equipment, and leasehold improvements	(180)	(156)
Capitalized computer software development costs	(189)	(356)
Non-capitalized acquired technology	—	75
Acquisition related fee payments	12	88
Free cash flows (non-GAAP)	<u>\$ 62,740</u>	<u>\$ 54,413</u>

Total free cash flow on a non-GAAP basis increased by \$8.3 million during the six months ended December 31, 2018 as compared to the same period of the prior fiscal year primarily due to changes in working capital. See additional commentary in the "Liquidity and Capital Resources" section below.

Non-GAAP Operating Income

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

The following table presents our net income, as adjusted for stock-based compensation expense, amortization of acquired intangibles, and other items, such as the impact of litigation judgments and acquisition related fees, for the indicated periods:

	Three Months Ended December 31,		Increase / (Decrease) Change		Six Months Ended December 31,		Increase / (Decrease) Change	
	2018	2017	\$	%	2018	2017	\$	%
	As Adjusted				As Adjusted			
	(Dollars in Thousands)							
GAAP income from operations	\$ 63,758	\$ 30,105	\$ 33,653	111.8 %	\$ 100,748	\$ 85,818	\$ 14,930	17.4 %
Plus:								
Stock-based compensation	6,335	5,455	880	16.1 %	15,200	11,869	3,331	28.1 %
Amortization of intangibles	1,156	526	630	119.8 %	2,223	1,052	1,171	111.3 %
Litigation judgment	—	1,548	(1,548)	(100.0)%	—	1,548	(1,548)	(100.0)%
Acquisition related fees	—	198	(198)	(100.0)%	(7)	328	(335)	(102.1)%
Non-GAAP income from operations	\$ 71,249	\$ 37,832	\$ 33,417	88.3 %	\$ 118,164	\$ 100,615	\$ 17,549	17.4 %

Critical Accounting Estimates and Judgments

Note 2, "Significant Accounting Policies," to the audited consolidated financial statements in our Annual Report on Form 10-K for the fiscal year ended June 30, 2018 describes the significant accounting policies and methods used in the preparation of the consolidated financial statements appearing in this report. The accounting policies that reflect our critical estimates, judgments and assumptions in the preparation of our consolidated financial statements are described in "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Item 7 of our Annual Report on Form 10-K for the fiscal year ended June 30, 2018, and include the following:

- Revenue recognition

Our accounting policies for revenue recognition were updated as a result of adopting Topic 606. See Note 2, "Significant Accounting Policies," and Note 3, "Revenue from Contracts with Customers," to our Unaudited Consolidated Financial Statements in Item 1 of this Form 10-Q for more information on our accounting policies as a result of the adoption of Topic 606.

Results of Operations

Comparison of the Three and Six Months Ended December 31, 2018 and 2017

The following table sets forth the results of operations and the period-over-period percentage change in certain financial data for the three and six months ended December 31, 2018 and 2017:

	Three Months Ended December 31,		Increase / (Decrease) Change	Six Months Ended December 31,		Increase / (Decrease) Change	
	2018	2017	%	2018	2017	%	
	As Adjusted			As Adjusted			
	(Dollars in Thousands)						
Revenue:							
License	\$ 93,368	\$ 56,975	63.9 %	\$ 157,123	\$ 135,865	15.6 %	
Maintenance	41,038	40,729	0.8 %	84,077	80,993	3.8 %	
Services and other	6,017	7,826	(23.1)%	13,392	15,159	(11.7)%	
Total revenue	140,423	105,530	33.1 %	254,592	232,017	9.7 %	
Cost of revenue:							
License	1,819	1,233	47.5 %	3,484	2,464	41.4 %	
Maintenance	5,286	4,250	24.4 %	9,279	8,802	5.4 %	
Services and other	7,634	6,606	15.6 %	15,203	13,555	12.2 %	
Total cost of revenue	14,739	12,089	21.9 %	27,966	24,821	12.7 %	
Gross profit	125,684	93,441	34.5 %	226,626	207,196	9.4 %	
Operating expenses:							
Selling and marketing	26,310	23,928	10.0 %	53,122	47,444	12.0 %	
Research and development	20,317	19,790	2.7 %	41,373	39,279	5.3 %	
General and administrative	15,299	19,618	(22.0)%	31,383	34,655	(9.4)%	
Total operating expenses, net	61,926	63,336	(2.2)%	125,878	121,378	3.7 %	
Income from operations	63,758	30,105	111.8 %	100,748	85,818	17.4 %	
Interest income	7,485	6,239	20.0 %	14,554	12,545	16.0 %	
Interest (expense)	(2,164)	(1,261)	71.6 %	(3,978)	(2,467)	61.2 %	
Other (expense) income, net	(578)	(238)	142.9 %	(451)	(854)	(47.2)%	
Income before income taxes	68,501	34,845	96.6 %	110,873	95,042	16.7 %	
Provision for (benefit from) income taxes	9,284	(97,187)	(109.6)%	13,591	(77,510)	(117.5)%	
Net income	\$ 59,217	\$ 132,032	(55.1)%	\$ 97,282	\$ 172,552	(43.6)%	

The following table sets forth the results of operations as a percentage of total revenue for certain financial data for the three and six months ended December 31, 2018 and 2017:

	Three Months Ended December 31,		Six Months Ended December 31,	
	2018	2017	2018	2017
	As Adjusted		As Adjusted	
	(% of Revenue)			
Revenue:				
License	66.5 %	54.0 %	61.7 %	58.6 %
Maintenance	29.2	38.6	33.0	34.9
Services and other	4.3	7.4	5.3	6.5
Total revenue	100.0	100.0	100.0	100.0
Cost of revenue:				
License	1.3	1.2	1.4	1.1
Maintenance	3.8	4.0	3.6	3.8
Services and other	5.4	6.3	6.0	5.8
Total cost of revenue	10.5	11.5	11.0	10.7
Gross profit	89.5	88.5	89.0	89.3
Operating expenses:				
Selling and marketing	18.7	22.7	20.9	20.4
Research and development	14.5	18.8	16.3	16.9
General and administrative	10.9	18.6	12.3	14.9
Total operating expenses, net	44.1	60.0	49.4	52.3
Income from operations	45.4	28.5	39.6	37.0
Interest income	5.3	5.9	5.7	5.4
Interest (expense)	(1.5)	(1.2)	(1.6)	(1.1)
Other (expense), net	(0.4)	(0.2)	(0.2)	(0.4)
Income before income taxes	48.8	33.0	43.5	41.0
Provision for (benefit from) income taxes	6.6	(92.1)	5.3	(33.4)
Net income	42.2 %	125.1 %	38.2 %	74.4 %

Revenue

Total revenue increased by \$34.9 million and \$22.6 million during the three and six months ended December 31, 2018, respectively, as compared to the corresponding period of the prior fiscal year. The increase of \$34.9 million during the three months ended December 31, 2018 was comprised of an increase in license revenue of \$36.4 million and an increase in maintenance revenue of \$0.3 million, partially offset by a decrease in services and other revenue of \$(1.8) million, as compared to the corresponding period of the prior fiscal year. The increase of \$22.6 million during the six months ended December 31, 2018 was comprised of an increase in license revenue of \$21.3 million and an increase in maintenance revenue of \$3.1 million, partially offset by a decrease in services and other revenue of \$(1.8) million, as compared to the corresponding period of the prior fiscal year.

License Revenue

	Three Months Ended December 31,		Increase / (Decrease) Change		Six Months Ended December 31,		Increase / (Decrease) Change	
	2018	2017	\$	%	2018	2017	\$	%
	As Adjusted				As Adjusted			
	(Dollars in Thousands)							
License revenue	\$ 93,368	\$ 56,975	\$ 36,393	63.9%	\$ 157,123	\$ 135,865	\$ 21,258	15.6%
As a percent of total revenue	66.5%	54.0%			61.7%	58.6%		

The period-over-period increase of \$36.4 million and \$21.3 million in license revenue during the three and six months ended December 31, 2018, respectively, was primarily attributable to an increase in bookings compared to the three and six months ended December 31, 2017.

Maintenance Revenue

	Three Months Ended December 31,		Increase / (Decrease) Change		Six Months Ended December 31,		Increase / (Decrease) Change	
	2018	2017	\$	%	2018	2017	\$	%
	As Adjusted				As Adjusted			
	(Dollars in Thousands)							
Maintenance revenue	\$ 41,038	\$ 40,729	\$ 309	0.8%	\$ 84,077	\$ 80,993	\$ 3,084	3.8%
As a percent of total revenue	29.2%	38.6%			33.0%	34.9%		

The period-over-period increase of \$0.3 million and \$3.1 million in maintenance revenue during the three and six months ended December 31, 2018, respectively, was primarily attributable to growth of our base of arrangements, which include maintenance, being recognized on a ratable basis.

We expect maintenance revenue to increase as a result of: (i) having a larger base of arrangements recognized on a ratable basis; (ii) increased customer usage of our software; (iii) adding new customers; and (iv) escalating annual payments.

Services and Other Revenue

	Three Months Ended December 31,		Increase / (Decrease) Change		Six Months Ended December 31,		Increase / (Decrease) Change	
	2018	2017	\$	%	2018	2017	\$	%
	As Adjusted				As Adjusted			
	(Dollars in Thousands)							
Services and other revenue	\$ 6,017	\$ 7,826	\$ (1,809)	(23.1)%	\$ 13,392	\$ 15,159	\$ (1,767)	(11.7)%
As a percent of total revenue	4.3%	7.4%			5.3%	6.5%		

Services and other revenue decreased \$(1.8) million during the three and six months ended December 31, 2018, respectively, as compared to the corresponding period of the prior fiscal year.

We recognize professional services fees for our time-and-materials ("T&M") contracts based upon hours worked and contractually agreed-upon hourly rates. Revenue from fixed-price engagements is recognized using the proportional performance method based on the ratio of costs incurred to the total estimated project costs. As our typical contract term approximates five years, professional services revenue on these types of arrangements will usually be recognized over a longer period than the period over which the services are performed.

Cost of Revenue

Cost of License Revenue

	Three Months Ended December 31,		Increase / (Decrease) Change		Six Months Ended December 31,		Increase / (Decrease) Change	
	2018	2017	\$	%	2018	2017	\$	%
	As Adjusted				As Adjusted			
	(Dollars in Thousands)							
Cost of license revenue	\$ 1,819	\$ 1,233	\$ 586	47.5%	\$ 3,484	\$ 2,464	\$ 1,020	41.4%
As a percent of license revenue	1.9%	2.2%			2.2%	1.8%		

Cost of license revenue increased \$0.6 million and \$1.0 million for the three and six months ended December 31, 2018, respectively, as compared to the corresponding period of the prior fiscal year primarily due to higher amortization of intangibles.

License gross profit margin was 98.1% and 97.8% for the three and six months ended December 31, 2018, respectively, and 97.8% and 98.2% for the three and six months ended December 31, 2017, respectively.

Cost of Maintenance Revenue

	Three Months Ended December 31,		Increase / (Decrease) Change		Six Months Ended December 31,		Increase / (Decrease) Change	
	2018	2017	\$	%	2018	2017	\$	%
	As Adjusted				As Adjusted			
	(Dollars in Thousands)							
Cost of maintenance revenue	\$ 5,286	\$ 4,250	\$ 1,036	24.4%	\$ 9,279	\$ 8,802	\$ 477	5.4%
As a percent of maintenance revenue	12.9%	10.4%			11.0%	10.9%		

Cost of maintenance revenue increased \$1.0 million and \$0.5 million for the three and six months ended December 31, 2018, respectively, as compared to the corresponding period of the prior fiscal year primarily due to higher headcount related costs.

Maintenance gross profit margin was 87.1% and 89.0% for the three and six months ended December 31, 2018, respectively, and 89.6% and 89.1% for the three and six months ended December 31, 2017, respectively.

Cost of Services and Other Revenue

	Three Months Ended December 31,		Increase / (Decrease) Change		Six Months Ended December 31,		Increase / (Decrease) Change	
	2018	2017	\$	%	2018	2017	\$	%
	As Adjusted				As Adjusted			
	(Dollars in Thousands)							
Cost of services and other revenue	\$ 7,634	\$ 6,606	\$ 1,028	15.6%	\$ 15,203	\$ 13,555	\$ 1,648	12.2%
As a percent of services and other revenue	126.9%	84.4%			113.5%	89.4%		

The timing of revenue and expense recognition on professional service arrangements can impact the comparability of cost and gross profit margin of professional services revenue from year to year.

Cost of services and other revenue increased \$1.0 million and \$1.6 million for the three and six months ended December 31, 2018, respectively, as compared to the corresponding period of the prior fiscal year primarily due to higher cost of professional services revenue.

Gross profit margin on services and other revenue was (26.9)% and (13.5)% for the three and six months ended December 31, 2018, respectively, and 15.6% and 10.6% for the three and six months ended December 31, 2017, respectively

Gross Profit

Gross profit increased \$32.2 million and \$19.4 million for the three and six months ended December 31, 2018, respectively, as compared to the corresponding period of the prior fiscal year.

Gross profit margin of 89.5% and 89.0% during the three and six months ended December 31, 2018, respectively, was consistent with the corresponding periods of the prior fiscal year. For further discussion of subscription and software gross profit and services and other gross profit, please refer to the "Cost of License Revenue," "Cost of Maintenance Revenue," and "Cost of Services and Other Revenue" sections above.

Operating Expenses

Selling and Marketing Expense

	Three Months Ended December 31,		Increase / (Decrease) Change		Six Months Ended December 31,		Increase / (Decrease) Change	
	2018	2017	\$	%	2018	2017	\$	%
	As Adjusted				As Adjusted			
	(Dollars in Thousands)							
Selling and marketing expense	\$ 26,310	\$ 23,928	\$ 2,382	10.0%	\$ 53,122	\$ 47,444	\$ 5,678	12.0%
As a percent of total revenue	18.7%	22.7%			20.9%	20.4%		

The period-over-period increase of \$2.4 million in selling and marketing expense during the three months ended December 31, 2018 was primarily attributable to higher compensation costs of \$1.4 million related to an increase in headcount and higher marketing costs of \$0.4 million.

The period-over-period increase of \$5.7 million in selling and marketing expense during the six months ended December 31, 2018 was primarily attributable to higher compensation costs of \$1.8 million related to an increase in headcount, higher commissions of \$1.2 million, higher stock-based compensation of \$0.6 million, higher sales training costs of \$0.5 million, and higher marketing costs of \$0.4 million.

Research and Development Expense

	Three Months Ended December 31,		Increase / (Decrease) Change		Six Months Ended December 31,		Increase / (Decrease) Change	
	2018	2017	\$	%	2018	2017	\$	%
	As Adjusted				As Adjusted			
	(Dollars in Thousands)							
Research and development expense	\$ 20,317	\$ 19,790	\$ 527	2.7%	\$ 41,373	\$ 39,279	\$ 2,094	5.3%
As a percent of total revenue	14.5%	18.8%			16.3%	16.9%		

The period-over-period increase of \$0.5 million in research and development expense during the three months ended December 31, 2018 was primarily attributable to higher compensation costs of \$0.3 million related to an increase in headcount.

The period-over-period increase of \$2.1 million in research and development expense during the six months ended December 31, 2018 was primarily attributable to higher compensation costs of \$1.5 million related to an increase in headcount.

General and Administrative Expense

	Three Months Ended December 31,		Increase / (Decrease) Change		Six Months Ended December 31,		Increase / (Decrease) Change	
	2018	2017	\$	%	2018	2017	\$	%
	As Adjusted				As Adjusted			
	(Dollars in Thousands)							
General and administrative expense	\$ 15,299	\$ 19,618	\$ (4,319)	(22.0)%	\$ 31,383	\$ 34,655	\$ (3,272)	(9.4)%
As a percent of total revenue	10.9%	18.6%			12.3%	14.9%		

The period-over-period decrease of \$(4.3) million in general and administrative expense during the three months ended December 31, 2018 was primarily attributable to lower bad debt expense of \$4.0 million and lower litigation judgments of \$1.5 million, partially offset by higher compensation costs of \$0.9 million related to an increase in headcount and higher stock-based compensation of \$0.6 million.

The period-over-period decrease of \$(3.3) million in general and administrative expense during the six months ended December 31, 2018 was primarily attributable to lower bad debt expense of \$5.4 million and lower litigation judgments of \$1.5 million, partially offset by higher stock-based compensation of \$2.2 million and higher compensation costs of \$1.4 million related to an increase in headcount.

Non-Operating Income (Expense)

Interest Income

	Three Months Ended December 31,		Increase / (Decrease) Change		Six Months Ended December 31,		Increase / (Decrease) Change	
	2018	2017	\$	%	2018	2017	\$	%
	As Adjusted				As Adjusted			
	(Dollars in Thousands)							
Interest income	\$ 7,485	\$ 6,239	\$ 1,246	20.0%	\$ 14,554	\$ 12,545	\$ 2,009	16.0%
As a percent of total revenue	5.3%	5.9%			5.7%	5.4%		

The period-over-period increase of \$1.2 million and \$2.0 million in interest income during the three and six months ended December 31, 2018, respectively, was attributable to contracts that include a significant financing component under Topic 606.

We expect interest income to continue to increase as a result of: (i) increased customer usage of our software; (ii) adding new customers; and (iii) escalating annual payments.

Interest (Expense)

	Three Months Ended December 31,		(Increase) / Decrease Change		Six Months Ended December 31,		(Increase) / Decrease Change	
	2018	2017	\$	%	2018	2017	\$	%
	As Adjusted				As Adjusted			
	(Dollars in Thousands)							
Interest (expense)	\$ (2,164)	\$ (1,261)	\$ (903)	71.6%	\$ (3,978)	\$ (2,467)	\$ (1,511)	61.2%
As a percent of total revenue	(1.5)%	(1.2)%			(1.6)%	(1.1)%		

The period-over-period increase of \$(0.9) million and \$(1.5) million in interest (expense) during the three and six months ended December 31, 2018, respectively, was primarily attributable to interest expenses related to higher interest rates and an increase in borrowings under our Credit Agreement.

Other (Expense), net

	Three Months Ended December 31,		(Increase) / Decrease Change		Six Months Ended December 31,		(Increase) / Decrease Change	
	2018	2017	\$	%	2018	2017	\$	%
	As Adjusted				As Adjusted			
	(Dollars in Thousands)							
Other (expense), net	\$ (578)	\$ (238)	\$ (340)	142.9%	\$ (451)	\$ (854)	\$ 403	(47.2)%
As a percent of total revenue	(0.4)%	(0.2)%			(0.2)%	(0.4)%		

During the three months ended December 31, 2018 and 2017, other (expense), net was comprised of \$(0.6) million and \$(0.2) million of currency losses, respectively. During the six months ended December 31, 2018 and 2017, other (expense), net was comprised of \$(0.5) million and \$(0.9) million of currency losses, respectively.

Provision for (Benefit From) Income Taxes

	Three Months Ended December 31,		Increase / (Decrease) Change		Six Months Ended December 31,		Increase / (Decrease) Change	
	2018	2017	\$	%	2018	2017	\$	%
	As Adjusted				As Adjusted			
	(Dollars in Thousands)							
Provision for (benefit from) income taxes	\$ 9,284	\$ (97,187)	\$ 106,471	(109.6)%	\$ 13,591	\$ (77,510)	\$ 91,101	(117.5)%
Effective tax rate	13.4%	(279.0)%			12.3%	(81.5)%		

On December 22, 2017, the President of the United States signed into law Public Law No. 115-97, commonly referred to as the Tax Cuts and Jobs Act (the "Tax Act"), following its passage by the United States Congress. The Tax Act made significant changes to U.S. federal income tax laws, including reduction of the corporate tax rate from 35.0% to 21.0%, and the implementation of a territorial tax system resulting in a one-time transition tax on the unremitted earnings of our foreign subsidiaries. The Tax Act also contains additional provisions that will become effective for us in fiscal year 2019, including a new deduction for Foreign-Derived Intangible Income ("FDII"), the repeal of the domestic production activity deduction, a new tax on Global Intangible Low-Taxed Income ("GILTI"), and increased limitations on the deductibility of certain executive compensation.

The effective tax rate for the periods presented is primarily the result of income earned in the U.S. taxed at U.S. federal and state statutory income tax rates, income earned in foreign tax jurisdictions taxed at the applicable rates, as well as the impact of permanent differences between book and tax income. Our effective tax rate was 13.4% and 12.3% during the three and six months ended December 31, 2018, respectively, and (279.0)% and (81.5)% during the three and six months ended December 31, 2017, respectively. Our effective tax rate increased for the three and six months ended December 31, 2018 compared to the same period in 2017 due to the tax benefit recorded for the three and six months ended December 31, 2017 for the revaluation of our deferred tax liabilities resulting from the adoption of Topic 606. We adopted Topic 606 effective July 1, 2018 using the full retrospective method, which coincided with the reduction of federal income tax rates due to the enactment of the Tax Act. The reduction in the corporate tax rate from 35.0% to the blended tax rate of 21.0% reduced our deferred tax liabilities established under Topic 606, which resulted in an income tax benefit for the three and six months ended December 31, 2017.

The Tax Act has several significant changes that impact all taxpayers, including a transition tax, which is a one-time tax charge on accumulated, undistributed foreign earnings. The calculation of accumulated foreign earnings requires an analysis of each foreign entity's financial results going back to 1986. We have concluded that we will not be subject to the transition tax associated with our accumulated, undistributed foreign earnings. We do not provide deferred taxes on unremitted earnings of our foreign subsidiaries as we intend to indefinitely reinvest those earnings.

The Tax Act also included a new provision designed to tax global intangible low-taxed income ("GILTI"). Under U.S. GAAP, we are allowed to make an accounting policy choice to either (i) treat taxes due on future U.S. inclusions in taxable income related to GILTI as a current-period expense when incurred (the "period cost method"); or (ii) factor in such amounts into the measurement of our deferred taxes (the "deferred method"). Our selection of an accounting policy related to the GILTI tax provisions depends, in part, on analyzing our global income to determine whether we expect to have future U.S. inclusions in taxable income related to GILTI and, if so, what the impact is expected to be. While our future global operations depend on a number of different factors, we do expect to have future U.S. inclusions in taxable income related to GILTI. Further, we have made a policy decision to record GILTI tax as a current-period expense when incurred.

Liquidity and Capital Resources

Resources

In recent years, we have financed our operations with cash generated from operating activities. As of December 31, 2018, our principal capital resources consisted of \$54.4 million in cash and cash equivalents.

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

Credit Agreement

On February 26, 2016, we entered into a \$250.0 million Credit Agreement (the "Credit Agreement") with JPMorgan Chase Bank, N.A., as administrative agent, Silicon Valley Bank, as syndication agent, and the lenders and other parties named therein (the "Lenders"). On August 9, 2017, we entered into an Amendment to increase the Credit Agreement to \$350.0 million. The indebtedness evidenced by the Credit Agreement matures on February 26, 2021. Prior to the maturity of the Credit Agreement, any amounts borrowed may be repaid and, subject to the terms and conditions of the Credit Agreement, borrowed again in whole or in part without penalty. We had \$220.0 million and \$170.0 million in outstanding borrowings under the Credit Agreement as of December 31, 2018 and June 30, 2018, respectively.

For a more detailed description of the Credit Agreement, see Note 11, "Credit Agreement," to our Unaudited Consolidated Financial Statements in Item 1 of this Form 10-Q.

Cash Equivalents and Cash Flows

Our cash equivalents of \$1.0 million consisted of money market funds as of December 31, 2018. The objective of our investment policy is to manage our cash and investments to preserve principal and maintain liquidity.

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

	Six Months Ended December 31,	
	2018	2017
	As Adjusted	
	(Dollars in Thousands)	
Cash flow provided by (used in):		
Operating activities	\$ 63,097	\$ 54,762
Investing activities	(369)	(11,312)
Financing activities	(103,811)	(96,907)
Effect of exchange rates on cash balances	(654)	206
Decrease in cash and cash equivalents	<u>\$ (41,737)</u>	<u>\$ (53,251)</u>

Operating Activities

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

Cash from operating activities provided \$63.1 million during the six months ended December 31, 2018. This amount resulted from net income of \$97.3 million, adjusted for non-cash items of \$(26.9) million and net uses of cash of \$(7.3) million related to changes in working capital.

Non-cash items during the six months ended December 31, 2018 consisted primarily of deferred income taxes of \$(47.5) million, stock-based compensation expense of \$15.2 million, and depreciation and amortization expense of \$4.0 million.

Cash used by working capital of \$(7.3) million during the six months ended December 31, 2018 was primarily attributable to cash used by increases in contract assets of \$41.9 million, increases in accounts receivable of \$16.5 million, and increases in contract costs of \$2.5 million, partially offset by cash provided by increases in accounts payable, accrued expenses and other current liabilities of \$37.7 million, increases in deferred revenue of \$14.2 million, and decreases in prepaid expenses, prepaid income taxes, and other assets of \$1.7 million. The increase in income taxes payable as of December 31, 2018 represents the

tax liability associated with adopting Topic 606. There was a correlating decrease in deferred income taxes during the six months ended December 31, 2018.

Investing Activities

During the six months ended December 31, 2018, we used \$0.4 million of cash for investing activities. We used \$0.2 million for capitalized computer software development costs and \$0.2 million for capital expenditures.

Financing Activities

During the six months ended December 31, 2018, we used \$103.8 million of cash for financing activities. We used \$147.4 million for repurchases of our common stock, \$9.7 million for withholding taxes on vested and settled restricted stock units, and \$1.2 million for deferred business acquisition payments, partially offset by \$50.0 million of proceeds from our Credit Agreement and \$4.5 million from the exercise of employee stock options.

Contractual Obligations

Standby letters of credit for \$3.9 million and \$3.5 million secure our performance on professional services contracts, certain facility leases and potential liabilities as of December 31, 2018 and June 30, 2018, respectively. The letters of credit expire at various dates through fiscal 2025.

Item 3. Quantitative and Qualitative Disclosures About Market Risk.

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

Foreign Currency Risk

During the three months ended December 31, 2018 and 2017, 17.7% and 11.7% of our total revenue was denominated in a currency other than the U.S. dollar, respectively. During the six months ended December 31, 2018 and 2017, 12.1% and 8.6% of our total revenue was denominated in a currency other than the U.S. dollar, respectively. In addition, certain of our operating costs incurred outside the United States are denominated in currencies other than the U.S. dollar. We conduct business on a worldwide basis and as a result, a portion of our revenue, earnings, net assets, and net investments in foreign affiliates is exposed to changes in foreign currency exchange rates. We measure our net exposure for cash balance positions and for cash inflows and outflows in order to evaluate the need to mitigate our foreign exchange risk. We may enter into foreign currency forward contracts to minimize the impact related to unfavorable exchange rate movements, although we have not done so during the three and six months ended December 31, 2018 and 2017. Our largest exposures to foreign currency exchange rates exist primarily with the Euro, Pound Sterling, Canadian Dollar, and Japanese Yen.

During the three months ended December 31, 2018 and 2017, we recorded \$(0.6) million and \$(0.2) million of net foreign currency exchange losses, respectively, related to the settlement and remeasurement of transactions denominated in currencies other than the functional currency of our operating units. Our analysis of operating results transacted in various foreign currencies indicated that a hypothetical 10% change in the foreign currency exchange rates could have increased or decreased the consolidated results of operations by approximately \$1.6 million and \$1.2 million for the three months ended December 31, 2018 and 2017, respectively.

During the six months ended December 31, 2018 and 2017, we recorded \$(0.5) million and \$(0.9) million of net foreign currency exchange losses, respectively, related to the settlement and remeasurement of transactions denominated in currencies other than the functional currency of our operating units. Our analysis of operating results transacted in various foreign currencies indicated that a hypothetical 10% change in the foreign currency exchange rates could have increased or decreased the consolidated results of operations by approximately \$2.1 million and \$2.3 million for the six months ended December 31, 2018 and 2017, respectively.

Interest Rate Risk

We place our investments in money market instruments. Our analysis of our investment portfolio and interest rates at December 31, 2018 indicated that a hypothetical 100 basis point increase or decrease in interest rates would not have a material impact on the fair value of our investment portfolio determined in accordance with an income-based approach utilizing portfolio future cash flows discounted at the appropriate rates.

We had \$220.0 million in outstanding borrowings under our Credit Agreement as of December 31, 2018. A hypothetical 10% increase or decrease in interest rates paid on outstanding borrowings under the Credit Agreement would not have a material impact on our financial position, results of operations or cash flows.

Item 4. Controls and Procedures.

a) Disclosure Controls and Procedures

Our management, with the participation of our chief executive officer and chief financial officer, evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2018. The term “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Securities Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC’s rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Securities Exchange Act is accumulated and communicated to the Company’s management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives, and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of December 31, 2018, our chief executive officer and chief financial officer concluded that, as of such date, our disclosure controls and procedures were effective.

b) Changes in Internal Controls Over Financial Reporting

During the six months ended December 31, 2018, we adopted new revenue recognition guidance. We designed and implemented new business processes and internal controls to ensure that we adequately evaluated our contracts with customers and properly assessed the impact of the new guidance to facilitate the adoption. Additionally, we implemented a new revenue recognition software system to assist in the ongoing application of the new guidance.

PART II - OTHER INFORMATION**Item 1. Legal Proceedings.**

None.

Item 1A. Risk Factors.

The risks described in "Item 1A. Risk Factors" in our Annual Report on Form 10-K for the year ended June 30, 2018, could materially and adversely affect our business, financial condition and results of operations. These risk factors do not identify all risks that we face—our operations could also be affected by factors that are not presently known to us or that we currently consider to be immaterial to our operations. The Risk Factors section of our 2018 Annual Report on Form 10-K remains current in all material respects, with the exception of the revised risk factors below.

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

During the three months ended December 31, 2018 and 2017, 17.7% and 11.7% of our total revenue was denominated in a currency other than the U.S. dollar, respectively. During the six months ended December 31, 2018 and 2017, 12.1% and 8.6% of our total revenue was denominated in a currency other than the U.S. dollar, respectively. In addition, certain of our operating expenses incurred outside the United States are denominated in currencies other than the U.S. dollar. Our reported revenue and operating results are subject to fluctuations in foreign exchange rates. Foreign currency risk arises primarily from the net difference between non-U.S. dollar receipts from customers outside the United States and non-U.S. dollar operating expenses for subsidiaries in foreign countries. Currently, our largest exposures to foreign exchange rates exist primarily with the Euro, Pound Sterling, Canadian dollar and Japanese Yen against the U.S. dollar. During the three and six months ended December 31, 2018 and 2017, we did not enter into, and were not a party to any, derivative financial instruments, such as forward currency exchange contracts, intended to manage the volatility of these market risks. We cannot predict the impact of foreign currency fluctuations, and foreign currency fluctuations in the future may adversely affect our revenue and operating results. Any hedging policies we may implement in the future may not be successful, and the cost of those hedging techniques may have a significant negative impact on our operating results.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds.

The following table provides information about purchases by us during the three months ended December 31, 2018 of shares of our common stock:

Period	Total Number of Shares Purchased (2)	Average Price Paid per Share (3)	Total Number of Shares Purchased as Part of Publicly Announced Program (1)	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Program (4)
October 1 to 31, 2018	180,185	\$ 99.69	180,185	
November 1 to 30, 2018	507,512	\$ 82.84	507,512	
December 1 to 31, 2018	487,834	\$ 81.99	487,834	
Total	1,175,531	\$ 85.07	1,175,531	\$ 296,293,127

(1) On January 22, 2015, our Board of Directors approved a share repurchase program (the "Share Repurchase Program") for up to \$450 million worth of our common stock. On April 26, 2016, June 8, 2017, April 18, 2018, and December 6, 2018, the Board of Directors approved a \$400 million, \$200 million, \$200 million, and \$100 million increase in the Share Repurchase Program, respectively.

(2) As of December 31, 2018, the total number of shares of common stock repurchased under all programs approved by the Board of Directors was 33,592,506.

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

(4) As of December 31, 2018, the total remaining value under the Share Repurchase Program was approximately \$296.3 million.

Item 6. Exhibits.

Exhibit Number	Description	Filed with this Form 10-Q	Incorporated by Reference		
			Form	Filing Date with SEC	Exhibit Number
31.1	Certification of Principal Executive Officer pursuant to Exchange Act Rules 13a-14 and 15d-14, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002	X			
31.2	Certification of Principal Financial Officer pursuant to Exchange Act Rules 13a-14 and 15d-14, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002	X			
32.1	Certification of President and Chief Executive Officer and Executive Vice President and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002	X			
101.INS	Instance Document	X			
101.SCH	XBRL Taxonomy Extension Schema Document	X			
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document	X			
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document	X			
101.LAB	XBRL Taxonomy Extension Label Linkbase Document	X			
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document	X			

SIGNATURES

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 thereunto duly authorized.

Aspen Technology, Inc.

Date: January 23, 2019

By: /s/ ANTONIO J. PIETRI
Antonio J. Pietri
President and Chief Executive Officer
(Principal Executive Officer)

Date: January 23, 2019

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

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

I, Antonio J. Pietri, certify that:

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

Date: January 23, 2019

/s/ **ANTONIO. J. PIETRI**

Antonio J. Pietri
President and Chief Executive Officer
(Principal Executive Officer)

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

I, Karl E. Johnsen, certify that:

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

Date: January 23, 2019

/s/ KARL E. JOHNSEN

Karl E. Johnsen
Senior Vice President and Chief Financial Officer
(Principal Financial Officer)

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

In connection with the Quarterly Report on Form 10-Q of Aspen Technology, Inc. (the "Company") for the quarter ended December 31, 2018, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), each of the undersigned hereby certifies in his capacity as an officer of the Company, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to his knowledge:

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

Date: January 23, 2019

/s/ ANTONIO J. PIETRI

Antonio J. Pietri
President and Chief Executive Officer

Date: January 23, 2019

/s/ KARL E. JOHNSEN

Karl E. Johnsen
Senior Vice President and Chief Financial Officer

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