Rubicon Technology, Inc.
Form 10-Q
August 10, 2017

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, DC 20549

FORM 10-Q

(Mark one)

Quarterly report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934

for the quarterly period ended 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 001-33834

RUBICON TECHNOLOGY, INC.

(Exact Name of Registrant as Specified in Its Charter)

Delaware	**36-4419301**
(State or Other Jurisdiction of Incorporation or Organization)	**(I.R.S. Employer Identification No.)**
900 East Green Street Bensenville, Illinois	**60106**
(Address of Principal Executive Offices)	**(Zip Code)**

Registrant's Telephone Number, Including Area Code: (847) 295-7000

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

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

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

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

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

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

As of August 7, 2017, the Registrant had 2,724,316 shares of common stock, par value $0.001 per share, outstanding.

RUBICON TECHNOLOGY, INC.

Quarterly Report on Form 10-Q

For the quarterly period ended June 30, 2017

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PART I FINANCIAL INFORMATION

ITEM 1. Consolidated Financial Statements

Rubicon Technology, Inc.

Consolidated balance sheets

	June 30, 2017 (unaudited)	December 31, 2016
	(in thousands, other than share data)	
Assets		
Cash and cash equivalents	$ 17,772	$ 17,672
Restricted cash	170	163
Accounts receivable, net	581	2,585
Inventories	4,714	8,000
Other inventory supplies	1,109	1,486
Prepaid expenses and other current assets	549	1,082
Assets held for sale	16,147	14,761
Total current assets	41,042	45,749
Property and equipment, net	1,275	7,110
Other assets	—	154
Total assets	$ 42,317	$ 53,013
Liabilities and stockholders' equity		
Accounts payable	$ 509	$ 948
Accrued payroll	293	182
Accrued and other current liabilities	530	602
Corporate income and franchise taxes	466	568
Accrued real estate taxes	270	241
Advance payments	12	23
Total current liabilities	2,080	2,564
Commitments and contingencies		
Stockholders' equity		
Preferred stock, $0.001 par value, 5,000,000 undesignated shares authorized, no shares issued or outstanding	—	—

Common stock, $0.001 par value, 8,200,000 shares authorized and 2,896,964 and 2,860,367 shares issued; 2,719,480 and 2,682,882 shares outstanding	29	29
Additional paid-in capital	375,353	374,903
Treasury stock, at cost, 177,484 shares	(12,148)	(12,148)
Accumulated other comprehensive loss	(10)	(30)
Accumulated deficit	(322,987)	(312,305)
Total stockholders' equity	40,237	50,449
Total liabilities and stockholders' equity	$ 42,317	$ 53,013

The accompanying notes are an integral part of these consolidated statements.

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Rubicon Technology, Inc.

Consolidated statements of operations

	Three months ended June 30,		Six months ended June 30,	
	2017	2016	2017	2016
	(unaudited)			
	(in thousands, other than share data)			
Revenue	$1,053	$3,535	$2,322	$7,822
Cost of goods sold	3,889	7,586	6,739	17,292
Gross loss	(2,836)	(4,051)	(4,417)	(9,470)
Operating expenses:				
General and administrative	1,299	2,695	3,110	4,462
Sales and marketing	194	361	438	752
Research and development	195	652	836	1,231
Loss on disposal of assets	432	126	1,181	126
Asset impairment charge	675	265	675	265
Loss from operations	(5,631)	(8,150)	(10,657)	(16,306)
Other income (expense):				
Interest income	28	19	34	43
Interest expense	—	(36)	—	(71)
Realized gain (loss) on foreign currency translation	13	(216)	19	467
Total other income (expense)	41	(233)	53	439
Loss before income taxes	(5,590)	(8,383)	(10,604)	(15,867)
Income tax benefit (expense)	(17)	174	(78)	325
Net loss	$(5,607)	$(8,209)	$(10,682)	$(15,542)
Net loss per common share				
Basic	$(2.16)	$(3.12)	$(4.04)	$(5.92)
Diluted	$(2.16)	$(3.12)	$(4.04)	$(5.92)
Weighted average common shares outstanding used in computing net loss per common share	2,608,814	2,629,640	2,641,144	2,626,151

The accompanying notes are an integral part of these consolidated statements.

Rubicon Technology, Inc.

Consolidated statements of comprehensive loss

	Three months ended June 30,		**Six months ended June 30,**	
	2017	2016	2017	2016
	(unaudited) (in thousands)			
Net loss	$(5,607)	$(8,209)	$(10,682)	$(15,542)
Other comprehensive income:				
Unrealized gain on investments, net of tax	—	—	12	5
Unrealized gain on currency translation	(2)	6	8	4
Other comprehensive income	(2)	6	20	9
Comprehensive loss	$(5,609)	$(8,203)	$(10,662)	$(15,533)

The accompanying notes are an integral part of these consolidated statements.

Rubicon Technology, Inc.

Consolidated statements of cash flows

	Six months ended June 30,	
	2017	2016
	(unaudited) (in thousands)	
Cash flows from operating activities		
Net loss	$(10,682)	$(15,542)
Adjustments to reconcile net loss to net cash used in operating activities		
Depreciation and amortization	868	3,291
Net loss on disposal of assets	1,181	126
Asset impairment charge	675	265
Stock-based compensation	623	731
Deferred taxes	—	(337)
Changes in operating assets and liabilities:		
Accounts receivable	2,004	(999)
Inventories	1,386	505
Inventory reserves	1,900	188
Other inventory supplies	256	232
Prepaid expenses and other assets	692	1,164
Accounts payable	(437)	330
Accrued payroll	109	49
Corporate income and franchise taxes	(101)	(97)
Advanced payments	(12)	20
Accrued and other current liabilities	(47)	(919)
Net cash used in operating activities	(1,585)	(10,993)
Cash flows from investing activities		
Purchases of property and equipment	—	(660)
Proceeds from disposal of assets	1,849	190
Purchases of investments	(9)	(18)
Proceeds from sale of investments	21	7,912
Net cash provided by investing activities	1,861	7,424
Cash flows from financing activities		
Taxes paid related to net share settlement of equity awards	(173)	(1)
Restricted cash	(7)	(12)
Net cash used in financing activities	(180)	(13)
Net effect of currency translation	4	(567)
Net decrease in cash and cash equivalents	100	(4,149)
Cash and cash equivalents, beginning of period	17,672	21,216

Cash and cash equivalents, end of period	$17,772	$17,067

The accompanying notes are an integral part of these consolidated statements.

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Rubicon Technology, Inc.

NOTES TO UNAUDITED CONSOLIDATED FINANCIAL STATEMENTS

June 30, 2017

1. BASIS OF PRESENTATION

Interim financial data

The accompanying unaudited consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States ("GAAP") for interim financial information and with the instructions to Form 10-Q and Article 10 of Regulation S-X. Accordingly, they do not include all of the information and notes required by GAAP for complete consolidated financial statements and should be read in conjunction with Rubicon Technology, Inc.'s (the "Company") annual report filed on Form 10-K, for the fiscal year ended December 31, 2016. In the opinion of management, all adjustments (consisting only of adjustments of a normal and recurring nature) considered necessary for a fair presentation of the results of operations have been included. Consolidated operating results for the three and six months periods ended June 30, 2017 are not necessarily indicative of results that may be expected for the year ending December 31, 2017.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Principles of consolidation

The consolidated financial statements include the accounts of the Company and its wholly owned subsidiaries, Rubicon Worldwide LLC, Rubicon Sapphire Technology (Malaysia) SDN BHD, and Rubicon Technology Hong Kong Limited. All intercompany transactions and balances have been eliminated in consolidation.

Foreign currency translation and transactions

Rubicon Worldwide LLC and Rubicon Technology Hong Kong Limited’s assets and liabilities are translated into U.S. dollars at exchange rates existing at the respective balance sheet dates and capital accounts at historical exchange rates. The results of operations are translated into U.S. dollars at the average exchange rates during the respective period. Translation adjustments resulting from fluctuations in exchange rates for Rubicon Worldwide LLC and Rubicon Technology Hong Kong Limited are recorded as a separate component of accumulated other comprehensive income (loss) within stockholders’ equity.

The Company has determined that the functional currency of Rubicon Sapphire Technology (Malaysia) SDN BHD is the U.S. dollar. Rubicon Sapphire Technology (Malaysia) SDN BHD’s assets and liabilities are translated into U.S. dollars using the remeasurement method. Non-monetary assets are translated at historical exchange rates and monetary assets are translated at exchange rates existing at the respective balance sheet dates. Translation adjustments for Rubicon Sapphire Technology (Malaysia) SDN BHD are included in determining net income (loss) for the period. The results of operations are translated into U.S. dollars at the average exchange rates during the period. The Company records these gains and losses in other income (expense).

Foreign currency transaction gains and losses are generated from the effects of exchange rate changes on transactions denominated in a currency other than the functional currency of the Company, which is the U.S. dollar. Gains and losses on foreign currency transactions are generally required to be recognized in the determination of net income (loss) for the period. The Company records these gains and losses in other income (expense).

Going Concern

The Company evaluates whether it is probable that known conditions or events, considered in the aggregate, would raise substantial doubt about the Company’s ability to continue as a going concern within one year after the date that the financial statements are issued. If such conditions or events are identified, the Company prepares mitigation plans to alleviate the doubt or a statement of the substantial doubt about the Company’s ability to continue as a going concern. The Company’s negative financial trends of recurring operating losses and negative cash flow from operating activities are considered conditions or events that raise substantial doubt about the Company’s ability to continue as a going concern. The Company has plans in place that are considered as probable to effectively mitigate the adverse conditions. Activities around the Company’s restructuring and mitigation plans are more fully disclosed below under assets held for sale and long-lived assets.

Investments

When the Company invests available cash, it primarily invests it in investment grade commercial paper, corporate notes, FDIC guaranteed certificates of deposit, common stock, and government securities. Investments classified as available-for-sale securities are carried at fair market value with unrealized gains and losses recorded in accumulated other comprehensive loss. Investments in trading securities are reported at fair value, with both realized and unrealized gains and losses recorded in other income (expense), in the Consolidated Statement of Operations. Investments in which the Company has the ability and intent, if necessary, to liquidate in order to support its current operations, are classified as short-term.

The Company reviews its available-for-sale securities investments at the end of each quarter for other-than-temporary declines in fair value based on the specific identification method. The Company considers various factors in determining whether an impairment is other-than-temporary, including the severity and duration of the impairment, changes in underlying credit ratings, forecasted recovery, its ability and intent to hold the investment for a period of time sufficient to allow for any anticipated recovery in market value and the probability that the scheduled cash payments will continue to be made. When the Company concludes that an other-than-temporary impairment has resulted, the difference between the fair value and carrying value is written off and recorded as a charge on the Consolidated Statement of Operations.

Accounts receivable

The majority of the Company’s accounts receivable is due from manufacturers serving the optical systems and specialty electronics devices industries. Credit is extended based on an evaluation of the customer’s financial condition. Accounts receivable are due based on contract terms and at stated amounts due from customers, net of an allowance for doubtful accounts.

Accounts outstanding longer than the contractual payment terms are considered past due. The Company determines its allowance by considering a number of factors, including the length of time past due, the customer’s current ability to pay and the condition of the general economy and industry as a whole. The Company writes off accounts receivable when they are deemed uncollectible, and payments subsequently received on such receivables are recorded as a reduction to bad debt expense. The following table shows the activity of the allowance for doubtful accounts:

	June 30, 2017	December 31, 2016
	(in thousands)	
Beginning balance	$31	$ 389
Net allowance adjustments	(21)	(235)
Accounts charged off, less recoveries	(4)	(123)
Ending balance	$6	$ 31

Inventories

Inventories are valued at the lower of cost or market. Raw materials cost is determined using the first-in, first-out method, and work-in-process and finished goods costs are determined on a standard cost basis, which includes materials, labor and overhead. The Company reduces the carrying value of its inventories for differences between the cost and the estimated net realizable value, taking into account usage, expected demand, technological obsolescence and other information.

The Company establishes inventory reserves when conditions exist that suggest inventory may be in excess of anticipated demand or is obsolete based on customer specifications. The Company evaluates the ability to realize the value of its inventory based on a combination of factors, including forecasted sales, estimated current and future market value and changes in customers' product specifications. The Company's method of estimating excess and obsolete inventory has remained consistent for all periods presented.

At times in 2016, the Company accepted sales orders for core and wafer products at prices lower than cost. Based on these sales prices, the Company recorded for the three months and six months ended June 30, 2016, a lower of cost or market adjustment which reduced inventory and increased cost of goods sold by $204,000 and $1.1 million, respectively. The Company did not record any additional lower of cost or market adjustments for the three and six months ended June 30, 2017.

The Company evaluates the amount of raw material needed for future production based on expected crystal growth production needed to meet anticipated sales. Based on this review, the Company determined at June 30, 2017 to lower its expected requirements for raw material inventory supply from five to three years and that it had excess material needed for future production. For the three and six months ended June 30, 2017, an excess and obsolete adjustment was recorded which reduced inventory and increased cost of goods sold by $2.4 million.

	June 30, 2017	December 31, 2016
	(in thousands)	
Raw materials	$546	$ 3,112
Work in progress	3,808	4,251
Finished goods	360	637
	$4,714	$ 8,000

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Property and equipment

Property and equipment consisted of the following:

	June 30, 2017	December 31, 2016
	(in thousands)	
Machinery, equipment and tooling	$6,128	$ 17,769
Leasehold improvements	4,624	4,624
Furniture and fixtures	8	991
Information systems	841	699
Construction in progress	247	263
Total cost	11,848	24,346
Accumulated depreciation and amortization	(10,573)	(17,326)
Property and equipment, net	$1,275	$ 7,110

Assets held for sale and long-lived assets

When circumstances, such as adverse market conditions, indicate that the carrying value of a long-lived asset may be impaired, the Company performs an analysis to review the recoverability of the asset's carrying value. The Company makes estimates of the undiscounted cash flows (excluding interest charges) from the expected future operations of the asset. These estimates consider factors such as expected future operating income, operating trends and prospects, as well as the effects of demand, competition and other factors. If the analysis indicates that the carrying value is not recoverable from future cash flows, an impairment loss is recognized to the extent that the carrying value exceeds the estimated fair value. The estimated fair value of assets is determined using appraisal techniques, which assume the highest and best use of the asset by market participants, considering the use of the asset that is physically possible, legally permissible, and financially feasible at the measurement date. Any impairment losses are recorded as operating expenses, which reduce net income.

In the third quarter of 2016, the Company announced its decision to limit its focus to the optical and industrial sapphire markets and to exit the LED market. This resulted in the closing of the Company's Malaysia facility. The Company evaluated its Malaysia asset portfolio based on assuming an orderly liquidation plan. Based on this review, the Company recorded for the year ended December 31, 2016 an asset impairment charge on its Malaysia machinery, equipment and facilities. In the fourth quarter of 2016, the Company developed a plan to scale down the remaining operations and sell additional assets that would not be needed. In this regard, the Company identified excess U.S. machinery, equipment and facilities. Based on these reviews, the Company recorded for the year ended December 31, 2016 an asset impairment charge on its Malaysia and U.S. machinery, equipment and facilities of $26.6 million.

In the six months ended June 30, 2017, the Company held auctions and individual assets sales of certain equipment located in Batavia, Illinois, and Malaysia, resulting in the sale of a portion of the excess U.S. and some of the Malaysia equipment classified as (a) assets held for sale or (b) machinery and equipment which had a net book value of $2.9 million. Unsold equipment, including excess crystal growth furnaces, was classified as current assets held for sale at June 30, 2017.

The Company is seeking to sell a manufacturing and office facility in Batavia, Illinois, a parcel of land the Company owns in Batavia, Illinois, and a facility in Penang, Malaysia. Although the Company cannot assure the timing of any sales, as it is the Company's intention to complete these sales within the next twelve-month period, these properties were classified as current assets held for sale at June 30, 2017 and December 31, 2016.

At June 30, 2017, the Company reviewed the current fair market value of its assets. With the scaling down of the Company's U.S. operations, the Company identified at June 30, 2017, additional assets that will not be needed. For the three and six months ended June 30, 2017, the Company reduced the net book value of certain machinery and equipment and recorded an asset impairment charge of $675,000. The Company will continue to assess its long-lived assets and adjust the carrying amount of these assets to reflect any changes in the asset usage, marketplace and other factors used in determining the current fair market value.

The Company cannot guarantee that it will be able to successfully complete the sale of any assets.

The table below summarizes the non-financial assets that were measured and recorded at fair value on a non-recurring basis as of June 30, 2017 and loss recorded during the six months ended June 30, 2017 on those assets:

	Carrying value at June 30, 2017	Quoted prices in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)	Loss for six months ended June 30, 2017
	(in thousands)				
Long lived assets held and used	$1,275	$ —	$ 1,275	$ —	$ 675
Long lived assets held for sale	16,147	—	16,147	—	—
Total nonrecurring for value measurements	$17,422	$ —	$ 17,422	$ —	$ 675

The table below summarizes the non-financial assets that were measured and recorded at fair value on a non-recurring basis as of December 31, 2016 and loss recorded during the twelve months ended December 31, 2016 on those assets:

	Carrying value at December 31, 2016	Quoted prices in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)	Loss for twelve months ended December 31, 2016
	(in thousands)				
Long lived assets held and used	$7,110	$ —	$ 7,110	$ —	$ 12,264
Long lived assets held for sale	14,761	—	14,761	—	14,290
Total nonrecurring for value measurements	$21,871	$ —	$ 21,871	$ —	$ 26,554

Revenue recognition

Revenue recognized includes product sales and billings for costs and fees for government contracts.

Product Sales

The Company recognizes revenue from product sales when earned. Revenue is recognized when, and if, evidence of an arrangement is obtained and the other criteria to support revenue recognition are met, including:

Persuasive evidence of an arrangement exists. The Company requires evidence of a purchase order with the customer indicating the terms and specifications of the product to be delivered, typically in the form of a signed quotation or purchase order from the customer.

Title has passed and the product has been delivered. Title passage and product delivery generally occur when the product is delivered to a common carrier.

The price is fixed or determinable. All terms are fixed in the signed quotation or purchase order received from the customer. Purchase orders do not contain rights of cancellation, return, exchange or refund.

Collection of the resulting receivable is reasonably assured. The Company's standard arrangement with customers includes payment terms. Customers are subject to the credit review process that evaluates each customer's financial position and ability to pay. Collectability is determined by considering the length of time the customer has been in business and its history of collections. If it is determined that collection is not probable, no product is shipped and no revenue is recognized unless cash is received in advance.

Government Contracts

The Company recognizes research and development revenue in the period during which the related costs are incurred over the contractually defined period. In July 2012, the Company signed a contract with the Air Force Research Laboratory to produce large-area sapphire windows on a cost plus fixed fee basis. The Company records research and development revenue on a gross basis as costs are incurred, plus a portion of the fixed fee. For the three and six months ended June 30, 2017, $3,000 and $29,000 of revenue was recorded, respectively, and for the three and six months ended June 30, 2016, $112,000 and $209,000 of revenue was recorded, respectively. The total value of the contract is $4.7 million, of which $4.3 million has been recorded through June 30, 2017. For the year ended December 31, 2016, the Company recorded estimated costs expected to be incurred in excess of this contract value of $217,000. No additional adjustments for the excess contract costs were recorded for the three and six months ended June 30, 2017.

The Company does not provide maintenance or other services and it does not have sales that involve multiple elements or deliverables.

Segment information

The Company evaluates operations as one reportable segment, as it only reports profit and loss information on an aggregate basis to its chief operating decision maker.

Net income per common share

Basic net income per common share is computed by dividing net income by the weighted-average number of common shares outstanding during the period. Diluted net income per common share is computed by dividing net income by the weighted-average number of diluted common shares outstanding during the period. Diluted shares outstanding are calculated by adding to the weighted-average shares any outstanding stock options and warrants based on the treasury stock method.

Diluted net loss per share is the same as basic net loss per share for the three and six months ended June 30, 2017 and 2016 because the effects of potentially dilutive securities are anti-dilutive.

As of June 30, 2017 and 2016, diluted shares outstanding were the same as basic shares outstanding as the exercise price of outstanding stock options exceeded the weighted-average trading share price.

Other comprehensive loss

Comprehensive loss is defined as the change in equity of a business enterprise from transactions and other events from non-owner sources. Comprehensive loss includes net earnings (loss) and other non-owner changes in equity that bypass the statement of operations and are reported in a separate component of equity. For the six months ended June 30, 2017 and for the twelve months ended December 31, 2016, other comprehensive loss includes the unrealized loss on investments and foreign currency translation adjustments.

The following table summarizes the components of accumulated comprehensive loss:

	June 30, 2017	December 31, 2016
	(in thousands)	
Unrealized loss on investments	$-	$ (12)
Unrealized loss on currency translation	(10)	(18)
Ending balance	$(10)	$ (30)

New accounting pronouncements adopted

In March 2016, the FASB issued ASU No. 2016-09 ("ASU 2016-09"), *Compensation—Stock Compensation* (*Topic 718): Improvements to Employee Share-Based Payment Accounting* which modifies several aspects of the accounting for share-based payment transactions, including income tax consequences, classification of awards as either equity or liabilities, and classification on the statement of cash flows. The Company adopted ASU 2016-09 at January 1, 2017, and the impact of adopting ASU 2016-09 for the six months ended June 30, 2017 was that the Company was required to bring the deferred tax assets related to off balance net operating losses onto the balance sheet. This increased the Company's deferred tax assets by $10.3 million with a corresponding entry to retained earnings. Since the Company continues to be in a full valuation allowance, there was an entry made to the valuation allowance to offset the increase to the deferred tax assets with a corresponding entry to retained earnings.

Recent accounting pronouncements

In January 2016, the FASB issued ASU No. 2016-01 ("ASU 2016-01"), *Financial Instruments—Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities.* The standard requires equity investments (except those accounted for under the equity method of accounting, or those that result in consolidation of the investee) to be measured at fair value with changes in fair value recognized in net income, requires public business entities to use the exit price notion when measuring the fair value of financial instruments for disclosure purposes, requires separate presentation of financial assets and financial liabilities by measurement category and form of financial asset, and eliminates the requirement for public business entities to disclose the method(s) and significant assumptions used to estimate the fair value that is required to be disclosed for financial instruments measured at amortized cost. These changes become effective for fiscal years beginning after December 15, 2017. The Company is evaluating the impact, if any, of adopting ASU 2016-01 on its financial statements.

In February 2016, the FASB issued ASU No. 2016-02 ("ASU 2016-02"), *Leases (Topic 842)* which modifies the lease recognition requirements and requires entities to recognize the assets and liabilities arising from leases on the balance sheet. ASU 2016-02 requires entities to use a modified retrospective approach for leases that exist or are entered into after the beginning of the earliest comparative period in the financial statements. ASU 2016-02 is effective for annual reporting periods beginning after December 15, 2018. Early adoption is permitted. The Company is evaluating the impact, if any, of adopting ASU 2016-02 on its financial statements.

In April 2016, the FASB issued ASU No. 2016-10 ("ASU 2016-10"), *Revenue from Contracts with Customers (Topic 606): Identifying Performance Obligations and Licensing.* This update clarifies how an entity identifies performance obligations related to customer contracts as well as helps to improve the operability and understanding of the licensing implementation guidance. The amendments in this update affect the guidance in ASU No. 2014-09, ("ASU 2014-09"), *Revenue from Contracts with Customers (Topic 606),* which supersedes most of the current revenue recognition requirements. The underlying principle is that an entity will recognize revenue to depict the transfer of goods or services to customers at an amount that the entity expects to be entitled to in exchange for those goods or services. The guidance provides a five-step analysis of transactions to determine when and how revenue is recognized. Other major provisions include capitalization of certain contract costs, consideration of time value of money in the transaction price, and allowing estimates of variable consideration to be recognized before contingencies are resolved in certain circumstances. The guidance also requires enhanced disclosures regarding the nature, amount, timing and uncertainty of revenue and cash flows arising from an entity's contracts with customers. The guidance is effective for the interim and annual periods beginning on or after December 15, 2017 (early adoption is not permitted). The guidance permits the use of either a retrospective or cumulative effect transition method. In May 2016, the FASB issued ASU No. 2016-12, ("ASU 2016-12"), Revenue from Contracts with Customers (Topic 606): Narrow-Scope Improvements and Practical Expedients. This update clarifies the objectives of collectability, sales and other taxes, noncash consideration, contract modifications at transition, completed contracts at transition and technical correction. The amendments in this update affect the guidance in ASU 2014-09. While the Company is currently assessing the impact of the new standards, the Company's revenue is primarily generated from the sale of finished products to customers. Sales predominantly contain a single delivery element and revenue is recognized at a single point in time when ownership, risks, and rewards transfer. These are largely unaffected by the new standard. The Company does not expect this new guidance to have a material impact on the amount of overall sales recognized; however, the timing of sales on certain projects may be affected. The Company has not yet quantified this potential impact.

In August 2016, the FASB issued ASU No. 2016-15 ("ASU 2016-15"), *Statement of Cash Flows (Topic230): Classification of Certain Cash Receipts and Cash Payments* which adds or clarifies guidance on the classification of certain cash receipts and payments in the statement of cash flows. The standard addresses eight specific cash flow issues with the objective of reducing diversity in practice. ASU 2016-15 is effective for the interim and annual periods beginning after December 15, 2017 with early adoption permitted. The Company is in the process of performing its initial assessment of the potential impact on its Consolidated Financial Statements and has not decided on its adoption methodology. The Company is evaluating the impact, if any, of adopting ASU 2016-15 on its financial statements.

In January 2017, the FASB issued ASU No. 2017-01 ("ASU 2017-01"), *Business Combinations (Topic 805): Clarifying the Definition of a Business*. This update clarifies the definition of a business with the objective of adding guidance to assist entities with evaluating whether transactions should be accounted for as acquisitions (or disposal) of assets or businesses. The update provides new guidance to determine when an integrated set of assets and activities (collectively referred to as a "set") is not a business. The guidance requires that when substantially all of the fair value of the gross assets acquired (or disposed of) is concentrated in a single identifiable asset or a group of similar identifiable assets, the set is not a business. ASU 2017-01 is effective for the interim and annual periods beginning after December 15, 2017 with early adoption permitted. The Company is evaluating the impact, if any, of adopting ASU 2017-01 on its financial statements.

3. SIGNIFICANT CUSTOMERS

For the three months ended June 30, 2017, the Company had three customers individually that accounted for approximately 17%, 12%, and 10% of revenue. For the three months ended June 30, 2016, the Company had three customers individually that accounted for approximately 39%, 18%, and 12% of revenue. For the six months ended June 30, 2017, the Company had four customers that accounted for approximately 17%, 13%, 11% and 11% of revenue. For the six months ended June 30, 2016, the Company had three customers that accounted for approximately 37%, 14% and 10% of revenue. No other customers accounted for more than 10% of revenue for these reported periods in 2017 and 2016.

Customers individually representing more than 10% of trade receivables accounted for approximately 65% and 75% of accounts receivable as of June 30, 2017 and December 31, 2016, respectively. The Company grants credit to customers based on an evaluation of their financial condition. Losses from credit sales are provided for in the financial statements.

4. STOCKHOLDERS' EQUITY

Common Stock

On April 19, 2017, the Company received a staff determination letter from the Listing Qualifications Department of NASDAQ informing the Company that it has failed to regain compliance with the minimum bid price requirement set forth in Listing Rule 5550(a) (2), and that the Company's common stock would be delisted from the NASDAQ Capital Market at the opening of business on April 28, 2017 unless the Company timely requested an appeal of this determination. On April 26, 2017, the Company submitted an appeal requesting a hearing before a NASDAQ listing qualifications panel. With completion of the reverse stock split (described below) our shares began trading above the required $1.00 per share closing bid price. On May 19, 2017, the Company received notification from NASDAQ that the bid price deficiency had been cured and the Company is considered in compliance with all applicable listing standards.

At the Company's annual meeting of stockholders held on May 3, 2017, the Company's stockholders approved, (i) an amendment to the Company's Eighth Amended and Restated Certificate of Incorporation (as amended, the "Certificate of Incorporation") to effect a reverse stock split of the Company's common stock in a range of 1-for-10 to 1-for-20, such ratio to be determined in the sole discretion of the Board; and (ii) an amendment to the Certificate of Incorporation to decrease the Company's authorized number of shares of common stock to three times the number of shares of the Company's common stock outstanding immediately following the reverse stock split, rounded up to the nearest 100,000 shares. On May 3, 2017, following the annual meeting, the Board determined to effect the reverse stock split at a ratio of 1-for-10, and the Company filed with the Secretary of State of the State of Delaware a Certificate of Amendment to (a) implement the reverse stock split and (b) to reduce the number of authorized shares of common stock from 40,000,000 to 8,200,000, consequently reducing the number of total authorized shares from 45,000,000 to 13,200,000.. The amendment, reverse stock split and reduction in authorized shares were effective on May 5, 2017.

As a result of the reverse stock split, every 10 shares of issued and outstanding common stock were automatically combined into one issued and outstanding share of common stock. Following the amendment to the Certificate of Incorporation, the Company has a total of 13,200,000 authorized shares, comprised of (i) 8,200,000 shares of common stock and (ii) 5,000,000 shares of preferred stock.

Stockholders received cash in lieu of any fractional shares resulting from the reverse stock split in a proportionate amount equal to $0.78 per pre-split share based on the average closing price of the Common Stock for the 30 trading days immediately preceding the effective date of the reverse stock split.

As of June 30, 2017, the Company had reserved 178,288 shares of common stock for issuance upon the exercise of outstanding common stock options and vesting of restricted stock units. Also 265,376 shares of the Company's common stock were reserved for future grants of stock options and restricted stock units (or other similar equity instruments) under the Rubicon Technology, Inc. 2016 Stock Incentive Plan (the "2016 Plan") as of June 30, 2017.

5. STOCK INCENTIVE PLANS

The Company sponsored a stock option plan, the Rubicon Technology Inc. 2001 Equity Plan as amended (the "2001 Plan"), which allowed for the granting of incentive and nonqualified stock options for the purchase of common stock. The maximum number of shares that may be awarded or sold under the 2001 Plan was 144,967 shares. Each option granted under the 2001 Plan entitled the holder to purchase one share of common stock at the specified option exercise price. The exercise price of each incentive stock option granted could not be less than the fair market value on the grant date. Management and the Board of Directors ("the Board") determined vesting periods and expiration dates at the time of the grant. On August 2, 2011, the 2001 Plan expired. Any existing options under the 2001 Plan remain outstanding in accordance with their current terms under the 2001 Plan.

In August 2007, the Company adopted the Rubicon Technology Inc. 2007 Stock Incentive Plan, which was amended and restated effective in March 2011 (the "2007 Plan"), and which allowed for the grant of incentive stock options, non-statutory stock options, stock appreciation rights, restricted stock, restricted stock units ("RSUs"), performance awards and bonus shares. The maximum number of shares that could be awarded under the 2007 Plan was 440,769 shares. Options granted under the 2007 Plan entitle the holder to purchase shares of the Company's common stock at the specified option exercise price, which could not be less than the fair market value of the common stock on the grant date. On June 24, 2016, the plan terminated with the adoption of the Rubicon Technology, Inc. 2016 Stock Incentive Plan, (the "2016 Plan"). Any existing awards under the 2007 Plan remain outstanding in accordance with their current terms under the 2007 Plan.

In June 2016, the Company's stockholders approved adoption of the 2016 Plan effective as of March 17, 2016, which allows for the grant of incentive stock options, non-statutory stock options, stock appreciation rights, restricted stock, RSUs, performance awards and bonus shares. The Compensation Committee of the Board administers the 2016 Plan. The committee determines the type of award to be granted, the fair market value, the number of shares covered by the award, and the time when the award vests and may be exercised.

Pursuant to the 2016 Plan, 222,980 shares of the Company's common stock plus any shares subject to outstanding awards under the 2007 Plan that subsequently expire unexercised, are forfeited without the delivery of shares or are settled in cash, will be available for issuance under the 2016 Plan. The 2016 Plan will automatically terminate on March 17, 2026, unless the Company terminates it sooner.

The Company uses the Black-Scholes option pricing model to value stock options issued after January 1, 2006. The Company uses a three-year historical stock price average to determine its volatility assumptions. The assumed risk-free rates were based on U.S. Treasury rates in effect at the time of grant with a term consistent with the expected option lives. The expected term is based upon the vesting term of the Company's options, a review of a peer group of companies, and expected exercise behavior. The forfeiture rate is based on past history of forfeited options. The expense is allocated using the straight-line method. For the three and six months ended June 30, 2017, the Company recorded $40,000 and $238,000, respectively, of stock option compensation expense. For the three and six months ended June 30, 2016, the Company recorded $151,000 and $312,000, respectively, of stock option compensation expense. As of June 30, 2017, the Company had $296,000 of total unrecognized compensation cost related to non-vested stock option awards granted under the Company's stock-based plans that it expects to recognize over a weighted-average period of 2.51 years.

The Company used a Monte Carlo simulation model valuation technique to determine the fair value of 59,098 RSUs granted in March 2017 to a key executive pursuant to an employment agreement because the awards vest based upon the achievement of market price targets of the Company's common stock. The RSUs vest in the amounts set forth below on the first date the 15-trading day average closing price of the Company's common stock equals or exceeds the corresponding target price for the common stock before March 15, 2021.

Number of restricted stock units	**Target price**
15,000	$6.50
15,000	$8.00
15,000	$9.50
14,098	$11.00

During the six months ended June 30, 2017, the first three tranches of the grant vested.

When the negotiation of the terms of the employment agreement began, the closing price of the common stock was approximately $5.50 per share. On the date of grant, the closing price of the Company's common stock was $6.30 per share.

The Monte Carlo simulation model utilizes multiple input variables that determine the probability of satisfying the market condition stipulated in the award and calculates the fair value of each RSU. The Company used the following assumptions in determining the fair value of the RSUs:

Daily expected stock price volatility	4.4237 %
Daily expected mean return on equity	(0.2226%)
Daily expected dividend yield	0.0 %
Average daily risk free interest rate	0.0063 %

The daily expected stock price volatility is based on a four-year historical volatility of the Company's common stock. The daily-expected dividend yield is based on annual expected dividend payments. The average daily risk-free interest rate is based on the three-year treasury yield as of the grant date. Each of the tranches is calculated to have its own fair value and requisite service period. The fair value of each tranche is amortized over the requisite or derived service period, which is up to four years. These RSUs had a grant date fair value of $322,623.

The following table summarizes the activity of the stock incentive and equity plans as of June 30, 2017 and changes during the six months then ended:

	Shares available for grant	Number of options outstanding	Weighted-average option exercise price	Number of restricted stock and board shares issued	Number of restricted stock units outstanding
At January 1, 2017	243,218	253,541	$ 37.30	76,483	12,584
Granted	(65,261)	—	—	6,162	59,098
Exercised/issued	—	—	—	—	(49,156)
Cancelled/forfeited	87,419	(97,779)	34.75	—	—
At June 30, 2017	265,376	155,762	$ 38.07	82,645	22,526

The Company's aggregate intrinsic value is calculated as the difference between the exercise price of the underlying stock options and the fair value of the Company's common stock. Based on the fair market value of the common stock at June 30, 2017 and 2016, there was no intrinsic value for options outstanding.

A summary of the Company's non-vested options during the six months ended June 30, 2017 is presented below:

	Options	Weighted-average exercise price
Non-vested at January 1, 2017	148,983	$ 10.20
Granted	—	—
Vested	(27,394)	15.15
Forfeited	(35,276)	9.58
Non-vested at June 30, 2017	86,313	$ 8.87

For the three and six months ended June 30, 2017, the Company recorded $188,000 and $324,000, respectively, of restricted stock unit ("RSU") expense. For the three and six months ended June 30, 2016, the Company recorded $67,000 and $138,000, respectively, of restricted stock unit ("RSU") expense. As of June 30, 2017, there was $166,000 of unrecognized compensation cost related to the non-vested RSUs. This cost is expected to be recognized over a weighted-average period of 0.6 years.

A summary of the Company's restricted stock units is as follows:

	RSUs outstanding	Weighted average price at time of grant	Aggregate intrinsic value
Non-vested restricted stock units as of January 1, 2017	12,584	$ 16.00	
Granted	59,098	6.30	
Vested	(49,156)	8.49	
Cancelled	—	—	
Non-vested at June 30, 2017	22,526	$ 6.94	$ 208,590

For the three and six months June 30, 2017, the Company recorded $57,000 and $61,000, respectively, of stock compensation expense related to restricted stock. For the three and six months ended June 30, 2016, the Company recorded $143,000 and $281,000, respectively, of stock compensation expense related to restricted stock.

An analysis of restricted stock issued is as follows:

Non-vested restricted stock as of January 1, 2017	16,470
Granted	6,162
Vested	(17,728)
Non-vested restricted stock as of June 30, 2017	4,904

6. COMMITMENTS AND CONTINGENCIES

Litigation

From time to time, the Company experiences routine litigation in the normal course of its business. The Company currently does not have any material pending litigation.

7. INCOME TAXES

The Company is subject to income taxes in the U.S. and Malaysia. On a quarterly basis, the Company assesses the recoverability of deferred tax assets and the need for a valuation allowance. Such evaluations involve the application of significant judgment and multiple factors, both positive and negative, are considered. For the period ended June 30, 2017, a valuation allowance has been included in the 2017 forecasted effective tax rate. The Company is in a cumulative loss position for the past three years, which is considered significant negative evidence that is difficult to overcome on a "more likely than not" standard through objectively verifiable data. Under the accounting standards objective verifiable evidence is given greater weight than subjective evidence such as the Company's projections for future growth. Based on an evaluation in accordance with the accounting standards, as of December 31, 2016, a valuation allowance has been recorded against the net U.S. deferred tax assets in order to measure only the portion of the deferred tax assets that are more likely than not to be realized based on the weight of all the available evidence. At June 30, 2017, the Company continues to be in a three-year cumulative loss position, therefore, until an appropriate level of profitability is attained, the Company expects to maintain a full valuation allowance on its U.S. and Malaysia net deferred tax assets. Any U.S. and Malaysia tax benefits or tax expense recorded on the Company's Consolidated Statement of Operations will be offset with a corresponding valuation allowance until such time that the Company changes its determination related to the realization of deferred tax assets. In the event that the Company changes its determination as to the amount of deferred tax assets that can be realized, the Company will adjust its valuation allowance with a corresponding impact to the provision for income taxes in the period in which such determination is made.

The tax provision for the three and six months ended June 30, 2017 is based on an estimated combined statutory effective tax rate. The Company recorded for the three and six months ended June 30, 2017 a tax expense of $17,000 and $78,000 respectively for an effective tax rate of 0.0%.and 0.1%, respectively. For the three and six months ended

June 30, 2017, the difference between the Company’s effective tax rate and the U.S. federal 35% statutory rate and state 6.2% (net of federal benefit) statutory rate was primarily related to U.S. and Malaysia valuation allowances, Malaysia foreign tax rate differential, and Malaysia withholding taxes.

8. CREDIT FACILITY

In January 2013, the Company entered into a three-year term agreement with a bank to provide the Company with a senior secured credit facility of up to $25.0 million. The agreement provided for the Company to borrow up to 80% of eligible accounts receivable and up to 35% of domestically held raw material and finished goods inventory. Advances against inventory were limited to 40% of the aggregate outstanding on the revolving line of credit and $10.0 million in aggregate. The Company had the option to borrow at an interest rate of LIBOR plus 2.75% or the Wall Street Journal prime rate plus 0.50%. If the Company maintained liquidity of $20.0 million or greater with the lending institution, then the borrowing interest rate options were LIBOR plus 2.25% or the Wall Street Journal prime rate. There was an unused revolving line facility fee of 0.375% per annum. In August 2015, the Company entered into an amended agreement with the bank to extend the senior secured facility through January 2018. Under the amended agreement, advances against inventory were limited to the lesser of 45% of the aggregate outstanding principal on the revolving line of credit and $10.0 million and the rate on facility fee on the unused portion of the revolving line was adjusted to 0.50% per annum.

In September 2016, the Company voluntarily terminated the loan agreement. Pursuant to the pay-off letter for termination of the loan agreement, upon payment of the pay-off amount, all obligations under the loan agreement were paid and discharged in full, all unfunded commitments by the bank to make credit extensions to the Company under the loan agreement were terminated, all security interests granted to or held by the bank under the loan agreement were released, and all guaranties supporting the loan agreement were released. The Company did not incur any early termination penalties in connection with the termination.

For the three and six months ended June 30, 2017, the Company incurred no interest expense. For the three and six months ended June 30, 2016, the Company recorded interest expense of $36,000 and $71,000, respectively, which includes $31,000 and $63,000, respectively, of interest expense charged on the unused portion of the facility.

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

Forward Looking Statements

All statements, other than statements of historical facts, included in this Quarterly Report on Form 10-Q, including statements regarding our estimates, expectations, beliefs, intentions, projections or strategies for the future, results of operations, financial position, net sales, projected costs, prospects and plans and objectives of management for future operations may be "forward-looking statements" within the meaning of the safe harbor provisions of the U.S. Private Securities Litigation Reform Act of 1995. We have based these forward-looking statements on our current expectations and projections about future events and financial trends that we believe may affect our financial condition, results of operations, business strategy, short-term and long-term business operations and objectives and financial needs. These forward looking statements can be identified by the use of terms and phrases such as "believe," "plan," "intend," "anticipate," "target," "estimate," "expect," "forecast," "prospects," "goals," "potential," "likely," and the like future-tense or conditional constructions such as "will," "may," "could," "should," etc. (or the negative thereof). Items contemplating or making assumptions about actual or potential future sales, market size and trends or operating results also constitute forward-looking statements.

Moreover, we operate in a very competitive and rapidly changing environment. New risks emerge from time to time. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. Before investing in our common stock, investors should be aware that the occurrence of the risks, uncertainties and events described in the section entitled "Risk Factors" in our Annual Report on Form 10-K, for the year ended December 31, 2016 and elsewhere in this Quarterly Report could have a material adverse effect on our business, results of operations and financial condition.

Although we believe that the expectations reflected in the forward-looking statements are reasonable, forward-looking statements are inherently subject to known and unknown business, economic and other risks and uncertainties that may cause actual results to be materially different from those discussed in these forward-looking statements. Readers are urged not to place undue reliance on these forward-looking statements, which speak only as of the date of this Quarterly Report. We assume no obligation to update any forward-looking statements in order to reflect any event or circumstance that may arise after the date of this Quarterly Report, other than as may be required by applicable law or regulation. If one or more of these risks or uncertainties materialize, or if the underlying assumptions prove incorrect, our actual results may vary materially from those expected or projected.

You should read this Quarterly Report, the documents that we reference in this Quarterly Report and have filed with the SEC as exhibits and our Annual Report on Form 10-K, for the year ended December 31, 2016 with the understanding that our actual future results, levels of activity, performance and events and circumstances may be materially different from what we expect.

Unless otherwise indicated, the terms “Rubicon,” the “Company,” “we,” “us,” and “our” refer to Rubicon Technology, Inc. and our consolidated subsidiaries.

OVERVIEW

We are a vertically integrated, advanced materials provider specializing in monocrystalline sapphire for applications in optical and industrial systems. We use our proprietary crystal growth technology to produce high-quality sapphire products to meet our customers exacting specifications. Historically, we have also provided sapphire products to the LED and mobile device markets, which are the largest markets for sapphire. However, given competitive pressures in those markets, in September 2016 we announced our decision to limit our focus in the near-term on the optical and industrial sapphire markets and exit the LED market. We believe that we continue to have a reputation as one of the highest quality sapphire producers in the market. We provide optical and industrial sapphire products in various shapes and sizes, including round and rectangular windows and blanks, domes, tubes and rods.

With the decision to exit the LED market, we stopped production activities in Penang, Malaysia in November 2016 and subsequently closed this plant in December 2016. Our wafer patterning equipment in Malaysia was sold in the fourth quarter of 2016. We held an auction in March 2017 in an effort to sell the polishing and fabrication equipment with mixed results. Since the March 2017 auction, we have continued to seek buyers for the remaining unsold equipment. Additionally, we are seeking to sell our Malaysia real estate. The timing of the sale of the equipment and real estate is difficult to predict.

Following the decision to focus on smaller optical and industrial sapphire markets in the fourth quarter 2016, we evaluated our U.S. asset portfolio and determined that we now have excess crystal growth and fabrication capacity in the U.S. Consequently, we have consolidated operations into our leased spaces in Bensenville, Illinois and Franklin Park, Illinois and vacated our largest owned manufacturing and office facility in Batavia, Illinois. In March 2017, we held an auction to sell excess equipment from our Batavia facility. Other than crystal growth furnaces, most of the equipment was sold. The plant itself is a special purpose facility with extensive enhancements to power and water-cooling systems required for crystal growth production. We are also actively seeking to sell this property and our initial focus is to find a buyer that is interested in both the building and improved infrastructure. Timing on the sale of this real estate, the crystal growth furnaces and remaining equipment in Malaysia is difficult to predict.

With the focus on smaller optical and industrial markets, the closing of our plant in Malaysia, and the consolidation of our operations in the U.S., our LED revenue has ceased. We anticipate that our sales will be almost exclusively from optical and industrial sapphire components. The following table summarizes optical revenue for each of the last three years:

Year ended December 31,	**Optical revenue (in thousands)**	**% of total revenue**
2016	$ 4,568	23 %
2015	$ 5,086	21 %
2014	$ 7,057	15 %

We operate in an extremely volatile market, so our ability to expand our optical and industrial business and acceptance of new product offerings is difficult to predict.

In addition, our current optical and industrial sapphire business serves smaller markets than our historical undertakings, so we are actively evaluating the acquisition of profitable companies both in and outside of the sapphire market to utilize our substantial net operating loss carry-forwards.

We recognize research and development revenue in the period during which the related costs and fees are incurred.

Historically, a significant portion of our revenue has been derived from sales to relatively few customers. For the three months ended June 30, 2017, we had three customers individually that accounted for approximately 17%, 12% and 10% of revenue and for the three months ended June 30, 2016, we had three customers individually that accounted for approximately 39%, 18% and 12% of revenue. For the six months ended June 30, 2017, we had four customers that accounted for approximately 17%, 13%, 11% and 11% of revenue and for the six months ended June 30, 2016, we had three customers that accounted for approximately 37%, 14% and 10% of revenue. No other customer accounted for 10% or more of our revenues during the three and six months ended June 30, 2017 and 2016. We expect our sales to continue to be concentrated among a small number of customers. However, we also expect that our significant customers may change from time to time.

We recognize revenue based upon shipping terms with our customers and from our government contract as costs and fees are incurred. Delays in product orders or changes to the timing of shipments could cause our quarterly revenue to vary significantly. We sell our products on a global basis and historically derived a significant portion of our revenue from customers outside of the U.S. In past periods, the majority of our sales were to the European and Asian markets. We expect a major source of our future revenue to be from the North American market. All of our revenue and corresponding accounts receivable are denominated in U.S. dollars.

We currently outsource some of our production processes. If these outsourcing processes were to be disrupted or terminated, we may have difficulty in finding, or may be unable to find, alternative sources for these items. As a result, we may be unable to meet the demand for our products, which could have a material adverse impact on our business.

We manage direct sales primarily from our Bensenville, Illinois offices. Substantially all of our revenue is generated by our direct sales force and we expect this to continue in the future.

We manufacture and ship our products from our facilities in the Chicago metropolitan area. We have approximately 62,000 square feet of leased manufacturing and office space in, Franklin Park and Bensenville, Illinois, We also have a 134,400 square foot facility in Batavia, Illinois and a 65,000 square foot facility in Penang, Malaysia. The Malaysia and Batavia facilities are currently held for sale. Additional land in Batavia, Illinois, is also held for sale.

Our cost of goods sold consists primarily of manufacturing materials, labor, manufacturing-related overhead such as utilities, depreciation and rent, provisions for excess and obsolete inventory reserves, idle plant charges, outsourcing costs, freight and warranties. We purchase materials and supplies to support such current and future demand. We are subject to variations in the cost of consumables from period to period because we do not have long-term fixed-price agreements with our suppliers.

Our operating expenses are comprised of sales and marketing, research and development ("R&D"), and general and administrative ("G&A") expenses. G&A expenses consist primarily of compensation and associated costs for employees in finance, human resources, information technology and administrative activities, charges for accounting, legal, and insurance fees, and stock-based compensation. The majority of our stock-based compensation relates to administrative personnel and is accounted for as a G&A expense.

Other income (expense) consists of interest income, interest expense and realized gains and losses on investments and currency translation.

We account for income taxes under the asset and liability method whereby the expected future tax consequences of temporary differences between the book value and the tax basis of assets and liabilities are recognized as deferred tax assets and liabilities, using enacted tax rates in effect for the year in which the differences are expected to be recognized. Our analysis of ownership changes that limit the utilization of our net operating loss ("NOL") carryforwards as of December 31, 2016, shows no impact on such utilization. We are in a cumulative loss position for the past three years which is considered significant negative evidence that is difficult to overcome on a "more likely than not" standard through objectively verifiable data. Based on an evaluation in accordance with the accounting standards, a valuation allowance has been recorded against the net U.S. and Malaysia deferred tax assets in order to measure only the portion of the deferred tax assets that are more likely than not to be realized based on the weight of all the available evidence. Until an appropriate level of profitability is attained, we expect to maintain a full valuation allowance on our U.S. and Malaysia net deferred tax assets. Any U.S. and Malaysia tax benefits or tax expense recorded on the Consolidated Statement of Operations will be offset with a corresponding valuation allowance until such time that we change our determination related to the realization of deferred tax assets. In the event that we change our determination as to the amount of deferred tax assets that can be realized, we will adjust our valuation allowance with a corresponding impact to the provision for income taxes in the period in which such determination is made.

We continue to review a variety of alternatives with a goal of providing greater value to our stockholders. These alternatives could result in, among other things, further modifying or eliminating certain of our operations, selling material assets or business segments, seeking additional financing, a sale of the business, a merger, consolidation or other business combination, partnering or other collaboration agreements, potential acquisitions or recapitalizations, or we may continue to operate with our current business plan and strategy. We cannot provide assurance that this process will result in the consummation of any transaction, or that the consummation of any transaction will provide greater value to our stockholders.

RESULTS OF CONSOLIDATED OPERATIONS THREE MONTHS ENDED JUNE 30, 2017 AND 2016

The following table sets forth our consolidated statements of operations for the periods indicated:

	Three months ended June 30,	
	2017	**2016**
	(in millions)	
Revenue	$ 1.1	$ 3.5
Cost of goods sold	3.9	7.6
Gross loss	(2.8)	(4.1)
Operating expenses:		
General and administrative	1.3	2.7
Sales and marketing	0.2	0.4
Research and development	0.2	0.6
Loss on disposal of assets	0.4	0.1
Asset impairment charge	0.7	0.3
Total operating expenses	2.8	4.1
Loss from operations	(5.6)	(8.2)
Other income (expense)	-	(0.2)
Loss before income taxes	(5.6)	(8.4)
Income tax benefit (expense)	-	0.2
Net loss	$ (5.6)	$ (8.2)

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The following table sets forth our consolidated statements of operations as a percentage of revenue for the periods indicated:

	Three months ended June 30,	
	2017	2016
	(percentage of total)	
Revenue	100 %	100 %
Cost of goods sold	369	215
Gross loss	(269)	(115)
Operating expenses:		
General and administrative	123	77
Sales and marketing	19	10
Research and development	19	18
Loss on disposal of assets	41	3
Asset impairment charge	64	8
Total operating expenses	266	116
Loss from operations	(535)	(231)
Other income (expense)	4	(7)
Loss before income taxes	(531)	(238)
Income tax (expense) benefit	-	6
Net loss	(531)%	(232)%

Revenue. Revenue was $1.1 million and $3.5 million for the three months ended June 30, 2017 and 2016, respectively, a decrease of $2.4 million. As we have ceased all LED manufacturing activities and exited the LED market, our revenue for the three months ended June 30, 2017, from the sale of our LED products was zero, a decrease of $2.4 million. The revenue from our optical and industrial sapphire business has increased by $87,000.

We operate in an extremely volatile market, so the amount of price or volume change and acceptance of new product offerings is difficult to predict.

As we are nearing the completion of our government contract, we have experienced a decrease of $109,000 in the R&D revenue attributable to this contract.

Gross loss. Gross loss was $2.8 million and $4.1 million for the three months ended June 30, 2017 and 2016, respectively, a decrease of $1.3 million. This was primarily attributable to our exit from the LED market and the elimination of operations related to manufacturing of LED products, resulting in a decrease in gross loss of $3.7 million. This was partially offset by an excess raw material write-down of $2.4 million.

General and administrative expenses. G&A expenses were $1.3 million and $2.7 million for the three months ended June 30, 2017 and 2016, respectively, a decrease of $1.4 million. In 2016, we incurred $1.1 million of additional legal and annual meeting costs as compared to 2017 because of costs associated with a proxy contest in 2016, which was partially offset by additional legal costs in 2017 associated with the reverse stock split that occurred in May 2017. We also experienced a decrease in employee compensation costs of $360,000 on a lower headcount, partially offset by an increase in executive restricted stock unit grant expense of $163,000. In addition, we experienced a decrease in the Board of Directors' compensation costs of $126,000, a decrease in insurance costs of $62,000 on renegotiated contracts, and a decrease in recruiting and immigration assistance costs of $37,000. In 2016, general and administrative expenses were reduced by $172,000 because we reversed a reserve for a bad debt expense due to collection of an old outstanding balance.

Sales and marketing expenses. Sales and marketing expenses were $194,000 and $361,000 for the three months ended June 30, 2017 and 2016, respectively, a decrease of $167,000. The decrease in sales and marketing expenses was primarily attributable to a decrease in employee compensation costs of $105,000 on lower headcount, a decrease in travel and other costs related to sales and marketing of $51,000, and a decrease in marketing services and samples costs of $9,000.

Research and development expenses. R&D expenses were $195,000 and $652,000 for the three months ended June 30, 2017 and 2016, respectively, a decrease of $457,000. The decrease in research and development expenses was primarily attributable to a decrease in employee compensation costs of $267,000 on a lower headcount, a decrease in project expenses and equipment costs of $166,000 and a decrease in employee travel costs of $24,000.

Asset impairment charge. With the scaling down of our U.S. operations, we identified at June 30, 2017, additional assets that would not be needed for ongoing operations. For the three months ended June 30, 2017, we reduced the net book value of certain machinery and equipment and recorded an asset impairment charge of $675,000. During the three months ended June 30, 2016, we made available for sale the land we own in Batavia, Illinois and recorded a related impairment charge of $265,000, as the book value of the property of $1.6 million was above the expected sale price.

Other income (expense). Other income was $41,000 and other expense was $233,000 for the three months ended June 30, 2017 and 2016, respectively, a decrease of $274,000. The decrease was primarily due to a decrease in realized loss on foreign currency translation of $229,000 and decreased interest expense of $36,000.

Income tax benefit (expense). In accordance with ASC740 “Accounting for Income Taxes” (“ASC740”), we evaluate our deferred income tax assets quarterly to determine if valuation allowances are required or should be adjusted. ASC740 requires that companies assess whether valuation allowances should be established against their deferred tax assets based on consideration of all available evidence, both positive and negative, using a “more likely than not” standard. We are in a cumulative loss position for the past three years, which is considered significant negative evidence by the accounting standards that is difficult to overcome on a “more likely than not” standard through objectively verifiable data. The accounting standards attribute greater weight to objective negative evidence than to subjective positive evidence, such as our projections for future growth. Based on this evaluation, as of December 31, 2015, a valuation allowance has been recorded against the net U.S. deferred tax assets in order to measure only the portion of the deferred tax assets that are more likely than not to be realized based on the weight of all the available evidence. At June 30, 2017 we continue to be in a three-year cumulative loss position, therefore, until an appropriate level of profitability is attained, we expect to maintain a valuation allowance on net deferred tax assets related to future U.S. and Malaysia tax benefits and will no longer accrue tax benefits or tax expense on our Consolidated Statement of Operations. In the event that we change our determination as to the amount of deferred tax assets that can be realized, we will adjust our valuation allowance with a corresponding impact to the provision for income taxes in the period in which such determination is made. The tax provision for the three months ended June 30, 2017 is based on an estimated combined statutory effective tax rate. For the three months ended June 30, 2017, the difference between our effective tax rate of 0% and the U.S. federal 35% statutory rate and state 6.2% (net of federal benefit) statutory rate was primarily related to U.S. and Malaysia valuation allowances, Malaysia foreign tax rate differential and Malaysia withholding taxes.

RESULTS OF CONSOLIDATED OPERATIONS SIX MONTHS ENDED JUNE 30, 2017 AND 2016

The following table sets forth our consolidated statements of operations for the periods indicated:

	Six months ended June 30,	
	2017	2016
	(in millions)	
Revenue	$ 2.3	$ 7.8
Cost of goods sold	6.7	17.3
Gross loss	(4.4)	(9.5)
Operating expenses:		
General and administrative	3.1	4.5
Sales and marketing	0.5	0.7
Research and development	0.8	1.2
Loss on disposal of assets	1.2	0.1
Asset impairment charge	0.7	0.3
Total operating expenses	6.3	6.8
Loss from operations	(10.7)	(16.3)
Other income (expense)	0.1	0.4
Loss before income taxes	(10.6)	(15.9)
Income tax (expense) benefit	(0.1)	0.3
Net loss	$ (10.7)	$ (15.6)

The following table sets forth our consolidated statements of operations as a percentage of revenue for the periods indicated:

	Six months ended June 30,	
	2017	2016
	(percentage of total)	
Revenue	100 %	100 %
Cost of goods sold	290	221
Gross loss	(190)	(121)
Operating expenses:		
General and administrative	134	57
Sales and marketing	19	10
Research and development	36	16
Loss on disposal of assets	51	2
Asset impairment charge	29	3

Total operating expenses	269	88
Loss from operations	(459)	(209)
Other income (expense)	2	6
Loss before income taxes	(457)	(203)
Income tax (expense) benefit	(3)	4
Net loss	(460)%	(199)%

Revenue. Revenue was $2.3 million and $7.8 million for the six months ended June 30, 2017 and 2016, respectively, a decrease of $5.5 million. As we have ceased all LED manufacturing activities and exited the LED market, our revenue for the six months ended June 30, 2017, from the sales of our LED products was zero, a decrease of $5.2 million. Revenue from our optical and industrial sapphire business has decreased by $99,000 due to seasonal fluctuations in demand.

We operate in an extremely volatile market, so the amount of price or volume change and acceptance of new product offerings is difficult to predict.

As we are nearing the completion of our government contract, we have experienced a decrease of $180,000 in the R&D revenue attributable to this contract.

Gross loss. Gross loss was $4.4 million and $9.5 million for the six months ended June 30, 2017 and 2016, respectively, a decrease in gross loss of $5.1 million. This was primarily attributable to our exit from the LED market and the elimination of operations related to manufacturing of LED products, resulting in a decrease in gross loss of $7.8 million. This was partially offset by the excess raw material write-down expense of $2.4 million and the costs of $255,000 incurred in connection with our restructuring and moving of manufacturing equipment to the leased facilities.

General and administrative expenses. G&A expenses were $3.1 million and $4.5 million for the six months ended June 30, 2017 and 2016, respectively, a decrease of $1.4 million. In 2016, we incurred $1.1 million of additional legal and annual meeting costs as compared to 2017 because of costs associated with a proxy contest in 2016, which was partially offset by additional legal costs in 2017 associated with the reverse stock split that occurred in May 2017. We also experienced a decrease in employee compensation costs of $662,000 on lower headcount, partially offset by an increase in executive severance expense of $458,000 and executive restricted stock unit grant expense of $234,000. In addition, we experienced a decrease in the board of directors' compensation costs of $207,000, a decrease in insurance costs of $121,000 on renegotiated contracts, and a decrease in recruiting and immigration assistance costs of $72,000. In 2016, general and administrative expenses were reduced by $225,000 because we reversed a reserve for a bad debt expense due to collection of an old outstanding balance.

Sales and marketing expenses. Sales and marketing expenses were $438,000 and $752,000 for the six months ended June 30, 2017 and 2016, respectively, a decrease of $314,000. The decrease in sales and marketing expenses was primarily attributable to a decrease in employee compensation costs of $190,000 on a lower headcount, a decrease in travel and other costs related to sales and marketing of $94,000, and a decrease in marketing services and samples costs of $30,000.

Research and development expenses. R&D expenses were $836,000 and $1.2 million for the six months ended June 30, 2017 and 2016, respectively, a decrease of $395,000. The decrease in research and development expenses was primarily attributable to a decrease in employee compensation costs of $107,000 on a lower headcount, a decrease in project expenses and equipment costs of $231,000 and a decrease in employee travel costs of $57,000.

Asset impairment charge. With the scaling down of our U.S. operations, we identified at June 30, 2017, additional assets that would not be needed for ongoing operations. For the six months ended June 30, 2017, we reduced the net book value of certain machinery and equipment and recorded an asset impairment charge of $675,000. During the six months ended June 30, 2016, we made available for sale the land we own in Batavia, Illinois and recorded a related impairment charge of $265,000, as the book value of the property of $1.6 million was above the expected sale price.

Other income (expense). Other income was $53,000 and $439,000 for the six months ended June 30, 2017 and 2016, respectively, an increase in other expense of $386,000. The increase was primarily due to a decrease in realized gains on foreign currency translation of $448,000 offset by a decrease in net interest expense of $62,000.

Income tax benefit. In accordance with ASC740 “Accounting for Income Taxes” (“ASC740”), we evaluate our deferred income tax assets quarterly to determine if valuation allowances are required or should be adjusted. ASC740 requires that companies assess whether valuation allowances should be established against their deferred tax assets based on consideration of all available evidence, both positive and negative, using a “more likely than not” standard. We are in a cumulative loss position for the past three years, which is considered significant negative evidence by the accounting standards that is difficult to overcome on a “more likely than not” standard through objectively verifiable data. The accounting standards attribute greater weight to objective negative evidence than to subjective positive evidence, such as our projections for future growth. Based on this evaluation, as of December 31, 2015, a valuation allowance has been recorded against the net U.S. deferred tax assets in order to measure only the portion of the deferred tax assets that are more likely than not to be realized based on the weight of all the available evidence. At June 30, 2017, we continue to be in a three-year cumulative loss position, therefore, until an appropriate level of profitability is attained, we expect to maintain a valuation allowance on net deferred tax assets related to future U.S. and Malaysia tax benefits and will no longer accrue tax benefits or tax expense on our Consolidated Statement of Operations. In the event that we change our determination as to the amount of deferred tax assets that can be realized, we will adjust our valuation allowance with a corresponding impact to the provision for income taxes in the period in which such determination is made. The tax provision for the six months ended June 30, 2017 is based on an estimated combined statutory effective tax rate. For the six months ended June 30, 2017, the difference between our effective tax rate of 1.0% and the U.S. federal 35% statutory rate and state 6.2% (net of federal benefit) statutory rate was primarily related to U.S. and Malaysia valuation allowances, Malaysia foreign tax rate differential and Malaysia withholding taxes.

LIQUIDITY AND CAPITAL RESOURCES

We have historically funded our operations using a combination of issuances of common stock and cash generated from our operations.

As of June 30, 2017, we had cash and short-term investments totaling $17.8 million, including cash of $6.8 million held in deposits at major banks and $11.0 million invested in money market funds.

Cash flows from operating activities

The following table represents the major components of our cash flows from operating activities for the six months ended June 30, 2017 and 2016:

	Six months ended June 30,	
	2017	2016
	(in millions)	
Net loss	$ (10.7)	$ (15.5)
Non-cash items:		
Depreciation and amortization	0.9	3.3
Net loss on disposal of assets	1.2	0.1
Asset impairment charge	0.7	0.3
Stock based compensation	0.6	0.7
Deferred taxes	-	(0.4)
Total non-cash items:	3.4	4.0
Working capital:		
Accounts receivable	2.0	(1.0)
Inventories	1.4	0.5
Inventory reserves	1.9	0.2
Prepaid expenses and other assets	0.9	1.4
Accounts payable	(0.4)	0.3
Other accruals	(0.1)	(0.9)
Total working capital items:	5.7	0.5
Net cash used in operating activities	$ (1.6)	$ (11.0)

Cash used in operating activities was $1.6 million for the six months ended June 30, 2017. During such period, we generated a net loss of $10.7 million, non-cash expenses of $3.4 million, and an increase in cash from net working capital of $5.7 million. The net working capital decrease was driven by a decrease in inventory of $3.3 million primarily related to a write-downs of excess raw material inventories of $2.4 million, a decrease in accounts receivable of $2.0 million on decreased revenue and collection of a LED customer account and a decrease in prepaid and other assets of $948,000 on amounts collected on asset sales and a deposit refund. This decrease was partially offset by a decrease in accounts payable and other accruals of $505,000 on timing of payments.

Cash used in operating activities was $11.0 million for the six months ended June 30, 2016. During such period, we generated a net loss of $15.5 million, non-cash expenses of $4.0 million, and an increase in cash from net working capital of $500,000. The net working capital decrease was driven by a decrease in inventory of $693,000 primarily related to a decrease in raw materials, and a decrease in other prepaid expenses of $1.4 million primarily related to a decrease in prepaid furnace and machinery components. This decrease was partially offset by an increase in accounts receivable of $1.0 million on timing of customer payments and a decrease in other accruals of $910,000 due to payment of a litigation settlement of $900,000 and timing of other payments.

Cash flows from investing activities

The following table represents the major components of our cash flows from investing activities for the six months ended June 30, 2017 and 2016:

	Six months ended June 30,	
	2017	2016
	(in millions)	
Purchases of property and equipment	$ —	$ (0.7)
Proceeds from disposal of assets	1.8	0.2
Total purchases of property and equipment net of disposals	1.8	(0.5)
Proceeds from sale of investments	0.1	7.9
Net cash used in investing activities	$ 1.9	$ 7.4

Net cash provided by investing activities was $1.9 million for the six months ended June 30, 2017, primarily due to sales of equipment and other assets at our Penang Malaysia and Batavia, IL locations, as the result of our decision to close the Malaysia facility and consolidate our operations in the U.S.

Net cash provided by investing activities was $7.4 million for the six months ended June 30, 2016. During the six months ended June 30, 2016, we used approximately $660,000 on the purchase of equipment for our new coating process and used proceeds from the sale of investments of $7.9 million to fund operations and capital spending.

We anticipate our capital expenditures will be kept to a minimum.

Cash flows from financing activities

Net cash used in financing activities was $180,000 for the six months ended June 30, 2017, which represents cash used to settle net equity awards of $173,000, and a change in restricted cash of $7,000. Net cash used in financing activities was $13,000 for the six months ended June 30, 2016, which represents cash used to settle net equity awards of $1,000, and a change in restricted cash of $12,000.

Future liquidity requirements

We believe that our existing cash, cash equivalents, anticipated cash flows from operating activities and proceeds from sales of fixed assets will be sufficient to meet our anticipated cash needs for at least the next twelve months. However, if our ability to generate sufficient operating cash flow or our use of cash in the next twelve months were to significantly adversely change, we may not have enough funds available to continue operating at our current level in future periods. Our cash needs include cash required to fund our operations. If the assumptions underlying our business plan regarding future revenues and expenses change, or if unexpected opportunities or needs arise, we may seek to raise additional cash by selling equity or convertible debt securities. If we raise additional funds through the issuance of equity or convertible debt securities, the percentage ownership of our stockholders could be significantly diluted, and these newly-issued securities may have rights, preferences or privileges senior to those of existing stockholders.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

We consider to be critical those accounting policies that require our most subjective or complex judgments, which often result from a need to make estimates about the effect of matters that are inherently uncertain, and that are among the most important of our accounting policies in the portrayal of our financial condition and results of operations. We believe the following to be our critical accounting policies, including the more significant estimates and assumptions used in preparation of our financial statements.

Inventory valuation

We value our inventory at the lower of cost or market. Market is determined based on net realizable value. Raw materials cost is determined using the first-in, first-out method, and work-in-process and finished goods costs are determined on a standard cost basis which includes materials, labor and overhead. We establish inventory reserves when conditions exist that suggest inventory may be in excess of anticipated demand or is obsolete based on customer required specifications. We evaluate the ability to realize the value of our inventory based on a combination of factors, including forecasted sales, estimated current and future market value and changes in customers’ product specifications. For the six months ended June 30, 2016, we accepted sales orders for core and wafer products at prices lower than our cost. Based on these sales prices, we recorded for the six months ended June 30, 2016 an adjustment which increased costs of goods sold and reduced inventory by $204,000 and $1.1 million, respectively. We did not record any additional lower of cost or market adjustments for the three and six months ended June 30, 2017. We recorded for the three and six months ended June 30, 2017, a write-down of excess raw material inventory of $2.4 million as we revised our method of estimating excess and obsolete raw material inventory to an estimated three year supply from five years. However, if our recognition of excess or obsolete inventory is, or if our estimates of our inventory’s potential utility become, less favorable than currently expected, additional inventory reserves may be required.

We determine our normal operating capacity and record as an expense costs attributable to lower utilization of equipment and staff. For the three and six months ended June 30, 2017, we determined that we were not operating at capacity and recorded costs associated with lower utilization of equipment and staff of $595,000 and $1.7 million, respectively. For the three and six months ended June 30, 2016, we determined that we were not operating at capacity and recorded costs associated with lower utilization of equipment and staff of $2.1 million and $4.5 million, respectively. For the remainder of 2017, it is likely that we will incur additional idle costs due to lower utilization of equipment and other legacy costs.

Assets held for sale and long-lived assets

When circumstances, such as adverse market conditions, indicate that the carrying value of a long-lived asset may be impaired, we perform an analysis to review the recoverability of the asset's carrying value. We make estimates of the undiscounted cash flows (excluding interest charges) from the expected future operations of the asset. These estimates consider factors such as expected future operating income, operating trends and prospects, as well as the effects of demand, competition and other factors. If the analysis indicates that the carrying value is not recoverable from future cash flows, an impairment loss is recognized to the extent that the carrying value exceeds the estimated fair value. The estimated fair value of assets is determined using appraisal techniques which assume the highest and best use of the asset by market participants, considering the use of the asset that is physically possible, legally permissible, and financially feasible at the measurement date. Any impairment losses are recorded as operating expenses, which reduces net income.

In the third quarter of 2016, we announced our decision to limit our focus to the optical and industrial sapphire markets and to exit the LED market. This resulted in the closing of our Malaysia facility. We evaluated our Malaysia asset portfolio based on assuming an orderly liquidation plan. Based on this review, we recorded for the year ended December 31, 2016 an asset impairment charge on our Malaysia machinery and equipment. In the fourth quarter of 2016, we also developed a plan to scale down our U.S. operations and sell additional assets that would not be needed. In this regard, we identified excess machinery, equipment and facilities located in the U.S. Based on this review, we recorded for the year ended December 31, 2016 an asset impairment charge on our U.S. machinery and equipment.

In the six months ended June 30, 2017, auctions and individual asset sales were completed resulting in the sale of a portion of the excess U.S. and some of the Malaysian equipment that were classified as (a) assets held for sale or (b) machinery and equipment which had a net book value of $2.9 million. Unsold equipment including excess crystal growth furnaces was classified as current assets held for sale at June 30, 2017.

We are actively seeking the sale of our manufacturing and office facility in Batavia, Illinois, a parcel of land we own in Batavia, Illinois, and a facility in Penang, Malaysia. Since it is our intention to complete these sales within the next twelve-month period, these properties were classified as current assets held for sale at June 30, 2017 and December 31, 2016.

At June 30, 2017, we reviewed the current fair market value of our assets and concluded no additional adjustments were needed except as noted below. With the scaling down of our U.S. operations, we identified at June 30, 2017, additional assets that would not be needed. For the three and six months ended June 30, 2017, we reduced the net book value of certain machinery and equipment and recorded an asset impairment charge of $675,000. We will continue to assess our long-lived assets to ensure the carrying amount of these assets is still appropriate given any changes in the asset usage, marketplace and other factors used in determining the current fair market value.

Stock-based compensation

We grant stock-based compensation in the form of stock options, restricted stock units ("RSUs") and restricted stock. We expense stock-based compensation based upon the fair market value on the date of grant. We use the Black-Scholes option pricing model to determine the fair value of stock options. The determination of the fair value of stock-based payment awards on the date of grant using an option-pricing model will be affected by assumptions regarding a number of complex and subjective variables. These variables include our expected stock volatility over the term of the awards, actual and projected employee stock option exercise behaviors, risk-free interest rates, forfeitures and expected dividends.

The expected term represents the weighted-average period that our stock options are expected to be outstanding and is based upon five years historical data. We estimate the volatility of our common stock based on a five year historical stock price. We base the risk-free interest rate that we use in the option pricing model on U.S. Treasury zero-coupon issues with remaining terms similar to the expected term on the options. We do not anticipate paying any cash dividends in the foreseeable future and, therefore, use an expected dividend yield of zero in the option pricing model. We are required to estimate forfeitures at the time of grant and revise those estimates in subsequent periods if actual forfeitures differ from those estimates. The current forfeiture rate of 23.1% was based on our past history of forfeitures.

We used a Monte Carlo simulation model valuation technique to determine the fair value of 59,098 RSUs granted in March 2017 to a key executive pursuant to an employment agreement, because the awards vest based upon achievement of market price targets of our common stock. The Monte Carlo simulation model utilizes multiple input variables that determine the probability of satisfying the market condition stipulated in the award and calculates the fair value of each RSU. We used the following assumptions in determining the fair value of the RSUs:

Daily expected stock price volatility	4.4237	%
Daily expected mean return on equity	(0.2226	%)
Daily expected dividend yield	0.0	%
Average daily risk free interest rate	0.0063	%

The daily expected stock price volatility is based on a four-year historical volatility of our common stock. The daily expected dividend yield is based on annual expected dividend payments. The average daily risk-free interest rate is based on the three-year treasury yield as of the grant date. Each of the tranches is calculated to have its own fair value and requisite service period. The fair value of each tranche is amortized over the requisite or derived service period, which is up to four years. These RSUs had a grant date fair value of $322,623.

We allocate stock based compensation costs using a straight-line method, which amortizes the fair value of each award on a straight-line basis over the service period. Based on the variables affecting the valuation of our common stock and the method used for allocating compensation costs, during the three and six months ended June 30, 2017 we recognized $285,000 and $623,000, respectively of stock compensation expense.

All option grants are granted at an exercise price per share equal to the closing market price of our common stock on the day before the date of grant. Therefore, there is no intrinsic value because the exercise price per share of each option was equal to the fair value of the common stock on the date of grant.

Based on the fair market value of the common stock at June 30, 2017, there is no aggregate intrinsic value of all stock options exercisable or outstanding.

Income tax valuation allowance

Evaluating the need for and amount of a valuation allowance for deferred tax assets often requires significant judgment and extensive analysis of all the positive and negative evidence available to determine whether all or some portion of the deferred tax assets will not be realized. A valuation allowance must be established for deferred tax assets when it is more likely than not (a probability level of more than 50%) that they will not be realized. In general, “realization” refers to the incremental benefit achieved through the reduction in future taxes payable or an increase in future taxes refundable from the deferred tax assets, assuming that the underlying deductible differences and carryforwards are the last items to enter into the determination of future taxable income. In determining our valuation allowance, we consider the source of taxable income including taxable income in prior carryback years, future reversals of existing temporary differences, the required use of tax planning strategies, and future taxable income exclusive of reversing temporary differences and carryforwards. We are in a cumulative loss position for the past three years which is considered significant negative evidence that is difficult to overcome on a “more likely than not” standard through objectively verifiable data. Under the accounting standards verifiable evidence will have greater weight than subjective evidence such as our projections for future growth. Based on an evaluation in accordance with the accounting standards, as of June 30, 2017, a valuation allowance has been recorded against the net U.S. and Malaysia deferred tax assets in order to measure only the portion of the deferred tax assets that are more likely than not to be realized based on the weight of all the available evidence. Any U.S. and Malaysia tax benefits or tax expense recorded on the Consolidated Statement of Operations will be offset with a corresponding valuation allowance until such time that we change our determination related to the realization of deferred tax assets. In the event that we change our determination as to the amount of deferred tax assets that can be realized, we will adjust our valuation allowance with a corresponding impact to the provision for income taxes in the period in which such determination is made.

RECENT ACCOUNTING PRONOUNCEMENTS

See Note 2 to the Consolidated Financial Statements for a discussion of new accounting standards.

OFF-BALANCE SHEET ARRANGEMENTS

We do not have any off-balance sheet arrangements.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURE ABOUT MARKET RISK

As of June 30, 2017, there were no material changes in the information regarding market risk contained in our Annual Report on Form 10-K, for the fiscal year ended December 31, 2016.

ITEM 4. CONTROLS AND PROCEDURES

Management's evaluation of disclosure controls and procedures

Based on evaluations at June 30, 2017, our chief executive officer and chief financial officer (together, our "certifying officers"), with the participation of the management team, have concluded that our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act")) are effective to ensure that information required to be disclosed by us in reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the rules and forms of the SEC, and that material information relating to the Company is accumulated and communicated to management, including our certifying officers, as appropriate to allow timely decisions regarding required disclosures.

Changes in internal control over financial reporting

Our certifying officers have concluded that there were no changes in our internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) during the three months ended June 30, 2017 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II

ITEM 6. EXHIBITS

The exhibits filed or incorporated by reference as a part of this report are listed in the Index to Exhibits which appears following the signature page to this Quarterly Report on Form 10-Q and is incorporated by reference.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

	Rubicon Technology, Inc.
Date: August 10, 2017	By: /s/ Timothy E. Brog Timothy E. Brog President and Chief Executive Officer
Date: August 10, 2017	By: /s/ Mardel A. Graffy Mardel A. Graffy Chief Financial Officer

EXHIBIT INDEX

The Exhibits listed below are filed or incorporated by reference as part of this Quarterly Report on Form 10-Q.

Exhibit No.	Description	Incorporation by Reference
3.1	Eighth Amended and Restated Certificate of Incorporation of Rubicon Technology, Inc.	Filed as Exhibit 3.1 to the registrant's Registration Statement on Form S-1/A, filed on November 1, 2007 (File No. 333-145880)
3.2	Amendment No. 1 to Eighth Amended and Restated Certificate of Incorporation of Rubicon Technology, Inc.	Filed as Appendix A to the registrant's Definitive Proxy Statement on Schedule 14A, filed on April 29, 2011 (File No. 1-33834)
3.3	Certificate of Amendment to Eighth Amended and Restated Certificate of Incorporation of Rubicon Technology, Inc.	Filed as Exhibit 3.1 to the registrant's Current Report on Form 8-K, filed on May 4, 2017 (File No. 1-33834)
3.4	Second Amended and Restated Bylaws of Rubicon Technology, Inc.	Filed as Exhibit 3.3 to the registrant's Quarterly Report on Form 10-Q, filed on May 10, 2016 (File No. 1-33834)
10.1	Amended and Restated Executive Employment Agreement by and between Rubicon Technology, Inc. and Timothy E. Brog, dated as of May 12, 2017	Filed as Exhibit 10.2 to the registrant's Quarterly Report on Form 10-Q, filed on May 12, 2017 (File No. 1-33834)
31.1*	Certification of Chief Executive Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002	
31.2*	Certification of Chief Financial Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002	
32.1*	Certifications of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002	
101.INS*	XBRL Instance Document	

101.SCH*	XBRL Taxonomy Extension Schema Document
101.CAL*	XBRL Taxonomy Extension Calculation Linkbase Document
101.LAB*	XBRL Taxonomy Extension Label Linkbase Document
101.PRE*	XBRL Taxonomy Extension Presentation Document
101.DEF*	XBRL Taxonomy Extension Definition Linkbase Document

*Filed electronically with this Quarterly Report on Form 10-Q