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 March 31, 2020

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

(781) 221-6400
(Registrant’s telephone number, including area code)

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

Title of Each Class	Trading Symbol	Name of Each Exchange on Which Registered
Common stock, $0.10 par value per share	**AZPN**	**NASDAQ Global Select Market**

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 o

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted 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 such files). Yes ☒ No o

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	o
Non-accelerated filer o		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. o

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

As of April 29, 2020, there were 67,600,241 shares of the registrant’s common stock (par value $0.10 per share) outstanding.

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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 2020" refers to the year ending June 30, 2020).

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 March 31,		Nine Months Ended March 31,	
	2020	2019	2020	2019
	(Dollars in Thousands, Except per Share Data)			
Revenue:				
License	$ 78,562	$ 98,493	$ 229,929	$ 255,616
Maintenance	45,230	41,878	134,094	125,955
Services and other	8,235	7,613	26,827	21,005
Total revenue	132,027	147,984	390,850	402,576
Cost of revenue:				
License	1,881	1,658	5,550	5,142
Maintenance	4,778	4,962	14,339	14,241
Services and other	9,046	7,740	26,560	22,943
Total cost of revenue	15,705	14,360	46,449	42,326
Gross profit	116,322	133,624	344,401	360,250
Operating expenses:				
Selling and marketing	28,354	27,410	86,046	80,532
Research and development	23,576	20,520	68,694	61,893
General and administrative	18,219	14,863	54,525	46,246
Total operating expenses	70,149	62,793	209,265	188,671
Income from operations	46,173	70,831	135,136	171,579
Interest income	8,173	6,835	24,577	21,389
Interest expense	(3,207)	(2,350)	(9,368)	(6,328)
Other (expense), net	(352)	(34)	(217)	(485)
Income before income taxes	50,787	75,282	150,128	186,155
Provision for income taxes	7,266	13,695	22,048	27,286
Net income	$ 43,521	$ 61,587	$ 128,080	$ 158,869
Net income per common share:				
Basic	$ 0.64	$ 0.89	$ 1.88	$ 2.26
Diluted	$ 0.64	$ 0.88	$ 1.86	$ 2.23
Weighted average shares outstanding:				
Basic	67,806	69,423	68,122	70,286
Diluted	68,482	70,160	68,906	71,142

See accompanying Notes to these unaudited consolidated financial statements.

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

	Three Months Ended March 31,				Nine Months Ended March 31,			
	2020		2019		2020		2019	
	(Dollars in Thousands)							
Net income	$	43,521	$	61,587	$	128,080	$	158,869
Other comprehensive income (loss):								
Foreign currency translation adjustments		(8,265)		1,159		(7,628)		(159)
Total other comprehensive income (loss)		(8,265)		1,159		(7,628)		(159)
Comprehensive income	$	35,256	$	62,746	$	120,452	$	158,710

See accompanying Notes to these unaudited consolidated financial statements.

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

	March 31, 2020	June 30, 2019
	(Dollars in Thousands, Except Share Data)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 192,172	$ 71,926
Accounts receivable, net	61,865	47,784
Current contract assets	273,390	294,193
Prepaid expenses and other current assets	13,061	12,628
Prepaid income taxes	1,170	2,509
Total current assets	541,658	429,040
Property, equipment and leasehold improvements, net	6,307	7,234
Computer software development costs, net	988	1,306
Goodwill	133,906	78,383
Intangible assets, net	44,211	33,607
Non-current contract assets	338,437	325,510
Contract costs	26,564	24,982
Operating lease right-of-use assets	34,213	—
Deferred tax assets	1,920	1,669
Other non-current assets	1,844	1,334
Total assets	$ 1,130,048	$ 903,065
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 4,058	$ 5,891
Accrued expenses and other current liabilities	34,425	54,594
Current operating lease liabilities	6,331	—
Income taxes payable	13,120	14,952
Current borrowings	135,163	220,000
Current deferred revenue	43,046	25,318
Total current liabilities	236,143	320,755
Non-current deferred revenue	15,402	19,573
Deferred income taxes	159,433	159,071
Non-current operating lease liabilities	32,991	—
Non-current borrowings, net	296,167	—
Other non-current liabilities	4,798	10,381
Commitments and contingencies (Note 17)		
Series D redeemable convertible preferred stock, $0.10 par value— Authorized— 3,636 shares as of March 31, 2020 and June 30, 2019 Issued and outstanding— none as of March 31, 2020 and June 30, 2019	—	—
Stockholders' equity:		
Common stock, $0.10 par value— Authorized—210,000,000 shares Issued— 103,868,904 shares at March 31, 2020 and 103,642,292 shares at June 30, 2019 Outstanding— 67,598,889 shares at March 31, 2020 and 68,624,566 shares at June 30, 2019	10,387	10,365
Additional paid-in capital	760,454	739,099
Retained earnings	1,388,064	1,259,984
Accumulated other comprehensive (loss) income	(7,292)	336
Treasury stock, at cost—36,270,015 shares of common stock at March 31, 2020 and 35,017,726 shares at June 30, 2019	(1,766,499)	(1,616,499)
Total stockholders' equity	385,114	393,285
Total liabilities and stockholders' equity	$ 1,130,048	$ 903,065

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 (Loss)	Treasury Stock		Total Stockholders' Equity
	Number of Shares	$0.10 Par Value				Number of Shares	Cost	
	(Dollars in Thousands, Except Share Data)							
June 30, 2019	103,642,292	$ 10,365	$ 739,099	$ 1,259,984	$ 336	35,017,726	$ (1,616,499)	$ 393,285
Comprehensive income:								
Net income	—	—	—	46,284	—	—	—	46,284
Other comprehensive (loss)	—	—	—	—	(3,102)			(3,102)
Issuance of shares of common stock	17,783	2	933	—	—	—		935
Issuance of restricted stock units and net share settlement related to withholding taxes	57,451	5	(3,399)	—	—	—	—	(3,394)
Repurchase of common stock	—	—	—	—	—	382,279	(50,000)	(50,000)
Stock-based compensation	—	—	9,275	—	—	—	—	9,275
September 30, 2019	103,717,526	$ 10,372	$ 745,908	$ 1,306,268	$ (2,766)	35,400,005	$ (1,666,499)	$ 393,283
Comprehensive income:								
Net income	—	—	—	38,275	—	—	—	38,275
Other comprehensive income	—	—	—	—	3,739			3,739
Issuance of shares of common stock	31,857	3	1,938	—	—	—		1,941
Issuance of restricted stock units and net share settlement related to withholding taxes	39,155	4	(2,623)	—	—	—	—	(2,619)
Repurchase of common stock	—	—	—	—	—	418,019	(50,000)	(50,000)
Stock-based compensation	—	—	7,559	—	—	—	—	7,559
December 31, 2019	103,788,538	$ 10,379	$ 752,782	$ 1,344,543	$ 973	35,818,024	$ (1,716,499)	$ 392,178
Comprehensive income:								
Net income	—	—	—	43,521	—	—	—	43,521
Other comprehensive (loss)	—	—	—	—	(8,265)			(8,265)
Issuance of shares of common stock	42,085	4	2,343	—	—	—		2,347
Issuance of restricted stock units and net share settlement related to withholding taxes	38,281	4	(1,970)	—	—	—	—	(1,966)
Repurchase of common stock	—	—	—	—	—	451,991	(50,000)	(50,000)
Stock-based compensation	—	—	7,299	—	—	—	—	7,299
March 31, 2020	103,868,904	$ 10,387	$ 760,454	$ 1,388,064	$ (7,292)	36,270,015	$ (1,766,499)	$ 385,114

	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	103,130,300	$ 10,313	$ 715,475	$ 997,250	$ 1,388	31,943,599	$ (1,316,499)	$ 407,927
Comprehensive income:								
Net income	—	—	—	38,066	—	—	—	38,066
Other comprehensive (loss)	—	—	—	—	(423)			(423)
Issuance of shares of common stock	90,009	9	3,702	—	—	—		3,711
Issuance of restricted stock units and net share settlement related to withholding taxes	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	103,279,138	$ 10,328	$ 724,752	$ 1,035,316	$ 965	32,416,975	$ (1,366,499)	$ 404,862
Comprehensive income:								
Net income	—	—	—	59,217	—	—	—	59,217
Other comprehensive (loss)	—	—	—	—	(895)			(895)
Issuance of shares of common stock	15,902	2	757	—	—	—		759
Issuance of restricted stock units and net share settlement related to withholding taxes	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	103,395,683	$ 10,340	$ 725,493	$ 1,094,533	$ 70	33,592,506	$ (1,466,499)	$ 363,937
Comprehensive income:								
Net income	—	—	—	61,587	—	—	—	61,587
Other comprehensive (loss)	—	—	—	—	1,159	—	—	1,159
Issuance of shares of common stock	39,303	4	1,444	—	—	—	—	1,448
Issuance of restricted stock units and net share settlement related to withholding taxes	43,604	4	(2,361)	—	—	—	—	(2,357)
Repurchase of common stock	—	—	—	—	—	777,569	(75,000)	(75,000)
Stock-based compensation	—	—	6,254	—	—	—	—	6,254
March 31, 2019	103,478,590	$ 10,348	$ 730,830	$ 1,156,120	$ 1,229	34,370,075	$ (1,541,499)	$ 357,028

See accompanying Notes to these unaudited consolidated financial statements.

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

	Nine Months Ended March 31,	
	2020	2019
	(Dollars in Thousands)	
Cash flows from operating activities:		
Net income	$ 128,080	$ 158,869
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation and amortization	7,028	6,063
Reduction in the carrying amount of right-of-use assets	6,518	—
Net foreign currency losses	183	23
Stock-based compensation	24,133	21,454
Deferred income taxes	(382)	(49,847)
Provision for bad debts	3,391	474
Other non-cash operating activities	423	341
Changes in assets and liabilities:		
Accounts receivable	(16,428)	(4,183)
Contract assets	8,256	(27,397)
Contract costs	(1,522)	(3,825)
Lease liabilities	(6,840)	—
Prepaid expenses, prepaid income taxes, and other assets	(2,201)	201
Accounts payable, accrued expenses, income taxes payable and other liabilities	(20,752)	32,980
Deferred revenue	13,701	17,983
Net cash provided by operating activities	143,588	153,136
Cash flows from investing activities:		
Purchases of property, equipment and leasehold improvements	(1,111)	(206)
Payments for business acquisitions, net of cash acquired	(74,460)	—
Payments for equity method investments	(319)	—
Payments for capitalized computer software costs	(141)	(1,094)
Net cash used in investing activities	(76,031)	(1,300)
Cash flows from financing activities:		
Issuance of shares of common stock	5,364	5,881
Repurchases of common stock	(150,621)	(224,182)
Payments of tax withholding obligations related to restricted stock	(8,246)	(11,916)
Deferred business acquisition payments	(4,600)	(1,700)
Proceeds from borrowings	215,163	50,000
Payments of debt issuance costs	(3,533)	—
Net cash provided by (used in) financing activities	53,527	(181,917)
Effect of exchange rate changes on cash and cash equivalents	(838)	(492)
Increase (decrease) in cash and cash equivalents	120,246	(30,573)
Cash and cash equivalents, beginning of period	71,926	96,165
Cash and cash equivalents, end of period	$ 192,172	$ 65,592
Supplemental disclosure of cash flow information:		
Income taxes paid, net	$ 26,359	$ 39,123
Interest paid	8,246	5,728
Supplemental disclosure of non-cash activities:		
Change in purchases of property, equipment and leasehold improvements included in accounts payable and accrued expenses	$ (89)	$ 10
Change in repurchases of common stock included in accounts payable and accrued expenses	(621)	818
Lease liabilities arising from obtaining right-of-use assets	11,626	—

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, 2019, 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 nine months ended March 31, 2020 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, 2019. We adopted Accounting Standards Update ("ASU") No. 2016-02, *Leases* ("Topic 842") effective July 1, 2019. Refer to Note 2(g), "New Accounting Pronouncements Adopted in Fiscal 2020," for further information regarding the adoption of Topic 842. There were no other material changes to our significant accounting policies during the three and nine months ended March 31, 2020.

(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 $(0.3) million and $(0.2) million during the three months ended March 31, 2020 and 2019, respectively, and $(0.2) million and $(0.5) million during the nine months ended March 31, 2020 and 2019, 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.

(f) Equity Method Investments

During the three months ended March 31, 2020, we entered into a limited partnership investment fund agreement. The primary objective of this partnership is investing in equity and equity-related securities (including convertible debt) of venture growth- stage businesses. We account for the investment in accordance with Topic 323, *Investments - Equity Method and Joint Ventures*. Our total commitment under this partnership is 5.0 million CAD ($3.5 million). Under the conditions of the equity method investment, unfavorable future changes in market conditions could lead to a potential loss up to the full value of our 5.0 million CAD ($3.5 million) commitment. As of March 31, 2020, the fair value of this investment is 0.5 million CAD ($0.3 million), representing our payment towards the total commitment during the three months ended March 31, 2020, and is recorded in non-current assets in our consolidated balance sheet.

(g) New Accounting Pronouncements Adopted in Fiscal 2020

In February 2016, the FASB issued Topic 842. Under the amendment, lessees are 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. We adopted Topic 842 effective July 1, 2019 using the effective date method with a modified retrospective transition approach. Results for reporting periods beginning on or after July 1, 2019 are presented under Topic 842, while prior period amounts were not adjusted and continue to be reported in accordance with the Company’s historic accounting under Topic 840 “Leases.” We elected the package of practical expedients permitted under the transition guidance within the new standard, which allowed the carry forward of historical assessments of whether a contract contains a lease, lease classification and initial direct costs. The most significant impact of the adoption of Topic 842 was the recognition of operating lease right-of-use assets of $28.5 million and current and non-current operating lease liabilities of $7.4 million and $26.5 million, respectively, and the reversal of deferred rent of $6.5 million as of July 1, 2019. The adoption of Topic 842 did not have a material impact on our operating results or cash flows, and there was no impact on our debt covenants. See Note 4, "Leases," to our Unaudited Consolidated Financial Statements for more information on the impact of adopting Topic 842.

(h) Recently Issued Accounting Pronouncements

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

In December 2019, the FASB issued ASU No. 2019-12, *Income Taxes ("Topic 740") - Simplifying the Accounting for Income Taxes*. ASU 2019-12 is intended to simplify accounting for income taxes. It removes certain exceptions to the general principles in Topic 740 and amends existing guidance to improve consistent application. ASU 2019-12 is effective for annual periods, including interim periods within those annual periods, beginning after December 15, 2020. Early adoption is permitted. We are currently evaluating the impact of ASU 2019-12 on our consolidated financial statements.

3. Revenue from Contracts with Customers

In accordance with ASU No. 2014-09, *Revenue from Contracts with Customers* ("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.

License

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.

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 March 31,		Nine Months Ended March 31,	
	2020	2019	2020	2019
	(Dollars in Thousands)			
Revenue by region:				
North America	$ 59,155	$ 63,395	$ 170,559	$ 161,379
Europe	27,493	33,665	94,693	109,085
Other (1)	45,379	50,924	125,598	132,112
	$ 132,027	$ 147,984	$ 390,850	$ 402,576
Revenue by type of performance obligation:				
Term licenses	$ 78,562	$ 98,493	$ 229,929	$ 255,616
Maintenance	45,230	41,878	134,094	125,955
Professional services and other	8,235	7,613	26,827	21,005
	$ 132,027	$ 147,984	$ 390,850	$ 402,576
Revenue by segment:				
Subscription and software	$ 123,792	$ 140,371	$ 364,023	$ 381,571
Services and other	8,235	7,613	26,827	21,005
	$ 132,027	$ 147,984	$ 390,850	$ 402,576

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

Contract Assets and Deferred Revenue

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.

Payment terms and conditions vary by contract type. Terms generally include a requirement of payment annually over the term of the license arrangement. During the majority of each customer contract term, the amount invoiced is generally less than the amount of revenue recognized to date, primarily because we transfer control of the performance obligation related to the software license at the inception of the contract term, and the allocation of contract consideration to the license performance obligation is a significant portion of the total contract consideration. Therefore, our contracts often result in the recording of a contract asset throughout the majority of the contract term. We record a contract asset when revenue recognized on a contract exceeds the billings. We recognize an impairment on contract assets if subsequent to contract inception it becomes probable payment is not collectible. We review contract assets for impairment at each reporting date using the same methodology used in determining the allowance for doubtful accounts under Topic 310, *Receivables*. We review customer receivables and contract assets on an individual basis, and we impair receivables and the associated contract assets if it is probable that some or all of the asset is not collectible, taking into account historical losses, economic conditions and customer-specific factors.

Our contract assets and deferred revenue were as follows as of March 31, 2020 and June 30, 2019:

	March 31, 2020	June 30, 2019
	(Dollars in Thousands)	
Contract assets	$ 611,827	$ 619,703
Deferred revenue	(58,448)	(44,891)
	$ 553,379	$ 574,812

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

The change in deferred revenue in the nine months ended March 31, 2020 was primarily due to an increase in new billings in advance of revenue recognition, partially offset by $23.5 million of revenue recognized that was included in deferred revenue at June 30, 2019.

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 years 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 statement of operations.

Transaction Price Allocated to Remaining Performance Obligations

The following table includes the aggregate amount of the transaction price allocated as of March 31, 2020 to the performance obligations that are unsatisfied (or partially unsatisfied) at the end of the reporting period:

	Year Ended June 30,					
	2020	2021	2022	2023	2024	Thereafter
	(Dollars in Thousands)					
License	$ 43,458	$ 52,754	$ 12,373	$ 4,726	$ 2,211	$ 1,290
Maintenance	45,296	153,659	114,346	80,798	54,833	34,757
Services and other	37,984	12,552	763	519	215	99

4. Leases

We have operating leases primarily for corporate offices, and other operating leases for data centers and certain equipment. We determine whether an arrangement is or contains a lease based on facts and circumstances present at the inception of the arrangement. We recognize lease expense on a straight-line basis over the lease term. Our leases have remaining lease terms of less than one year to approximately ten years, some of which include options to extend the leases for up to five years, and some of which include the option to terminate the leases upon advanced notice of 30 days or more. If we are reasonably certain we will exercise an option to extend or terminate the lease, the time period covered by the extension or termination option is included in the lease term.

Operating lease liabilities and their corresponding right-of-use assets are recorded based on the present value of lease payments over the expected lease term. The interest rate implicit in the lease contracts is typically not readily determinable. As such, we utilize the appropriate incremental borrowing rate, which is the rate incurred to borrow on a collateralized basis over a similar term at an amount equal to the lease payments in a similar economic environment. Certain adjustments to the right-of-use asset may be required for items such as incentives received. We have lease agreements with lease and non-lease components, which are accounted for separately.

Operating lease costs are recognized on a straight-line basis over the term of the lease. The components of lease expenses for the three and nine months ended March 31, 2020 were as follows:

	Three Months Ended March 31, 2020	Nine Months Ended March 31, 2020
	(Dollars in Thousands)	
Operating lease costs (1)	$ 2,443	$ 7,012
Total lease costs	$ 2,443	$ 7,012

(1) Operating lease costs include rent and fixed fees

The following table represents the weighted-average remaining lease term and discount rate information related to our operating leases:

	March 31, 2020
Weighted average remaining lease term	6.0 years
Weighted average discount rate	4.5%

The following table represents the maturities of our operating lease liabilities as of March 31, 2020 and June 30, 2019:

	March 31, 2020	June 30, 2019 (1)
	(Dollars in Thousands)	
Year Ending June 30,		
2020	$ 1,309	$ 8,399
2021	8,731	7,820
2022	7,869	6,514
2023	7,447	5,862
2024	7,206	4,932
Thereafter	12,873	3,307
Total lease payments	45,435	36,834
Less: imputed interest	(6,113)	—
	$ 39,322	$ 36,834

(1) As previously disclosed in our 2019 Annual Report on Form 10-K under the previous lease accounting standard, Topic 840, *Leases.*

5. 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 are 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.

Equity method investments are reported at fair value calculated in accordance with the market approach, utilizing market consensus pricing models with quoted prices that are directly or indirectly observable, or "Level 2 Inputs."

The following table summarizes financial assets and liabilities measured and recorded at fair value on a recurring basis in the accompanying consolidated balance sheets as of March 31, 2020 and June 30, 2019, segregated by the level of the valuation inputs within the fair value hierarchy utilized to measure fair value:

	Fair Value Measurements at Reporting Date Using,	
	Quoted Prices in Active Markets for Identical Assets (Level 1 Inputs)	Significant Other Observable Inputs (Level 2 Inputs)
	(Dollars in Thousands)	
March 31, 2020:		
Cash equivalents	$ 1,020	$ —
Equity method investments	—	319
June 30, 2019:		
Cash equivalents	$ 1,007	$ —

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 Amended and Restated Credit Agreement (described below in Note 12, "Credit Agreement") approximates its carrying value due to the floating interest rate.

6. Accounts Receivable, Net

Our accounts receivable, net of the related allowance for doubtful accounts, were as follows as of March 31, 2020 and June 30, 2019:

	March 31, 2020	June 30, 2019
	(Dollars in Thousands)	
Accounts receivable, gross	$ 64,784	$ 51,133
Allowance for doubtful accounts	(2,919)	(3,349)
Accounts receivable, net	$ 61,865	$ 47,784

As of March 31, 2020, we had one customer receivable balance that individually represented 10% or more of our net accounts receivable. This customer receivable balance was collected subsequent to March 31, 2020. As of June 30, 2019, we had no customer receivable balances that individually represented 10% or more of our net accounts receivable.

7. Property and Equipment

Property, equipment and leasehold improvements consisted of the following as of March 31, 2020 and June 30, 2019:

	March 31, 2020	June 30, 2019
	(Dollars in Thousands)	
Property, equipment and leasehold improvements, at cost:		
Computer equipment	$ 6,775	$ 6,642
Purchased software	22,945	22,793
Furniture & fixtures	6,961	6,794
Leasehold improvements	12,328	12,232
Property, equipment and leasehold improvements, at cost	49,009	48,461
Accumulated depreciation	(42,702)	(41,227)
Property, equipment and leasehold improvements, net	$ 6,307	$ 7,234

8. Acquisitions

Sabisu Ltd.

On June 12, 2019, we completed the acquisition of all the outstanding shares of Argent & Waugh Limited and Sabisu Ltd. ("Sabisu"), a provider of a flexible enterprise visualization and workflow solution to deliver real-time decision support, for a total cash consideration of £6.2 million ($7.9 million). The purchase price consisted of £4.8 million ($6.1 million) of cash paid at closing, a subsequent working capital adjustment of £0.2 million ($0.3 million), and an additional £1.2 million ($1.5 million) to be held back until June 2021 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.

An allocation of the purchase price is as follows:

	Amount
	(Dollars in Thousands)
Tangible assets acquired, net	$ 706
Identifiable intangible assets:	
Technology-related	1,966
Customer relationships	1,180
Goodwill	4,576
Deferred tax liabilities	(564)
Total assets acquired, net	$ 7,864

The goodwill reflects the value of the assembled workforce and the company-specific synergies we expect to realize by selling Sabisu products and services to our existing customers. The results of operations of Sabisu have been included prospectively in our results of operations since the date of acquisition.

Mnubo, Inc.

On July 12, 2019, we completed the acquisition of all the outstanding shares of Mnubo Inc. ("Mnubo"), a Canada-based provider of purpose-built artificial intelligence and analytics infrastructure for the internet of things, for a total cash consideration of $78.3 million (102.3 million CAD). The purchase price of $78.3 million includes $7.9 million (10.3 million CAD) paid into an escrow account to be held back until January 2021 as security for certain representations, warranties, and obligations of the sellers.

An allocation of the purchase price is as follows:

	Amount
	(Dollars in Thousands)
Tangible assets acquired, net	$ 512
Identifiable intangible assets:	
Technology-related	13,660
Customer relationships	2,990
Goodwill	61,512
Deferred tax liabilities	(374)
Total assets acquired, net	$ 78,300

The goodwill reflects the value of the assembled workforce and the company-specific synergies we expect to realize by selling Mnubo products and services to our existing customers. The results of operations of Mnubo have been included prospectively in our results of operations since the date of acquisition.

9. 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 March 31, 2020 and June 30, 2019:

	Gross Carrying Amount	Accumulated Amortization	Effect of Currency Translation	Net Carrying Amount
	(Dollars in Thousands)			
March 31, 2020:				
Technology	$ 51,269	$ (12,080)	$ (904)	$ 38,285
Customer relationships	9,148	(2,496)	(726)	5,926
Non-compete agreements	553	(553)	—	—
Total	$ 60,970	$ (15,129)	$ (1,630)	$ 44,211
June 30, 2019:				
Technology	$ 37,168	$ (8,868)	$ (118)	$ 28,182
Customer relationships	6,503	(1,039)	(100)	5,364
Non-compete agreements	553	(492)	—	61
Total	$ 44,224	$ (10,399)	$ (218)	$ 33,607

Total amortization expense related to intangible assets is included in cost of license revenue and operating expenses and amounted to approximately $1.9 million and $1.2 million for the three months ended March 31, 2020 and 2019, respectively, and approximately $4.7 million and $3.4 million for the nine months ended March 31, 2020 and 2019, respectively.

Future amortization expense as of March 31, 2020 is expected to be as follows:

Year Ended June 30,	Amortization Expense
	(Dollars in Thousands)
2020	$ 1,822
2021	6,786
2022	6,808
2023	6,782
2024	6,223
Thereafter	15,790
Total	$ 44,211

10. Goodwill

The changes in the carrying amount of goodwill for our subscription and software reporting segment during the nine months ended March 31, 2020 were as follows:

	Gross Carrying Amount	Accumulated Impairment Losses	Effect of Currency Translation	Net Carrying Amount
	(Dollars in Thousands)			
June 30, 2019:	$ 145,572	$ (65,569)	$ (1,620)	$ 78,383
Goodwill from acquisitions	61,305	—	—	61,305
Foreign currency translation	—	—	(5,782)	(5,782)
March 31, 2020:	$ 206,877	$ (65,569)	$ (7,402)	$ 133,906

We have elected December 31st as the annual impairment assessment date. We performed our annual impairment test for the subscription and software reporting unit as of December 31, 2019 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.

11. Accrued Expenses and Other Liabilities

Accrued expenses and other current liabilities consisted of the following as of March 31, 2020 and June 30, 2019:

	March 31, 2020	June 30, 2019
	(Dollars in Thousands)	
Compensation-related	$ 17,328	$ 27,147
Deferred acquisition payments	—	4,600
Uncertain tax positions	168	3,751
Royalties and external commissions	3,714	3,665
Share repurchases	1,811	2,432
Professional fees	2,206	3,053
Deferred rent	—	1,331
Other	9,198	8,615
Total accrued expenses and other current liabilities	$ 34,425	$ 54,594

Other non-current liabilities consisted of the following as of March 31, 2020 and June 30, 2019:

	March 31, 2020	June 30, 2019
	(Dollars in Thousands)	
Deferred rent	$ —	$ 5,187
Uncertain tax positions	2,239	2,274
Deferred acquisition payments	1,487	1,524
Asset retirement obligations	912	914
Other	160	482
Total other non-current liabilities	$ 4,798	$ 10,381

12. Credit Agreement

In December 2019, we entered into an Amended and Restated Credit Agreement (the "Amended and Restated Credit Agreement"). The Amended and Restated Credit Agreement, which amends and restates the Credit Agreement we entered into as of February 26, 2016, provides for a $200.0 million secured revolving credit facility and a $320.0 million secured term loan facility.

Principal outstanding under the Amended and Restated Credit Agreement bears interest at a rate per annum equal to, at our option, either: (1) the sum of (a) the highest of (i) the rate of interest last quoted by The Wall Street Journal in the United States as the prime rate in effect, (ii) the NYFRB Rate plus 0.5%, and (iii) the LIBO rate multiplied by the Statutory Reserve Rate plus 1.0%, plus (b) a margin initially of 0.5% for the first full fiscal quarter ending after the date of the Amended and Restated Credit Agreement and thereafter based on our leverage ratio (as defined in the Amended and Restated Credit Agreement); or (2) the sum of (a) the LIBO rate multiplied by the Statutory Reserve Rate, plus (b) a margin initially of 1.5% for the first full fiscal quarter ending after the date of the Amended and Restated Credit Agreement and thereafter based on our leverage ratio. The interest rates as of March 31, 2020 were 2.43% on $316.0 million in outstanding borrowings on our term loan facility and 2.46% and 2.43% on $100.0 million and $19.2 million, respectively, in outstanding borrowings on our revolving credit facility.

All borrowings under the Amended and Restated Credit Agreement are secured by liens on substantially all of our assets and the assets of our subsidiary AspenTech Canada Holdings, LLC, which has guaranteed our obligations under the Amended and Restated Credit Agreement. Additional significant subsidiaries (as determined in the Amended and Restated Credit Agreement) may be required to guarantee our obligations and to grant liens on their assets in favor of the lenders.

As of March 31, 2020, we had $119.2 million and $316.0 million in outstanding borrowings on our revolving credit facility and term loan facility, respectively. Our current borrowings of $135.2 million consist of $119.2 million of the revolving credit facility and $16.0 million of the term loan facility. Our non-current borrowings of $296.2 million consist of $300.0 million of our term loan facility, net of $3.8 million in debt issuance costs. We had $220.0 million in outstanding current borrowings as of June 30, 2019.

The indebtedness under the revolving credit facility matures on December 23, 2024. The following table summarizes the maturities of the term loan facility:

Year Ended June 30,	Amount
	(Dollars in Thousands)
2020	$ 4,000
2021	16,000
2022	20,000
2023	28,000
2024	36,000
Thereafter	212,000
Total	$ 316,000

The Amended and Restated 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. There are also financial covenants regarding maintenance as of the end of each fiscal quarter, commencing with the quarter ending March 31, 2020, of a maximum leverage ratio of 3.50 to 1.00 and a minimum interest coverage ratio of 2.50 to 1.00. As of March 31, 2020, we were in compliance with these covenants.

13. Stock-Based Compensation

Stock Compensation Accounting

The weighted average estimated fair value of option awards granted was $37.54 and $20.05 during the three months ended March 31, 2020 and 2019, respectively. The weighted average estimated fair value of option awards granted was $33.15 and $31.26 during the nine months ended March 31, 2020 and 2019, respectively.

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

	Nine Months Ended March 31,	
	2020	2019
Risk-free interest rate	1.5%	2.8%
Expected dividend yield	0.0%	0.0%
Expected life (in years)	4.5	4.6
Expected volatility factor	26.8%	26.6%

The stock-based compensation expense under all equity plans and its classification in the unaudited consolidated statements of operations for the three and nine months ended March 31, 2020 and 2019 are as follows:

	Three Months Ended March 31,		Nine Months Ended March 31,	
	2020	2019	2020	2019
	(Dollars in Thousands)			
Recorded as expenses:				
Cost of maintenance	$ 343	$ 379	$ 1,104	$ 916
Cost of services and other	450	366	1,477	1,038
Selling and marketing	1,472	1,228	4,228	3,687
Research and development	2,082	1,518	6,193	5,451
General and administrative	2,952	2,763	11,131	10,362
Total stock-based compensation	$ 7,299	$ 6,254	$ 24,133	$ 21,454

A summary of stock option and restricted stock unit ("RSU") activity under all equity plans for the nine months ended March 31, 2020 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, 2019	1,304,017	$ 60.33	6.94	$ 83,388	793,718	$ 98.38
Granted	297,504	133.05			266,237	133.39
Settled (RSUs)	—				(204,114)	85.16
Exercised	(84,571)	53.06			—	
Cancelled / Forfeited	(30,851)	99.18			(83,951)	112.68
Outstanding at March 31, 2020	1,486,099	$ 74.50	6.80	$ 46,116	771,890	$ 112.39
Vested and exercisable at March 31, 2020	980,407	$ 56.76	5.87	$ 41,571	—	
Vested and expected to vest as of March 31, 2020	1,429,077	$ 73.10	6.73	$ 45,612	726,960	$ 112.46

The weighted average grant-date fair value of RSUs granted was $138.27 and $82.18 during the three months ended March 31, 2020 and 2019, respectively. The weighted average grant-date fair value of RSUs granted was $133.39 and $114.66 during the nine months ended March 31, 2020 and 2019, respectively. The total fair value of shares vested from RSU grants was $5.7 million and $6.9 million during the three months ended March 31, 2020 and 2019, respectively. The total fair value of shares vested from RSU grants was $23.6 million and $31.9 million during the nine months ended March 31, 2020 and 2019, respectively.

At March 31, 2020, the total future unrecognized compensation cost related to stock options was $11.7 million and is expected to be recorded over a weighted average period of 2.6 years. At March 31, 2020, the total future unrecognized compensation cost related to RSUs was $36.0 million and is expected to be recorded over a weighted average period of 2.6 years. Amounts represent compensation cost, net of estimated forfeitures.

The total intrinsic value of options exercised was $2.9 million and $2.4 million during the three months ended March 31, 2020 and 2019, respectively. The total intrinsic value of options exercised was $5.9 million and $9.2 million during the nine months ended March 31, 2020 and 2019, respectively. We received cash proceeds from option exercises of $2.7 million and $1.4 million during the three months ended March 31, 2020 and 2019, respectively. We received cash proceeds from option exercises of $5.4 million and $5.9 million during the nine months ended March 31, 2020 and 2019, respectively. We withheld taxes on vested RSUs of $2.4 million and $2.4 million during the three months ended March 31, 2020 and 2019, respectively. We withheld taxes on vested RSUs of $8.2 million and $12.0 million during the nine months ended March 31, 2020 and 2019, respectively.

As of March 31, 2020, common stock reserved for future issuance under equity compensation plans was 7.2 million shares.

Performance Awards

Beginning in fiscal 2019, 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 at least ten percent growth in annual spend, 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.

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 total fair value of the performance awards 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 March 31, 2020, we have granted 418,886 RSUs in connection with the performance awards. As of March 31, 2020, all of the RSUs issued in connection with the performance awards were unvested and outstanding. No compensation expense was recognized during the three and nine months ended March 31, 2020 and 2019.

On August 2, 2019, 60,680 RSUs in connection with the performance awards were forfeited associated with the departure of an executive.

Employee Stock Purchase Plan

On July 26, 2018, our Board of Directors approved the Aspen Technology, Inc. 2018 Employee Stock Purchase Plan (the "ESPP"), which provides for the issuance of up to 250,000 shares of common stock to participating employees. 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 was January 1, 2019 through June 30, 2019. Our current offering period is January 1, 2020 through June 30, 2020.

During the three and nine months ended March 31, 2020, we recorded stock-based compensation expense of approximately $0.2 million and $0.4 million, respectively, associated with the ESPP. As of March 31, 2020, there were 229,807 shares of common stock available for issuance under the ESPP.

14. 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. The Share Repurchase Program was announced on January 28, 2015, and expires at the end of each fiscal year unless extended. On April 26, 2016, June 8, 2017, April 18, 2018, December 6, 2018, and April 17, 2019, the Board of Directors approved a $400.0 million, $200.0 million, $200.0 million, $100.0 million, and $200.0 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 nine months ended March 31, 2020, we repurchased 451,991 and 1,252,289 shares of our common stock in the open market for $50.0 million and $150.0 million, respectively. As of March 31, 2020, the total remaining value under the Share Repurchase Program was approximately $196.3 million.

Accumulated Other Comprehensive (Loss) Income

As of March 31, 2020 and June 30, 2019, accumulated other comprehensive (loss) income was comprised of foreign currency translation adjustments of $(7.3) million and $0.3 million, respectively.

15. 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 nine months ended March 31, 2020 and 2019 are as follows:

	Three Months Ended March 31,		Nine Months Ended March 31,	
	2020	2019	2020	2019
	(Dollars and Shares in Thousands, Except per Share Data)			
Net income	$ 43,521	$ 61,587	$ 128,080	$ 158,869
Weighted average shares outstanding	67,806	69,423	68,122	70,286
Dilutive impact from:				
Employee equity awards	676	737	784	856
Dilutive weighted average shares outstanding	68,482	70,160	68,906	71,142
Income per share				
Basic	$ 0.64	$ 0.89	$ 1.88	$ 2.26
Dilutive	$ 0.64	$ 0.88	$ 1.86	$ 2.23

For the three and nine months ended March 31, 2020 and 2019, 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 March 31, 2020 and 2019:

	Three Months Ended March 31,		Nine Months Ended March 31,	
	2020	2019	2020	2019
	(Shares in Thousands)			
Employee equity awards	688	803	678	803

Included in the table above are options to purchase 291,679 and 290,007 shares of our common stock during the three and nine months ended March 31, 2020, respectively, which were not included in the computation of dilutive weighted average shares outstanding, because their exercise prices ranged from $116.90 per share to $138.14 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 March 31, 2020 and expire at various dates through February 17, 2030.

16. Income Taxes

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, primarily the Foreign Derived Intangible Income (“FDII”) deduction. Assuming certain requirements are met, the FDII deduction is a benefit for U.S. companies that sell their products or services to customers outside the U.S.

Our effective tax rate was 14.3% and 14.7% during the three and nine months ended March 31, 2020, respectively, and 18.2% and 14.7% during the three and nine months ended March 31, 2019, respectively. Our effective tax rate decreased for the three months ended March 31, 2020 compared to the same period in the prior fiscal year due to the lower pre-tax income and stock-based compensation.

We recognized an income tax expense of $7.3 million and $22.0 million during the three and nine months ended March 31, 2020, respectively, compared to $13.7 million and $27.3 million during the corresponding periods of the prior fiscal year. Our income tax expense was driven primarily by pre-tax profitability in our domestic and foreign operations and the impact of permanent items, offset by the tax benefit from the release of uncertain tax positions due to the completion of the IRS audit. The permanent items are predominantly the FDII deduction, stock-based compensation expense and tax credits for research expenditures.

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.

17. Commitments and Contingencies

Standby letters of credit for $2.2 million and $3.9 million secured our performance on professional services contracts, certain facility leases and potential liabilities as of March 31, 2020 and June 30, 2019, respectively. The letters of credit expire at various dates through fiscal 2025.

18. 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 March 31, 2020			
Segment revenue	$ 123,792	$ 8,235	$ 132,027
Segment expenses (1)	(58,589)	(9,046)	(67,635)
Segment profit	$ 65,203	$ (811)	$ 64,392
Three Months Ended March 31, 2019			
Segment revenue	$ 140,371	$ 7,613	$ 147,984
Segment expenses (1)	(54,550)	(7,740)	(62,290)
Segment profit (loss)	$ 85,821	$ (127)	$ 85,694
Nine Months Ended March 31, 2020			
Segment revenue	$ 364,023	$ 26,827	$ 390,850
Segment expenses (1)	(174,629)	(26,560)	(201,189)
Segment profit	$ 189,394	$ 267	$ 189,661
Nine Months Ended March 31, 2019			
Segment revenue	$ 381,571	$ 21,005	$ 402,576
Segment expenses (1)	(161,808)	(22,943)	(184,751)
Segment profit (loss)	$ 219,763	$ (1,938)	$ 217,825

(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 expense; interest income; interest expense; and other (expense) income, 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 nine months ended March 31, 2020 and 2019:

	Three Months Ended March 31,		Nine Months Ended March 31,	
	2020	2019	2020	2019
	(Dollars in Thousands)			
Total segment profit for reportable segments	$ 64,392	$ 85,694	$ 189,661	$ 217,825
General and administrative expense	(18,219)	(14,863)	(54,525)	(46,246)
Interest income	8,173	6,835	24,577	21,389
Interest expense	(3,207)	(2,350)	(9,368)	(6,328)
Other (expense), net	(352)	(34)	(217)	(485)
Income before income taxes	$ 50,787	$ 75,282	$ 150,128	$ 186,155

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 2020" refers to the year ending on June 30, 2020).

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 2,300 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, which are consistent with our reporting units: 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.

Recent Events

In December 2019, the novel SARS-CoV-2 virus and associated COVID 19 disease ("COVID-19") were reported in China, and in March 2020 the World Health Organization declared it a pandemic. Since the beginning of March 2020, the sudden decrease in demand for oil due to the COVID-19 pandemic, compounded by the excess supply arising from producers' failure to agree on production cuts, resulted in a drop in oil prices. In the three months ended March 31, 2020, our business was negatively impacted by these factors. Specifically, in the last three weeks of the quarter, we saw a slowdown in closing customer contracts and, to a lesser extent, a slowdown in customer payments. We are continuing to assess the impact of these items on global markets and the various industries of our customers. The extent of the impact on our operational and financial performance going forward will depend on developments such as the duration and spread of the pandemic and other factors affecting oil prices, the impact of these items on our customers and our sales cycles, as well as on our employees, all of which are uncertain and cannot be predicted. We are continuing to monitor the potential impacts related to the current disruption of COVID-19 and uncertainty in the global markets on the various industries of our customers. These factors could potentially impact the signing of new agreements, as well as the recoverability of assets, including accounts receivable and contract costs.

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.

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.

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 primarily of personnel-related 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, amortization of intangibles, 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, we generally receive the majority of the customer consideration after the recognition of a substantial portion of the arrangement fee as license revenue. 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 Amended and Restated Credit Agreement.

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

Key Business Metrics

Background

We utilize key business measures to track and assess the performance of our business. We have identified the following set of appropriate business metrics in the context of our evolving business:

- Annual spend
- Total contract value
- Bookings

We also use the following non-GAAP business metrics in addition to GAAP measures to track our business performance:

- Free cash flow
- Non-GAAP operating income

We make these measures available to investors and 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 agreements, as of a specific date. Annual spend is calculated by summing the most recent annual invoice value of each of our active term license agreements. Annual spend also includes the annualized value of standalone SMS agreements purchased with certain legacy term license agreements, which have become an immaterial part of our business.

Comparing annual spend for different dates can provide insight into the growth and retention rates of our business, because annual spend represents the estimated annualized billings associated with our active term license agreements. Management utilizes the annual spend business metric to evaluate the growth and performance of our business as well as for planning and forecasting. In addition, our corporate and executive bonus programs are based in part on the company’s success in meeting targets for growth in annual spend that are approved by our board. We believe that annual spend is a useful business metric to investors as it provides insight into the growth component of our term licenses and to how management evaluates and forecasts the business.

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 contractually-agreed 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 agreements.

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 agreements that become inactive during the agreement's term because, in our determination, amounts due (or which will become due) under the agreement are not collectible. Because the annual spend calculation includes all of our active term license agreements, the reported balance may include agreements with customers that are delinquent in paying invoices, that are in bankruptcy proceedings, or where payment is otherwise in doubt.

As of March 31, 2020, approximately 90% of our term license agreements (by value) are denominated in United States dollars. For agreements denominated in other currencies, the company uses a fixed historical exchange rate to calculate annual spend in dollars rather than using current exchange rates, so that our calculation of growth in annual spend is not affected by fluctuations in foreign currencies.

Beginning in fiscal year 2019 and for all future periods, for term license agreements that contain professional services or other products and services, we have included in the annual spend calculation the portion of the invoice allocable to the term license under Topic 606 rather than the portion of the invoice attributed to the license in the agreement. We believe that methodology more accurately allocates any discounts or premiums to the different elements of the agreement. We have not applied this methodology retroactively for agreements entered into in prior fiscal years.

We estimate that annual spend grew by approximately 1.9% during the third quarter of fiscal 2020, from $564.4 million at December 31, 2019 to $575.2 million at March 31, 2020, and by approximately 6.3% during the first nine months of fiscal 2020, from $541.0 million at June 30, 2019.

Total Contract Value

Total Contract Value ("TCV") is the aggregate value of all payments received or to be received under all active term license agreements, including maintenance and escalation. TCV was $2.6 billion as of June 30, 2019. TCV is an annual metric and will be included in our Annual Report on Form 10-K for the fiscal year ended June 30, 2020.

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 decreased from $159.9 million during the three months ended March 31, 2019 to $126.7 million during the three months ended March 31, 2020. Bookings decreased from $410.8 million during the nine months ended March 31, 2019 to $373.9 million during the nine months ended March 31, 2020. The decrease is related to the timing of renewals as compared to the corresponding period of the prior fiscal year.

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 Amended and Restated 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) payments for capitalized computer software costs, and (c) 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:

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	Nine Months Ended March 31,	
	2020	2019
	(Dollars in Thousands)	
Net cash provided by operating activities	$ 143,588	$ 153,136
Purchases of property, equipment, and leasehold improvements	(1,111)	(206)
Payments for capitalized computer software costs	(141)	(1,094)
Acquisition related payments	1,264	27
Free cash flows (non-GAAP)	$ 143,600	$ 151,863

Total free cash flow on a non-GAAP basis decreased by $8.3 million during the nine months ended March 31, 2020 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 intangibles, and other items, such as the impact of acquisition related fees, for the indicated periods:

	Three Months Ended March 31,		Increase / (Decrease) Change		Nine Months Ended March 31,		Increase / (Decrease) Change	
	2020	2019	$	%	2020	2019	$	%
	(Dollars in Thousands)							
GAAP income from operations	$ 46,173	$ 70,831	$ (24,658)	(34.8)%	$ 135,136	$ 171,579	$ (36,443)	(21.2)%
Plus:								
Stock-based compensation	7,299	6,254	1,045	16.7 %	24,133	21,454	2,679	12.5 %
Amortization of intangibles	1,864	1,157	707	61.1 %	4,741	3,380	1,361	40.3 %
Acquisition related fees	—	15	(15)	(100.0)%	78	8	70	875.0 %
Non-GAAP income from operations	$ 55,336	$ 78,257	$ (22,921)	(29.3)%	$ 164,088	$ 196,421	$ (32,333)	(16.5)%

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, 2019 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, 2019, and include the following:

- Revenue recognition

See Note 3, "Revenue from Contracts with Customers," to our Unaudited Consolidated Financial Statements in Part 1, Item 1 of this Form 10-Q for more information on our accounting policies related to revenue recognition.

Results of Operations

Comparison of the Three and Nine Months Ended March 31, 2020 and 2019

The following table sets forth the results of operations and the period-over-period percentage change in certain financial data for the three and nine months ended March 31, 2020 and 2019:

	Three Months Ended March 31,		Increase / (Decrease) Change	Nine Months Ended March 31,		Increase / (Decrease) Change
	2020	2019	%	2020	2019	%
			(Dollars in Thousands)			
Revenue:						
License	$ 78,562	$ 98,493	(20.2)%	$ 229,929	$ 255,616	(10.0)%
Maintenance	45,230	41,878	8.0 %	134,094	125,955	6.5 %
Services and other	8,235	7,613	8.2 %	26,827	21,005	27.7 %
Total revenue	132,027	147,984	(10.8)%	390,850	402,576	(2.9)%
Cost of revenue:						
License	1,881	1,658	13.4 %	5,550	5,142	7.9 %
Maintenance	4,778	4,962	(3.7)%	14,339	14,241	0.7 %
Services and other	9,046	7,740	16.9 %	26,560	22,943	15.8 %
Total cost of revenue	15,705	14,360	9.4 %	46,449	42,326	9.7 %
Gross profit	116,322	133,624	(12.9)%	344,401	360,250	(4.4)%
Operating expenses:						
Selling and marketing	28,354	27,410	3.4 %	86,046	80,532	6.8 %
Research and development	23,576	20,520	14.9 %	68,694	61,893	11.0 %
General and administrative	18,219	14,863	22.6 %	54,525	46,246	17.9 %
Total operating expenses	70,149	62,793	11.7 %	209,265	188,671	10.9 %
Income from operations	46,173	70,831	(34.8)%	135,136	171,579	(21.2)%
Interest income	8,173	6,835	19.6 %	24,577	21,389	14.9 %
Interest expense	(3,207)	(2,350)	36.5 %	(9,368)	(6,328)	48.0 %
Other (expense), net	(352)	(34)	935.3 %	(217)	(485)	(55.3)%
Income before income taxes	50,787	75,282	(32.5)%	150,128	186,155	(19.4)%
Provision for income taxes	7,266	13,695	(46.9)%	22,048	27,286	(19.2)%
Net income	$ 43,521	$ 61,587	(29.3)%	$ 128,080	$ 158,869	(19.4)%

The following table sets forth the results of operations as a percentage of total revenue for certain financial data for the three and nine months ended March 31, 2020 and 2019:

	Three Months Ended March 31,		Nine Months Ended March 31,	
	2020	2019	2020	2019
	(% of Revenue)			
Revenue:				
License	59.5 %	66.6 %	58.8 %	63.5 %
Maintenance	34.3	28.3	34.3	31.3
Services and other	6.2	5.1	6.9	5.2
Total revenue	100.0	100.0	100.0	100.0
Cost of revenue:				
License	1.4	1.1	1.4	1.3
Maintenance	3.6	3.4	3.7	3.5
Services and other	6.9	5.2	6.8	5.7
Total cost of revenue	11.9	9.7	11.9	10.5
Gross profit	88.1	90.3	88.1	89.5
Operating expenses:				
Selling and marketing	21.5	18.5	22.0	20.0
Research and development	17.9	13.9	17.6	15.4
General and administrative	13.8	10.0	14.0	11.5
Total operating expenses	53.1	42.4	53.5	46.9
Income from operations	35.0	47.9	34.6	42.6
Interest income	6.2	4.6	6.3	5.3
Interest expense	(2.4)	(1.6)	(2.4)	(1.6)
Other (expense), net	(0.3)	—	(0.1)	(0.1)
Income before income taxes	38.5	50.9	38.4	46.2
Provision for income taxes	5.5	9.3	5.6	6.8
Net income	33.0 %	41.6 %	32.8 %	39.5 %

Revenue

Total revenue decreased by $(16.0) million during the three months ended March 31, 2020 as compared to the corresponding period of the prior fiscal year. The decrease of $(16.0) million during the three months ended March 31, 2020 was comprised of a decrease in license revenue of $(19.9) million, partially offset by an increase in maintenance revenue of $3.4 million and an increase in services and other revenue of $0.6 million, as compared to the corresponding period of the prior fiscal year.

Total revenue decreased by $(11.7) million during the nine months ended March 31, 2020 as compared to the corresponding period of the prior fiscal year. The decrease of $(11.7) million during the nine months ended March 31, 2020 was comprised of a decrease in license revenue of $(25.7) million, partially offset by an increase in maintenance revenue of $8.1 million and an increase in services and other revenue of $5.8 million, as compared to the corresponding period of the prior fiscal year.

License Revenue

	Three Months Ended March 31,		Increase / (Decrease) Change		Nine Months Ended March 31,		Increase / (Decrease) Change	
	2020	2019	$	%	2020	2019	$	%
	(Dollars in Thousands)							
License revenue	$ 78,562	$ 98,493	$ (19,931)	(20.2)%	$ 229,929	$ 255,616	$ (25,687)	(10.0)%
As a percent of total revenue	59.5%	66.6%			58.8%	63.5%		

The period-over-period decrease of $(19.9) million and $(25.7) million in license revenue during the three and nine months ended March 31, 2020, respectively, was primarily attributable to a decrease in bookings related to the timing of renewals as compared to the corresponding period of the prior fiscal year.

Maintenance Revenue

	Three Months Ended March 31,		Increase / (Decrease) Change		Nine Months Ended March 31,		Increase / (Decrease) Change	
	2020	2019	$	%	2020	2019	$	%
	(Dollars in Thousands)							
Maintenance revenue	$ 45,230	$ 41,878	$ 3,352	8.0%	$ 134,094	$ 125,955	$ 8,139	6.5%
As a percent of total revenue	34.3%	28.3%			34.3%	31.3%		

The period-over-period increase of $3.4 million and $8.1 million in maintenance revenue during the three and nine months ended March 31, 2020, respectively, was primarily due 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 March 31,		Increase / (Decrease) Change		Nine Months Ended March 31,		Increase / (Decrease) Change	
	2020	2019	$	%	2020	2019	$	%
	(Dollars in Thousands)							
Services and other revenue	$ 8,235	$ 7,613	$ 622	8.2%	$ 26,827	$ 21,005	$ 5,822	27.7%
As a percent of total revenue	6.2%	5.1%			6.9%	5.2%		

We recognize professional services revenue 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.

Services and other revenue increased $0.6 million and $5.8 million during the three and nine months ended March 31, 2020, respectively, as compared to the corresponding period of the prior fiscal year primarily due to the timing and volume of professional services engagements.

Cost of Revenue

Cost of License Revenue

	Three Months Ended March 31,		Increase / (Decrease) Change		Nine Months Ended March 31,		Increase / (Decrease) Change	
	2020	2019	$	%	2020	2019	$	%
	(Dollars in Thousands)							
Cost of license revenue	$ 1,881	$ 1,658	$ 223	13.4%	$ 5,550	$ 5,142	$ 408	7.9%
As a percent of license revenue	2.4%	1.7%			2.4%	2.0%		

Cost of license revenue increased $0.2 million for the three and nine months ended March 31, 2020 as compared to the corresponding period of the prior fiscal year primarily due to increased amortization of intangible assets from acquisitions. License gross profit margin remained consistent at 97.6% and 98.3% for the three months ended March 31, 2020 and 2019, respectively, and 97.6% and 98.0% for the nine months ended March 31, 2020 and 2019, respectively, due to the low cost of license revenue.

Cost of Maintenance Revenue

	Three Months Ended March 31,		Increase / (Decrease) Change		Nine Months Ended March 31,		Increase / (Decrease) Change	
	2020	2019	$	%	2020	2019	$	%
	(Dollars in Thousands)							
Cost of maintenance revenue	$ 4,778	$ 4,962	$ (184)	(3.7)%	$ 14,339	$ 14,241	$ 98	0.7%
As a percent of maintenance revenue	10.6%	11.8%			10.7%	11.3%		

Cost of maintenance revenue remained consistent for the three and nine months ended March 31, 2020 as compared to the corresponding period of the prior fiscal year, decreasing $(0.2) million and increasing $0.1 million for the three and nine months ended March 31, 2020, respectively. Maintenance gross profit margin was 89.4% and 88.2% for the three months ended March 31, 2020 and 2019, respectively, and 89.3% and 88.7% for the nine months ended March 31, 2020 and 2019, respectively.

Cost of Services and Other Revenue

	Three Months Ended March 31,		Increase / (Decrease) Change		Nine Months Ended March 31,		Increase / (Decrease) Change	
	2020	2019	$	%	2020	2019	$	%
	(Dollars in Thousands)							
Cost of services and other revenue	$ 9,046	$ 7,740	$ 1,306	16.9%	$ 26,560	$ 22,943	$ 3,617	15.8%
As a percent of services and other revenue	109.8%	101.7%			99.0%	109.2%		

Cost of services and other revenue increased $1.3 million for the three months ended March 31, 2020 as compared to the corresponding period of the prior fiscal year primarily due to higher cost of delivering professional services to support the corresponding increase in revenue during the period. Gross profit margin on services and other revenue was (9.8)% and (1.7)% for the three months ended March 31, 2020 and 2019, respectively.

Cost of services and other revenue increased $3.6 million for the nine months ended March 31, 2020 as compared to the corresponding period of the prior fiscal year primarily due to higher cost of delivering professional services to support the corresponding increase in revenue during the period. Gross profit margin on services and other revenue was 1.0% and (9.2)% for the nine months ended March 31, 2020 and 2019, respectively.

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. For example, 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.

Gross Profit

	Three Months Ended March 31,		Increase / (Decrease) Change		Nine Months Ended March 31,		Increase / (Decrease) Change	
	2020	2019	$	%	2020	2019	$	%
	(Dollars in Thousands)							
Gross profit	$ 116,322	$ 133,624	$ (17,302)	(12.9)%	$ 344,401	$ 360,250	$ (15,849)	(4.4)%
As a percent of revenue	88.1%	90.3%			88.1%	89.5%		

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 March 31,		Increase / (Decrease) Change		Nine Months Ended March 31,		Increase / (Decrease) Change	
	2020	2019	$	%	2020	2019	$	%
	(Dollars in Thousands)							
Selling and marketing expense	$ 28,354	$ 27,410	$ 944	3.4%	$ 86,046	$ 80,532	$ 5,514	6.8%
As a percent of total revenue	21.5%	18.5%			22.0%	20.0%		

The period-over-period increase of $0.9 million in selling and marketing expense during the three months ended March 31, 2020 was primarily attributable to higher compensation costs of $1.7 million related primarily to an increase in headcount, partially offset by lower external commissions of $0.5 million.

The period-over-period increase of $5.5 million in selling and marketing expense during the nine months ended March 31, 2020 was primarily attributable to higher compensation costs of $6.2 million related to an increase in headcount and higher stock-based compensation of $0.8 million, partially offset by lower commissions of $1.0 million. Contributing partially to the increase in compensation costs is acquired headcount from acquired businesses.

Research and Development Expense

	Three Months Ended March 31,		Increase / (Decrease) Change		Nine Months Ended March 31,		Increase / (Decrease) Change	
	2020	2019	$	%	2020	2019	$	%
	(Dollars in Thousands)							
Research and development expense	$ 23,576	$ 20,520	$ 3,056	14.9%	$ 68,694	$ 61,893	$ 6,801	11.0%
As a percent of total revenue	17.9%	13.9%			17.6%	15.4%		

The period-over-period increase of $3.1 million in research and development expense during the three months ended March 31, 2020 was primarily attributable to higher compensation costs of $1.8 million related to an increase in headcount and higher stock-based compensation of $0.6 million.

The period-over-period increase of $6.8 million in research and development expense during the nine months ended March 31, 2020 was primarily attributable to higher compensation costs of $4.9 million related to an increase in headcount and higher stock-based compensation of $0.9 million. Contributing partially to the increase in compensation costs is acquired headcount from acquired businesses.

General and Administrative Expense

	Three Months Ended March 31,		Increase / (Decrease) Change		Nine Months Ended March 31,		Increase / (Decrease) Change	
	2020	2019	$	%	2020	2019	$	%
	(Dollars in Thousands)							
General and administrative expense	$ 18,219	$ 14,863	$ 3,356	22.6%	$ 54,525	$ 46,246	$ 8,279	17.9%
As a percent of total revenue	13.8%	10.0%			14.0%	11.5%		

The period-over-period increase of $3.4 million in general and administrative expense during the three months ended March 31, 2020 was primarily attributable to higher professional fees of $1.4 million and higher bad debt expense of $1.4 million.

The period-over-period increase of $8.3 million in general and administrative expense during the nine months ended March 31, 2020 was primarily attributable to higher professional fees of $2.8 million, higher bad debt expense of $1.2 million, higher compensation costs of $0.7 million related to an increase in headcount, and higher stock-based compensation of $0.4 million.

Non-Operating Income (Expense)

Interest Income

	Three Months Ended March 31,		Increase / (Decrease) Change		Nine Months Ended March 31,		Increase / (Decrease) Change	
	2020	2019	$	%	2020	2019	$	%
	(Dollars in Thousands)							
Interest income	$ 8,173	$ 6,835	$ 1,338	19.6%	$ 24,577	$ 21,389	$ 3,188	14.9%
As a percent of total revenue	6.2%	4.6%			6.3%	5.3%		

The period-over-period increase of $1.3 million and $3.2 million in interest income during the three and nine months ended March 31, 2020, respectively, was a result of: (i) increased customer usage of our software; (ii) adding new customers; and (iii) escalating annual payments.

Interest Expense

	Three Months Ended March 31,		(Increase) / Decrease Change		Nine Months Ended March 31,		(Increase) / Decrease Change	
	2020	2019	$	%	2020	2019	$	%
	(Dollars in Thousands)							
Interest expense	$ (3,207)	$ (2,350)	$ (857)	36.5%	$ (9,368)	$ (6,328)	$ (3,040)	48.0%
As a percent of total revenue	(2.4)%	(1.6)%			(2.4)%	(1.6)%		

The period-over-period increase of $(0.9) million and $(3.0) million in interest expense during the three and nine months ended March 31, 2020, respectively, was primarily due to interest expenses related to an increase in borrowings under our Amended and Restated Credit Agreement.

Other (Expense), Net

	Three Months Ended March 31,		Increase / (Decrease) Change		Nine Months Ended March 31,		(Increase) / Decrease Change	
	2020	2019	$	%	2020	2019	$	%
	(Dollars in Thousands)							
Other (expense) income, net	$ (352)	$ (34)	$ (318)	935.3%	$ (217)	$ (485)	$ 268	(55.3)%
As a percent of total revenue	(0.3)%	— %			(0.1)%	(0.1)%		

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

During the three months ended March 31, 2020 and 2019, other (expense), net was comprised of $(0.3) million and $(0.2) million of currency losses, respectively.

During the nine months ended March 31, 2020 and 2019, other income (expense), net was comprised of $(0.2) million and $(0.5) million of currency (losses), respectively.

Provision for Income Taxes

	Three Months Ended March 31,		Increase / (Decrease) Change		Nine Months Ended March 31,		Increase / (Decrease) Change	
	2020	2019	$	%	2020	2019	$	%
	(Dollars in Thousands)							
Provision for income taxes	$ 7,266	$ 13,695	$ (6,429)	(46.9)%	$ 22,048	$ 27,286	$ (5,238)	(19.2)%
Effective tax rate	14.3%	18.2%			14.7%	14.7%		

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, primarily the Foreign Derived Intangible Income (“FDII”) deduction. Assuming certain requirements are met, the FDII deduction is a benefit for U.S. companies that sell their products or services to customers outside the U.S.

Our effective tax rate was 14.3% and 14.7% during the three and nine months ended March 31, 2020, respectively, and 18.2% and 14.7% during the three and nine months ended March 31, 2019, respectively. Our effective tax rate decreased for the three months ended March 31, 2020 compared to the same period in the prior fiscal year due to the lower pre-tax income and stock-based compensation.

We recognized an income tax expense of $7.3 million and $22.0 million during the three and nine months ended March 31, 2020, respectively, compared to $13.7 million and $27.3 million during the corresponding periods of the prior fiscal year. Our income tax expense was driven primarily by pre-tax profitability in our domestic and foreign operations and the impact of permanent items, offset by the tax benefit from the release of uncertain tax positions due to the completion of the IRS audit. The permanent items are predominantly the FDII deduction, stock-based compensation expense and tax credits for research expenditures.

Liquidity and Capital Resources

Resources

In recent years, we have financed our operations with cash generated from operating activities. As of March 31, 2020, our principal capital resources consisted of $192.2 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 purposes is required beyond existing resources and our Amended and Restated 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.

In March 2020, we drew $100.0 million under the revolving credit facility described below under "Credit Agreement," with the majority of the proceeds held as cash and cash equivalents. We increased our borrowing under the revolving credit facility as a precautionary measure to increase our cash position and preserve financial flexibility in light of current disruption and uncertainty in the global markets resulting from the outbreak of the novel SARS-CoV-2 virus and associated COVID-19 disease and its impact on the demand for oil, compounded by the excess supply arising from producers’ failure to agree on production cuts.

Credit Agreement

In December 2019, we entered into an Amended and Restated Credit Agreement (the "Amended and Restated Credit Agreement"). The Amended and Restated Credit Agreement, which amends and restates the Credit Agreement we entered into as of February 26, 2016, provides for a $200.0 million secured revolving credit facility and a $320.0 million secured term loan facility.

As of March 31, 2020, we had $119.2 million and $316.0 million in outstanding borrowings on our revolving credit facility and term loan facility, respectively. Our current borrowings of $135.2 million consist of $119.2 million of the revolving credit facility and $16.0 million of the term loan facility. Our non-current borrowings of $296.2 million consist of $300.0 million of our term loan facility, net of $3.8 million in debt issuance costs. We had $220.0 million in outstanding current borrowings as of June 30, 2019.

For a more detailed description of the Amended and Restated Credit Agreement, see Note 12, "Credit Agreement," to our Unaudited Consolidated Financial Statements in Part 1, 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 March 31, 2020. 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:

	Nine Months Ended March 31,	
	2020	**2019**
	(Dollars in Thousands)	
Cash flow provided by (used in):		
Operating activities	$ 143,588	$ 153,136
Investing activities	(76,031)	(1,300)
Financing activities	53,527	(181,917)
Effect of exchange rates on cash balances	(838)	(492)
Increase (decrease) in cash and cash equivalents	$ 120,246	$ (30,573)

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 $143.6 million during the nine months ended March 31, 2020. This amount resulted from net income of $128.1 million, adjusted for non-cash items of $41.3 million and net uses of cash of $(25.8) million related to changes in working capital.

Non-cash items during the nine months ended March 31, 2020 consisted primarily of stock-based compensation expense of $24.1 million, right-of-use asset amortization of $6.5 million, depreciation and amortization expense of $7.0 million, and provision for bad debts of $3.4 million.

Cash used by working capital of $(25.8) million during the nine months ended March 31, 2020 was primarily attributable to cash used by decreases in accounts payable, accrued expenses and other current liabilities of $20.8 million, decreases in lease liabilities of $6.8 million, increases in prepaid expenses, prepaid income taxes, and other assets of $2.2 million, increases in accounts receivable of $16.4 million, and increases in contract costs of $1.5 million, partially offset by cash provided by increases in deferred revenue of $13.7 million and decreases in contract assets of $8.3 million.

Investing Activities

During the nine months ended March 31, 2020, we used $76.0 million of cash for investing activities. We used $74.5 million for business acquisitions, $1.1 million for capital expenditures, and $0.3 million for equity method investments.

Financing Activities

Cash from financing activities provided $53.5 million of cash during the nine months ended March 31, 2020. This amount resulted from $215.2 million of proceeds from debt and $5.4 million from the exercise of employee stock options, partially offset by $150.6 million of cash used for repurchases of our common stock, $8.2 million of cash used for withholding taxes on vested and settled restricted stock units, and $3.5 million of cash used for payments of debt issuance costs.

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Contractual Obligations

Standby letters of credit for $2.2 million and $3.9 million secured our performance on professional services contracts, certain facility leases and potential liabilities as of March 31, 2020 and June 30, 2019, 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 March 31, 2020 and 2019, 7.9% and 9.1% of our total revenue was denominated in a currency other than the U.S. dollar, respectively. During the nine months ended March 31, 2020 and 2019, 6.9% and 11.0% 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 nine months ended March 31, 2020 and 2019. 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 March 31, 2020 and 2019, we recorded $(0.3) 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 $1.0 million and $1.2 million for the three months ended March 31, 2020 and 2019, respectively.

During the nine months ended March 31, 2020 and 2019, we recorded $(0.2) million and $(0.5) 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 $1.7 million and $3.3 million for the nine months ended March 31, 2020 and 2019, respectively.

Interest Rate Risk

We place our investments in money market instruments. Our analysis of our investment portfolio and interest rates at March 31, 2020 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.

As of March 31, 2020, we had $119.2 million and $316.0 million in outstanding borrowings on our revolving credit facility and term loan facility, respectively. Our current borrowings of $135.2 million consist of $119.2 million of the revolving credit facility and $16.0 million of the term loan facility. Our non-current borrowings of $296.2 million consist of $300.0 million of our term loan facility, net of $3.8 million in debt issuance costs. A hypothetical 100 basis point 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.

Investment Risk

During the three months ended March 31, 2020, we entered into a limited partnership investment fund agreement. The primary objective of this partnership is investing in equity and equity-related securities (including convertible debt) of venture growth- stage businesses. We account for the investment in accordance with Topic 323, *Investments - Equity Method and Joint Ventures*. Our total commitment under this partnership is 5.0 million CAD ($3.5 million). Under the conditions of the equity method investment, unfavorable future changes in market conditions could lead to a potential loss up to the full value of our 5.0 million CAD ($3.5 million) commitment. As of March 31, 2020, the fair value of this investment is 0.5 million CAD ($0.3 million), representing our payment towards the total commitment during the three months ended March 31, 2020, and is recorded in non-current assets in our consolidated balance sheet.

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 March 31, 2020. 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 March 31, 2020, our chief executive officer and chief financial officer concluded that, as of such date, our disclosure controls and procedures were not effective due to a material weakness in internal control over financial reporting that was disclosed in our Annual Report on Form 10-K for the fiscal year ended June 30, 2019.

b) Management's Plan to Remediate the Material Weakness

As previously described in Part II, Item 9A of our Annual Report on Form 10-K for the fiscal year ended June 30, 2019, we began implementing a remediation plan to address the material weakness mentioned above. During the nine months ended March 31, 2020, management has enhanced our risk assessment process over the design and implementation of internal controls included in new and emerging financial reporting matters. We have also performed an updated risk assessment of revenue controls and have identified and designed enhanced review controls over the accounting for revenue contracts under ASC Topic 606, including the use of additional reporting tools and additional reconciliation controls. The weakness will not be considered remediated until the applicable controls operate for a sufficient period of time and management has concluded, through testing, that these controls are operating effectively. We expect that the remediation of this material weakness will be completed prior to the end of fiscal 2020.

c) Changes in Internal Controls Over Financial Reporting

There was no change in our internal control over financial reporting that occurred during the three and nine months ended March 31, 2020, that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting, with the exception of the change in our leasing controls resulting from the adoption of Topic 842 as described in Note 2, "Significant Accounting Policies," to our Unaudited Consolidated Financial Statements. Although the new leasing standard did not have a material impact on our operating results or cash flows, it did have a material impact on our consolidated balance sheet and disclosures. We performed a risk assessment and implemented changes to our processes related to lease accounting and the control activities within them. These included the development of new guidelines based on the requirements of Topic 842, including new training, identification of new leases and modification of leases, ongoing contract review, periodic review of discount rates, and gathering information provided for disclosures. We will continue to review and document our disclosure controls and procedures, including our internal control over financial reporting, and may from time to time make changes aimed at enhancing their effectiveness and to ensure that our systems evolve with our business. We also performed an updated risk assessment to determine if new controls were needed due to the outbreak of the novel SARS-CoV-2 virus and associated COVID-19 disease. As a result, we enhanced internal controls to include more frequent reviews and incorporate new review criteria.

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, 2019, 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 2019 Annual Report on Form 10-K remains current in all material respects, with the exception of the revised risk factors below.

Our customers' business operations have been, and continue to be, subject to business interruptions arising from the COVID-19 pandemic. We continue to monitor the situation, but there can be no assurance that the pandemic will not result in delays or possibly reductions in demand for our solutions that could have a serious adverse effect on our business.

Many countries have imposed restrictions on travel and public assembly and closed schools and businesses in order to slow the spread of the SARS-CoV-2 virus and associated COVID-19 disease. These governmental restrictions and related private sector responses have adversely affected the business operations of some of our customers and resulted in a slowdown in closing some customer contracts and, to a lesser extent, a slowdown in customer payments in the last three weeks of the quarter ended March 31, 2020. While the measures instituted in response to COVID-19 are expected to be temporary, the duration of the business disruptions and related operational and financial impact on our customers and us cannot be estimated with certainty at this time. The adverse effects on the economies and financial markets of many countries and markets may result in an economic downturn and changes in global economic policy that could reduce demand for our products and have a material adverse impact on our business, operating results and financial condition, including on our ability to collect accounts receivable. Our business may also be harmed if our employees are not able to perform services for customers on-site due to travel restrictions or facility closings.

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

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

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

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

In addition, worldwide economic downturns and pricing pressures experienced by energy, chemical, engineering and construction, and other capital-intensive industries have led to consolidations and reorganizations. In particular, we believe that the drop in demand for oil due to the COVID-19 pandemic, compounded by the excess supply arising from producers' failure to agree on production cuts, impacted and may continue to impact the operating levels of and capital spending by certain of our customers. This has, and could continue to result in, less predictable and lower demand for our products and services. Any such adverse environmental, safety or health incident, change in regulatory standards, or economic downturn that affects the capital-intensive industries, including continued challenges and uncertainty among customers whose business is adversely affected by volatility in oil prices, as well as general domestic and foreign economic conditions and other factors that reduce spending by companies in these industries, could harm our operating results in the future.

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

Our business is influenced by a range of factors that are beyond our control and difficult or impossible to predict. If the market for asset optimization software grows more slowly than we anticipate, demand for our products and services could decline and our operating results could be impaired. Further, the state of the global economy may deteriorate in the future. Our operating results may be adversely affected by unfavorable global economic and market conditions, including the significant drop in oil prices arising from producers' failure to agree on production cuts and a drop in demand due to the COVID-19 pandemic, as well as a lessening demand for asset optimization software generally.

Customer demand for our products is linked to the strength of the global economy. If weakness in the global economy persists, many customers, including those whose businesses are negatively impacted by lower oil prices or the COVID-19 pandemic generally, may delay or reduce technology purchases. This could result in reductions in sales of our products, longer sales cycles, slower adoption of new technologies, increased price competition or reduced use of our products by our customers. We will lose revenue if demand for our products is reduced because potential customers experience weak or deteriorating economic conditions, catastrophic environmental or other events, and our business, results of operations, financial condition and cash flow from operations would likely be adversely affected.

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

During the three months ended March 31, 2020 and 2019, 7.9% and 9.1% of our total revenue was denominated in a currency other than the U.S. dollar, respectively. During the nine months ended March 31, 2020 and 2019, 6.9% and 11.0% 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 nine months ended March 31, 2020 and 2019, 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 March 31, 2020 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)
January 1 to 31, 2020	97,158	$ 131.57	97,158	
February 1 to 29, 2020	140,790	$ 122.42	140,790	
March 1 to 31, 2020	214,043	$ 93.36	214,043	
Total	451,991	$ 110.62	451,991	$ 196,293,455

(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. The Share Repurchase Program was announced on January 28, 2015, and expires at the end of each fiscal year unless extended. On April 26, 2016, June 8, 2017, April 18, 2018, December 6,

2018, and April 17, 2019, the Board of Directors approved a $400 million, $200 million, $200 million, $100 million, and $200 million increase in the Share Repurchase Program, respectively.

(2) As of March 31, 2020, the total number of shares of common stock repurchased under all programs approved by the Board of Directors was 36,270,015.

(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 March 31, 2020, the total remaining value under the Share Repurchase Program was approximately $196.3 million.

Item 6. Exhibits.

			Incorporated by Reference		
Exhibit Number	Description	Filed with this Form 10-Q	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 Senior 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.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: May 6, 2020	By:	/s/ **ANTONIO J. PIETRI**
		Antonio J. Pietri
		President and Chief Executive Officer
		(Principal Executive Officer)
Date: May 6, 2020	By:	/s/ **KARL E. JOHNSEN**
		Karl E. Johnsen
		Senior Vice President and Chief Financial Officer
		(Principal Financial and Accounting Officer)

EXHIBIT 31.1

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

I, Antonio J. Pietri, certify that:

1. I have reviewed this 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: May 6, 2020

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

EXHIBIT 31.2

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

I, Karl E. Johnsen, certify that:

1. I have reviewed this 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: May 6, 2020

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

EXHIBIT 32.1

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

In connection with the Quarterly Report on Form 10-Q of Aspen Technology, Inc. (the “Company”) for the quarter ended March 31, 2020, 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: May 6, 2020	**/s/ ANTONIO J. PIETRI**
	Antonio J. Pietri
	President and Chief Executive Officer
Date: May 6, 2020	**/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.