

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

FORM 10-Q

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

For the quarterly period ended June 30, 2017

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: 001-34387



Medidata Solutions, Inc.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

13-4066508
(I.R.S. Employer
Identification No.)

350 Hudson Street, 9th Floor
New York, New York
(Address of principal executive offices)

10014
(Zip Code)

(212) 918-1800

(Registrant's telephone number, including area code)

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

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

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

Large accelerated filer	<input checked="" type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/> (Do not check if a smaller reporting company)	Smaller reporting company	<input type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

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

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

As of July 25, 2017, the registrant had 58,504,326 shares of common stock outstanding.

MEDIDATA SOLUTIONS, INC.
QUARTERLY REPORT ON FORM 10-Q
FOR THE QUARTERLY PERIOD ENDED JUNE 30, 2017
TABLE OF CONTENTS

	Page
PART I	FINANCIAL INFORMATION
Item 1.	Financial Statements (Unaudited)
	Condensed Consolidated Balance Sheets as of June 30, 2017 and December 31, 2016 3
	Condensed Consolidated Statements of Operations for the Three and Six Months Ended June 30, 2017 and 2016 4
	Condensed Consolidated Statements of Comprehensive Income for the Three and Six Months Ended June 30, 2017 and 2016 5
	Condensed Consolidated Statements of Cash Flows for the Six Months Ended June 30, 2017 and 2016 6
	Notes to Condensed Consolidated Financial Statements 8
Item 2.	Management's Discussion and Analysis of Financial Condition and Results of Operations 20
Item 3.	Quantitative and Qualitative Disclosures about Market Risk 24
Item 4.	Controls and Procedures 25
PART II	OTHER INFORMATION 26
Item 1.	Legal Proceedings 26
Item 1A.	Risk Factors 26
Item 2.	Unregistered Sales of Equity Securities and Use of Proceeds 26
Item 3.	Defaults upon Senior Securities 26
Item 4.	Mine Safety Disclosures 26
Item 5.	Other Information 26
Item 6.	Exhibits 26
	SIGNATURES 27
	EXHIBIT INDEX 28

PART I - FINANCIAL INFORMATION

Item 1. Financial Statements (Unaudited)

MEDIDATA SOLUTIONS, INC.
CONDENSED CONSOLIDATED BALANCE SHEETS (Unaudited)

	June 30, 2017	December 31, 2016
(Amounts in thousands, except per share data)		
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 110,708	\$ 93,519
Marketable securities	256,401	281,285
Accounts receivable, net of allowance for doubtful accounts of \$1,298 and \$1,041, respectively	111,233	115,216
Prepaid commission expense	3,511	1,842
Prepaid expenses and other current assets	30,846	20,382
Deferred income taxes	—	6,536
Total current assets	512,699	518,780
Restricted cash	5,513	5,760
Furniture, fixtures and equipment, net	71,162	58,461
Marketable securities – long-term	167,896	140,418
Goodwill	47,678	30,780
Intangible assets, net	20,014	5,090
Deferred income taxes – long-term	41,268	40,415
Other assets	22,625	18,181
Total assets	\$ 888,855	\$ 817,885
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ 12,257	\$ 6,202
Accrued payroll and other compensation	19,630	29,260
Accrued expenses and other	34,120	20,958
Deferred revenue	86,314	75,911
Total current liabilities	152,321	132,331
Noncurrent liabilities:		
1.00% convertible senior notes, net	270,647	263,401
Deferred revenue, less current portion	2,159	1,703
Deferred tax liabilities	124	322
Other long-term liabilities	20,812	18,138
Total noncurrent liabilities	293,742	283,564
Total liabilities	446,063	415,895
Commitments and contingencies		
Stockholders' equity:		
Preferred stock, par value \$0.01 per share; 5,000 shares authorized, none issued and outstanding	—	—
Common stock, par value \$0.01 per share; 200,000 shares authorized; 62,578 and 61,393 shares issued; 58,503 and 57,733 shares outstanding, respectively	626	614
Additional paid-in capital	454,856	418,497
Treasury stock, 4,075 and 3,660 shares, respectively	(128,991)	(114,204)
Accumulated other comprehensive loss	(3,826)	(5,276)
Retained earnings	120,127	102,359
Total stockholders' equity	442,792	401,990
Total liabilities and stockholders' equity	\$ 888,855	\$ 817,885

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

MEDIDATA SOLUTIONS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS (Unaudited)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
(Amounts in thousands, except per share data)				
Revenues				
Subscription	\$ 114,291	\$ 96,760	\$ 221,361	\$ 186,728
Professional services	23,123	17,850	42,874	32,120
Total revenues	137,414	114,610	264,235	218,848
Cost of revenues (1)(2)				
Subscription	17,017	15,600	34,146	29,929
Professional services	14,903	13,457	28,388	23,796
Total cost of revenues	31,920	29,057	62,534	53,725
Gross profit	105,494	85,553	201,701	165,123
Operating costs and expenses				
Research and development (1)	35,884	28,267	65,821	56,495
Sales and marketing (1)(2)	32,784	27,609	62,893	53,067
General and administrative (1)	23,083	18,531	47,071	37,777
Total operating costs and expenses	91,751	74,407	175,785	147,339
Operating income	13,743	11,146	25,916	17,784
Interest and other income (expense)				
Interest expense	(4,383)	(4,183)	(8,710)	(8,310)
Interest income	1,328	932	2,499	1,804
Other income (expense), net	—	3	—	(1)
Total interest and other expense, net	(3,055)	(3,248)	(6,211)	(6,507)
Income before income taxes	10,688	7,898	19,705	11,277
Provision for income taxes	2,438	1,688 (3)	1,937	492 (3)
Net income	\$ 8,250	\$ 6,210 (3)	\$ 17,768	\$ 10,785 (3)
Earnings per share				
Basic	\$ 0.15	\$ 0.11 (3)	\$ 0.32	\$ 0.20 (3)
Diluted	\$ 0.14	\$ 0.11 (3)	\$ 0.30	\$ 0.19 (3)
Weighted average common shares outstanding				
Basic	56,433	55,392	56,254	55,255
Diluted	59,835	56,875 (3)	59,051	56,813 (3)
(1) Stock-based compensation expense included in cost of revenues and operating costs and expenses is as follows:				
Cost of revenues	\$ 1,246	\$ 1,239	\$ 2,415	\$ 2,449
Research and development	3,427	2,323	6,262	4,517
Sales and marketing	1,836	1,839	3,011	3,716
General and administrative	6,183	5,046	11,325	10,015
Total stock-based compensation	\$ 12,692	\$ 10,447	\$ 23,013	\$ 20,697
(2) Amortization of intangible assets included in cost of revenues and operating costs and expenses is as follows:				
Cost of revenues	\$ 1,022	\$ 314	\$ 1,476	\$ 393
Sales and marketing	119	85	202	109
Total amortization of intangible assets	\$ 1,141	\$ 399	\$ 1,678	\$ 502
(3) Prior periods recast to reflect the Company's early adoption of Accounting Standards Update No. 2016-09 in the third quarter of 2016.				

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

MEDIDATA SOLUTIONS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (Unaudited)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
	(Amounts in thousands)			
Net income	\$ 8,250	\$ 6,210 ⁽¹⁾	\$ 17,768	\$ 10,785 ⁽¹⁾
Other comprehensive income (loss)				
Foreign currency translation adjustments	879	(565)	1,302	(652)
Unrealized gain on marketable securities	128	399	240	1,707
Other comprehensive income (loss)	1,007	(166)	1,542	1,055
Income tax related to unrealized gain or loss on marketable securities	(49)	(581)	(92)	(581)
Other comprehensive income (loss), net of tax	958	(747)	1,450	474
Comprehensive income, net of tax	<u>\$ 9,208</u>	<u>\$ 5,463 ⁽¹⁾</u>	<u>\$ 19,218</u>	<u>\$ 11,259 ⁽¹⁾</u>

(1) Prior periods recast to reflect the Company's early adoption of Accounting Standards Update No. 2016-09 in the third quarter of 2016.

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

MEDIDATA SOLUTIONS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS (Unaudited)

	Six Months Ended June 30,	
	2017	2016
Cash flows from operating activities	(Amounts in thousands)	
Net income	\$ 17,768	\$ 10,785
Adjustments to reconcile net income to net cash provided by operating activities		
Depreciation and amortization	10,065	6,983
Stock-based compensation	23,013	20,697
Amortization of discounts or premiums on marketable securities	757	1,700
Deferred income taxes	2,535	(1,164)
Amortization of debt issuance costs	639	639
Amortization of debt discount	6,607	6,224
Provision for doubtful accounts	526	508
(Gain) loss on fixed asset disposal	(2)	4
Change in fair value of contingent consideration	58	—
Changes in operating assets and liabilities:		
Accounts receivable	4,058	(7,729)
Prepaid commission expense	(4,661)	(2,931)
Prepaid expenses and other current assets	(13,031)	3,040
Other assets	1,171	(3,583)
Accounts payable	4,490	(1,932)
Accrued payroll and other compensation	(10,122)	(4,302)
Accrued expenses and other	5,313	7,715
Deferred revenue	10,634	9,206
Other long-term liabilities	884	(2,814)
Net cash provided by operating activities	<u>60,702</u>	<u>43,046</u> ⁽¹⁾
Cash flows from investing activities		
Purchases of furniture, fixtures and equipment	(16,642)	(13,425)
Purchases of available-for-sale securities	(157,228)	(144,136)
Proceeds from sale of available-for-sale securities	154,117	154,784
Acquisition of businesses, net of cash acquired	(22,941)	(17,142)
Net cash used in investing activities	<u>(42,694)</u>	<u>(19,919)</u> ⁽²⁾
Cash flows from financing activities		
Proceeds from exercise of stock options	9,057	1,691
Proceeds from employee stock purchase plan	4,248	3,385
Repayment of notes payable	—	(100)
Acquisition of treasury stock	(14,785)	(13,797)
Net cash used in financing activities	<u>(1,480)</u>	<u>(8,821)</u> ⁽¹⁾
Effect of exchange rate changes on cash, cash equivalents and restricted cash	414	397
Net increase in cash, cash equivalents and restricted cash	16,942	14,703
Cash, cash equivalents and restricted cash – Beginning of period	99,279	55,472 ⁽²⁾
Cash, cash equivalents and restricted cash – End of period	<u>\$ 116,221</u>	<u>\$ 70,175</u> ⁽²⁾

(1) As a result of the Company's early adoption of Accounting Standards Update No. 2016-09 in the third quarter of 2016, the consolidated statement of cash flows for the six months ended June 30, 2016 has been adjusted to reflect an offsetting increase of \$5,048 thousand to net cash provided by operating activities and net cash used in financing activities.

(2) As a result of the Company's early adoption of ASU No. 2016-18 during the first quarter of 2017, the consolidated statement of cash flows for the six months ended June 30, 2016 has been adjusted to include restricted cash in beginning- and end-of-period cash, and to remove change in restricted cash as a reconciling item.

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

MEDIDATA SOLUTIONS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS, CONTINUED (Unaudited)

	Six Months Ended June 30,	
	2017	2016
Supplemental disclosures of cash flow information:		
Cash paid during the period for:		
Interest	\$ 1,441	\$ 1,445
Income taxes	\$ 2,877	\$ 845
Noncash investing activities:		
Furniture, fixtures, and equipment acquired but not yet paid for at period-end	\$ 4,671	\$ 1,097
Contingent consideration associated with acquisition of business, at fair value	\$ 5,697	\$ —

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

MEDIDATA SOLUTIONS, INC.
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Unaudited)

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Medidata Solutions, Inc., together with its consolidated subsidiaries (collectively, the "Company"), is the leading global provider of cloud-based solutions for clinical research in life sciences, offering platform technology that transforms clinical development and increases the value of its customers' research investments. The Company was organized as a New York corporation in June 1999 and reincorporated as a Delaware corporation in May 2000.

Except to the extent updated or described below, the Company's significant accounting policies as of June 30, 2017 are the same as those at December 31, 2016, which are included in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2016, filed with the Securities and Exchange Commission ("SEC") on February 28, 2017.

Basis of Presentation — The accompanying interim condensed consolidated balance sheets as of June 30, 2017 and December 31, 2016, the condensed consolidated statements of operations for the three and six months ended June 30, 2017 and 2016, the condensed consolidated statements of comprehensive income for the three and six months ended June 30, 2017 and 2016, and the condensed consolidated statements of cash flows for the six months ended June 30, 2017 and 2016 are unaudited and have been prepared in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP") and applicable rules and regulations of the SEC for interim financial reporting. Accordingly, certain information and footnote disclosures have been condensed or omitted pursuant to SEC rules that would ordinarily be required by U.S. GAAP for complete financial statements. These unaudited interim condensed consolidated financial statements should be read in conjunction with the audited consolidated financial statements and accompanying notes thereto for the fiscal year ended December 31, 2016 included in the Company's Annual Report on Form 10-K filed with the SEC on February 28, 2017.

The unaudited interim condensed consolidated financial statements have been prepared on the same basis as the audited consolidated financial statements and, in the opinion of management, reflect all adjustments consisting of normal recurring accruals considered necessary to present fairly the Company's financial position as of June 30, 2017, results of its operations for the three and six months ended June 30, 2017 and 2016, comprehensive income for the three and six months ended June 30, 2017 and 2016, and cash flows for the six months ended June 30, 2017 and 2016. The results of operations for the three and six months ended June 30, 2017 are not necessarily indicative of the results that may be expected for the year ending December 31, 2017.

Income Taxes — The Company's interim period provision for income taxes is computed by using an estimate of the annual effective tax rate, adjusted for discrete items taken into account in the relevant period, if any. Each quarter, the annual effective income tax rate is recomputed and if there are material changes in the estimate, a cumulative adjustment is made.

Accounts Receivable — Accounts receivable are recorded at original invoice amount less an allowance that management believes will be adequate to absorb estimated losses on uncollectible accounts. This allowance is based on an evaluation of the collectability of accounts receivable and prior bad debt experience. Accounts receivable are written off when deemed uncollectible. Unbilled receivables consist of revenue recognized in excess of billings, substantially all of which is expected to be billed and collected within one year. As of June 30, 2017 and December 31, 2016, unbilled accounts receivable of \$12.5 million and \$14.1 million, respectively, were included in accounts receivable on the Company's consolidated balance sheets. In general, there is a direct relationship between the Company's accounts receivable balance and its transaction volume.

Recently Adopted Accounting Pronouncements — In November 2015, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2015-17, *Income Taxes: Balance Sheet Classification of Deferred Taxes*, which simplifies the presentation of deferred income taxes by requiring that all deferred tax assets and liabilities be classified as noncurrent in the consolidated balance sheets. ASU No. 2015-17 is effective for annual reporting periods beginning after December 15, 2016 and interim periods within those annual periods, and may be applied either prospectively or retrospectively to all periods presented. The Company adopted ASU No. 2015-17 prospectively on January 1, 2017, and the adoption did not have a material impact on its consolidated financial statements, aside from a balance sheet reclassification from short-term to long-term deferred income taxes.

In October 2016, the FASB issued ASU No. 2016-16, *Income Taxes: Intra-Entity Transfers of Assets Other Than Inventory*, which requires entities to recognize the income tax consequences of intra-entity transfers of assets other than inventory when those transfers occur. ASU No. 2016-16 is effective for annual reporting periods beginning after December 15, 2017, including interim periods within those annual periods. The Company early adopted ASU No. 2016-16 on January 1, 2017, and the adoption had no impact on its consolidated financial statements.

In November 2016, the FASB issued ASU No. 2016-18, *Statement of Cash Flows: Restricted Cash*, which requires entities to include restricted cash in cash and cash equivalents when reconciling beginning-of-period and end-of-period cash in the statement of cash flows. ASU No. 2016-18 is effective for annual periods beginning after December 15, 2017, including interim periods within those annual periods. The Company early adopted ASU No. 2016-18 retrospectively on January 1, 2017 and the adoption did not have a material impact on its consolidated financial statements, aside from changes in presentation.

MEDIDATA SOLUTIONS, INC.
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Unaudited)

Recently Issued Accounting Pronouncements — There have been no changes in the expected dates of adoption or estimated effects on the Company's consolidated financial statements of recently issued accounting pronouncements from those disclosed in the Company's Annual Report on Form 10-K, except as described below.

ASU No. 2014-09, *Revenue from Contracts with Customers*, which creates Accounting Standards Codification ("ASC") 606 and supersedes the existing accounting standards for revenue recognition in ASC 605, provides principles for recognizing revenue for the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods and services. ASU No. 2014-09 is effective for annual reporting periods beginning after December 15, 2017, including interim periods within those annual periods. The Company will adopt ASU No. 2014-09 on January 1, 2018. The Company's assessment of the impact of this updated standard is ongoing; however, the Company continues to expect to identify performance obligations under the new guidance in ASC 606 that are similar to the deliverables and separate units of account identified under the current guidance ASC 605. As a result, the Company anticipates that timing of revenue recognition for most of its contracts will remain the same. A few of the Company's contracts include contingent amounts of variable consideration that were precluded from recognition because of the requirement for amounts to be "fixed or determinable" under ASC 605-10-S99. However, the Company anticipates that ASC 606 will require it to estimate these amounts in advance. As a result, the Company expects to recognize revenue from these contracts earlier under ASC 606 than under ASC 605. ASU No. 2014-09 also creates a new subtopic under ASC 340, *Other Assets and Deferred Costs*, which discusses the deferral of incremental costs of obtaining a contract with a customer, including the period of amortization of such costs. The Company is still evaluating the planned amortization period for such costs, but expects a longer amortization period than under the current guidance. The Company plans to choose between the permitted full and modified retrospective transition methods at the conclusion of its evaluation in the second half of 2017.

In May 2017, the FASB issued ASU No. 2017-09, *Scope of Modification Accounting*, which clarifies when a change in the terms or conditions of a share-based payment award should be accounted for as a modification. ASU No. 2017-09 is effective for annual periods beginning after December 15, 2017, including interim periods within those annual periods. The Company will adopt ASU No. 2017-09 on January 1, 2018, and the adoption is not expected to have a material impact on its consolidated financial statements.

2. STOCKHOLDERS' EQUITY

Common Stock — Common stockholders are entitled to one vote for each share of common stock held. Common stockholders may receive dividends if and when the board of directors determines, at its sole discretion.

Treasury Stock — From time to time, the Company grants nonvested restricted stock awards ("RSAs"), restricted stock units ("RSUs"), and performance-based restricted stock units ("PBRsUs") to its employees pursuant to the terms of its 2017 Long-Term Incentive Plan ("2017 Plan") and formerly pursuant to the terms of its Second Amended and Restated 2009 Long-Term Incentive Plan ("2009 Plan"). Under the provisions of the 2017 Plan and 2009 Plan, unless otherwise elected, participants fulfill their related income tax withholding obligation by having shares withheld at the time of vesting. On the date of vesting, the Company divides the participant's income tax withholding obligation in dollars by the closing price of its common stock and withholds the resulting number of vested shares. The shares withheld are then transferred to the Company's treasury stock at cost.

During the six months ended June 30, 2017 and 2016, the Company withheld 260,737 shares at an average price of \$56.71 and 326,568 shares at an average price of \$35.59, respectively, in connection with the vesting of equity awards.

Nonvested restricted stock awards forfeited by plan participants are transferred to the Company's treasury stock at par. During the six months ended June 30, 2017 and 2016, 154,106 and 99,876 forfeited shares, respectively, were transferred to treasury stock at their par value of \$0.01.

3. INVESTMENTS

Marketable Securities

Marketable securities, which the Company classifies as available-for-sale securities, primarily consist of high quality commercial paper, corporate bonds, and U.S. government debt obligations. Marketable securities with remaining effective maturities of twelve months or less from the balance sheet date are classified as short-term; otherwise, they are classified as long-term on the consolidated balance sheets.

MEDIDATA SOLUTIONS, INC.
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Unaudited)

The following tables provide the Company's marketable securities by security type as of June 30, 2017 and December 31, 2016 (in thousands):

	As of June 30, 2017			
	Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Commercial paper and corporate bonds	\$ 390,313	\$ 16	\$ (594)	\$ 389,735
U.S. government agency debt securities	34,631	—	(69)	34,562
Total	\$ 424,944	\$ 16	\$ (663)	\$ 424,297

	As of December 31, 2016			
	Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Commercial paper and corporate bonds	\$ 389,459	\$ 4	\$ (827)	\$ 388,636
U.S. government agency debt securities	33,132	—	(65)	33,067
Total	\$ 422,591	\$ 4	\$ (892)	\$ 421,703

Contractual maturities of the Company's marketable securities as of June 30, 2017 and December 31, 2016 are summarized as follows (in thousands):

	As of June 30, 2017		As of December 31, 2016	
	Cost	Estimated Fair Value	Cost	Estimated Fair Value
Due in one year or less	\$ 256,720	\$ 256,401	\$ 281,591	\$ 281,285
Due in one to five years	168,224	167,896	141,000	140,418
Total	\$ 424,944	\$ 424,297	\$ 422,591	\$ 421,703

At June 30, 2017, the Company had \$0.7 million of gross unrealized losses primarily due to a decrease in the fair value of certain corporate bonds.

The Company regularly reviews its investment portfolio to identify and evaluate investments that have indications of possible impairment. Investments that are impaired are those that are considered to have losses that are other-than-temporary. Factors considered in determining whether a loss is temporary include:

- the length of time and extent to which fair value has been lower than the cost basis;
- the financial condition, credit quality and near-term prospects of the investee; and
- whether it is more likely than not that the Company will be required to sell the security prior to recovery.

As the Company has the ability and intent to hold these investments until a recovery of fair value, which may be maturity, the Company has determined that the gross unrealized losses on such investments at June 30, 2017 are temporary in nature. Accordingly, the Company did not consider its investments in marketable securities to be other-than-temporarily impaired as of June 30, 2017.

The following tables provide the fair market value and gross unrealized losses of the Company's marketable securities with unrealized losses, aggregated by security type, as of June 30, 2017 and December 31, 2016 (in thousands):

	In Loss Position for Less than 12 Months			
	As of June 30, 2017		As of December 31, 2016	
	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses
Commercial paper and corporate bonds	\$ 347,730	\$ (549)	\$ 299,708	\$ (771)
U.S. government agency debt securities	22,776	(54)	28,273	(59)
Total	\$ 370,506	\$ (603)	\$ 327,981	\$ (830)

MEDIDATA SOLUTIONS, INC.
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Unaudited)

	In Loss Position for More than 12 Months			
	As of June 30, 2017		As of December 31, 2016	
	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses
Commercial paper and corporate bonds	\$ 25,200	\$ (45)	\$ 68,158	\$ (56)
U.S. government agency debt securities	11,785	(15)	4,794	(6)
Total	\$ 36,985	\$ (60)	\$ 72,952	\$ (62)

During the three and six months ended June 30, 2017 and 2016, the Company recorded an insignificant amount of net realized gains from the sale of marketable securities.

Cost Method Investment

The Company holds shares of Series B Preferred Stock of SHYFT Analytics, Inc. ("SHYFT"), purchased via a private placement. This investment is accounted for under the cost method and is included in other assets on the Company's consolidated balance sheet as of June 30, 2017 at its purchase price of \$4.0 million.

4. FAIR VALUE

The following table summarizes, as of June 30, 2017 and December 31, 2016, the Company's financial assets and liabilities that are measured at fair value on a recurring basis, according to the fair value hierarchy described in the significant accounting policies included in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2016 (in thousands):

	As of June 30, 2017				As of December 31, 2016			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Cash	\$ 110,632	\$ —	\$ —	\$ 110,632	\$ 93,384	\$ —	\$ —	\$ 93,384
Money market funds	76	—	—	76	135	—	—	135
Total cash and cash equivalents	110,708	—	—	110,708	93,519	—	—	93,519
Commercial paper and corporate bonds	—	389,735	—	389,735	—	388,636	—	388,636
U.S. government agency debt securities	—	34,562	—	34,562	—	33,067	—	33,067
Total marketable securities	—	424,297	—	424,297	—	421,703	—	421,703
Total financial assets measured at fair value on a recurring basis	<u>\$ 110,708</u>	<u>\$ 424,297</u>	<u>\$ —</u>	<u>\$ 535,005</u>	<u>\$ 93,519</u>	<u>\$ 421,703</u>	<u>\$ —</u>	<u>\$ 515,222</u>
Contingent consideration – short-term	\$ —	\$ —	\$ 3,965	\$ 3,965	\$ —	\$ —	\$ —	\$ —
Contingent consideration – long-term	—	—	1,790	1,790	—	—	—	—
Total financial liabilities measured at fair value on a recurring basis	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 5,755</u>	<u>\$ 5,755</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ —</u>

Investments in commercial paper, corporate bonds, and U.S. government agency debt securities have been classified as Level 2 as they are valued using quoted prices in less active markets or other directly or indirectly observable inputs. Fair values of corporate bonds and U.S. government agency debt securities were derived from a consensus or weighted-average price based on input of market prices from multiple sources at each reporting period. With regard to commercial paper, all of the securities had high credit ratings and one year or less to maturity; therefore, fair value was derived from accretion of purchase price to face value over the term of maturity or quoted market prices for similar instruments if available. During the six months ended June 30, 2017 and 2016, there were no transfers of financial assets between Level 1 and Level 2.

Contingent consideration liabilities associated with acquisition-related earn-out payments are classified as Level 3 in the fair value hierarchy because they rely significantly on inputs that are unobservable in the market. The fair value of short-term contingent consideration, which is related to the achievement of a technical milestone, has been estimated using situation-based modeling, which considers the probability-weighted present value of the expected payout amount. Significant assumptions include the Company's expectations with regard to the likelihood and timing of achievement of the related technical milestone and a discount rate of 2.9%. The fair value of long-term contingent consideration, which is related to achievement of revenue targets, has been estimated using a Monte Carlo simulation to simulate future performance of the acquired business under a risk-neutral framework; significant assumptions include a risk-adjusted discount rate of 10.2% and revenue volatility of 8.0%. Short-term and long-term contingent consideration are recorded in accrued expenses and other and other long-term liabilities, respectively, on the Company's consolidated balance sheet as of June 30, 2017.

MEDIDATA SOLUTIONS, INC.
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Unaudited)

The following table provides a summary of changes in fair value of the Company's Level 3 financial liabilities during the six months ended June 30, 2017 (in thousands):

Balance as of January 1, 2017	\$	—
Contingent consideration — acquisition		5,697
Fair value adjustment (included in general and administrative expenses)		58
Balance as of June 30, 2017	\$	<u>5,755</u>

The carrying amounts of all other current financial assets and current financial liabilities reflected in the consolidated balance sheets approximate fair value due to their short-term nature.

5. ACQUISITIONS

The Company acquired all outstanding equity interests in CHITA Inc. ("CHITA") and Mytrus, Incorporated ("Mytrus") on February 17, 2017 and April 18, 2017, respectively.

CHITA provides regulated content management for the life sciences industry. Mytrus provides cloud-based software for electronic informed consent ("eConsent"), which replaces paper patient consent forms. Through these acquisitions, the Company adds regulated document and standard operating procedure ("SOP") management, electronic trial master file ("eTMF"), and eConsent capabilities to its platform.

Aggregate purchase consideration of \$28.9 million consisted of upfront consideration of \$23.2 million and contingent consideration (associated with CHITA) initially valued at \$5.7 million. In connection with these acquisitions, the Company recognized \$16.6 million in finite-lived intangible assets, deferred tax liabilities of \$2.9 million, and \$1.5 million in other net tangible liabilities, resulting in the recognition of \$16.7 million in goodwill.

Intangible assets acquired were as follows (in thousands):

	Acquisition Date Fair Value	Weighted-Average Useful Life
Developed technology	\$ 15,602	5 years
Customer relationships	890	6 years
Non-competition agreements	110	3.5 years
Total	<u>\$ 16,602</u>	

The Company does not consider these acquisitions, individually or in the aggregate, to be significant to its financial condition or results of operations; its consolidated results of operations for the three and six months ended June 30, 2017 include the revenues and expenses of CHITA and Mytrus since their respective acquisition dates.

MEDIDATA SOLUTIONS, INC.
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Unaudited)

6. GOODWILL AND INTANGIBLE ASSETS

The change in the carrying amount of goodwill during the six months ended June 30, 2017 was as follows (in thousands):

Balance as of January 1, 2017	\$	30,780
Additions related to acquisitions		16,690
Foreign currency translation adjustments		208
Balance as of June 30, 2017	\$	<u>47,678</u>

Total intangible assets are summarized as follows (in thousands):

	As of June 30, 2017			As of December 31, 2016		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Developed technology	\$ 24,386	\$ (6,644)	\$ 17,742	\$ 8,714	\$ (5,098)	\$ 3,616
Customer relationships	4,475	(2,373)	2,102	3,566	(2,176)	1,390
Non-competition agreements	260	(90)	170	150	(66)	84
Total	<u>\$ 29,121</u>	<u>\$ (9,107)</u>	<u>\$ 20,014</u>	<u>\$ 12,430</u>	<u>\$ (7,340)</u>	<u>\$ 5,090</u>

Future amortization of intangible assets is expected to be as follows (in thousands):

Remainder of year ending December 31, 2017	\$	2,427
Years ending December 31,		
2018		4,788
2019		4,530
2020		3,787
2021		3,517
2022		921
Thereafter		44
Total	\$	<u>20,014</u>

7. DEBT

The Company's 1.00% convertible senior notes (the "Notes"), issued in August 2013, consisted of the following components as of June 30, 2017 and December 31, 2016 (in thousands):

	June 30, 2017	December 31, 2016
Equity component, net of equity issue costs	\$ 60,222	\$ 60,222
Liability component:		
Principal	287,500	287,500
Less: unamortized debt discount	(15,469)	(22,076)
Less: unamortized debt issuance costs	(1,384)	(2,023)
Net carrying amount	<u>\$ 270,647</u>	<u>\$ 263,401</u>

As of June 30, 2017 and December 31, 2016, the estimated fair value of the Notes was \$398.6 million and \$314.4 million, respectively. The Company considers this disclosure to be a Level 2 measurement because it is based upon a recent modeled bid-price quote for the Notes, reflecting activity in a less active market. Based on the closing price of the Company's common stock as of June 30, 2017 of \$78.20, which is higher than the Notes' initial conversion price of \$58.05, the if-converted value of the Notes exceeded their face value by \$99.8 million.

As of June 30, 2017, the remaining life of the Notes is approximately 13 months.

MEDIDATA SOLUTIONS, INC.
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Unaudited)

The following table sets forth total interest expense recognized related to the Notes for the three and six months ended June 30, 2017 and 2016 (in thousands except percentages):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
Contractual interest expense	\$ 719	\$ 719	\$ 1,438	\$ 1,438
Amortization of debt issuance costs	320	320	639	639
Amortization of debt discount	3,328	3,135	6,607	6,224
Total	\$ 4,367	\$ 4,174	\$ 8,684	\$ 8,301
Effective interest rate	6.5%	6.5%	6.5%	6.5%

8. STOCK-BASED COMPENSATION

For the three and six months ended June 30, 2017 and 2016, the components of stock-based compensation expense were as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
Stock options	\$ 938	\$ 998	\$ 1,855	\$ 2,053
Restricted stock awards and units	7,769	6,263	14,688	11,741
Performance-based restricted stock units	3,074	2,235	4,702	4,869
Employee stock purchase plan	969	951	1,897	2,034
Total stock-based compensation (1)	\$ 12,750	\$ 10,447	\$ 23,142	\$ 20,697

(1) Total stock-based compensation is presented in this table on a gross basis, consistent with the additional paid-in capital impact recorded in stockholders' equity. On the Company's consolidated statements of operations and consolidated statements of cash flows, stock-based compensation is presented net of foreign exchange impact and capitalization of eligible software development-related costs.

Stock Options

The fair value of each stock option granted during the three and six months ended June 30, 2017 and 2016 was estimated on the date of grant using a Black-Scholes pricing model with the following weighted-average assumptions:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
Expected volatility	43%	44%	44%	43%
Expected life	6 years	6 years	6 years	6 years
Risk-free interest rate	2.02%	1.40%	2.07%	1.45%
Dividend yield	—	—	—	—

MEDIDATA SOLUTIONS, INC.
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Unaudited)

The following table summarizes the status of the Company's stock options as of June 30, 2017, and changes during the six months then ended (in thousands, except per share data):

	Number of Shares	Weighted- Average Exercise Price	Weighted- Average Remaining Contractual Term (years)	Aggregate Intrinsic Value
Outstanding at January 1, 2017	1,793	\$23.39		
Granted	77	56.90		
Exercised	(268)	33.81		
Forfeited	(42)	44.08		
Expired	(7)	58.92		
Outstanding at June 30, 2017	<u>1,553</u>	\$22.53	4.70	\$86,484
Exercisable at June 30, 2017	<u>1,249</u>	\$16.18	3.76	\$77,450
Vested and expected to vest at June 30, 2017	<u>1,521</u>	\$21.97	4.61	\$85,499

The weighted-average grant-date fair value of stock options granted during the three months ended June 30, 2017 and 2016 was \$25.47 and \$17.34, respectively. The weighted-average grant-date fair value of stock options granted during the six months ended June 30, 2017 and 2016 was \$25.37 and \$17.14, respectively. The total intrinsic value of stock options exercised during the three months ended June 30, 2017 and 2016 was \$4.0 million and \$2.3 million, respectively. The total intrinsic value of stock options exercised during the six months ended June 30, 2017 and 2016 was \$8.0 million and \$3.0 million, respectively. The total fair value of stock options vested during the three months ended June 30, 2017 and 2016 was \$1.0 million and \$1.3 million, respectively. The total fair value of stock options vested during the six months ended June 30, 2017 and 2016 was \$2.1 million and \$2.1 million, respectively.

As of June 30, 2017, there was \$5.9 million in unrecognized compensation cost related to all non-vested stock options granted. This cost is expected to be recognized over a weighted-average remaining period of 2.58 years.

Restricted Stock Awards and Units

The following table summarizes the status of the Company's nonvested time-based RSAs and RSUs as of June 30, 2017, and changes during the six months then ended (in thousands, except per share data):

	Number of Shares	Weighted- Average Grant Date Fair Value
Nonvested at January 1, 2017	1,850	\$40.89
Granted	727	56.91
Vested	(537)	38.77
Forfeited	(156)	41.40
Nonvested at June 30, 2017	<u>1,884</u>	\$47.66

The total fair value of RSAs and RSUs vested during the three months ended June 30, 2017 and 2016 was \$4.7 million and \$7.5 million, respectively. The total fair value of RSAs and RSUs vested during the six months ended June 30, 2017 and 2016 was \$31.0 million and \$16.9 million, respectively.

As of June 30, 2017, there was \$76.7 million in unrecognized compensation cost related to all nonvested RSAs and RSUs granted. This cost is expected to be recognized over a weighted-average remaining period of 2.76 years.

Performance-Based Restricted Stock Units

No PBRsUs were granted during the three months ended June 30, 2017 and 2016.

During the six months ended June 30, 2017, the Company granted: (1) 132 thousand PBRsUs ("2017 TSR PBRsUs") with market conditions based on the Company's total stockholder return ("TSR") relative to that of the Russell 2000 Index over the three-year period ending December 31, 2019, vesting in full in three years with the number of shares ultimately earned ranging from zero to 200% of the target number of shares; (2) 132 thousand PBRsUs ("2017 Net Income PBRsUs") with performance conditions based on the compound annual growth rate of net income over the three-year period ending December 31, 2019, vesting in full in three years with the number of shares ultimately earned ranging from zero to 200% of the target number of shares.

MEDIDATA SOLUTIONS, INC.
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Unaudited)

During the six months ended June 30, 2016, the Company granted 223 thousand PBRsUs ("2016 TSR PBRsUs") with market conditions based on the Company's TSR relative to that of the Russell 2000 Index over the three-year period ending December 31, 2018, vesting in full in three years with the number of shares ultimately earned ranging from zero to 200% of the target number of shares. The Company also granted an insignificant number of other PBRsUs with performance conditions based on achievement of certain individual performance objectives.

The fair value of PBRsUs with market conditions granted during the six months ended June 30, 2017 and 2016 was estimated as of the date of grant using a Monte Carlo valuation model with the following weighted average assumptions:

	2017 TSR PBRsUs	2016 TSR PBRsUs
Expected volatility - Medidata	42%	48%
Expected volatility - comparison index	43%	43%
Expected life	2.85 years	2.84 years
Risk-free interest rate	1.40%	0.91%
Dividend yield	—	—

The following table summarizes the status of the Company's PBRsUs based upon expected performance as of June 30, 2017, and changes during the six months then ended (in thousands, except per share data):

	Net Income	TSR	Other	Total Number of Shares	Weighted-Average Grant Date Fair Value
Nonvested at January 1, 2017	—	390	2	392	\$ 57.05
Granted (based on performance at 100% of targeted levels)	132	132	—	264	71.51
Adjustment related to expected performance	66	402	—	468	61.82
Vested	—	(92)	—	(92)	67.30
Forfeited	—	(26)	—	(26)	59.60
Nonvested at June 30, 2017	<u>198</u>	<u>806</u>	<u>2</u>	<u>1,006</u>	<u>\$ 62.06</u>

No PBRsUs vested during the three months ended June 30, 2017 and 2016. The total fair value of PBRsUs vested during the six months ended June 30, 2017 and 2016 was \$5.1 million and \$10.0 million, respectively. As of June 30, 2017, there was \$26.4 million in unrecognized compensation cost related to all nonvested PBRsUs. This cost is expected to be recognized over a weighted-average remaining period of 2.00 years.

Employee Stock Purchase Plan

The fair value of shares granted under the Company's employee stock purchase plan ("ESPP") was estimated using a Black-Scholes pricing model with the following weighted-average assumptions:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
Expected volatility	39%	46%	39%	46%
Expected life	1.49 years	1.68 years	1.49 years	1.68 years
Risk-free interest rate	0.62%	0.58%	0.62%	0.58%
Dividend yield	—	—	—	—

During the three and six months ended June 30, 2017, 103 thousand shares were purchased under the ESPP at a weighted-average price of \$40.50. During the three and six months ended June 30, 2016, 89 thousand shares were purchased under the ESPP at a weighted-average price of \$38.35. As of June 30, 2017, there was \$3.4 million in unrecognized compensation cost related to ESPP shares. This cost is expected to be recognized over a weighted-average remaining period of 1.04 years.

Modifications

Incremental expense associated with modifications to stock options, RSAs and PBRsUs during the three months ended June 30, 2017 and 2016 was none and \$0.1 million in the aggregate, respectively and immaterial on an individual basis. Incremental expense during the six months ended June 30, 2017 and 2016 was \$0.1 million and \$0.3 million in the aggregate, respectively and immaterial on an individual basis.

MEDIDATA SOLUTIONS, INC.
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Unaudited)

9. ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS)

The changes in the balances of each component of accumulated other comprehensive loss during the six months ended June 30, 2017 were as follows (in thousands):

	Foreign currency translation adjustments	Unrealized gains (losses) on marketable securities	Total
Balance as of January 1, 2017	\$ (4,729)	\$ (547)	\$ (5,276)
Other comprehensive income	1,302	148	1,450
Balance as of June 30, 2017	<u>\$ (3,427)</u>	<u>\$ (399)</u>	<u>\$ (3,826)</u>

For the six months ended June 30, 2017 and 2016, reclassifications of items from accumulated other comprehensive income (loss) to net income were insignificant.

10. EARNINGS PER SHARE

Basic earnings per share is calculated by dividing net income available to common stockholders by the weighted-average number of shares outstanding during the period. The holders of unvested RSAs do not have nonforfeitable rights to dividends or dividend equivalents and therefore, such vested awards do not qualify as participating securities and are excluded from the basic earnings per share calculation. Diluted earnings per share includes the determinants of basic net income per share and, in addition, gives effect to the potential dilution that would occur if securities or other contracts to issue common stock are exercised, vested, or converted into common stock, unless they are anti-dilutive. As the Company intends to settle the principal amount of the Notes (see Note 7, "Debt") in cash upon conversion, their dilutive effect is reflected in diluted earnings per share using the treasury stock method, which considers the number of shares that would be required to settle any premium above principal at the average stock price for the period. During the three and six months ended June 30, 2016, the average price of the Company's stock was below the conversion price of the Notes; as a result, the Notes were not dilutive for these periods.

MEDIDATA SOLUTIONS, INC.
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Unaudited)

A reconciliation of the numerator and denominator of basic earnings per share and diluted earnings per share for the three and six months ended June 30, 2017 and 2016 is shown in the following table (in thousands, except per share data):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016 (1)	2017	2016 (1)
Numerator				
Net income	\$ 8,250	\$ 6,210	\$ 17,768	\$ 10,785
Denominator				
Denominator for basic earnings per share:				
Weighted average common shares outstanding	56,433	55,392	56,254	55,255
Denominator for diluted earnings per share:				
Dilutive potential common shares:				
Stock options	1,001	980	976	977
Restricted stock awards and units	798	409	835	440
Performance-based restricted stock units	625	94	560	141
Employee stock purchase plan	149	—	114	—
Convertible senior notes	829	—	312	—
Weighted average common shares outstanding with assumed conversion	59,835	56,875	59,051	56,813
Basic earnings per share	\$ 0.15	\$ 0.11	\$ 0.32	\$ 0.20
Diluted earnings per share	\$ 0.14	\$ 0.11	\$ 0.30	\$ 0.19

(1) Prior period recast to reflect the Company's early adoption of ASU No. 2016-09 in the third quarter of 2016.

Anti-dilutive common stock equivalents excluded from the calculation of diluted earnings per share for the three and six months ended June 30, 2017 and 2016 are shown in the following table (in thousands, except per share data):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016 (1)	2017	2016 (1)
Stock options	94	665	202	636
Restricted stock awards and units	1	132	10	121
Performance-based restricted stock units	—	—	—	166
Employee stock purchase plan	275	233	275	233
Total	370	1,030	487	1,156

(1) Prior period recast to reflect the Company's early adoption of ASU No. 2016-09 in the third quarter of 2016.

11. INCOME TAXES

The Company's unrecognized tax benefits were approximately \$2.9 million as of June 30, 2017, and were unchanged from December 31, 2016.

12. COMMITMENTS AND CONTINGENCIES

Legal Matters — The Company is subject to legal proceedings and claims that arise in the ordinary course of business and records an estimated liability for these matters when an adverse outcome is considered to be probable and can be reasonably estimated. Although the outcome of the litigation cannot be predicted with certainty and some lawsuits, claims, or proceedings may be disposed of unfavorably to the Company, which could materially and adversely affect its financial condition or results of operations, the Company does not believe that it is currently a party to any material legal proceedings.

Contractual Warranties — The Company typically provides contractual warranties to its customers covering its solutions and services. To date, any refunds provided to customers have been immaterial.

Change in Control Agreements — The Company has change in control agreements with its chief executive officer and certain other executive officers. These agreements provide for payments to be made to such officers upon involuntary termination of their employment by the Company without cause or by such officers for good reason as defined in the agreements, within a period of 2 years following a change in control. The agreements provide that, upon a qualifying termination event, such officers will

MEDIDATA SOLUTIONS, INC.
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Unaudited)

be entitled to (a) a severance payment equal to the sum of the officer's base salary and target bonus amount (except that such payment for the Company's chief executive officer and president would be two times such sum); (b) continuation of health benefits for one year (except that such continuation for the Company's chief executive officer and president would be for two years); and (c) immediate vesting of remaining unvested equity awards, unless otherwise specified in the equity award agreements.

Wire Transaction Claim — In September 2014, the Company discovered that it had been the victim of a crime involving the fraudulently induced transfer of \$4.8 million. The Company filed an insurance claim for its loss, and its insurer, Federal Insurance Co. ("Federal"), denied coverage. The Company commenced legal action, alleging that Federal had wrongly denied coverage. On July 21, 2017, the United States District Court for the Southern District of New York granted the Company's motion for summary judgment, and denied Federal's motion.

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

This Quarterly Report on Form 10-Q contains "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended ("Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended ("Exchange Act"). Forward-looking statements reflect our current estimates, expectations and projections about our future results, performance, prospects and opportunities. Forward-looking statements include, among other things, the information concerning our possible future results of operations, business and growth strategies, financing plans, expectations that regulatory developments or other matters will not have a material adverse effect on our business or financial condition, our competitive position and the effects of competition, the projected growth of the industry in which we operate, the benefits and synergies to be obtained from our completed and any future acquisitions, and statements of management's goals and objectives, and other similar expressions concerning matters that are not historical facts. Words such as "may," "should," "could," "would," "predicts," "potential," "continue," "expects," "anticipates," "future," "intends," "plans," "believes," "estimates," "appears," "projects" and similar expressions, as well as statements in the future tense, identify forward-looking statements. Forward-looking statements should not be read as a guarantee of future performance or results, and will not necessarily be accurate indications of the times at, or by which, such performance or results will be achieved. Forward-looking information is based on information available at the time and/or management's good faith belief with respect to future events, and is subject to risks and uncertainties that could cause actual performance or results to differ materially from those expressed in the statements. Important factors that could cause such differences include, but are not limited to the factors discussed under the "Risk Factors" section included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2016, filed with the Securities and Exchange Commission ("SEC") on February 28, 2017.

The following is a discussion and analysis of our financial condition and results of operations and should be read together with our condensed consolidated financial statements and related notes to condensed consolidated financial statements included elsewhere in this Quarterly Report on Form 10-Q and our audited consolidated financial statements and related notes to audited consolidated financial statements included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2016.

Overview

Medidata is a global provider of a platform of cloud-based solutions for life sciences, enabling efficiency and quality through clinical development programs, aimed at accelerating processes, enhancing decision making, minimizing operational risk, saving resources, and enabling transformational trial strategies. We are committed to powering smarter treatments and healthier people while advancing the competitive and scientific goals of our life sciences customers worldwide. As of June 30, 2017, our industry-leading technology platform, the Medidata Clinical Cloud®, was the primary technology solution powering clinical trials for 18 of the world's top 25 global pharmaceutical companies, and was used by 18 of the top 25 medical device developers, from study design and planning through execution, management and reporting.

Subscription revenues, which are comprised of fees from clients accessing our cloud-based solutions, represented 84% of our revenues for the first half of 2017. Professional services revenues, which are derived from the provision of services that help our clients realize higher value in their clinical development processes, represented 16% of total revenues.

Second Quarter and First Half 2017 Highlights

- Total revenues increased 20% and 21% compared with the second quarter and first half of 2016, respectively.
- Professional services revenue increased 30% and 33% compared with the second quarter and first half of 2016, respectively.
- Operating income increased 23% and 46% compared with the second quarter and first half of 2016, respectively.
- Net income for the first half of 2017 was \$17.8 million, up 65% compared with \$10.8 million in the first half of 2016.
- Cash flow from operations for the first half of 2017 was \$60.7 million, up 41%, compared with \$43.0 million for the first half of 2016.

Results of Operations

Revenues

Revenues for the three and six months ended June 30, 2017 and 2016 were as follows:

	Three Months Ended June 30,			Six Months Ended June 30,		
	2017	2016	Change	2017	2016	Change
Revenues:	(amounts in thousands except percentages)					
Subscription	\$ 114,291	\$ 96,760	18.1%	\$ 221,361	\$ 186,728	18.5%
Percentage of total revenues	83.2%	84.4%		83.8%	85.3%	
Professional services	23,123	17,850	29.5%	42,874	32,120	33.5%
Percentage of total revenues	16.8%	15.6%		16.2%	14.7%	
Total revenues	<u>\$ 137,414</u>	<u>\$ 114,610</u>	19.9%	<u>\$ 264,235</u>	<u>\$ 218,848</u>	20.7%

Year-over-year growth in subscription revenues was driven by major platform customer wins and sales growth among both new and existing customers, with strong contributions from our risk-based monitoring, data analytics, and mobile health solutions. As of June 30, 2017, we had remaining subscription backlog of \$204 million, representing the future contract value of outstanding arrangements, billed and unbilled, to be recognized during the remainder of 2017, excluding renewals. This reflects an increase of 15% compared with remaining backlog of \$178 million at June 30, 2016.

Year-over-year growth in professional services revenues was driven by strong demand from new and existing customers implementing our platform, data analytics, and strategic services. Professional services revenues for the three months ended June 30, 2017 benefited from the successful completion of large projects, and we expect professional services revenue to decrease in the second half of 2017 relative to the first half.

Cost of Revenues

Cost of revenues for the three and six months ended June 30, 2017 and 2016 was as follows:

	Three Months Ended June 30,			Six Months Ended June 30,		
	2017	2016	Change	2017	2016	Change
Cost of revenues:	(amounts in thousands except percentages)					
Subscription	\$ 17,017	\$ 15,600	9.1%	\$ 34,146	\$ 29,929	14.1%
Percentage of total revenues	12.4%	13.6%		12.9%	13.7%	
Professional services	14,903	13,457	10.7%	28,388	23,796	19.3%
Percentage of total revenues	10.8%	11.8%		10.8%	10.8%	
Total cost of revenues	<u>\$ 31,920</u>	<u>\$ 29,057</u>	9.9%	<u>\$ 62,534</u>	<u>\$ 53,725</u>	16.4%
Percentage of total revenues	23.2%	25.4%		23.7%	24.5%	
Gross profit	\$ 105,494	\$ 85,553	23.3%	\$ 201,701	\$ 165,123	22.2%
Gross margin	76.8%	74.6%		76.3%	75.5%	
Subscription margin	85.1%	83.9%		84.6%	84.0%	
Professional services margin	35.5%	24.6%		33.8%	25.9%	

Year-over-year growth in cost of subscription revenues was largely driven by increases in depreciation and amortization of \$1.4 million and \$2.0 million for the three and six months ended June 30, 2017, respectively, associated with technology obtained through recent business acquisitions and increased software development capitalization. Net increases in personnel costs of \$0.7 million and \$1.5 million for the three and six months ended June 30, 2017, respectively, driven by a 4% year-over-year headcount increase, also impacted expenses, partially offset by decreased consulting and professional fees. As a result of the scaling of our business, subscription gross margin increased to 85.1% and 84.6% for the three and six months ended June 30, 2017, respectively, compared with 83.9% and 84.0% for the three and six months ended June 30, 2016, respectively.

[Table of Contents](#)

Year-over-year growth in cost of professional services revenues was primarily driven by net increases in personnel costs of \$1.4 million and \$2.7 million for the three and six months ended June 30, 2017, respectively, associated with a 20% year-over-year headcount increase to support strong customer demand. For the six months ended June 30, 2017, cost of professional services revenues were also impacted by increased consulting and professional fees. Professional services gross margin increased to 35.5% and 33.8% for the three and six months ended June 30, 2017, respectively, compared with 24.6% and 25.9% for the three months ended June 30, 2016, respectively, benefiting significantly from effective project mix and more efficient use of resources in the current periods.

Overall gross margin increased to 76.8% and 76.3% for the three and six months ended June 30, 2017, respectively, compared with 74.6% and 75.5% for the three and six months ended June 30, 2016, respectively, driven by strong 2017 margins for both subscription and professional services.

Operating Costs and Expenses

Operating costs and expenses for the three and six months ended June 30, 2017 and 2016 were as follows:

	Three Months Ended June 30,			Six Months Ended June 30,		
	2017	2016	Change	2017	2016	Change
Operating costs and expenses:	(amounts in thousands except percentages)					
Research and development	\$ 35,884	\$ 28,267	26.9%	\$ 65,821	\$ 56,495	16.5%
Percentage of total revenues	26.1%	24.6%		24.9%	25.8%	
Sales and marketing	32,784	27,609	18.7%	62,893	53,067	18.5%
Percentage of total revenues	23.9%	24.1%		23.8%	24.3%	
General and administrative	23,083	18,531	24.6%	47,071	37,777	24.6%
Percentage of total revenues	16.8%	16.2%		17.8%	17.3%	
Total operating costs and expenses	<u>\$ 91,751</u>	<u>\$ 74,407</u>	23.3%	<u>\$ 175,785</u>	<u>\$ 147,339</u>	19.3%
Percentage of total revenues	66.8%	64.9%		66.5%	67.4%	
Operating income	\$ 13,743	\$ 11,146	23.3%	\$ 25,916	\$ 17,784	45.7%
Operating margin	10.0%	9.7%		9.8%	8.1%	

The year-over-year growth in research and development expenses was largely driven by net increases in personnel and recruiting costs of \$3.8 and \$5.4 million for the three and six months ended June 30, 2017, respectively, resulting from a 28% year-over-year headcount increase in connection with our continued hiring of skilled engineering talent and our acquisitions of CHITA Inc. ("CHITA") and Mytrus Inc. ("Mytrus"). Research and development expenses were also impacted by increased use of specialized consultants, outside experts, and third-party software, as well as higher rent expense in connection with new and acquired offices. These increases were partially offset by capitalization of internal-use software development costs associated with our Clinical Cloud platform.

The year-over-year growth in sales and marketing expenses was predominantly driven by net increases in personnel and recruiting costs of \$2.3 million and \$3.6 million for the three and six months ended June 30, 2017, respectively, resulting from an 18% year-over-year headcount increase to expand our global sales organization and partner team. Sales and marketing expense were also impacted by increased conference, event, and travel costs. On a comparable basis, the six months ended June 30, 2017 lack the benefit of the \$1.4 million in grant income that was recorded as a result of the enactment of the New Jersey Business Employment Incentive Program ("NJ BEIP") in the first quarter of 2016.

The year-over-year increase in general and administrative expenses was primarily driven by net increases in personnel-related costs of \$3.4 million and \$5.9 million for the three and six months ended June 30, 2017, respectively, resulting from a 17% year-over-year headcount increase. General and administrative expenses were also impacted by increases in legal and professional fees of \$0.5 million and \$2.3 million for the three and six months ended June 30, 2017, respectively, associated with acquisitions and litigation matters.

Income Taxes

Provision for income taxes for the three and six months ended June 30, 2017 and 2016 was as follows:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
	(amounts in thousands)			
Provision for income taxes	\$ 2,438	\$ 1,688	\$ 1,937	\$ 492

The difference between our effective tax rate and the U.S. statutory rate is primarily due to the relative mix of pre-tax income subject to tax in various jurisdictions, state taxes, share-based compensation, and U.S. tax credits and incentives. The benefits from U.S. credits and incentives will likely continue to have a favorable impact on our overall effective tax rate in the future. Share-based compensation will also continue to have an impact on our effective tax rate which may or may not be favorable.

Our quarterly tax provision and quarterly estimate of the annual effective tax rate are subject to significant variation due to several factors, including variability in accuracy of predictions of pre-tax book and taxable income or loss, the mix of jurisdictions to which they relate, and changes in tax law in the jurisdictions in which we conduct business.

Critical Accounting Estimates

Our condensed consolidated financial statements are prepared in conformity with accounting principles generally accepted in the United States of America, which require us to make estimates and assumptions about certain items and future events. These estimates inherently involve levels of subjectivity and judgment and may have a material impact on our financial condition or results of operations. Accordingly, actual results could differ from those estimates. Our critical accounting estimates as of June 30, 2017 are the same as those at December 31, 2016, which are included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2016. Also see Note 1, "Summary of Significant Accounting Policies," to the condensed consolidated financial statements included in this Quarterly Report on Form 10-Q, which discusses our significant accounting policies.

Effects of Recently Issued Accounting Pronouncements on Current and Future Trends

Refer to Note 1, "Summary of Significant Accounting Policies — Recently Issued Accounting Pronouncements," to the condensed consolidated financial statements included in this Quarterly Report on Form 10-Q. No other recently issued accounting pronouncements have had or are expected to have a material impact on our current or future trends.

Liquidity and Capital Resources

We believe that our cash flows from operations, cash and cash equivalents, and highly liquid marketable securities will be sufficient to satisfy the anticipated cash requirements associated with our existing operations for the foreseeable future. Our future capital expenditures and other cash requirements could be higher than we currently expect as a result of various factors, including any expansion of our business that we may complete. The following table presents selected financial information related to our liquidity and capital resources as of June 30, 2017 and December 31, 2016, and for the six-month periods ended June 30, 2017 and 2016 (in thousands):

	June 30, 2017		December 31, 2016	
Cash, cash equivalents, and marketable securities	\$	535,005	\$	515,222
Furniture, fixtures and equipment, net		71,162		58,461
1.00% convertible senior notes, net		270,647		263,401

	Six Months Ended June 30,	
	2017	2016
Cash provided by operating activities	\$ 60,702	\$ 43,046 ⁽¹⁾
Cash used in investing activities	(42,694)	(19,919)
Cash used in financing activities	(1,480)	(8,821) ⁽¹⁾

(1) As a result of our early adoption of ASU No. 2016-09 in the third quarter of 2016, the consolidated statement of cash flows for the six months ended June 30, 2016 has been adjusted to reflect an offsetting increase of \$5,048 thousand to net cash provided by operating activities and net cash used in financing activities.

Cash, Cash Equivalents, and Marketable Securities

For the six months ended June 30, 2017, cash provided by operating activities of \$60.7 million was driven by strong customer collections, partially offset by operating expenditures and cash interest expense on our 1.00% convertible senior notes. Cash used

[Table of Contents](#)

in investing activities of \$42.7 million consisted of net payments of \$22.9 million in aggregate to acquire CHITA and Mytrus, cash payments for capital expenditures of \$16.6 million, and net purchases of marketable securities of \$3.1 million. Cash used in financing activities of \$1.5 million resulted from the acquisition of \$14.8 million of treasury stock in connection with equity plan participant tax withholdings upon vesting, partially offset by equity plan proceeds of \$13.3 million.

For the six months ended June 30, 2016, cash provided by operating activities of \$43.0 million was driven by strong customer collections, partially offset by operating expenditures and cash interest expense on our 1.00% convertible senior notes. Cash used in investing activities of \$19.9 million consisted of a net payment of \$17.1 million to acquire Intelimage, LLC ("Intelimage") and cash payments for capital expenditures of \$13.4 million, partially offset by net sales of marketable securities of \$10.6 million. Cash used in financing activities of \$8.8 million resulted primarily from the acquisition of \$13.8 million of treasury stock in connection with equity plan participant tax withholdings upon vesting, partially offset by equity plan proceeds of \$5.1 million.

Capital Assets

We acquired \$20.2 million in capital assets during the six months ended June 30, 2017, predominantly related to our new office spaces in Seoul, South Korea and Hammersmith, UK, continued enhancements to our existing infrastructure and facilities, and capitalization of software development costs. On a cash basis, our capital expenditures during the six months ended June 30, 2017 were \$16.6 million and included payments for previously accrued assets. We expect to spend approximately \$17 to \$20 million on additional capital assets during the remainder of 2017.

Debt

In August 2013, we issued \$287.5 million of 1.00% convertible senior notes (the "Notes") that will mature on August 1, 2018 unless earlier repurchased or converted. Upon conversion, we will deliver to the holders of the Notes either cash, shares of our common stock, or a combination thereof, at our election. If converted, we intend to settle the principal amount of the Notes in cash and any excess conversion value beyond the principal amount in shares of our common stock, cash, or a combination thereof. As of June 30, 2017, the Notes are not convertible and therefore are classified as long term liabilities in our condensed consolidated balance sheet. For further information, see Note 7, "Debt," to the condensed consolidated financial statements included in this Quarterly Report on Form 10-Q.

Contractual Obligations, Commitments and Contingencies

The table below summarizes the aggregate effect that our material contractual obligations as of June 30, 2017 are expected to have on our cash flows in the periods indicated (in thousands):

	Total	Payments Due by Period			
		Remainder of 2017	2018 - 2019	2020 - 2021	2022 and later
Contractual Obligations:					
1.00% convertible senior notes	\$ 287,500	\$ —	\$ 287,500	\$ —	\$ —
Interest payments on convertible senior notes	4,313	1,438	2,875	—	—
Operating lease obligations	116,960	7,626	30,826	32,398	46,110
Contingent consideration obligations	5,755	3,965	1,790	—	—
Total	<u>\$ 414,528</u>	<u>\$ 13,029</u>	<u>\$ 322,991</u>	<u>\$ 32,398</u>	<u>\$ 46,110</u>

Legal Matters

For a discussion of legal matters, refer to Note 12, "Commitments and Contingencies — Legal Matters," to the condensed consolidated financial statements included in this Quarterly Report on Form 10-Q.

Item 3. Quantitative and Qualitative Disclosures about Market Risk

Interest Rate Sensitivity

We had unrestricted cash and cash equivalents totaling \$110.7 million at June 30, 2017. Our cash equivalents are invested principally in money market funds. We also had investments in marketable securities, which we classify as available-for-sale securities, totaling \$424.3 million at June 30, 2017. Substantially all of our marketable securities are fixed income securities, which primarily consist of high quality commercial paper and corporate bonds. Due to the short duration, laddered maturities, and high credit ratings of these investments, we believe that we do not have any material exposure to changes in the fair value of our investment portfolio as a result of changes in interest rates.

Exchange Rate Sensitivity

Our non-U.S. operating subsidiaries are located in the United Kingdom, Japan, South Korea, Singapore, China, and Germany. The functional currencies for these subsidiaries are the respective local currencies. We have exposure to exchange rate movements that are captured in translation adjustments for these subsidiaries. Such cumulative adjustments are recorded in accumulated other comprehensive income (loss). The estimated potential translation loss for the six months ended June 30, 2017 resulting from a hypothetical 10% adverse change in quoted foreign currency exchange rates amounted to \$2.6 million.

We bill our customers primarily in U.S. dollars. The majority of our foreign billings are billed from Medidata Solutions, Inc., a U.S. entity, and are mainly denominated in Euros, British pounds sterling, Australian dollars, and Canadian dollars. Our foreign currency-denominated costs and expenses are mainly incurred by our non-U.S. operating subsidiaries. Accordingly, future changes in currency exchange rates will impact our future operating results. For the six months ended June 30, 2017, 4.5% of our revenues and 16.3% of our expenses were denominated in foreign currencies. Total gain (loss) arising from transactions denominated in foreign currencies amounted to \$(0.6) million for the six months ended June 30, 2017.

Impact of Inflation

We do not believe that inflation has had a material impact on our business, financial condition, or results of operations.

Item 4. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

As of June 30, 2017, an evaluation was performed with the participation of our Disclosure Committee and our management, including the Chief Executive Officer ("CEO") and the Chief Financial Officer ("CFO") of the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act). Disclosure controls and procedures are controls and procedures that are designed to ensure that information required to be disclosed in our reports filed or submitted under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures are also designed to ensure that such information is accumulated and communicated to our management, including our CEO and CFO, as appropriate to allow timely decisions regarding required disclosure. Based upon such evaluation, our CEO and CFO have concluded that our disclosure controls and procedures were effective as of June 30, 2017.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting during our most recent fiscal quarter that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

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

See Note 12, "Commitments and Contingencies – Legal Matters," to the condensed consolidated financial statements included in this Quarterly Report on Form 10-Q for a description of current legal proceedings.

Item 1A. Risk Factors

We operate in a rapidly changing environment that involves a number of risks, some of which are beyond our control. The risks described in our Annual Report on Form 10-K for the fiscal year ended December 31, 2016 are those that we believe are the material risks we face. There have been no material changes in our risk factors since our Annual Report on Form 10-K for the fiscal year ended December 31, 2016. Any of those disclosed risk factors or additional risks and uncertainties not presently known to us, or that we currently deem immaterial, could have a material adverse effect on our business, financial condition and results of operations.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds***Purchases of Equity Securities by the Issuer and Affiliated Purchasers***

From time to time, we grant nonvested restricted stock awards, restricted stock units, or performance-based restricted stock units to our employees, pursuant to the terms of our 2017 Long-Term Incentive Plan ("2017 Plan") and formerly pursuant to the terms of our Second Amended and Restated 2009 Long-Term Incentive Plan ("2009 Plan"). Under the provisions of the 2017 Plan and 2009 Plan, unless otherwise elected, participants fulfill their related income tax withholding obligation by having shares withheld at the time of vesting. On the date of vesting, we divide the participant's income tax withholding obligation in dollars by the closing price of our common stock and withhold the resulting number of vested shares.

A summary of our repurchases of shares of our common stock for the three months ended June 30, 2017 is as follows:

	Total Number of Shares Purchased (1)	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Maximum Number of Shares that May Yet be Purchased under the Plans or Programs
April 1 – April 30, 2017	7,928	\$ 60.49	—	—
May 1 – May 31, 2017	5,896	\$ 68.14	—	—
June 1 – June 30, 2017	3,915	\$ 73.37	—	—
Total	17,739	\$ 65.88	—	—

(1) Represents the number of shares acquired as payment by employees of applicable statutory withholding taxes owed upon vesting of restricted stock awards, restricted stock units, or performance-based restricted stock units granted under the 2017 Plan and 2009 Plan.

Item 3. Defaults upon Senior Securities

None.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

None.

Item 6. Exhibits

The information required by this Item 6 is set forth on the exhibit index that follows the signature page of this report.

Signature

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

MEDIDATA SOLUTIONS, INC.

By: /s/ ROUVEN BERGMANN

Rouven Bergmann
Chief Financial Officer (Principal Financial and Principal Accounting Officer)

Date: August 1, 2017

EXHIBIT INDEX

Exhibit No.	Description
10.1†	2017 Long-Term Incentive Plan, incorporated by reference to Exhibit 99.1 to the Registrant's Registration Statement on Form S-8 filed on May 30, 2017 (File No. 333-218349)
10.2†*	Form of Medidata Solutions, Inc. Restricted Stock Agreement
31.1*	Certification of CEO pursuant to Rule 13a-14(a) or Rule 15d-14(a) under the Exchange Act
31.2*	Certification of CFO pursuant to Rule 13a-14(a) or Rule 15d-14(a) under the Exchange Act
32.1**	Certification of CEO pursuant to Rules 13a-14(b) or 15d-14(b) under the Exchange Act and 18 U.S.C. 1350
32.2**	Certification of CFO pursuant to Rules 13a-14(b) or 15d-14(b) under the Exchange Act and 18 U.S.C. 1350
101.INS*	XBRL Instance Document
101.SCH*	XBRL Taxonomy Extension Schema Document
101.CAL*	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF*	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB*	XBRL Taxonomy Extension Label Linkbase Document
101.PRE*	XBRL Taxonomy Extension Presentation Linkbase Document

* Filed herewith.

** Furnished herewith.

† Indicates a management contract or any compensatory plan, contract, or arrangement.

MEDIDATA SOLUTIONS, INC.
RESTRICTED STOCK AGREEMENT

AGREEMENT made as of the [DAY] day of [MONTH], [YEAR], by and between MEDIDATA SOLUTIONS, INC. (the “Company”), and [PARTICIPANT] (the “Participant”).

1. Award. In accordance with the Medidata Solutions, Inc. 2017 Long-Term Incentive Plan (the “Plan”), the Company has made a restricted stock award to the Participant for [###] shares of the Company’s common stock (the “Shares”). Capitalized terms that are used but not defined in this Agreement shall have the meanings ascribed to them by the Plan.

2. Vesting of Shares. Except as otherwise provided herein or the Plan, the Shares will become vested over a four-year period, twenty-five percent (25%) on [ONE YEAR FROM EFFECTIVE DATE] and each of the next three annual anniversaries thereof, subject to the Participant’s continuous employment or other service with the Company or a Subsidiary on the applicable vesting date.

3. Termination of Employment.

(a) General. Except as provided in (b) below, unless the Committee, acting in its sole and absolute discretion, determines otherwise, upon the termination of the Participant’s employment and other service with the Company and its Subsidiaries (“Termination of Employment”), the Participant will forfeit all right, title and interest in the unvested Shares. If unvested Shares are forfeited, any certificate or book entry for such Shares will be automatically canceled on the books and records of the Company without further action by the Participant.

(b) Death or Disability. If the Participant’s employment terminates because of the Participant’s death or if the Company terminates the Participant’s employment by reason of “disability” (as defined below), any unvested Shares then held by the Participant will become fully vested and the restrictions thereon shall lapse as of the date of such termination of employment. For the purpose of this Agreement, the term “disability” shall have the same definition ascribed to that term in the Company’s then-current employee handbook, or in the absence of such a definition in the then-current employee handbook, the term “disability” shall mean a Participant’s inability, due to mental or physical incapacity, to substantially perform the duties of the Participant’s employment for 180 consecutive days, provided such incapacity is determined to be total and permanent by a physician selected by Company or its insurers who is reasonably acceptable to the Participant or the Participant’s legal representative.

4. Transfer Restrictions. The Participant may not sell, assign, transfer, pledge, hedge, hypothecate, encumber or dispose of in any way (whether by operation of law or otherwise) any unvested Shares, and unvested Shares shall not be subject to execution, attachment or similar process. Any attempt by the Participant or any other person claiming against, through or under the Participant to cause unvested Shares to be transferred or assigned in any manner and for any purpose not permitted hereunder or under the Plan shall be null and void and without effect upon the Company, the Participant or any other person.

5. Dividends and Voting Rights. No dividends will be payable on unvested Shares; however, the Participant will be credited with dividend equivalents in the form of cash or Shares in an amount or having a value equal to the amount or value of the dividends that would have been paid on the unvested Shares if they were vested. The dividend equivalents, if any, will be credited to a bookkeeping account in the name of the Participant. The “dividend equivalent” amounts will be subject to the same vesting, forfeiture and other terms and conditions applicable to the corresponding unvested Shares. Dividend equivalent amounts credited with respect to unvested Shares that become vested will be payable to the Participant within 60 days after the date the corresponding unvested Shares become vested. The Participant will be entitled to exercise voting rights with respect to the unvested Shares.

6. Issuance of Shares; Removal of Restrictions and Conditions. The Participant is the record owner of the Shares on the Company’s books, subject to the restrictions and conditions set forth in this Agreement. By executing this Agreement, the Participant expressly authorizes the Company to cancel, reacquire, retire or retain, at its election, any unvested Shares if and when they are forfeited in accordance with this Agreement. The Participant will execute and deliver such other documents and take such other actions, if any, as the Company may reasonably request in order to evidence such action with respect to any unvested Shares that are forfeited. If, as and when Shares become vested, and subject to the satisfaction of applicable withholding and other legal requirements, the vested Shares will no longer be subject to the transfer restrictions and other conditions contained in this Agreement and the Company’s books and, as applicable, stock certificates representing the Shares will be updated accordingly.

7. Withholding. Notwithstanding anything to the contrary contained herein, the vesting of Shares covered by this Agreement shall be subject to and conditioned upon the satisfaction by the Participant of applicable tax withholding obligations. The Committee, acting in its sole discretion in accordance with the Plan, may require or permit the Participant to satisfy such tax withholding obligations (in whole or in part) by or through (a) the payment of cash by the Participant, (b) the Company’s withholding cash or Shares that would otherwise be paid or released pursuant to this Agreement, (c) the transfer to the Company of other Shares owned by the Participant, (d) a broker-assisted cashless exercise arrangement that complies with applicable law, and/or (e) by such other means as the Committee may determine, including, without limitation, withholding from regular and/or incentive cash compensation that may otherwise be or become payable to the Participant. Unless the Committee determines otherwise or the Participant elects to satisfy the tax withholding obligation by an alternative means, Participant's acceptance of this Agreement constitutes Participant's instruction and authorization to the Company to withhold on the Participant's behalf the number of Shares from those Shares issuable to the Participant at the time when the award becomes vested as the Company determines to be sufficient to satisfy the tax withholding obligation.

8. Provisions of the Plan Control. This Agreement is subject to all the terms, conditions and provisions of the Plan and to such rules, regulations and interpretations as may be established or made by the Committee acting within the scope of its authority and responsibility under the Plan. The Participant acknowledges receipt of a copy of the Plan prior to execution of this Agreement. The applicable provisions of the Plan shall govern in any situation where this Agreement is silent

or where the applicable provisions of this Agreement are contrary to or not reconcilable with such Plan provisions.

9. No Employment Rights. Nothing contained herein or in the Plan shall confer upon the Participant any right with respect to the continuation of the Participant's employment or other service with the Company or a Subsidiary or interfere in any way with the right of the Company and its Subsidiaries at any time to terminate such employment or other service or to increase or decrease, or otherwise adjust, the Participant's compensation and any other terms and conditions of the Participant's employment or other service.

10. Committee Authority. The Committee under the Plan shall have complete discretion in the exercise of its rights, powers, and duties under this Agreement. Any interpretation or construction of any provision of, and the determination of any question arising under, this Agreement shall be made by the Committee in its discretion and such exercise shall be final, conclusive, and binding. The Committee may designate any individual or individuals to perform any of its functions hereunder.

11. Successors. This Agreement shall be binding upon, and inure to the benefit of, any successor or successors of the Company, the Participant and any beneficiary of the Participant.

12. Entire Agreement. This Agreement constitutes the entire agreement between the parties with respect to the subject matter hereof and may not be amended, except as provided in the Plan, other than by a written instrument executed by the parties hereto.

13. Governing Law. All rights and obligations under this Agreement and the Plan shall be governed by and construed in accordance with the laws of the State of Delaware, without regard to its principles of conflict of laws.

[Signature page follows]

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first above written.

MEDIDATA SOLUTIONS, INC.

By: _____
Participant

Michael I. Otner
EVP, General Counsel &
Secretary

This Agreement may be signed electronically using a service agreeable to Medidata, and in such cases electronic signatures will be affixed on the Agreement.

**CERTIFICATION PURSUANT TO RULE 13a-14(a) or 15d-14(a) OF THE SECURITIES
EXCHANGE ACT OF 1934, AS ADOPTED PURSUANT TO SECTION 302 OF THE
SARBANES-OXLEY ACT OF 2002**

I, Tarek A. Sherif, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Medidata Solutions, 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 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 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: August 1, 2017

By: /s/ TAREK A. SHERIF

Tarek A. Sherif
Chairman and Chief Executive Officer
Medidata Solutions, Inc.

**CERTIFICATION PURSUANT TO RULE 13a-14(a) or 15d-14(a) OF THE SECURITIES
EXCHANGE ACT OF 1934, AS ADOPTED PURSUANT TO SECTION 302 OF THE
SARBANES-OXLEY ACT OF 2002**

I, Rouven Bergmann, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Medidata Solutions, 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 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 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: August 1, 2017

By: /s/ ROUVEN BERGMANN

Rouven Bergmann
Chief Financial Officer
Medidata Solutions, Inc.

**CERTIFICATION PURSUANT TO 18 U.S.C. §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 Medidata Solutions, Inc. (the "Company") for the period ended June 30, 2017, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Tarek A. Sherif, Chairman and Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. §1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that

- (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: August 1, 2017

By: /s/ TAREK A. SHERIF

Tarek A. Sherif
Chairman and Chief Executive Officer
Medidata Solutions, Inc.

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

**CERTIFICATION PURSUANT TO 18 U.S.C. §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 Medidata Solutions, Inc. (the "Company") for the period ended June 30, 2017, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Rouven Bergmann, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. §1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that

- (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: August 1, 2017

By: /s/ ROUVEN BERGMANN

Rouven Bergmann
Chief Financial Officer
Medidata Solutions, Inc.

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

