UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Form 10-K

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2018

Commission file number: 1-34283

Rosetta Stone Inc.

(Exact name of registrant as specified in its charter)

Delaware (State of incorporation)	043837082 (I.R.S. Employer Identification No.)
1621 North Kent Street, Suite 1200 Arlington, Virginia (Address of principal executive offices)	22209 (Zip Code)

Registrant's telephone number, including area code: 703-387-5800

Securities Registered Pursuant to Section 12(b) of the Act:

Title of Each Class	Name of Each Exchange on Which Registered
Common Stock, par value $0.00005 per share	New York Stock Exchange

Securities Registered Pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act. Yes No

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

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

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

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

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

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

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

The aggregate market value of the common stock held by non-affiliates of the registrant was approximately $ 267.9 million as of June 30, 2018 (based on the last sale price of such stock as quoted on the New York Stock Exchange). All executive officers and directors of the registrant and all persons filing a Schedule 13D with the Securities and Exchange Commission in respect of registrant's common stock have been deemed, solely for the purpose of the foregoing calculation, to be "affiliates" of the registrant.

As of February 27, 2019, there were 23,640,971 shares of common stock outstanding.

Documents incorporated by reference: Portions of the definitive Proxy Statement to be delivered to stockholders in connection with the 2019 Annual Meeting of Stockholders to be held on May 16, 2019 are incorporated by reference into Part III.

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PART I

FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K (this "Report") and other statements or presentations made from time to time by the Company, including the documents incorporated by reference, contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements can be identified by non-historical statements and often include words such as "outlook," "potential," "believes," "expects," "anticipates," "estimates," "intends," "plans," "seeks" or words of similar meaning, or future-looking or conditional verbs, such as "will," "should," "could," "may," "might," "aims," "intends," or "projects," or similar words or phrases. These statements may include, but are not limited to, statements related to: our business strategy; guidance or projections related to revenue, Adjusted EBITDA, sales, and other measures of future economic performance; the contributions and performance of our businesses, including acquired businesses and international operations; projections for future capital expenditures; and other guidance, projections, plans, objectives, and related estimates and assumptions. A forward-looking statement is neither a prediction nor a guarantee of future events or circumstances. In addition, forward-looking statements are based on the Company's current assumptions, expectations and beliefs and are subject to certain risks and uncertainties that could cause actual results to differ materially from our present expectations or projections. Some important factors that could cause actual results, performance or achievement to differ materially from those expressed or implied by these forward-looking statements include, but are not limited to: the risk that we are unable to execute our business strategy; declining demand for our language learning and literacy solutions; the risk that we are not able to manage and grow our business; the impact of any revisions to our pricing strategy; the risk that we might not succeed in introducing and producing new products and services; the impact of foreign exchange fluctuations; the adequacy of internally generated funds and existing sources of liquidity, such as bank financing, as well as our ability to raise additional funds; the risk that we cannot effectively adapt to and manage complex and numerous technologies; the risk that businesses acquired by us might not perform as expected; and the risk that we are not able to successfully expand internationally. We expressly disclaim any obligation to update or revise any forward-looking statements, whether as a result of new information, future developments or otherwise, except as required by law. These factors should not be construed as exhaustive and should be read in conjunction with the other cautionary statements risks and uncertainties that are more fully described in the Company's filings with the U.S. Securities and Exchange Commission (SEC), including those described below in this Annual Report on Form 10-K in Part I, Item 1A: "Risk Factors" and Part II, Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations," those described elsewhere in this Annual Report on Form 10-K, and those described from time to time in our future reports filed with the Securities and Exchange Commission.

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Item 1. Business

Overview

Rosetta Stone Inc. (“Rosetta Stone,” “the Company,” “we” or “us”) is dedicated to changing people's lives through the power of language and literacy education. Our innovative digital solutions drive positive learning outcomes for the inspired learner at home or in schools and workplaces around the world.

Founded in 1992, Rosetta Stone's language division uses cloud-based solutions to help all types of learners read, write, and speak more than 30 languages. Lexia Learning, Rosetta Stone's literacy education division, was founded more than 30 years ago and is a leader in the literacy education space. Today, Lexia helps students build foundational reading skills through its rigorously researched, independently evaluated, and widely respected instruction and assessment programs. Rosetta Stone Inc. was incorporated in Delaware in 2005.

As our Company has evolved, we believe that our current portfolio of language and literacy products and transition to a SaaS-based delivery model provide multiple opportunities for long-term value creation. We believe the demand is growing for e-learning based literacy solutions in the U.S. and English language-learning around the globe, and we are uniquely positioned with the power of our global brand to meet the growing needs of global learners.

We continue to emphasize the development of products and solutions for learners who need to speak and read English. This focus extends to the Consumer Language segment, where we continue to make product investments serving the needs of passionate language-learners who are mobile, results-focused and value a quality language-learning experience.

To position the organization for success, our focus is on the following priorities:

1. Focus on growing our K-12 business;
2. Position ourselves as a leader in virtual blended learning; and
3. Accelerate growth and increase intrinsic value.

Business Segments

Our business is organized into three operating segments: Literacy, E&E Language, and Consumer Language. The Literacy segment derives revenue under a Software-as-a-Service ("SaaS") model from the sales of literacy solutions to educational institutions serving grades K through 12. The E&E Language segment derives language-learning revenues from sales to educational institutions, corporations, and government agencies worldwide under a SaaS model. The Consumer Language segment derives revenue from sales to individuals and retail partners worldwide and recently completed a SaaS migration from a packaged software business. For additional information regarding our segments, see Note 18 of Item 8, Financial Statements and Supplementary Data. Prior periods are presented consistently with our current operating segments and definition of segment contribution.

Products and Services

Literacy:

Literacy Solutions: Our Literacy segment is comprised solely of our Lexia business. The Lexia Learning suite of subscription-based English literacy-learning and assessment solutions provide explicit, systematic, personalized learning on foundational literacy skills for students of all abilities. This research-proven technology based approach accelerates reading skills development, predicts students' year-end performance and provides teachers with data-driven action plans to help differentiate instruction. Lexia Reading Core5 is available for all abilities from pre-K through grade 5. PowerUp Literacy is designed for non-proficient readers in grades 6 and above. Lexia RAPID Assessment is a computer-adaptive screener and diagnostic tool for grades K-12 that identifies and monitors reading and language skills to provide actionable data for instructional planning. Lexia's solutions deliver performance data and analysis to enable teachers to monitor and modify their instruction to address specific student needs. These literacy solutions are provided under web-based subscriptions. Our service offerings provide schools with product implementation services to support strong educator and student use. These services are purchased through annual or multi-year service contracts.

E&E Language:

E&E Language-Learning Solutions: Rosetta Stone provides a series of web-based subscriptions to interactive language-learning solutions for schools, business and other organizations that are primarily available online. Our core language-learning suite offers courses and practice applications in multiple languages, each leveraging our proprietary context-based immersion methodology, speech recognition engine and innovative technology features. Available in 24 languages and designed for beginner to intermediate language learners, Rosetta Stone Foundations builds fundamental language skills. Rosetta Stone Advantage is available for all proficiency levels in 9 of the 24 languages and focuses on improving everyday and business language skills. Our Advanced English for Business solution serves multinational companies seeking to build their employees' English language proficiency so they are able to communicate and operate in a global business environment. Our Catalyst product consolidates and aligns our Foundations, Advantage and Advanced English for Business products into a single solution for our enterprise customers. Catalyst provides streamlined access and simplified pricing for the full suite of English and world language learning content, along with assessment, placement, ongoing reporting and demonstration of results, all of which address important customer needs to focus and demonstrate payback. Specifically designed for use with our language-learning solutions, our E&E Language customers may also purchase our audio practice products and live tutoring sessions to enhance the learning experience.

Rosetta Stone offers tailored solutions to help organizations maximize the success of their learning programs. Our current custom solutions include curriculum development, global collaboration programs that combine language education with business culture training, group and live tutoring, and language courses for mission-critical government programs.

Our E&E Language and Literacy customers can maximize their learning solutions with administrative tools, professional services and custom solutions.

Administrative Tools: Our E&E Language and Literacy learning programs come with a set of administrative tools for performance monitoring, and to measure and track learner progress. Administrators can use these tools to access real-time dynamic reports and identify each learner's strengths and weaknesses.

Professional Services: Professional services provide our customers with access to experienced training, implementation and support resources. Our team works directly with customers to plan, deploy, and promote the program for each organization, incorporate learning goals into implementation models, prepare and motivate learners, and integrate the E&E Language and Literacy solutions into technical infrastructure.

Consumer Language:

Rosetta Stone also offers a broad portfolio of technology-based learning products for personal use to the global consumer. Our interactive portfolio of language-learning solutions is powered by our widely recognized brand, and building on our more than 25-year heritage in language-learning.

Many of our consumer products and services are available in flexible and convenient formats for tablets and smartphones. Our mobile apps enable learners to continue their lessons on the go and extend the learning experience away from a computer. Progress is automatically synchronized across devices to meet our customers' lifestyles. These apps may be available for download through the Apple App Store, Google Play, Amazon App Store for Android and Samsung Galaxy App Store.

Rosetta Stone Language-Learning Solutions: Rosetta Stone provides intuitive, easy-to-use language-learning programs that can be purchased primarily as a software subscription via the web, mobile in-app purchase, or through retail channels.

Our language-learning suite offers courses and practice applications in multiple languages, each leveraging our proprietary immersion methodology, speech recognition engine and innovative technology features. Beginner to intermediate language-learning products are available in 30 languages to build fundamental language skills. More advanced language-learning products are available in 9 of the 30 languages. We also offer online services to enhance and augment our learners' capabilities. Our Online Tutoring is an online video service that provides either one-on-one or group conversational coaching sessions with native speakers to practice skills and experience direct interactive dialogue. Our current suite of mobile language-learning apps includes companions to our computer-based language-learning apps which enables learners to access their language program anytime anywhere.

Software Development:

Our offering portfolio is a result of significant investment in software development. Our software development efforts include the design and build of software solutions across a variety of devices, pedagogy and curriculum development, and the creation of learning content. Our development teams build new solutions and enhance or maintain existing solutions. We have specific expertise in speech recognition technology, iterative and customer-focused software development, instructional design, and language acquisition. We continue to evaluate changes to our solutions to strengthen our brand and improve the relevance of our offering portfolio.

Customers and Distribution Channels

No customer accounted for more than 10% of consolidated revenue during the years ended December 31, 2018, 2017, and 2016. Most of our business is SaaS based; consequently, backlog is not significant.

Literacy:

Our Literacy distribution channel in the United States utilizes a direct sales force as well as relationships with third-party resellers focused on the sale of Lexia solutions to K-12 schools. International distribution is primarily managed through independent resellers based in the United Kingdom, Australia and New Zealand.

E&E Language:

Our E&E Language distribution channel is focused on targeted sales activity primarily through a direct sales force in five markets: K-12 schools, colleges and universities, government agencies, not-for-profit organizations, and corporations. Our E&E Language-learning customers include the following:

Educational Institutions.   These customers include primary and secondary schools and colleges and universities.

Government Agencies and Not-for-Profit Organizations.   These customers include government agencies and organizations developing workforces that serve non-native speaking populations, offering literacy programs, and preparing members for overseas missions.

Corporations.   We promote interest in this market with onsite visits, trade show and seminar attendance, speaking engagements, and direct mailings.

Third-party Resellers and Partners. We utilize third-party resellers and partners to provide our language-learning solutions to businesses, schools, and public-sector organizations in markets predominantly outside the U.S.

As part of our K-12 customer activities, our Literacy and E&E Language segments interact with employees of school districts including superintendents, procurement officers, principals and teachers. For instance, we participate in associations and events, including as a sponsor, at which such employees are present. We also invite these employees to events hosted by us, at which we discuss general educational developments as well as our products and services, and to serve on customer advisory boards to provide feedback on our products and services. We sometimes, and as permissible, pay the travel expenses of school district employees who attend company-sponsored events or serve on an advisory board.

Consumer Language:

Our Consumer Language distribution channel comprises a mix of our websites, third party e-commerce websites, app-stores, consignment distributors, select retailers, and call centers. We believe these channels complement each other, as consumers who have seen our direct-to-consumer advertising may purchase at our retailers, and vice versa.

Direct to consumer (“DTC”).   Sales generated through our e-commerce website at www.rosettastone.com, app stores such as Google Play and Apple App Store and our call centers.

Indirect to consumer. Sales generated through arrangements with third-party e-commerce websites and consignment distributors such as Software Packaging Associates.

Retailers.   Our retailers enable us to provide additional points of contact to educate consumers about our solutions, expand our presence beyond our own websites, and further strengthen and enhance our brand image. Our retail relationships include Amazon.com, Barnes & Noble, Target, Best Buy, Staples, and others in and outside of the U.S.

We may also partner at times with daily deal and home shopping resellers.

Home School. We promote interest in the language-learning market through advertising in publications focused on home schooling and attending local trade shows.

Sourcing and Fulfillment

Consistent with the SaaS model in our Literacy and E&E Language segments, we have transitioned the Consumer Language segment away from CD-based product sales to a cloud-based software subscription in order to provide an improved learner experience with instant fulfillment and mobile availability, which has also allowed us to, over time, reduce costs associated with physical packaging and distribution. Consequently, physical inventory is not significant.

Our physical inventory utilizes a flexible and low-cost manufacturing base. We use a third-party logistics company to obtain substantially all of our packaging components, which primarily consist of boxes for our language learning product and audio practice products, and to manufacture and fulfill finished product. We believe that we have good relationships with our vendors and that there are alternative sources in the event that one or more of these vendors is not available. We continually review our manufacturing and supply needs against the capacity of our contract manufacturers and suppliers with a view to ensuring that we are able to meet our production goals, reduce costs and operate more efficiently.

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Competition

Rosetta Stone competes in several categories within the technology-based learning industry, including literacy, enterprise and educational language learning, and consumer language learning. With Lexia, we compete primarily in the K-12 digital literacy space in the U.S. The language-learning market is highly fragmented globally and consists of a variety of instructional and learning modes: classroom instruction utilizing the traditional approach of memorization, grammar and translation; immersion-based classroom instruction; self-study books, audio recordings and software that rely primarily on grammar and translation; and free online and mobile offerings that provide content and opportunities to practice writing and speaking.

Seasonality

Our business is affected by variations in seasonal trends. Within our Literacy segment and K-12 Language education sales channel, sales are seasonally stronger in the second and third quarters of the calendar year corresponding to the end and beginning of school district budget years. E&E Language segment sales in our government and corporate sales channels are seasonally stronger in the second half of the calendar year due to purchasing and budgeting cycles. Consumer Language sales are affected by seasonal trends associated with the holiday shopping season. In particular, we generate a large portion of our Consumer Language sales in the fourth quarter during the period beginning on Black Friday through the end of the calendar year.

Our operating segments are affected by different sales-to-cash patterns. Consumer Language sales typically turn to cash more quickly than E&E Language and Literacy sales, which tend to have longer collection cycles. Historically, in the first half of the year we have been a net user of cash and in the second half of the year we have been a net generator of cash.

Intellectual Property

Our intellectual property is critical to our success. We rely on a combination of measures to protect our intellectual property, including patents, trade secrets, trademarks, trade dress, copyrights and non-disclosure and other contractual arrangements. In certain circumstances, we may sub-license our intellectual property including our trademarks and software for use in certain markets.

We have sixteen U.S. patents, thirteen foreign patents and several U.S. and foreign patent applications pending that cover various aspects of our language-learning and literacy technologies.

We have registered a variety of trademarks, including our primary or house marks, Rosetta Stone, The Blue Stone Logo, Lexia, Lexia PowerUP Literacy, TruAccent, and Catalyst. These trademarks are the subject of either registrations or pending applications in the U.S., as well as numerous countries worldwide where we do business. We have been issued trademark registrations for our yellow color from the U.S. Patent and Trademark Office. We intend to continue to strategically register, both domestically and internationally, trademarks we use today and those we develop in the future. We believe that the distinctive marks that we use in connection with our solutions are important in building our brand image and distinguishing our offerings from those of our competitors. These marks are among our most valuable assets.

In addition to our distinctive marks, we own numerous registered and unregistered copyrights, and trade dress rights, to our products and packaging. We intend to continue to strategically register copyrights in our various products. We also place significant value on our trade dress, which is the overall image and appearance of our products, as we believe that our trade dress helps to distinguish our products in the marketplace from our competitors.

Since 2006, we have held a perpetual, irrevocable and worldwide license from the University of Colorado allowing us to use speech recognition technology for language-learning solutions. Since 2014, we have also held a commercial license from the Florida State University Research Foundation allowing us to use certain computer software and technology in our literacy offerings. These types of arrangements are often subject to royalty or license fees.

We diligently protect our intellectual property through the use of patents, trademarks and copyrights and through enforcement efforts in litigation. We routinely monitor for potential infringement in the countries where we do business. In addition, our employees, contractors and other parties with access to our confidential information are required to sign agreements that prohibit the unauthorized disclosure of our proprietary rights, information and technology.

Employees

As of December 31, 2018, we had 1,040 total employees, consisting of 723 full-time and 317 part-time employees. We have employees in France and Spain who benefit from a collective bargaining agreement. We believe that we have good relations with our employees.

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Available Information

This Annual Report on Form 10-K, along with our Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (the "Exchange Act"), are available free of charge through our website as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. Our website address is www.rosettastone.com. The information contained in, or that can be accessed through, our website is not part of, and is not incorporated into, this Annual Report on Form 10-K.

The SEC maintains a website that contains reports, proxy statements and other information regarding issuers that file electronically with the SEC. These materials may be obtained electronically by accessing the SEC's website at www.sec.gov.

Item 1A. Risk Factors

The following description of risk factors includes any material changes to, and supersedes the description of, risk factors associated with our business previously disclosed in our Quarterly Report on Form 10-Q filed on November 6, 2018 with the SEC for the period ended September 30, 2018. An investment in our common stock involves a substantial risk of loss. Investors should carefully consider these risk factors, together with all of the other information included herewith, before deciding to purchase shares of our common stock. If any of the following risks actually occur, our business, financial condition, or results of operations could be materially adversely affected. In such case, the market price of our common stock could decline and all or part of an investment may be lost.

The risks described below are not the only ones facing us. Our business is also subject to the risks that affect many other companies, such as general economic conditions and geopolitical events. Further, additional risks not currently known to us or that we currently believe are immaterial could have a material adverse effect on our business, financial condition, cash flows and results of operations. In addition to the other information set forth in this annual report on Form 10-K, you should carefully consider the risk factors discussed below and in other documents we file with the SEC that could materially affect our business, financial condition, cash flows or future results.

We might not be successful in executing our strategy of focusing on learners who need to speak and read English and passionate language learners who are mobile.

We are continuing to implement our strategy to emphasize the development of products and solutions for learners who need to speak and read English. This focus extends to the Consumer Language segment, where we continue to make product investments serving the needs of passionate language learners who are mobile, results-focused and value a quality language-learning experience. If we do not successfully execute our strategy, our revenue and profitability could decline, which could have an adverse effect on our business and financial results.

Our actual operating results may differ significantly from our guidance.

Historically, our practice has been to release guidance regarding our future performance that represents management's estimates as of the date of release. This guidance, which includes forward-looking statements, is based on projections prepared by management. These projections are not prepared with a view toward compliance with published guidelines of the American Institute of Certified Public Accountants, and neither our registered public accountants nor any other independent expert or outside party confirms or examines the projections and, accordingly, no such person expresses any opinion or any other form of assurance with respect thereto.

Projections are based upon a number of assumptions and estimates that, while presented with numerical specificity, are inherently subject to significant business, economic and competitive uncertainties and contingencies, many of which are beyond our control and are based upon specific assumptions with respect to future business decisions, some of which will change. We generally state possible outcomes as high and low ranges or as single point estimates, but actual results could differ materially. The principal reason that we release guidance is to provide a basis for management to discuss our business outlook with analysts and investors. We do not accept any responsibility for any projections or reports published by any such persons.

Guidance is necessarily speculative in nature, and it can be expected that some or all of the assumptions in the guidance furnished by us will not materialize or will vary significantly from actual results. Accordingly, our guidance is only an estimate of what management believes is realizable as of the date of release. Actual results may vary from our guidance and the variations may be material. We expressly disclaim any obligations to update or revise any guidance, whether as a result of new information, future events or otherwise, except as required by law. In light of the foregoing, investors are urged not to rely upon, or otherwise consider, our guidance in making an investment decision in respect of our common stock.

Any failure to successfully implement our strategy or the occurrence of any of the events or circumstances set forth in these "Risk Factors" and elsewhere in this annual report on Form 10-K could result in the actual operating results being different from our guidance, and such differences may be adverse and material.

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Intense competition in our industry may hinder our ability to attract and retain customers and generate revenue, and may diminish our margins.

The business environment in which we operate is rapidly evolving, highly fragmented and intensely competitive, and we expect competition to persist and intensify. Increased competition could adversely affect operating results by causing lower demand for our products and services, reduced revenue, more product returns, price reductions or concessions, reduced gross margins and loss of customers.

Many of the current and potential competitors in our Literacy and E&E Language segments have substantially greater financial, technical, sales, marketing and other resources than we do, as well as greater name recognition in some locations, as well as in some cases, lower costs. Some competitors offer more differentiated products (for example, online learning as well as physical classrooms and textbooks) that may allow them to more flexibly meet changing customer preferences. The resources of our competitors also may enable them to respond more rapidly to new or emerging technologies and changes in customer requirements and preferences and to offer lower prices than ours or to offer free language-learning software or online services. We may not be able to compete successfully against current or future competitors.

There are a number of free online language-learning opportunities to learn grammar, pronunciation, vocabulary (including specialties in areas such as medicine and business), reading, and conversation by means of podcasts and MP3s, mobile applications, audio courses and lessons, videos, games, stories, news, digital textbooks, and through other means, which compete with our Consumer Language segment. We estimate that there are thousands of free mobile applications on language-learning; free products are provided in at least 50 languages by private companies, universities, and government agencies. Low barriers to entry allow start-up companies with lower costs and less pressure for profitability to compete with us. Competitors that are focused more on user acquisition rather than profitability and funded by venture capital may be able to offer products at significantly lower prices or for free. As free online translation services improve and become more widely available and used, people may generally become less interested in language learning. Although we also offer free products such as mobile apps, if we cannot successfully attract users of these free products and convert a sufficient portion of these free users into paying customers, our business could be adversely affected. If free products become more engaging and competitive or gain widespread acceptance by the public, demand for our products could decline or we may have to lower our prices, which could adversely impact our revenue and other results.

Historically a substantial portion of our revenue has been generated from our Consumer Language business. If we fail to accurately anticipate consumer demand and trends in consumer preferences, our brands, sales and customer relationships may be harmed.

Demand for our consumer focused language-learning software products and related services is subject to rapidly changing consumer demand and trends in consumer preferences. Therefore, our success depends upon our ability to:

- identify, anticipate, understand and respond to these trends in a timely manner;
- introduce appealing new products and performance features on a timely basis;
- provide appealing solutions that engage our customers;
- adapt and offer our products and services using rapidly evolving, widely varying and complex technologies;
- anticipate and meet consumer demand for additional languages, learning levels and new platforms for delivery;
- effectively position and market our products and services;
- identify and secure cost-effective means of marketing our products to reach the appropriate consumers;
-

identify cost-effective sales distribution channels and other sales outlets where interested consumers will buy our products;

- anticipate and respond to consumer price sensitivity and pricing changes of competitive products; and
- identify and successfully implement ways of building brand loyalty and reputation.

We anticipate having to make investments in new products in the future and we may incur significant expenses without achieving the anticipated benefits of our investment or preserving our brand and reputation. Investments in new products and technology are speculative, the development cycle for products may exceed planned estimates and commercial success depends on many factors, including innovativeness, developer support, and effective distribution and marketing. Customers might not perceive our latest offerings as providing significant new value and may reduce their purchases of our offerings, unfavorably impacting revenue. We might not achieve significant revenue from new product and service investments for a number of years, if at all. We also might not be able to develop new solutions or enhancements in time to capture business opportunities or achieve sustainable acceptance in new or existing marketplaces. Furthermore, consumers may defer purchases of our solutions in anticipation of new products or new versions from us or our competitors. A decline in consumer demand for our solutions, or any failure on our part to satisfy such changing consumer preferences, could harm our business and profitability.

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If the recognition by schools and other organizations of the value of technology-based education does not continue to grow, our ability to generate revenue from organizations could be impaired.

Our success depends in part upon the continued adoption by organizations and potential customers of technology-based education initiatives. Some academics and educators oppose online education in principle and have expressed concerns regarding the perceived loss of control over the education process that could result from offering courses online. If the acceptance of technology-based education does not continue to grow, our ability to continue to grow our Literacy and E&E Language businesses could be impaired.

We depend on discretionary consumer spending in the Consumer Language segment of our business. Adverse trends in general economic conditions, including retail and online shopping patterns or consumer confidence, as well as other external consumer dynamics may compromise our ability to generate revenue.

The success of our business depends to a significant extent upon discretionary consumer spending, which is subject to a number of factors, including general economic conditions, consumer confidence, employment levels, business conditions, interest rates, availability of credit, inflation, and taxation. Adverse trends in any of these economic indicators may cause consumer spending to decline, which could adversely affect our sales and profitability.

Because a portion of our Consumer Language sales are made to or through retailers and distributors, none of which has any obligation to sell our products, the failure or inability of these parties to sell our products effectively could reduce our revenue and profitability.

We rely on retailers and distributors, together with our direct sales force, to sell our products. Our sales to retailers and distributors are concentrated on a key group that is comprised of a mix of websites, such as Amazon.com, app stores, such as the Apple App Store and the Google Play Store, select retail resellers, such as Barnes & Noble, Best Buy, Target, and Staples, and consignment distributors such as Software Packaging Associates.

We have no control over the quantity of products that retailers and distributors purchase from us or sell on our behalf, we do not have long-term contracts with any of them, and they have no obligation to offer or sell our products or to give us any particular shelf space or product placement within their stores. Thus, there is no guarantee that this source of revenue will continue at the same level as it has in the past or that these retailers and distributors will not promote competitors' products over our products or enter into exclusive relationships with our competitors. Any material adverse change in the principal commercial terms, material decrease in the volume of sales generated by our larger retailers or distributors or major disruption or termination of a relationship with these retailers and distributors could result in a significant decline in our revenue and profitability. Furthermore, product display locations and promotional activities that retailers, websites and app stores undertake can affect the sales of our products. The fact that we also sell our products directly could cause retailers, websites, app stores or distributors to reduce their efforts to promote our products or stop selling our products altogether.

Many traditional physical retailers are experiencing diminished foot traffic and sales. For our retail business, even though online sales have increased in popularity and are growing in importance, we continue to depend on sales that take place in physical stores and shopping malls. Reduced customer foot traffic in these stores and malls is likely to reduce their sales of our products. In addition, if one or more of these retailers or distributors are unable to meet their obligations with respect to accounts payable to us, we could be forced to write off accounts receivable with such accounts. Any bankruptcy, liquidation, insolvency or other failure of any of these retailers or distributors could result in significant financial loss and cause us to lose revenue in future periods.

Price changes and other concessions could reduce our revenue.

We continue to test and offer changes to the pricing of our products. If we reduce our prices in an effort to increase our sales, this could have an adverse impact on our revenue to the extent that unit sales do not increase in a sufficient amount to compensate for the lower pricing. Reducing our pricing to individual consumers could also cause us to have to lower pricing to our E&E Language customers. Any increase in the taxation of online sales could have the effect of a price increase to consumers and could cause us to have to lower our prices or could cause sales to decline. It is uncertain whether we will need to lower prices to effectively compete and what other short-term or long-term impacts could be.

In the U.S. and Canada, we offer consumers who purchase our web-based software, packaged software and audio practice products directly from us a 30-day, unconditional, full money-back refund. We also permit some of our retailers and distributors to return products, subject to certain limitations. We establish revenue reserves for product returns based on historical experience, estimated channel inventory levels, the timing of new product introductions and other factors. If product returns exceed our reserve estimates, the excess would offset reported revenue, which could adversely affect our reported financial results.

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Our future growth and profitability will depend in large part upon the effectiveness and efficiency of our marketing.

Our future growth and profitability will depend in large part upon the effectiveness and efficiency of our marketing, including our ability to:

- appropriately and efficiently allocate our marketing for multiple products;
- accurately identify, target and reach our audience of potential customers with our marketing messages;
- select the right marketplace, media and specific media vehicle in which to advertise;
- identify the most effective and efficient level of spending in each marketplace, media and specific media vehicle;
- determine the appropriate creative message and media mix for advertising, marketing and promotional expenditures;
- effectively manage marketing costs, including creative and media expenses, in order to maintain acceptable customer acquisition costs;
- differentiate our products as compared to other products;
- create greater awareness of our new products, our brands and learning solutions;
- drive traffic to our e-commerce website, call centers, distribution channels and retail partners; and
- convert customer inquiries into actual orders.

Our planned marketing may not result in increased revenue or generate sufficient levels of product and brand name awareness, and we may not be able to increase our net sales at the same rate as we increase our advertising expenditures.

We engage in an active public relations program, including through social media sites such as Facebook and Twitter. We also seek new customers through our online marketing efforts, including paid search listings, banner ads, text links and permission-based e-mails, as well as our affiliate and reseller programs. If one or more of the search engines or other online sources on which we rely for website traffic were to modify their general methodology for how they display our websites, resulting in fewer consumers clicking through to our websites, our sales could suffer. If any free search engine on which we rely begins charging fees for listing or placement, or if one or more of the search engines or other online sources on which we rely for purchased listings, modifies or terminates its relationship with us, our expenses could rise, we could lose customers and traffic to our websites could decrease.

We dynamically adjust our mix of marketing programs to acquire new customers at a reasonable cost with the intention of achieving overall financial goals. If we are unable to maintain or replace our sources of customers with similarly effective sources, or if the cost of our existing sources increases, our customer levels and marketing expenses may be adversely affected.

Our international businesses may not succeed and may impose additional and unique risks.

In 2016, we decided to eliminate our direct sales presence in almost all of our non-U.S. and non-northern European geographies related to the distribution of the E&E Language offerings, relying on indirect sales channels through reseller and other arrangements with third parties in those geographies. We also have optimized certain of our website sales channels in Europe, Asia and Latin America. If we are unable to conduct our international operations successfully and market, sell, deliver and support our products and services internationally to the extent we expect, our business, revenue and financial results could be harmed.

If we are unable to continually adapt our products and services to mobile devices and technologies other than personal computers and laptops, and to adapt to other technological changes and customer needs generally, we may be unable to attract and retain customers, and our revenue and business could suffer.

We need to anticipate, develop and introduce new products, services and applications on a timely and cost-effective basis that keeps pace with technological developments and changing customer needs. The process of developing new high technology products, services and applications and enhancing existing products, services and applications is complex, costly and uncertain, and any failure by us to anticipate customers' changing needs and emerging technological trends accurately could significantly harm our ability to attract and retain customers and our results of operations. For example, the number of individuals who access the Internet through devices other than a personal computer, such as tablet computers, mobile devices, televisions and set-top box devices, has increased dramatically and this trend is likely to continue. Our products and services may not work or be viewable on these devices because each manufacturer or distributor may establish unique technical standards for such devices. Accordingly, we may need to devote significant resources to the creation, support and maintenance of such versions. If we fail to develop or sell products and services on a cost-effective basis that respond to these or other technological developments and changing customer needs, we may be harmed in our ability to attract and retain customers, and our revenue and business could suffer. Furthermore, our customers who view our advertising via mobile devices might not buy our products to the same extent that they do when viewing our advertising via personal computers or laptops. Accordingly, if we cannot convince customers to purchase our products via mobile devices, our business and results of operations could be harmed to the extent that the trend to mobile devices continues.

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We offer our software products on operating systems and platforms including Windows, Macintosh, Apple OS, Android, and Amazon apps. The demand for traditional desktop computers has been declining, while the demand for mobile devices such as notebook computers, smartphones and tablets has been increasing, which means that we must be able to market to potential customers and to provide customers with access to and use of our products and services on many platforms and operating systems, as they may be changed from time to time. To the extent new releases of operating systems, including for mobile and non-PC devices, or other third-party products, platforms or devices make it more difficult for our products to perform, and our customers use alternative technologies, our business could be harmed.

Our software products must interoperate with computer operating systems of our customers. If we are unable to ensure that our products interoperate properly with customer systems, our business could be harmed.

Our products must interoperate with our customers' computer systems, including the network, security devices and settings, and student learning management systems of our E&E Language and Literacy customers. As a result, we must continually ensure that our products interoperate properly with these varied and customized systems. Changes in operating systems, the technologies we incorporate into our products or the computer systems our customers use may damage our business.

Our products and internal systems rely on software that is highly technical and maintained by third parties and if such third-party software contains undetected errors or vulnerabilities or if it not supported or updated to keep pace with current computer hardware, our business could be adversely affected.

Our products and internal systems rely on software, including software developed or maintained internally and/or by third parties, that is highly technical and complex. In addition, our products and internal systems depend on the ability of such software to store, retrieve, process, and manage immense amounts of data. Such software has contained, and may now or in the future contain, undetected errors, bugs, or vulnerabilities. Some errors may only be discovered after the code has been released for external or internal use. Errors, vulnerabilities, or other design defects within the software on which we rely may result in a negative experience for users and marketers who use our products, delay product introductions or enhancements, result in measurement or billing errors, compromise our ability to protect the data of our users and/or our intellectual property or lead to reductions in our ability to provide some or all of our services.

For example, we rely on Adobe Flash as a platform for our software although we are in the process of modifying our products to eliminate that reliance. Adobe Flash is one of the most versatile programming systems available and is unique in its ability to allow the integration of many forms of electronic formatted media into an interactive and user friendly system. However, in July 2015, certain vulnerabilities discovered in Adobe Flash led to temporary interruption of support for Adobe Flash by popular web browsers. As a result, some software makers are opting to exclude Adobe Flash from their web browsers. If similar interruptions occur in the future and disrupt our ability to provide our products to some or all of our users, our ability to generate revenue would be harmed. Additionally, if Adobe Flash were to become deleted from Adobe’s product line or become not supported or updated to keep pace with current computer hardware, then our software products would become obsolete very quickly. Any errors, bugs, vulnerabilities, or defects discovered in the software on which we rely, and any associated degradations or interruptions of service, could result in damage to our reputation, loss of users, loss of revenue, or liability for damages, any of which could adversely affect our business and financial results.

If there are changes in the spending policies or budget priorities for government funding of colleges, universities, schools, other education providers, or government agencies, we could lose revenue.

Many of our E&E Language and Literacy customers are colleges, universities, primary and secondary schools and school districts, other education providers, armed forces and government agencies that depend substantially on government funding. Accordingly, any general decrease, delay or change in federal, state or local funding for colleges, universities, primary and secondary schools and school districts, or other education providers or government agencies that use our products and services could cause our current and potential customers to reduce their purchases of our products and services, to exercise their right to terminate licenses, or to decide not to renew licenses, any of which could cause us to lose revenue. In addition, a specific reduction in governmental funding support for products such as ours would also cause us to lose revenue and could adversely affect our overall gross margins.

Some of our E&E Language and Literacy business is characterized by a lengthy and unpredictable sales cycle, which could delay new sales.

We face a lengthy sales cycle between our initial contact with some potential E&E Language and Literacy customers and the signing of license agreements with these customers. As a result of this lengthy sales cycle, we have only a limited ability to forecast the timing of such E&E Language and Literacy sales. A delay in or failure to complete license transactions could cause us to lose revenue, and could cause our financial results to vary significantly from quarter to quarter. Our sales cycle varies widely, reflecting differences in our potential E&E Language and Literacy customers' decision-making processes, procurement requirements and budget cycles, and is subject to significant risks over which we have little or no control, including:

- customers' budgetary constraints and priorities;
- the timing of our customers' budget cycles;
- the need by some customers for lengthy evaluations that often include administrators and faculties; and
- the length and timing of customers' approval processes.

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We have completed our transition to a 100% SaaS-based model for our Consumer Language business and sell our solutions as subscriptions, rather than packaged software, our revenue, which could negatively affect our results of operations and cash flow.

Historically, we have predominantly sold our packaged software programs under a perpetual license for a single upfront fee and recognized 65-90% of the revenue at the time of sale. Our online and app-based products are sold under different subscription terms, from short-term (less than one year) to long-term (typically 12- to 24-months) subscriptions with a corresponding license term. Online and app-based subscription customers could be less likely to renew their subscriptions beyond the initial term with the effect that we could earn less revenue over time from each customer than historically which could have a substantially negative impact on our revenue, results of operations and cash flow in any quarterly reporting period.

Our revenue is subject to seasonal and quarterly variations, which could cause our financial results to fluctuate significantly.

We have experienced, and we believe we will continue to experience, substantial seasonal and quarterly variations in our revenue, cash flows and net income. These variations are primarily related to increased sales of our Consumer Language products and services in the fourth quarter, especially during the holiday selling season, as well as higher sales to governmental, educational institutions, and corporations in the second half of the calendar year. We sell to a significant number of our retailers, distributors and E&E Language customers on a purchase order basis and we receive orders when these customers need products and services. As a result, their orders are typically not evenly distributed throughout the year. Our quarterly results of operations also may fluctuate significantly as a result of a variety of other factors, including the timing of holidays and advertising initiatives, changes in our products, services and advertising initiatives and changes in those of our competitors. Budgetary constraints of our E&E Language and Literacy customers may also cause our quarterly results to fluctuate.

As a result of these seasonal and quarterly fluctuations, we believe that comparisons of our results of operations between different quarters are not necessarily meaningful and that these comparisons are not reliable as indicators of our future performance. In addition, these fluctuations could result in volatility and adversely affect our cash flows. Any seasonal or quarterly fluctuations that we report in the future may differ from the expectations of market analysts and investors, which could cause the price of our common stock to fluctuate significantly.

Acquisitions, joint ventures and strategic alliances may have an adverse effect on our business.

We have made and may continue to make acquisitions or enter into joint ventures and strategic alliances as part of our long-term business strategy. Such transactions may result in use of our cash resources, dilutive issuances of our equity securities, or incurrence of debt. Such transactions also involve significant challenges and risks including that the transaction does not advance our business strategy, that we do not realize a satisfactory return on our investment, that we experience difficulty integrating new technology, employees, and business systems, that we divert management's attention from our other businesses or that we acquire undiscovered liabilities such as patent infringement claims or violations of the U.S. Foreign Corrupt Practices Act and similar worldwide anti-bribery laws. It may take longer than expected to realize the full benefits, such as increased revenue, enhanced efficiencies, or more customers, or those benefits may ultimately be smaller than anticipated, or may not be realized. These events and circumstances could harm our operating results or financial condition.

The possession and use of personal, financial and other information by us and our third party service providers presents risks and expenses that could harm our business. If we or our service providers are unable to protect our information technology networks against service interruption or failure, misappropriation or unauthorized disclosure or manipulation of data, whether through breach of our network security or otherwise, we could be subject to costly government enforcement actions and litigation and our reputation may be damaged.

Our business involves the collection, storage and transmission of personal, financial or other information that is entrusted to us by our customers and employees. Our information systems also contain the Company's proprietary and other confidential information related to our business. Our efforts to protect such information may be unsuccessful due to the actions of third parties, computer viruses, physical or electronic break-ins, catastrophic events, employee error or malfeasance or other attempts to harm our systems. Possession and use of personal information in conducting our business subjects us to legislative and regulatory obligations that could require notification of data breaches, restrict our use of personal information, and hinder our ability to acquire new customers or market to existing customers. Our use of new and emerging technologies such as cloud-based services and mobile applications continues to evolve, presenting new and additional risks in managing access to our data, including relying on third parties to manage and safeguard data. These third party service providers receive or store information provided by us, our users or our employees. If these third parties fail to adopt or adhere to adequate information security practices, or fail to comply with our online policies, or in the event of a breach of their networks, our customers' or employees’ data may be improperly accessed, used or disclosed. As our business and the regulatory environment evolve in the U.S. and internationally, we may become subject to additional and even more stringent legal obligations concerning our treatment of customer information. We have incurred, and will continue to incur, expenses to comply with privacy and security standards and protocols imposed by law, regulation, industry standards or contractual obligations.

Despite our precautions and significant ongoing investments to protect against security risks, data protection breaches, cyber-attacks and other intentional disruptions of our products and offerings, we may be a target of attacks specifically designed to impede the performance of our products and offerings and harm our reputation as a company. If our systems are harmed or fail to function properly or if third parties improperly obtain and use the personal information of our customers or employees, we may be required to expend significant resources to repair or replace systems or to otherwise protect against security breaches or to address problems caused by the breaches. A major breach of our network security and systems could have serious negative consequences for our businesses, including possible fines, penalties and damages, reduced customer demand for our products and services, harm to our reputation and brand, and loss of our ability to accept and process customer credit card orders. Any such access, disclosure or loss of information could result in legal claims or proceedings and regulatory penalties, disrupt our operations or result in a loss of confidence in our products and services, which could lead to a material and adverse effect on our business, reputation or financial results.

We may incur significant costs related to maintaining data security and in the event of any data security breaches that could compromise our information technology network security, trade secrets and customer data.

The secure processing, maintenance and transmission of personal, financial or other information that is entrusted to us by our customers is critical to our operations and business strategy, and we devote significant resources to protecting such information. The expenses associated with protecting such information could reduce our operating margins. Additionally, threats to our information technology network security can take a variety of forms. Individual hackers and groups of hackers, and sophisticated organizations or individuals may threaten our information technology network security. Cyber attackers may develop and deploy malicious software to attack our services and gain access to our networks or data centers, hold access to critical systems or information for ransom, or act in a coordinated manner to launch distributed denial of service or other coordinated attacks. Cyber threats and attacks are constantly evolving, thereby increasing the difficulty of detecting and successfully implementing measures to defend against them. We may be unable to anticipate potential techniques or implement adequate preventative measures in time. Cyber threats and attacks can have cascading impacts that unfold with increasing speed across internal networks and systems. Breaches of our network, credit card processing information, or data security could disrupt the security of our internal systems and business applications, impair our ability to provide services to our customers and protect the privacy of their data, cause product development delays, compromise confidential or technical business information harming our competitive position, result in theft or misuse of our intellectual property or other assets, expose us to contractual or regulatory audit or investigation, require us to allocate additional resources to alternative and potentially more costly technologies more frequently than anticipated, or otherwise adversely affect our business. We maintain cyber risk insurance, but our policy coverage limits may not be sufficient to cover all of our losses caused by any future information security-related breaches or events.

Our business is subject to complex and evolving U.S. and foreign laws and regulations regarding privacy and data protection. Changes in regulations or customer concerns regarding privacy and protection of customer data, or any failure to comply with such laws, could adversely affect our business.

Federal, state, and international laws and regulations govern the collection, use, retention, disclosure, sharing and security of data that we receive from and about our customers. The use of consumer data by online service providers and advertising networks is a topic of active interest among federal, state, and international regulatory bodies, and the regulatory environment is unsettled and rapidly evolving. Many states have passed new laws impacting required notifications to customers and/or state agencies where there is a security breach involving personal data, such as California’s Information Practices Act.

We also face similar risks in international markets where our products, services and apps are offered. Foreign data protection, privacy, competition, and other laws and regulations can impose different obligations or be more restrictive than those in the United States. We are subject to international laws and regulations that dictate whether, how, and under what circumstances we can transfer, process and/or receive transnational data that is critical to our operations and ability to provision our products and perform services for our customers, including data relating to users, customers, or partners outside the United States, and those laws and regulations are uncertain and subject to change.

Recent legal developments in Europe have created complexity and compliance uncertainty regarding certain transfers of information from Europe to the U.S. For example, in October 2015, the European Court of Justice invalidated the 2000 US-EU Safe Harbor program as a legitimate and legally authorized basis on which U.S. companies, including Rosetta Stone, could rely for the transfer of personal data from the European Union to the United States. The European Union and United States agreed to an alternative transfer framework for data transferred from the European Union to the United States, called the Privacy Shield Framework. Rosetta Stone participates and has certified to its compliance to the Privacy Shield Framework. However, this framework also faces a number of legal challenges, is subject to an annual review that could result in changes to our obligations, and also may be challenged by national regulators or private parties. In addition, other available bases on which to rely for the transfer of EU personal data outside of the European Economic Area, such as standard Model Contractual Clauses (MCCs), have also been subjected to regulatory or judicial scrutiny. This has resulted in some uncertainty, and compliance obligations could cause us to incur costs or require us to change our business practices in a manner adverse to our business. The United Kingdom’s decision to withdraw from the EU also has resulted in uncertainty with respect to compliance obligations with respect to data transfers between the EU and the United Kingdom and the U.S. and the United Kingdom.

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If one or more of the legal bases for transferring personal data from Europe to the United States is invalidated, or if we are unable to transfer personal data between and among countries and regions in which Rosetta Stone operates, it could affect the manner in which we provide our services or adversely affect our financial results. Any failure, or perceived failure, by us to comply with or make effective modifications to our policies, or to comply with any federal, state, or international privacy, data-retention or data-protection-related laws, regulations, orders or industry self-regulatory principles could result in proceedings or actions against us by governmental entities or others, a loss of customer confidence, damage to the Rosetta Stone brands, and a loss of customers, which could potentially have an adverse effect on our business.

In addition, various federal, state and foreign legislative or regulatory bodies may enact new or additional laws and regulations concerning privacy, data-retention and data-protection issues, including laws or regulations mandating disclosure to domestic or international law enforcement bodies, which could adversely impact our business, our brand or our reputation with customers. For example, some countries are considering laws mandating that personal data regarding customers in their country be maintained solely in their country. Having to maintain local data centers and design product, service and business operations to limit personal data processing within individual countries could increase our operating costs significantly. In addition, the European Commission has approved a data protection regulation, known as the General Data Protection Regulation (GDPR), which came into force in May 2018. The GDPR includes additional operational and other requirements for companies that receive or process personal data of residents of the European Union as well as significant penalties for non-compliance. California recently enacted the Consumer Privacy Act of 2018, which will become effective January 1, 2020 and will require companies to give California consumers information about what data they collect, as well as to delete data about consumers if requested.

The interpretation and application of privacy, data protection and data retention laws and regulations are often uncertain and in flux in the U.S. and internationally. Complying with these varying international requirements could cause us to incur substantial costs or require us to change our business practices in a manner adverse to our business and operating results. In addition, these laws may be interpreted and applied inconsistently from country to country and inconsistently with our current policies and practices, complicating long-range business planning decisions. If privacy, data protection or data retention laws are interpreted and applied in a manner that is inconsistent with our current policies and practices we may be deemed non-compliant, subject to legal or regulatory process, fined or ordered to change our business practices in a manner that could cause use to incur substantial costs, or that adversely impacts our business or operating results.

We are subject to U.S. and foreign government regulation of online services which could subject us to claims, judgments, and remedies, including monetary liabilities and limitations on our business practices.

We are subject to regulations and laws directly applicable to providers of online services. The application of existing domestic and international laws and regulations to us relating to issues such as user privacy and data protection, data security, defamation, promotions, billing, consumer protection, accessibility, content regulation, quality of services, and intellectual property ownership and infringement is unclear or unsettled in many instances. Also, the collection and protection of information from children under the age of 13 is subject to the provisions of the Children's Online Privacy Protection Act (COPPA), which is particularly relevant to our learning solutions focused on children. In addition, we will also be subject to any new laws and regulations directly applicable to our domestic and international activities. Internationally, we may also be subject to laws regulating our activities in foreign countries and to foreign laws and regulations that are inconsistent from country to country. We may incur substantial liabilities for expenses necessary to defend litigation in connection with such regulations and laws or to comply with these laws and regulations, as well as potential substantial penalties for any failure to comply.

Changes in how network operators handle and charge for access to data that travel across their networks could adversely impact our business.

We rely upon the ability of customers to access many of our products through the Internet. To the extent that network operators implement usage based pricing, including meaningful bandwidth caps, or otherwise try to monetize access to their networks by data providers, we could incur greater operating expenses and our customer acquisition and retention could be negatively impacted. Furthermore, to the extent network operators were to create tiers of Internet access service and either charge us for or prohibit us from being available through these tiers, our business could be negatively impacted.

We are exposed to risks associated with credit card and payment fraud, and with our obligations under rules on credit card processing and alternative payment methods, which could cause us to lose revenue or incur costs. We depend upon our credit card processors and payment card associations.

As an e-commerce provider that accepts debit and credit cards for payment, we are subject to the Payment Card Industry Data Security Standard ("PCI DSS"), issued by the PCI Council. PCI DSS contains compliance guidelines and standards with regard to our network security surrounding the physical and electronic storage, processing and transmission of individual cardholder data. Despite our compliance with these standards and other information security measures, we cannot guarantee that all our information technology systems are able to prevent, contain or detect any cyber attacks, cyber terrorism, or security breaches from currently known viruses or malware, or viruses or malware that may be developed in the future. To the extent any disruption results in the loss, damage or misappropriation of information, we may be adversely affected by claims from customers, financial institutions, regulatory authorities, payment card associations and others. In addition, the cost of complying with stricter privacy and information security laws and standards could be significant.

We are subject to rules, regulations and practices governing our accepted payment methods which could change or be reinterpreted to make it difficult or impossible for us to comply. A failure to comply with these rules or requirements could make us subject to fines and higher transaction fees and we could lose our ability to accept these payment methods. We depend upon our credit card processors to carry out our sales transactions and remit the proceeds to us. At any time, credit card processors have the right to withhold funds otherwise payable to us to establish or increase a reserve based on their assessment of the inherent risks of credit card processing and their assessment of the risks of processing our customers’ credit cards. If our credit card processors exercise their right to establish or increase a reserve, it may adversely impact our liquidity. Our business and results of operations could be adversely affected if these changes were to occur.

The uncertainty surrounding the terms of the United Kingdom's withdrawal from the European Union and its consequences could cause disruptions and create uncertainty to our businesses and adversely impact consumer and investor confidence in our products and services.

In June 2016, a majority of voters in the United Kingdom elected to withdraw from the European Union in a national referendum (also referred to as "Brexit"). The referendum was advisory, and by the terms of the Treaty on European Union, withdrawal is subject to a negotiation period that is scheduled to expire in March 2019. The ultimate effects of Brexit on us are difficult to predict, but because we currently conduct business in the United Kingdom and in Europe, the results of the referendum and any eventual withdrawal could cause disruptions and create uncertainty to our businesses, including affecting the business of and/or our relationships with our customers and suppliers, as well as altering the relationship among tariffs and currencies, including the value of the British pound and the Euro relative to the U.S. dollar. Such disruptions and uncertainties could adversely affect our financial condition, operating results, and cash flows. Additionally, Brexit could result in legal uncertainty and potentially divergent national laws and regulations as new legal relationships between the United Kingdom and the European Union are established. The ultimate effects of Brexit on us will also depend on the terms of agreements, if any, the United Kingdom and the European Union make to retain access to each other's respective markets either during a transitional period or more permanently. Any of these effects, among others, could materially adversely affect our business, business opportunities, results of operations, and financial condition.

The U.S. Congress and Trump administration may make substantial changes to fiscal, political, regulatory and other federal policies that may adversely affect our business, financial condition, operating results and cash flows.

Changes or uncertainty in general economic or political conditions in the United States or other regions could adversely affect our business. For example, the administration under President Donald Trump has made, or has indicated that it may propose, significant changes with respect to a variety of issues, including education standards and funding, international trade agreements, import and export regulations, tariffs and customs duties, foreign relations, and immigration laws, that could have a materially adverse effect on our business, business opportunities, results of operations and financial condition.

Uncertainty in the global geopolitical landscape from recent events may impede the implementation of our strategy outside the United States.

There may be uncertainty as to the position the United States government will take with respect to world affairs and events. This uncertainty may include such issues as U.S. support for existing treaty and trade relationships with other countries. This uncertainty, together with other key global events during recent years (such as the continuing uncertainty arising from the United Kingdom's planned withdrawal from the EU as well as ongoing terrorist activity), may adversely impact (i) the ability or willingness of non-U.S. companies to transact business in the United States, including with the Company (ii) regulation and trade agreements affecting U.S. companies, (iii) global stock markets (including the New York Stock Exchange on which our common stock is traded), and (iv) general global economic conditions. All of these factors are outside of our control, but may nonetheless cause us to adjust our strategy in order to compete effectively in global markets.

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Any significant interruptions in the operations of our website, call center or third-party call centers, especially during the holiday shopping season, could cause us to lose sales and disrupt our ability to process orders and deliver our solutions in a timely manner.

We rely on our website, an in-house call center and third-party call centers, over which we have little or no control, to sell our solutions, respond to customer service and technical support requests and process orders. These activities are especially important during the holiday season and in particular the period beginning on Black Friday through the end of the calendar year. Any significant interruption in the operation of these facilities, including an interruption caused by our failure to successfully expand or upgrade our systems or to manage these expansions or upgrades, or a failure of third-party call centers to handle higher volumes of use, could reduce our ability to receive and process orders and provide products and services, which could result in cancelled sales and loss of revenue and damage to our brand and reputation. These risks are more important during the holiday season, when many sales of our products and services take place.

We structure our marketing and advertising to drive potential customers to our website and call centers to purchase our solutions. If we experience technical difficulties with our website or if our call center operators do not convert inquiries into sales at expected rates, our ability to generate revenue could be impaired. Training and retaining qualified call center operators is challenging due to the expansion of our product and service offerings and the seasonality of our business. If we do not adequately train our call center operators, they may not convert inquiries into sales at an acceptable rate.

If any of our products or services contain defects or errors or if new product releases or services are delayed, our reputation could be harmed, resulting in significant costs to us and impairing our ability to sell our solutions.

If our products or services contain defects, errors or security vulnerabilities, our reputation could be harmed, which could result in significant costs to us and impair our ability to sell our products in the future. In the past, we have encountered product development delays due to errors or defects. We would expect that, despite our testing, errors could be found in new products and product enhancements in the future. Significant errors in our products or services could lead to, among other things:

- delays in or loss of marketplace acceptance of our products and services;
- diversion of our resources;
- a lower rate of license renewals or upgrades for Consumer Language, Literacy and E&E Language customers;
- injury to our reputation;
- increased service expenses or payment of damages; or
- costly litigation.

If we fail to effectively upgrade our information technology systems, we may not be able to accurately report our financial results or prevent fraud.

As part of our efforts to continue improving our internal control over financial reporting, we may decide to upgrade our existing financial information technology systems in order to automate controls that are currently performed manually. We may experience difficulties in transitioning to these upgraded systems, including loss of data and decreases in productivity, as personnel become familiar with these new systems. In addition, our management information systems will require modification and refinement as our business needs change, which could prolong difficulties we experience with systems transitions, and we may not always employ the most effective systems for our purposes. If we experience difficulties in implementing new or upgraded information systems or experience significant system failures, or if we are unable to successfully modify our management information systems or respond to changes in our business needs, we may not be able to effectively manage our business and we may fail to meet our reporting obligations. In addition, as a result of the automation of these manual processes, the data produced may cause us to question the accuracy of previously reported financial results.

Failure to maintain the availability of the systems, networks, databases and software required to operate and deliver our Internet-based products and services could damage our reputation and cause us to lose revenue.

We rely on internal and external systems, networks and databases maintained by us and third-party providers to process customer orders, handle customer service requests, and host and deliver our Internet-based learning solutions. Any damage, interruption or failure of our systems, networks and databases could prevent us from processing customer orders and result in degradation or interruptions in delivery of our products and services. Notwithstanding our efforts to protect against interruptions in the availability of our e-commerce websites and Internet-based products and services, we do occasionally experience unplanned outages or technical difficulties. In addition, we do not have complete redundancy for all of our systems. In the event of an interruption or system event we may be unable to meet contract service level requirements, or we could experience an unrecoverable loss of data which could cause us to lose customers and could harm our reputation and cause us to face unexpected liabilities and expenses. If we continue to expand our business, we will put additional strains on these systems. As we continue to move additional product features to online systems or place more of our business online, all of these considerations will become more significant.

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We may also need to grow, reconfigure or relocate our data centers in response to changing business needs, which may be costly and lead to unplanned disruptions of service.

We may incur losses associated with currency fluctuations and may not be able to effectively hedge our exposure, which could impair our financial performance.

Our operating results are subject to fluctuations in foreign currency exchange rates. We currently do not attempt to mitigate a portion of these risks through foreign currency hedging, based on our judgment of the appropriate trade-offs among risk, opportunity and expense. In the future, we might choose to engage in foreign currency hedging transactions, which would involve different risks and uncertainties.

Our revolving credit facility contains borrowing limitations and other restrictive covenants and the failure to maintain a sufficient borrowing base or to comply with such covenants could prevent us from borrowing funds, and could cause any outstanding debt to become immediately payable, which might adversely impact our business.

Our revolving credit facility contains borrowing limitations based on a combination of our cash balance and eligible accounts receivable balances and financial covenants currently applicable to us, as well as a number of restrictive covenants, including restrictions on incurring additional debt, making investments and other restricted payments, selling assets, paying dividends and redeeming or repurchasing capital stock and debt, subject to certain exceptions. Collectively, these borrowing limitations and covenants could constrain our ability to grow our business through acquisition or engage in other transactions. During the term of our $25.0 million revolving credit facility, we are also subject to certain financial covenants that require us to maintain a minimum liquidity amount and minimum financial performance requirements, as defined in the credit agreement. If we are not able to comply with all of these covenants, for any reason, we would not be able to borrow funds under the facility, and some or all of any outstanding debt could become immediately due and payable which could have a material adverse effect on our liquidity and ability to conduct our business.

A significant deterioration in our profitability and/or cash flow caused by prolonged economic instability could reduce our liquidity and/or impair our financial ratios, and trigger a need to raise additional funds from the capital markets and/or renegotiate our banking covenants.

To the extent we face economic difficulties, our revenue, profitability and cash flows could be significantly reduced. A liquidity shortfall may delay certain development initiatives or may expose us to a need to negotiate further funding. While we anticipate that our existing cash and cash equivalents, together with availability under our existing revolving credit facility, cash balances and cash from operations, will be sufficient to fund our operations for at least the next 12 months, we may need to raise additional capital to fund operations in the future or to finance acquisitions. If we seek to raise additional capital in order to meet various objectives, including developing future technologies and services, increasing working capital, acquiring businesses and responding to competitive pressures, capital may not be available on favorable terms or may not be available at all. A lack of sufficient capital resources could significantly limit our ability to take advantage of business and strategic opportunities. Any additional capital raised through the sale of equity securities would dilute our stock ownership. If adequate additional funds are not available, we may be required to delay, reduce the scope of, or eliminate material parts of our business strategy, including potential additional acquisitions or development of new products, services and technologies.

We might require additional funds from what we internally generate to support our business which might not be available on acceptable terms or at all.

We might need to further reduce costs or raise additional funds through public or private financings or borrowings in order to maintain our operations at their current level, develop or enhance products, fund expansion, respond to competitive pressures or to acquire complementary products, businesses or technologies. If required, additional financing might not be available on terms that are favorable to us, if at all. If we raise additional funds through the issuance of debt, equity or convertible debt securities, these securities might have rights, preferences and privileges senior to those of our current stockholders.

If our goodwill or indefinite-lived intangible assets become impaired, we may be required to record a significant non-cash charge to earnings.

Under accounting principles generally accepted in the U.S. ("GAAP"), we review our goodwill and indefinite lived intangible assets for impairment at least annually and when there are changes in circumstances. Factors that may be considered a change in circumstances include a decline in stock price and market capitalization, expected future cash flows and slower growth rates in our industry. We may be required to record significant charges to earnings in our financial statements during the period in which any impairment of our goodwill or indefinite lived intangible assets is determined, resulting in a negative effect on our results of operations.

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We may have exposure to greater than anticipated tax liabilities.

We are subject to income and indirect tax in the U.S. and many foreign jurisdictions. The application of indirect taxes (such as sales and use tax, value-added tax, goods and services tax, business tax and gross receipt tax) to our businesses and to our users is complex, uncertain and evolving, in part because many of the fundamental statutes and regulations that impose indirect taxes were established before the adoption and growth of the Internet and e-commerce. We are subject to audit by multiple tax authorities throughout the world. Although we believe our tax estimates are reasonable and accurate, the final determination of tax audits and any related litigation could be materially different from our historical tax provisions and accruals. The results of an audit or litigation could have a material adverse effect on our financial statements in the period or periods for which that determination is made.

In addition, the United States government and other governments may adopt tax measures that could impact future effective tax rates favorably or unfavorably affected by changes in tax rates, changes in the valuation of our deferred tax assets or liabilities, or changes in tax laws or their interpretation. Although we cannot predict whether or in what form any other legislation changes may pass, if enacted it could have a material adverse impact on our tax expense, deferred tax assets and cash flows.

Our deferred tax assets may not be fully realizable.

We record tax valuation allowances to reflect uncertainties about whether we will be able to realize some of our deferred tax assets before they expire. Our tax valuation allowance is based on our estimates of taxable income for the jurisdictions in which we operate and the period over which our deferred tax assets will be realizable. In the future, we could be required to increase the valuation allowance to take into account additional deferred tax assets that we may be unable to realize. An increase in the valuation allowance would have an adverse impact, which could be material, on our income tax provision and net income in the period in which we record the increase.

Protection of our intellectual property is limited, and any misuse of our intellectual property by others, including software piracy, could harm our business, reputation and competitive position.

Our intellectual property is important to our success. We believe our trademarks, copyrights, trade secrets, patents, pending patent applications, trade dress and designs are valuable and integral to our success and competitive position. To protect our proprietary rights, we rely on a combination of patents, copyrights, trademarks, trade dress, trade secret laws, confidentiality procedures, contractual provisions and technical measures. However, even if we are able to secure such rights in the United States, the laws of other countries in which our products are sold may not protect our intellectual property rights to the same extent as the laws of the United States.

In addition to issued patents, we have several patent applications on file in the U.S. and other countries. However, we do not know whether any of our pending patent applications will result in the issuance of patents or whether the examination process will require us to narrow our claims. Even if patents are issued from our patent applications, which are not certain, they may be challenged, circumvented or invalidated in the future. Moreover, the rights granted under any issued patents may not provide us with proprietary protection or competitive advantages, and, as with any technology, competitors may be able to develop similar or superior technologies now or in the future. In addition, we have not emphasized patents as a source of significant competitive advantage and have instead sought to primarily protect our proprietary rights under laws affording protection for trade secrets, copyright and trademark protection of our products, brands, and other intellectual property where available and appropriate. These measures afford only limited protection and may be challenged, invalidated or circumvented by third parties. In addition, these protections may not be adequate to prevent our competitors or customers from copying or reverse-engineering our products. Third parties could copy all or portions of our products or otherwise obtain, use, distribute and sell our proprietary information without authorization. Third parties may also develop similar or superior technology independently by designing around our intellectual property, which would decrease demand for our products. In addition, our patents may not provide us with any competitive advantages and the patents of others may seriously impede our ability to conduct our business.

We protect our products, trade secrets and proprietary information, in part, by requiring all of our employees to enter into agreements providing for the maintenance of confidentiality and the assignment of rights to inventions made by them while employed by us. We also enter into non-disclosure agreements with our technical consultants, customers, vendors and resellers to protect our confidential and proprietary information. We cannot guarantee that our confidentiality agreements with our employees, consultants and other third parties will not be breached, that we will be able to effectively enforce these agreements, that we will have adequate remedies for any breach, or that our trade secrets and other proprietary information will not be disclosed or will otherwise be protected.

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We rely on contractual and license agreements with third parties in connection with their use of our products and technology. There is no guarantee that such parties will abide by the terms of such agreements or that we will be able to adequately enforce our rights, in part because we rely, in many instances, on "click-wrap" and "shrink-wrap" licenses, which are not negotiated or signed by individual licensees. Accordingly, some provisions of our licenses, including provisions protecting against unauthorized use, copying, transfer, resale and disclosure of the licensed software program, could be unenforceable under the laws of several jurisdictions.

Protection of trade secret and other intellectual property rights in the places in which we operate and compete is highly uncertain and may involve complex legal questions. The laws of countries in which we operate may afford little or no protection to our trade secrets and other intellectual property rights. Although we defend our intellectual property rights and combat unlicensed copying and use of software and intellectual property rights through a variety of techniques, preventing unauthorized use or infringement of our intellectual property rights is inherently difficult. Despite our enforcement efforts against software piracy, we could lose significant revenue due to illegal use of our software and from counterfeit copies of our software. If piracy activities increase, it could further harm our business.

We also suspect that competitors might try to illegally use our proprietary information and develop products that are similar to ours, which may infringe on our proprietary rights. In addition, we could potentially lose trade secret protection for our source code if any unauthorized disclosure of such code occurs. The loss of trade secret protection could make it easier for third parties to compete with our products by copying functionality. In addition, any changes in, or unexpected interpretations of, the trade secret and other intellectual property laws in any country in which we operate may compromise our ability to enforce our trade secret and intellectual property rights. Costly and time-consuming litigation could be necessary to enforce and determine the scope of our confidential information and trade secret protection. If we are unable to protect our proprietary rights or if third parties independently develop or gain access to our or similar technologies, our business, revenue, reputation and competitive position could be harmed.

Third-party use of our trademarks as keywords in Internet search engine advertising programs may direct potential customers to competitors' websites, which could harm our reputation and cause us to lose sales.

Competitors and other third parties, including counterfeiters, purchase our trademarks and confusingly similar terms as keywords in Internet search engine advertising programs in order to divert potential customers to their websites. Preventing such unauthorized use is inherently difficult. If we are unable to protect our trademarks and confusingly similar terms from such unauthorized use, competitors and other third parties may drive potential online customers away from our websites to competing and unauthorized websites, which could harm our reputation and cause us to lose sales.

Our trademarks are limited in scope and geographic coverage and might not significantly distinguish us from our competition.

We own several U.S. trademark registrations, including registrations of Rosetta Stone, the Blue Stone logo, Lexia, TruAccent, Lexia PowerUP Literacy, and Catalyst trademarks, as well as U.S. registrations of the color yellow as a trademark. In addition, we hold common law trademark rights and have trademark applications pending in the U.S. and abroad for additional trademarks. Even if federal registrations and registrations in other countries are granted to us, our trademark rights may be challenged. It is also possible that our competitors will adopt trademarks similar to ours, thus impeding our ability to build brand identity and possibly leading to customer confusion. In fact, various third parties have registered trademarks that are similar to ours in the U.S. and overseas. Furthermore, notwithstanding the fact that we may have secured trademark rights for our various trademarks in the U.S. and in some countries where we do business, in other countries we may not have secured similar rights and, in those countries there may be third parties who have prior use and prior or superior rights to our own. That prior use, prior or superior right could limit use of our trademarks and we could be challenged in our efforts to use our trademarks. We could incur substantial costs in prosecuting or defending trademark infringement suits. If we fail to effectively enforce our trademark rights, our competitive position and brand recognition may be diminished.

We must monitor and protect our Internet domain names to preserve their value. We may be unable to prevent third parties from acquiring domain names that are similar to, infringe on or otherwise decrease the value of our trademarks.

We own several domain names related to our business. Third parties may acquire substantially similar domain names or Top Level Domains ("TLDs") that decrease the value of our domain names and trademarks and other proprietary rights which may adversely affect our business. Third parties also may acquire country-specific domain names in the form of Country Code TLDs that include our trademarks or similar terms and which prevent us from operating country-specific websites from which customers can view our products and engage in transactions with us. Moreover, the regulation of domain names in the U.S. and foreign countries is subject to change. Governing bodies could appoint additional domain name registrars, modify the requirements for holding domain names or release additional TLDs. As a result, we may have to incur additional costs to maintain control over potentially relevant domain names or may not maintain exclusive rights to all potentially relevant domain names in the U.S. or in other countries in which we conduct business, which could harm our business or reputation. Moreover, attempts may be made to register our trademarks as new TLDs or as domain names within new TLDs and we will have to make efforts to enforce our rights against such registration attempts.

Our business depends on our strong brands, and failing to maintain or enhance the Rosetta Stone brands in a cost-effective manner could harm our operating results.

Maintaining and enhancing our brands is an important aspect of our efforts to attract new customers and expand our business. We believe that maintaining and enhancing our brands will depend largely on our ability to provide high-quality, innovative products, and services, which we might not do successfully. Our brands may be negatively impacted by a number of factors such as service outages, product malfunctions, data protection and security issues, and exploitation of our trademarks by others without permission.

Further, while we attempt to ensure that the quality of our brands is maintained by our licensees, our licensees might take actions that could impair the value of our brands, our proprietary rights, or the reputation of our products. If we are unable to maintain or enhance our brands in a cost-effective manner, or if we incur excessive expenses in these efforts, our business, operating results and financial condition could be harmed.

Claims that we misuse the intellectual property of others could subject us to significant liability and disrupt our business.

As we expand our business and develop new technologies, products and services, we may become subject to material claims of infringement by competitors and other third parties with respect to current or future products, e-commerce and other web-related technologies, online business methods, trademarks or other proprietary rights. Our competitors, some of which may have made significant investments in competing products and technologies, and may have, or seek to apply for and obtain, patents, copyrights or trademarks that will prevent, limit or interfere with our ability to make, use and sell our current and future products and technologies, and we may not be successful in defending allegations of infringement of these patents, copyrights or trademarks. Further, we may not be aware of all of the patents and other intellectual property rights owned by third parties that may be potentially adverse to our interests. We may need to resort to litigation to enforce our proprietary rights or to determine the scope and validity of a third-party's patents or other proprietary rights, including whether any of our products, technologies or processes infringe the patents or other proprietary rights of third parties. We may incur substantial expenses in defending against third-party infringement claims regardless of the merit of such claims. The outcome of any such proceedings is uncertain and, if unfavorable, could force us to discontinue advertising and sale of the affected products or impose significant penalties, limitations or restrictions on our business. We do not conduct comprehensive patent searches to determine whether the technologies used in our products infringe upon patents held by others. In addition, product development is inherently uncertain in a rapidly evolving technological environment in which there may be numerous patent applications pending, many of which are confidential when filed, with regard to similar technologies.

We do not own all of the software, other technologies and content used in our products and services, and the failure to obtain rights to use such software, other technologies and content could harm our business.

Some of our products and services contain intellectual property owned by third parties, including software that is integrated with internally developed software and voice recognition software, which we license from third parties. From time to time we may be required to renegotiate with these third parties or negotiate with new third parties to include their technology or content in our existing products, in new versions of our existing products or in wholly new products. We may not be able to negotiate or renegotiate licenses on commercially reasonable terms, or at all, and the third-party software may not be appropriately supported, maintained or enhanced by the licensors. If we are unable to obtain the rights necessary to use or continue to use third-party technology or content in our products and services, this could harm our business, by resulting in increased costs, or in delays or reductions in product shipments until equivalent software could be developed, identified, licensed and integrated.

Our use of open source software could impose limitations on our ability to commercialize our products.

We incorporate open source software into our products and may use more open source software in the future. The use of open source software is governed by license agreements. The terms of many open source licenses have not been interpreted by U.S. courts, and there is a risk that these licenses could be construed in a manner that could impose unanticipated conditions or restrictions on our ability to commercialize our products. Therefore, we could be required to seek licenses from third parties in order to continue offering our products, make generally available, in source code form, proprietary code that links to certain open source modules, re-engineer our products, discontinue the sale of our products if re-engineering could not be accomplished on a cost-effective and timely basis, or become subject to other consequences. In addition, open source licenses generally do not provide warranties or other contractual protections regarding infringement claims or the quality of the code. Thus, we may have little or no recourse if we become subject to infringement claims relating to the open source software or if the open source software is defective in any manner.

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We offer Consumer language-learning packages that bundle software and online services that have increased our costs as a percentage of revenue, and these and future product introductions may not succeed and may harm our business, financial results and reputation.

Our Consumer language-learning packages integrate our language-learning software solutions with online services, which provide opportunities for practice with dedicated language conversation coaches and other language learners to increase language socialization. The costs associated with the online services included with these software packages decrease margins. Customers may choose to not engage with conversation coaches or be willing to pay higher prices to do so. We cannot assure you that our future software package offerings will be successful or profitable, or if they are profitable, that they will provide an adequate return on invested capital. If our software package offerings are not successful, our business, financial results and reputation may be harmed.

Substantially all of our inventory is managed by a single third party logistics company. A disagreement with, or production disruption at, this entity could cause financial loss, including loss of revenue and harm to our reputation.

Substantially all of our inventory, which consists primarily of boxes for our language learning product and our audio practice products, is produced by a single third party logistics company. We could experience an interruption in our operations if we have a disagreement with this company or this company suffers a production disruption or event that results in the damage or destruction of our inventory. We might be unable to meet our contractual obligations as a result of such an interruption, which could cause us financial loss, including loss of revenue and harm to our reputation. As our business has moved online, we expect that this risk will diminish over time.

We rely on highly skilled personnel and, if we are unable to retain or motivate key personnel or hire qualified personnel, we may not be able to achieve results or grow effectively.

Our performance is largely dependent on the talents and efforts of highly skilled individuals. Our future success depends on our continuing ability to identify, hire, develop, motivate and retain highly skilled personnel for all areas of our organization.

We compete with other companies both within and outside of our industry for talented employees, and we may lose talented employees or fail to attract, train, and retain other talented employees. Any such loss or failure could adversely affect our product sales, financial condition, and operating results. In addition, we may not be able to locate suitable replacements for certain critical employees who leave, or offer employment to potential replacements on reasonable terms, all of which could adversely affect our product sales, financial condition, and operating results.

Our business could be impacted as a result of actions by activist stockholders or others.

We may be subject, from time to time, to legal and business challenges in the operation of our company due to proxy contests, stockholder proposals, media campaigns and other such actions instituted by activist stockholders or others. Responding to such actions could be costly and time-consuming, disrupt our operations, may not align with our business strategies and could divert the attention of our Board of Directors and senior management from the pursuit of current business strategies. Perceived uncertainties as to our future direction as a result of stockholder activism or potential changes to the composition of the Board of Directors may lead to the perception of a change in the direction of the business or other instability that may make it more difficult to attract and retain qualified personnel and business partners, and could have a materially adverse effect on the Company’s stock price.

Provisions in our organizational documents and in the Delaware General Corporation Law may prevent takeover attempts that could be beneficial to our stockholders.

Provisions in our second amended and restated certificate of incorporation and third amended and restated bylaws, and in the Delaware General Corporation Law, may make it difficult and expensive for a third party to pursue a takeover attempt we oppose even if a change in control of our Company would be beneficial to the interests of our stockholders. Any provision of our second amended and restated certificate of incorporation or third amended and restated bylaws or Delaware law that has the effect of delaying or deterring a change in control could limit the opportunity for our stockholders to receive a premium for their shares of our common stock, and could also affect the price that some investors are willing to pay for our common stock. Our Board of Directors has the authority to issue up to 10,000,000 shares of preferred stock in one or more series and to fix the powers, preferences and rights of each series without stockholder approval. The ability to issue preferred stock could discourage unsolicited acquisition proposals or make it more difficult for a third party to gain control of our Company, or otherwise could adversely affect the market price of our common stock. Further, as a Delaware corporation, we are subject to Section 203 of the Delaware General Corporation Law. This section generally prohibits us from engaging in mergers and other business combinations with stockholders that beneficially own 15% or more of our voting stock, or with their affiliates, unless our directors or stockholders approve the business combination in the prescribed manner.

Item 1B. Unresolved Staff Comments

None.

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Item 2. Properties

As of December 31, 2018, our corporate headquarters are located in Arlington, Virginia, where we occupy approximately 13,000 square feet of space on the top floor of an office building under a lease that ends January 31, 2020. For more information about our Arlington, Virginia lease and subleases, please see Note 13 of Item 8, Financial Statements and Supplementary Data. We currently own one facility in Harrisonburg, Virginia, that provides operations and customer support services.

In addition, the Company leases property in various locations in the U.S. and around the world as sales offices, for research and development activities, operations, product distribution, data centers, and market research. We utilize international locations in or near cities including the following: London, United Kingdom; Vancouver, Canada; and Cologne, Germany. Our offices and facilities are used across multiple segments. We believe our offices and facilities are adequate for our current needs.

Item 3. Legal Proceedings

Information with respect to this item may be found in Note 15 of Item 8, Financial Statements and Supplementary Data, which is incorporated herein by reference.

Item 4. Mine Safety Disclosures

Not applicable.

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PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Market for Common Stock

Our common stock is listed on the New York Stock Exchange, or NYSE, under the symbol "RST." There were approximately 105 stockholders of record of our common stock as of February 27, 2019 when the last reported sales price of our common stock on the NYSE was $15.66 per share.

Securities Authorized For Issuance Under Equity Compensation Plans

For information regarding securities authorized for issuance under equity compensation plans, see Part III "Item 12—Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters."

Purchases of Equity Securities by the Issuer and Affiliated Purchasers

The following table presents the total number of shares of the Company's common stock that it purchased during the fourth quarter of 2018, the average price paid per share, the number of shares that the Company purchased as part of its publicly announced repurchase program, and the approximate dollar value of shares that still could have been purchased at the end of the applicable fiscal period pursuant to the share repurchase program:

Period	Total Number of Shares Purchased	Average Price Paid Per Share	Total Number of Shares Purchased as Part of Publicly Announced Program (1)	Maximum Dollar Value of Shares that May Yet Be Purchased Under the Program (in thousands) (1)
October 2018	—	$ —	—	
November 2018	—	$ —	—	
December 2018	—	$ —	—	
Total	—	$ —	—	$ 13,565

(1) A program covering the repurchase of up to $25.0 million of the Company's common stock was initially announced on August 22, 2013.

Our revolving credit facility contains financial and restrictive covenants that, among other restrictions and subject to certain limitations, limit our ability to repurchase our shares.

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Stockholder Return Performance Presentation

The following graph compares the change in the cumulative total stockholder return on our common stock during the 5-year period from December 31, 2013 through December 31, 2018, with the cumulative total return on the NYSE Composite Index and the SIC Code Index that includes all U.S. public companies in the Standard Industrial Classification (SIC) Code 7372-Prepackaged Software. The comparison assumes that $100 was invested on December 31, 2013 in our common stock and in each of the foregoing indices and assumes reinvestment of dividends, if any.

The foregoing graph shall not be deemed to be filed as part of this Annual Report on Form 10-K and does not constitute soliciting material and should not be deemed filed or incorporated by reference into any other filing of the Company under the Securities Act, or the Exchange Act, except to the extent we specifically incorporate the graph by reference.

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Item 6. Selected Consolidated Financial Data

The following tables set forth selected consolidated statement of operations data, balance sheet data, and other data for the periods indicated. The selected consolidated statement of operations data for the years ended December 31, 2018, 2017, 2016, 2015, and 2014, and the selected consolidated balance sheet data as of December 31, 2018, 2017, 2016, 2015, and 2014 have been derived from our audited consolidated financial statements. The selected consolidated financial data should be read in conjunction with the information under "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations," our consolidated financial statements, the related notes and the accompanying independent registered public accounting firm's report, which are included in "Item 8. Financial Statements and Supplementary Data." Our historical results for any prior period are not necessarily indicative of results to be expected in any future period.

	Year Ended December 31,				
	2018	2017	2016(1)	2015(2)	2014(3)
	(in thousands, except per share data)				
Selected Statements of Operations Data:					
Revenue	$173,634	$184,593	$194,089	$217,670	$261,853
Gross profit	137,712	150,972	159,768	179,143	208,799
Loss from operations	(19,619)	(4,501)	(26,920)	(43,813)	(78,850)
Net loss	(21,473)	(1,546)	(27,550)	(46,796)	(73,706)
Loss per share attributable to common stockholders:					
Basic	$(0.95)	$(0.07)	$(1.25)	$(2.17)	$(3.47)
Diluted	$(0.95)	$(0.07)	$(1.25)	$(2.17)	$(3.47)
Other Selected Data:					
Total stock-based compensation expense	$4,475	$4,141	$4,906	$7,195	$6,762
Total intangible amortization expense	$3,311	$3,839	$4,351	$5,192	$6,263

(1) As discussed in Note 12 of Item 8, Financial Statements and Supplementary Data, the Company announced and initiated restructuring actions in the first quarter of 2016 to exit the direct sales presence in almost all of its non-U.S. and non-northern European geographies related to the distribution of its E&E Language offerings. Under this initiative, the Company made headcount reductions, office lease terminations, and other cost reductions in France, China, Brazil, Canada, Spain, Mexico, U.S. and the U.K.

(2) The Company undertook restructuring actions in the first quarter of 2015 to focus on the E&E Language business and optimize the Consumer Language business for profitability. Under this initiative, the Company undertook headcount and cost reductions to areas including Consumer Language sales and marketing, Consumer Language product investment, and general and administrative functions.

(3) The Company acquired Vivity Labs, Inc. on January 2, 2014 and Tell Me More S.A. on January 9, 2014. The results of operations from these entities have been included from the acquisition date.

	As of December 31,				
	2018	2017	2016	2015	2014

	(in thousands)				
Selected Consolidated Balance Sheet Data:					
Cash and cash equivalents	$38,092	$42,964	$36,195	$47,782	$64,657
Total assets	187,258	194,755	194,310	228,543	288,173
Total deferred revenue	162,885	151,263	141,457	142,748	128,169
Notes payable and capital lease obligation	1,787	2,300	2,559	3,143	3,748
Total stockholders' equity (deficit)	(12,008)	2,423	(1,659)	22,410	63,445

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Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

This Management's Discussion and Analysis of Financial Condition and Results of Operations ("MD&A") contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. The MD&A should be read in conjunction with our consolidated financial statements and notes thereto which appear elsewhere in this Annual Report on Form 10-K. Our actual results may differ materially from those currently anticipated and expressed in such forward-looking statements as a result of a number of factors, including those discussed under ("Risk Factors") and elsewhere in this Annual Report on Form 10-K.

Overview

Rosetta Stone is dedicated to changing people's lives through the power of language and literacy education. Our innovative digital solutions drive positive learning outcomes for the inspired learner at home or in schools and workplaces around the world. Founded in 1992, Rosetta Stone's language division uses cloud-based solutions to help all types of learners read, write, and speak more than 30 languages. Lexia Learning, Rosetta Stone's literacy education division, was founded more than 30 years ago and is a leader in the literacy education space. Today, Lexia helps students build foundational reading skills through its rigorously researched, independently evaluated, and widely respected instruction and assessment programs. Rosetta Stone Inc. was incorporated in Delaware in 2005.

The Literacy segment derives the majority of its revenue from sales of literacy solutions to educational institutions serving grades K through 12. The E&E Language segment derives revenue from sales of language-learning solutions to educational institutions, corporations, and government agencies worldwide. The Consumer Language segment derives the majority of revenue from sales of language-learning solutions to individuals and retail partners. Our Literacy distribution channel utilizes a direct sales force as well as relationships with third-party resellers focused on the sale of Lexia Learning solutions to K-12 schools. Our E&E Language distribution model is focused on targeted sales activity primarily through a direct sales force in five markets: K-12 schools; colleges and universities; federal government agencies; corporations; and not-for-profit organizations. Our Consumer Language distribution channel comprises a mix of our call centers, websites, app-stores, third party e-commerce websites, select retail resellers, such as Amazon.com, Barnes & Noble, Target, Best Buy, Staples, consignment distributors such as Software Packaging Associates, and daily deal partners.

As our Company has evolved, we believe that our current portfolio of language and literacy products and transition to a SaaS-based delivery model provides multiple opportunities for long-term value creation. We also believe the demand is growing for e-learning based literacy solutions in the U.S. and English language-learning around the globe, and we are uniquely positioned with the power of our global brand to meet the growing needs of global learners.

We continue to emphasize the development of products and solutions for learners who need to speak and read English. This focus extends to the Consumer Language segment where we continue to make product investments serving the needs of passionate language learners who are mobile, results-focused and value a quality language-learning experience.

To position the organization for success, our focus is on the following priorities:

1. Focus on growing our K-12 business;
2. Position ourselves as a leader in virtual blended learning; and
3. Accelerate growth and increase intrinsic value.

Over the last few years, our Consumer Language strategy has been to shift our Consumer Language business to online subscriptions, which feature access across the web and apps, and away from perpetual digital download and CD packages. We believe that these online subscription formats provide customers with an overall better experience, flexibility to use our products on multiple platforms (tablets, smartphones and computers), and provide a more economical and relevant way for us to deliver our products to customers. We expect the trend in Consumer Language subscription sales to continue as customer preferences move towards mobile experiences.

Components of Our Statements of Operations

Revenue

We derive revenue from sales of language-learning and literacy solutions. Revenue is presented as subscription and service revenue or product revenue in our consolidated financial statements. Subscription and service revenue consists of fees associated with web-based software subscriptions, online services, professional services, and certain mobile applications. As discussed in Note 2 of Item 8, Financial Statements and Supplementary Data, we adopted the new revenue recognition accounting standard ("ASC 606") effective January 1, 2018 using the modified retrospective method. As such, the comparative information has not been restated under ASC 606 and continues to be reported under the accounting standards in effect for those prior comparative periods.

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Subscription revenue is generated from contracts with customers that provide access to hosted software over a contract term without the customer taking possession of the software. Subscription revenue is recognized ratably over the contract period as the performance obligation is satisfied. Subscription revenue is generated by all three reportable segments and range from short-term to multi-year contracts. Online services are typically sold in short-term service periods and include dedicated online conversational coaching services and access to online communities of language learners. Professional services include training and implementation services. Online services revenue and professional services revenue are recognized as the services are provided. Expired services are forfeited and revenue is recognized upon expiry.

Product revenue primarily consists of revenue from perpetual language-learning software and audio practice products. Audio practice products are often combined with language-learning software and sold as a solution. Perpetual software revenue is recognized at the point in time when the software is made available to the customer. Audio practice products are recognized at the point in time that the audio practice products are delivered to the customer. As post-contract support ("PCS") is provided to customers who purchase perpetual software at no charge, a portion of the transaction price is allocated to PCS service revenue and recognized as the PCS services are provided, which is typically three months from the date of purchase. With the completion of the SaaS transition, perpetual software sales are no longer a significant portion of the business.

We sell our solutions directly and indirectly to individuals, educational institutions, corporations, and governmental agencies. We sell to enterprise and education organizations primarily through our direct sales force as well as through our network of resellers and organizations who typically gain access to our solutions under a web-based subscription service. We distribute our Consumer Language products predominantly through our direct sales channels, primarily utilizing our websites, mobile applications and call centers, which we refer to as our direct-to-consumer (“DTC”) channel. We also distribute our Consumer Language products through select third-party retailers and distributors. For purposes of explaining variances in our revenue, we separately discuss changes in our E&E Language, Literacy, and our Consumer Language segments because the customers and revenue drivers of these channels are different.

Literacy segment sales are seasonally strongest in the third quarter of the calendar year corresponding to school district budget years. Within our E&E Language segment, sales in our education, government, and corporate sales channels are seasonally stronger in the second half of the calendar year due to purchasing and budgeting cycles. Consumer Language sales are affected by seasonal trends associated with the holiday shopping season. We expect these trends to continue.

Cost of Revenue

Cost of subscription and service revenue primarily represents costs associated with supporting our web-based subscription services and online language-learning services, which includes online language conversation coaching, hosting costs, and depreciation. We also include the cost of credit card processing and customer technical support in both cost of subscription and service revenue and cost of product revenue. Cost of product revenue consists of the direct and indirect materials and labor costs to produce and distribute our products. Such costs include packaging materials, computer headsets, freight, inventory receiving, personnel costs associated with product assembly, third-party royalty fees and inventory storage, obsolescence and shrinkage.

Operating Expenses

We classify our operating expenses into the following categories: sales and marketing, research and development, and general and administrative. When certain events occur, we also recognize operating expenses related to asset impairment and operating lease terminations.

Our operating expenses primarily consist of personnel costs, direct advertising and marketing expenses, and professional fees associated with contract product development, legal, accounting and consulting. Personnel costs for each category of operating expenses include salaries, bonuses, stock-based compensation and employee benefit costs. Included within our operating expenses are restructuring costs that consist primarily of employee severance and related benefit costs, contract termination costs, and other related costs associated with our restructuring activities.

Sales and Marketing. Our sales and marketing expenses consist primarily of direct advertising expenses related to television, print, radio, online and other direct marketing activities, personnel costs for our sales and marketing staff, and commissions earned by our sales personnel and app stores. Sales commissions are generally paid when a customer contract is recorded either as revenue or as deferred revenue. However, sales commissions are deferred and recognized as expense in proportion to when the related revenue is recognized.

Research and Development. Research and development expenses consist primarily of employee compensation costs, consulting fees, and overhead costs associated with development of our solutions. Our development efforts are primarily based in the U.S. and are devoted to modifying and expanding our offering portfolio through the addition of new content, as well as new paid and complementary products and services to our language-learning and literacy solutions.

General and Administrative. General and administrative expenses consist primarily of shared services, such as personnel costs of our executive, finance, legal, human resources and other administrative personnel, as well as accounting and legal professional services fees including professional service fees related to other corporate expenses.

Impairment. Impairment expenses consist primarily of goodwill impairment, impairment of long-lived assets, and impairment expense related to the abandonment of previously capitalized internal-use software projects.

Lease Abandonment and Termination. Lease abandonment and termination expenses include the recognition of costs associated with the termination or abandonment of our office operating leases, such as early termination fees and expected lease termination costs.

Interest and Other Income (Expense)

Interest and other income (expense) primarily consist of interest income, interest expense, and foreign exchange gains and losses. Interest income represents interest received on our cash and cash equivalents. Interest expense is primarily related to interest on our capital leases and amortization of deferred financing fees associated with our revolving credit facility. Fluctuations in foreign currency exchange rates in our foreign subsidiaries cause foreign exchange gains and losses.

Income Tax Expense (Benefit)

Income tax expense (benefit) consists of federal, state and foreign income taxes.

We regularly evaluate the recoverability of our deferred tax assets and establish a valuation allowance, if necessary, to reduce the deferred tax assets to an amount that is more likely than not to be realized (a likelihood of more than 50 percent). Significant judgment is required to determine whether a valuation allowance is necessary and the amount of such valuation allowance, if appropriate.

The establishment of a valuation allowance has no effect on the ability to use the deferred tax assets in the future to reduce cash tax payments. We assess the likelihood that the deferred tax assets will be realizable at each reporting period, and the valuation allowance will be adjusted accordingly, which could materially affect our financial position and results of operations.

Critical Accounting Policies and Estimates

In presenting our financial statements in conformity with GAAP, we are required to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues, costs and expenses, and related disclosures.

Some of the estimates and assumptions we are required to make relate to matters that are inherently uncertain as they pertain to future events. We base these estimates and assumptions on historical experience or on various other factors that we believe to be reasonable and appropriate under the circumstances. On an ongoing basis, we reconsider and evaluate our estimates and assumptions. Our future estimates may change if the underlying assumptions change. Actual results may differ significantly from these estimates.

We believe that the following critical accounting policies involve our more significant judgments, assumptions and estimates and, therefore, could have the greatest potential impact on our consolidated financial statements. In addition, we believe that a discussion of these policies is necessary for readers to understand and evaluate our consolidated financial statements contained in this annual report on Form 10-K. See Note 2 of Item 8, Financial Statements and Supplementary Data for a complete description of our significant accounting policies.

Effective January 1, 2018, we adopted the new revenue recognition standard ("ASC 606") using the modified retrospective method. As such, the comparative information has not been restated under ASC 606 and continues to be reported under the accounting standards in effect for those prior comparative periods. See our Annual Report on Form 10-K filed with the SEC on March 7, 2018 for revenue recognition policies that were in effect in prior periods before adoption of ASC 606.

Revenue Recognition

Nature of Revenue: We account for revenue contracts with customers by applying the following steps:

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

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Our primary sources of revenue are web-based software subscriptions, mobile application, online services, perpetual product software, and bundles of perpetual product software and online services. We also generate revenue from the sale of audio practice products and professional services. With the completion of the SaaS transition, perpetual software sales are no longer a significant portion of the business.

Revenue is recognized upon transfer of control of promised goods or services to customers in an amount that reflects the consideration expected to be received in exchange for those goods or services. Revenue is recognized net of allowances for returns. Revenue is also recognized net of any taxes collected from customers, which are subsequently remitted to governmental authorities.

Subscription and service revenue consists of fees associated with non-cancellable web-based software subscriptions, online services, professional services, and mobile applications. Subscription revenue is generated from contracts with customers that provide access to hosted software over a contract term without the customer taking possession of the software. Subscription revenue is recognized ratably over the contract period as the performance obligation is satisfied. Subscription revenue is generated by all three reportable segments and range from short-term to multi-year contracts. Online services are typically sold in short-term service periods and include dedicated online conversational coaching services and access to online communities of language learners. Professional services include implementation services. Online services revenue and professional services revenue are recognized as the services are provided. Expired services are forfeited and revenue is recognized upon expiry.

Product revenue primarily consists of revenue from perpetual language-learning software and audio practice products. Audio practice products are often combined with language-learning software and sold as a solution. Perpetual software revenue is recognized at the point in time when the software is made available to the customer. Audio practice products are recognized at the point in time that the audio practice products are delivered to the customer. As post-contract support ("PCS") is provided to customers who purchase perpetual software at no charge, a portion of the transaction price is allocated to PCS service revenue and recognized as the PCS services are provided, which is typically up to three months from the date of purchase. With the completion of the SaaS transition, perpetual software sales are no longer a significant portion of the business.

Performance Obligations: A performance obligation is a promise in a contract to transfer a distinct good or service to the customer, and is the unit of account. A contract's transaction price is allocated to each distinct performance obligation and recognized as revenue when, or as, the performance obligation is satisfied. Performance obligations are satisfied at a point in time or over time as delivery occurs or as work progresses.

Significant Judgments: Some contracts with customers include promises to transfer multiple products and services to a customer. Determining whether products and services are considered distinct performance obligations that should be accounted for separately, versus together, requires significant judgment. This includes determining whether distinct services are part of a series of distinct services that are substantially the same. When subscription services are sold with professional services, judgment is required to determine whether the professional services are distinct and can be accounted for separately. In the E&E Language segment, we have concluded that each promised service within the language-learning subscription is delivered concurrently with all other promised services over the contract term and, as such, concluded that these promises are a single performance obligation that includes a series of distinct services that have the same pattern of transfer to the customer. When there are multiple performance obligations, revenue is allocated to each performance obligation based on its relative standalone selling price ("SSP"). Judgment is required to determine the SSP for each distinct performance obligation where SSP is not directly observable, such as when the product or service is not sold separately, SSP is determined using internally published price lists which include suggested sales prices for each performance obligation based on the type of client and volume purchased. These price lists are derived from past experience and from the expectation of obtaining a reasonable margin based on the cost to fulfill each performance obligation.

Subscription revenue is recognized ratably over the contract period as the performance obligation is satisfied. Certain Consumer Language offerings have contracts with no fixed duration and are marketed as lifetime subscriptions. For these lifetime subscriptions, we estimate the expected contract period as the greater of the typical customer usage period or the longest fixed-period duration subscription that is currently marketed. Our current expected contract period for lifetime subscriptions is 24 months.

Certain Consumer Language offerings are sold with a right of return and we may provide other credits or incentives. These rights are accounted for as variable consideration when estimating the amount of revenue to recognize by utilizing the expected value method. Returns and credits are estimated at contract inception based on historical return rates, estimated channel inventory levels, the timing of new product introductions and other factors. Reserves for returns and credits are updated at the end of each reporting period as additional information becomes available.

We distribute products and services both directly to the end customer and indirectly through resellers. Resellers earn commissions generally calculated as a fixed percentage of the gross sale amount to the end customer. We evaluate each of our reseller relationships to determine whether it is the principal (where revenue is recognized at the gross amount) or agent (where revenue is recognized net of the reseller commission). In making this determination we evaluate a variety of factors including the amount of control we are able to exercise over the transactions.

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Contract Balances: The timing of revenue recognition, invoicing, and cash collection results in accounts receivable and deferred revenue in the consolidated balance sheets. Payment from customers is often received in advance of services being provided, resulting in deferred revenue. Accounts receivable is recorded when there is an executed customer contract and the right to the consideration becomes unconditional. Contract assets such as unbilled receivables are not material.

The allowance for doubtful accounts reflects the best estimate of probable losses inherent in the accounts receivable balance. We establish an allowance for doubtful accounts based on specific risks identified, historical experience, and other currently available evidence.

Payment terms and conditions vary by contract type and customer. For the E&E Language and Literacy segments, payment terms generally range from 30 to 90 days. In the Consumer Language segment, resellers are generally granted payment terms of 45 days. Within Consumer Language, sales to end customers via the Rosetta Stone ecommerce website are done by credit card, which generally are settled within 7-10 days and may be made in installments. In instances where the timing of revenue recognition differs from the timing of invoicing, we have determined that contracts generally do not include a significant financing component. The primary purpose of invoicing terms is to provide customers with simplified and predictable ways of purchasing products and services and not to provide customers with financing.

Deferred revenue is comprised mainly of unearned revenue related to subscription services which is recognized ratably over the subscription period. Deferred revenue also includes payments for professional services and online services to be performed in the future which are earned as revenue when the service is provided. Our practice is to ship our products promptly upon receipt of purchase orders from customers; consequently, contract backlog is not material.

Assets Recognized from Costs to Obtain a Contract with a Customer: We recognize an asset for the incremental costs of obtaining a contract with a customer, which primarily represents sales commissions paid when a customer contract is either recorded as revenue or deferred revenue. Sales commissions paid to obtain non-cancellable subscription contracts are deferred and amortized in proportion to the period over which the revenue is recognized from the related contract. Deferred sales commissions are amortized to sales and marketing expense on the consolidated statements of operations. Deferred sales commissions are classified as non-current unless the associated amortization period is one year or less.

Stock-Based Compensation

All stock-based awards, including employee stock option grants, are recorded at fair value as of the grant date. For options granted with service and/or performance conditions, the fair value of each grant is estimated on the date of grant using the Black-Scholes option pricing model. For options granted with market-based conditions, the fair value of each grant is estimated on the date of grant using the Monte-Carlo simulation model. These methods require the use of estimates, including future stock price volatility, expected term, risk-free interest rate, and forfeitures.

As we do not have sufficient historical option exercise experience that spans the full 10 year contractual term for determining the expected term of options granted, we estimate the expected term of options using a combination of historical information and the simplified method for estimating the expected term. We use our own historical stock price data to estimate a forfeiture rate and expected volatility over the most recent period commensurate with the estimated expected term of the awards. For the risk free interest rate, we use a U.S. Treasury Bond rate consistent with the estimated expected term of the option award.

Our restricted stock and restricted stock unit grants are accounted for as equity awards. Stock-based compensation expense associated with service-based equity awards is recognized in the statement of operations on a straight-line basis over the requisite service period, which is the vesting period. For equity awards granted with performance-based conditions, stock compensation expense is recognized in the statement of operations ratably for each vesting tranche based on the probability that operating performance conditions will be met and to what extent. Changes in the probability estimates associated with performance-based awards are accounted for in the period of change using a cumulative catch-up adjustment to retroactively apply the new probability estimate. In any period in which we determine the achievement of the performance metrics is not probable, we cease recording compensation expense and all previously recognized compensation expense for the performance-based award is reversed. For equity awards granted with market-based conditions, stock compensation expense is recognized in the statement of operations ratably for each vesting tranche regardless of meeting or not meeting the market conditions. Stock compensation expense is recognized based on the estimated portion of the awards that are expected to vest. Estimated forfeiture rates were applied in the expense calculation.

Goodwill

The value of goodwill is primarily derived from the acquisition of Rosetta Stone Ltd. (formerly known as Fairfield & Sons, Ltd.) in January 2006, the acquisition of certain assets of SGLC International Co. Ltd ("SGLC") in November 2009, the acquisitions of Livemocha and Lexia in 2013, and the acquisition of Tell Me More in 2014.

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We routinely review goodwill at the reporting unit level for potential impairment as part of our internal control framework and we test goodwill for impairment annually on June 30 of each year at the reporting unit level using a fair value approach or more frequently, if impairment indicators arise. We have the option to first assess qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying value. The factors that we consider important in a qualitative assessment and which could trigger a quantitative test include, but are not limited to: a significant decline in the market value of our common stock for a sustained period; a material adverse change in economic, financial, market, industry, or sector trends; a material failure to achieve operating results relative to historical levels or projected future levels; and significant changes in operations or business strategy. If, based on a review of qualitative factors, it is more likely than not that the fair value of a reporting unit is less than its carrying value, we perform a quantitative impairment test by comparing the fair value of a reporting unit with its carrying amount. If the carrying value exceeds the fair value, we measure the amount of impairment loss, if any.

For our annual goodwill test performed at June 30, 2018, we exercised our option to bypass the qualitative assessment and began our annual test with the quantitative test using a fair value approach. In estimating the fair value of our reporting units, we used a variety of techniques including the income approach (i.e., the discounted cash flow method) and the market approach (i.e., the guideline public company method). Our projections are estimates that can significantly affect the outcomes of the analysis, both in terms of our ability to accurately project future results and in the allocation of fair value between reporting units. As of June 30, 2018, we determined that the fair values of our reporting units with remaining goodwill balances substantially exceeded their carrying values. Accordingly, no goodwill impairment charges were recorded in connection with the annual impairment test.

For additional risk factors which could affect the assumptions used in our valuation of our reporting units, see the section titled "Risk Factors" in Part I, Item 1A of this Report. Accordingly, we cannot provide assurance that the assumptions, estimates and values used in our assessment will be realized and actual results could vary materially.

We recognized $1.7 million in goodwill impairment expense associated with our Fit Brains business during the year ended December 31, 2016 which represented the impairment of all remaining goodwill associated with the Fit Brains business. There was no goodwill impairment during the years ended December 31, 2018 and 2017.

Intangible Assets

Intangible assets consist of acquired technology, including developed and core technology, customer related assets, trade name and trademark, and other intangible assets. Those intangible assets with finite lives are recorded at cost and amortized on a straight line basis over their expected lives. Intangible assets with finite lives are reviewed routinely for potential impairment as part of our internal control framework. Annually, as of December 31, and more frequently if a triggering event occurs, we review the Rosetta Stone trade name, our only indefinite-lived intangible asset, to determine if indicators of impairment exist. We have the option to first assess qualitative factors to determine whether it is more likely than not that an indefinite-lived intangible asset is impaired as a basis for determining whether it is necessary to perform the quantitative test. If necessary, the quantitative test is performed by comparing the fair value of indefinite-lived intangible assets to the carrying value. In the event the carrying value exceeds the fair value of the assets, the assets are written down to their fair value.

For our annual indefinite-lived intangible asset test performed at December 31, 2018, we began our annual test with the qualitative test. As of December 31, 2018, we concluded that there were no indicators of impairment that would cause us to believe that it is more likely than not that our indefinite-lived intangible asset was impaired.

We recognized intangible asset impairment expense of $1.2 million in 2016 related to the full impairment of the tradename, developed technology, and customer relationship long-lived intangible assets associated with our Fit Brains business. There were no impairments of intangible assets during the years ended December 31, 2018 and 2017.

Valuation of Long-Lived Assets

As part of our internal control framework we evaluate the recoverability of our long-lived assets. An impairment of long-lived assets is recognized in the event that the net book value of such assets exceeds the future undiscounted net cash flows attributable to such assets. Impairment, if any, is recognized in the period of identification to the extent the carrying amount of an asset exceeds the fair value of such asset. During 2016, we recorded $1.0 million in impairment expense related to the abandonment of software projects that were previously capitalized. There were no such impairments in 2018 and 2017.

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Restructuring Costs

In March 2016, we announced the 2016 Restructuring Plan ("2016 Restructuring Plan"), outlining our withdrawal of the direct sales presence in almost all of our non-U.S. and non-northern European geographies related to the distribution of the E&E Language offerings. These operations added sales, but at too high a cost and without the near-term ability to capture scale efficiencies. Where appropriate, we will seek to operate through partners in the geographies we exited. We have also completed the closure of our software development operations in France and China. See Note 2 and Note 12 of Item 8, Financial Statements and Supplementary Data for additional information about this strategic undertaking.

Restructuring or other employee severance plans have been initiated in each of the years ended December 31, 2017 and 2016 to reduce headcount and other costs in order to support our strategic shift in business focus. In connection with these plans, we incurred restructuring related costs, including employee severance and related benefit costs, contract termination costs, and other related costs. These costs are included in cost of sales and the sales and marketing, research and development, and general and administrative operating expense categories in our consolidated statements of operations.

Employee severance and related benefit costs primarily include cash payments, outplacement services, continuing health insurance coverage, and other benefits. Where no substantive involuntary termination plan previously exists, these severance costs are generally considered “one-time” benefits and recognized at fair value in the period in which a detailed plan has been approved by management and communicated to the terminated employees. Severance costs pursuant to ongoing benefit arrangements, including termination benefits provided for in existing employment contracts, are recognized when probable and reasonably estimable.

Contract termination costs include penalties to cancel certain service and license contracts and costs to terminate operating leases. Contract termination costs are recognized at fair value in the period in which the contract is terminated in accordance with the contract terms.

Other related costs generally include external consulting and legal costs associated with the strategic shift in business focus. Such costs are recognized at fair value in the period in which the costs are incurred.

During 2017, and 2016, we recorded $1.2 million, and $5.2 million, respectively, in restructuring costs related to our recent restructuring plans and other employee severance actions. Restructuring and other employee severance expense was not significant during 2018.

Income Taxes

We believe that the accounting estimate for the realization of deferred tax assets is a critical accounting estimate because judgment is required in assessing the likely future tax consequences of events that have been recognized in our financial statements or tax returns. Although it is possible there will be changes that are not anticipated in our current estimates, we believe it is unlikely such changes would have a material period-to-period impact on our financial position or results of operations.

We use the asset and liability approach to accounting for income taxes. Deferred tax assets and liabilities represent the future tax consequences of the differences between the financial statement carrying amounts of assets and liabilities versus the tax bases of assets and liabilities. Under this method, deferred tax assets are recognized for deductible temporary differences, and operating loss and tax credit carryforwards. Deferred tax liabilities are recognized for taxable temporary differences.

We reduce the carrying amounts of deferred tax assets by a valuation allowance if, based on available evidence, it is more likely than not that such assets will not be realized. Accordingly, the need to establish valuation allowances for deferred tax assets is assessed quarterly based on the more-likely-than-not realization threshold criterion. In the assessment, appropriate consideration is given to all positive and negative evidence related to the realization of the deferred tax assets. This assessment considers, among other matters, the nature, frequency and severity of current and cumulative losses, forecasts of future profitability, the duration of statutory carryforward periods, our experience with operating loss and tax credit carryforwards not expiring unused, and tax planning alternatives. Significant judgment is required to determine whether a valuation allowance is necessary and the amount of such valuation allowance, if appropriate. The valuation allowance is reviewed quarterly and is maintained until sufficient positive evidence exists to support a reversal.

In assessing the recoverability of our deferred tax assets, we consider all available evidence, including:

- the nature, frequency, and severity of cumulative financial reporting losses in recent years;
- the carryforward periods for the net operating loss, capital loss, and foreign tax credit carryforwards;
- predictability of future operating profitability of the character necessary to realize the asset;
- prudent and feasible tax planning strategies that would be implemented, if necessary, to protect against the loss of the deferred tax assets; and
- the effect of reversing taxable temporary differences.

The evaluation of the recoverability of the deferred tax assets requires that we weigh all positive and negative evidence to reach a conclusion that it is more likely than not that all or some portion of the deferred tax assets will not be realized. The weight given to the evidence is commensurate with the extent to which it can be objectively verified. The more negative evidence that exists, the more positive evidence is necessary and the more difficult it is to support a conclusion that a valuation allowance is not needed. Our valuation allowance analysis considers a number of factors, including our cumulative losses in recent years, our expectation of future taxable income and the time frame over which our net operating losses expire.

As of December 31, 2018, a full valuation allowance exists for the U.S., Hong Kong, Mexico, Spain, Brazil, and France where we have determined the deferred tax assets will not more likely than not be realized.

All of the jurisdictions mentioned above have cumulative losses for the most recent year ended December 31, 2018. The establishment of a valuation allowance has no effect on the ability to use the deferred tax assets in the future to reduce cash tax payments. We will continue to assess the likelihood that the deferred tax assets will be realizable at each reporting period and the valuation allowance will be adjusted accordingly, which could materially affect our financial position and results of operations.

As of December 31, 2018 and 2017, our net deferred tax liability was $2.8 million and $2.0 million, respectively.

New tax legislation, commonly referred to as the Tax Cuts and Jobs Act of 2017 (the “Tax Act”), was enacted on December 22, 2017. During the year of enactment, we recorded reasonable estimates of the effects of the Tax Act which principally related to a) the reduction in the U.S. corporate income tax rate from 35% to 21% and b) the change in the carryforward period of net operating losses. In the fourth quarter of 2017, we recorded an income tax benefit of $2.4 million to remeasure deferred tax liabilities associated with indefinite-lived intangible assets that will reverse at the new 21% rate. Absent this deferred tax liability, we were in a net deferred tax asset position that was offset by a full valuation allowance. Though the impact of the rate change has a net tax effect of zero, the accounting to determine the gross change in the deferred tax position and the offsetting valuation resulted in a $26.3 million reduction in both. Additionally, we recorded an income tax benefit of $3.1 million in the fourth quarter of 2017 related to the release of the valuation allowance associated with the post-2017 reversing deferred tax assets to offset 80% of the deferred tax liability associated with our indefinite-lived intangible asset. In the third quarter of 2018, we recorded a $0.2 million tax expense in addition to the estimates made in the year of enactment. The accounting for the Tax Act are considered final as we obtained, prepared, and analyzed the information necessary to finalize the accounting and the 2017 U.S. income tax return. The Tax Act included a one-time mandatory repatriation transition tax on the net accumulated earnings and profits of a U.S. taxpayer’s foreign subsidiaries. We had a deficit in net accumulated earnings and profits so no transition tax was reported on our 2017 U.S. income tax return.

Other Tax Act provisions that may impact income taxes include: a limitation of net operating losses generated after 2017 to 80% of taxable income, the inclusion of commissions and performance based compensation in determining the excess compensation limitation, and a minimum tax on certain foreign earnings in excess of 10% of the foreign subsidiaries tangible assets (i.e., global intangible low-taxed income or GILTI). The Company has elected to treat GILTI as a period expense.

Going Concern Assessment

As part of our internal control framework, we routinely perform an assessment to determine the Company's ability to continue as a going concern. As further described below, we have concluded based on projections that the cash balance, funds available from the line of credit, and the cash flows from operations are sufficient to meet the liquidity needs through the one year period following the financial statement issuance date.

The consolidated financial statements have been prepared on a going concern basis, which contemplates the realization of assets and the satisfaction of liabilities in the normal course of business. Management has evaluated whether relevant conditions or events, considered in the aggregate, indicate that there is substantial doubt about the Company's ability to continue as a going concern. Substantial doubt exists when conditions and events, considered in the aggregate, indicate it is probable that the Company will be unable to meet its obligations as they become due within one year after the financial statement issuance date. The assessment is based on the relevant conditions that are known or reasonably knowable as of March 6, 2019.

The assessment of our ability to meet our future obligations is inherently judgmental, subjective and susceptible to change. The inputs that we considered important in a going concern analysis, include, but are not limited to, our 2019 cash flow forecast, 2019 operating budget, and long-term plan that extends beyond 2019. These inputs consider information including, but not limited to, our financial condition, liquidity sources, obligations due within one year after the financial statement issuance date, funds necessary to maintain operations, and financial conditions, including negative financial trends or other indicators of possible financial difficulty.

We have considered both quantitative and qualitative factors as part of the assessment that are known or reasonably knowable as of March 6, 2019, and concluded that conditions and events considered in the aggregate, do not indicate that it is probable that we will be unable to meet obligations as they become due through the one year period following the financial statement issuance date.

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Recently Issued Accounting Standards

For a summary of recent accounting pronouncements applicable to our consolidated financial statements see Note 2 of Item 8, Financial Statements and Supplementary Data, which is incorporated herein by reference.

Results of Operations

The following table sets forth our consolidated statement of operations for the periods indicated.

	Year Ended December 31,		
	2018	2017	2016
	(in thousands, except per share data)		
Statements of Operations Data:			
Revenue:			
Subscription and service	$170,685	$168,442	$154,336
Product	2,949	16,151	39,753
Total revenue	173,634	184,593	194,089
Cost of revenue:			
Cost of subscription and service revenue	32,010	26,082	23,676
Cost of product revenue	3,912	7,539	10,645
Total cost of revenue	35,922	33,621	34,321
Gross profit	137,712	150,972	159,768
Operating expenses			
Sales and marketing	98,911	96,660	114,340
Research and development	25,210	24,747	26,273
General and administrative	33,210	34,066	40,501
Impairment	—	—	3,930
Lease abandonment and termination	—	—	1,644
Total operating expenses	157,331	155,473	186,688
Loss from operations	(19,619)	(4,501)	(26,920)
Other income and (expense):			
Interest income	103	66	46
Interest expense	(313)	(491)	(470)
Other income and (expense)	165	881	2,297
Total other income and (expense)	(45)	456	1,873
Loss before income taxes	(19,664)	(4,045)	(25,047)
Income tax expense (benefit)	1,809	(2,499)	2,503
Net loss	$(21,473)	$(1,546)	$(27,550)
Loss per share:			
Basic	$(0.95)	$(0.07)	$(1.25)
Diluted	$(0.95)	$(0.07)	$(1.25)
Common shares and equivalents outstanding:			
Basic weighted average shares	22,705	22,244	21,969
Diluted weighted average shares	22,705	22,244	21,969

Comparison of the Year Ended December 31, 2018 and the Year Ended December 31, 2017

Our total revenue decreased $11.0 million to $173.6 million for the year ended December 31, 2018, from $184.6 million for the year ended December 31, 2017. The decrease in total revenue was primarily due to a decrease in Consumer Language revenue of $15.2 million and a decrease in E&E Language revenue of $4.9 million, which were partially offset by an increase in Literacy revenue of $9.2 million.

We reported an operating loss of $19.6 million for the year ended December 31, 2018, compared to an operating loss of $4.5 million for the year ended December 31, 2017. Total operating expenses increased $1.9 million, comprised of an increase of $2.3 million in sales and marketing expense and an increase of $0.5 million in research and development expense, partially offset by a decrease of $0.9 million in general and administrative expense. Gross profit decreased $13.3 million, driven by a $11.0 million decrease in revenue.

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Segment Revenue, Segment Contribution and Segment Contribution Margin by Operating Segment

We currently have three operating segments, Literacy, E&E Language, and Consumer Language. We discuss the profitability of each segment in terms of segment contribution. Segment contribution is the measure of profitability used by our Chief Operating Decision Maker. Prior periods have been reclassified to reflect our current segment presentation and definition of segment contribution. See Note 18 of Item 8, Financial Statements and Supplementary Data for additional information about the definition, calculation, and presentation of segment contribution.

The following table sets forth revenue, the corresponding percent of total revenue, segment contribution, and segment contribution margin for each of our operating segments for the years ended December 31, 2018 and 2017:

	Year ended December 31,				2018 versus 2017	
	2018		2017 (1)		Change	% Change
	(in thousands, except percentages)					
Revenue and Revenue as a Percent of Total Revenue						
Literacy	$52,766	30.4 %	$43,608	23.6 %	$9,158	21.0 %
Enterprise & Education Language	60,376	34.8 %	65,267	35.4 %	(4,891)	(7.5)%
Consumer Language	60,492	34.8 %	75,718	41.0 %	(15,226)	(20.1)%
Total Revenue	$173,634	100.0%	$184,593	100.0%	$(10,959)	(5.9)%
Segment Contribution and Segment Contribution Margin						
Literacy	$7,173	13.6 %	$4,964	11.4 %	$2,209	44.5 %
Enterprise & Education Language	22,852	37.8 %	26,897	41.2 %	(4,045)	(15.0)%
Consumer Language	12,771	21.1 %	24,849	32.8 %	(12,078)	(48.6)%
Language Shared Services	(16,153)		(17,369)		1,216	(7.0)%
Total Segment Contribution	$26,643		$39,341		$(12,698)	(32.3)%

(1) Effective January 1, 2018 we adopted ASC 606 using the modified retrospective approach. Revenue in prior comparative periods reflects amounts previously reported and has not been restated. See Note 2 of Item 8, Financial Statements and Supplementary Data, for additional disclosures regarding revenue recognition and the impact of adoption of ASC 606.

Literacy Segment

The increase in Literacy segment revenue reflects sales growth and strong retention rates, which has been positively impacted by increases in our implementation and training services as well as the release of PowerUp in early 2018, which has been incorporated into our suite of Literacy solutions. We anticipate additional investments in product and sales personnel in the Literacy business to grow this segment and achieve scale.

The Literacy segment contribution dollar and margin increases were primarily due to the larger revenue base on which segment contribution is calculated, partially offset by increases in direct sales and marketing, cost of sales, and research and development expenses due to the transition to a direct sales team, and investments made to improve the Literacy product portfolio and infrastructure. Additionally, the higher direct Literacy expenses reflect the higher implementation and training services costs in support of Literacy sales growth.

E&E Language Segment

The decrease in E&E Language segment revenue reflects lower performance from non-strategic custom-content and affiliate sales channels. Revenue declined approximately $3.0 million, or 8% in the enterprise category and approximately $1.9 million, or 7% in the North America K-12 category. The enterprise revenue decline was driven by $2.0 million in lower revenue from the reseller channel. We expect to continue to balance investments and adjust our cost structure to align scale without impacting growth.

Before shared Language research and development expense, the E&E Language segment contribution dollar and margin decreases were primarily due to lower revenue as direct costs were comparable year-over-year.

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Consumer Language Segment

The decrease in Consumer Language segment revenue was largely due to the transition of the segment to subscription-based sales, which are recognized over time, from the sale of perpetual products that were historically recognized up front at the time of sale. The SaaS transition within the Consumer Language segment's DTC channel was largely completed by the end of 2017 and the migration from CD-based product sales to subscriptions in the retail channel was largely complete in the middle of 2018. The decline in Consumer Language segment revenue also reflects the absence of $2.5 million in FitBrains subscription revenue from our brain fitness business that was recently shuttered. In connection with our recent shift in strategy, we will invest in mobile and English-learning to drive growth. Our Consumer business is seasonal and consumer sales typically peak in the fourth quarter during the holiday shopping season.

Before shared Language research and development expense, the Consumer Language segment contribution dollar and margin decreases were primarily due to lower revenue recognized year over year, primarily due to the SaaS transition and absence of FitBrains revenue described above. The declines in segment revenue were partially offset by year-over-year reductions in direct cost of sales and a direct sales and marketing expense.

Revenue by Geographic Area

The following table sets forth revenue by geographic area and the corresponding percent of total revenue for the years ended December 31, 2018 and 2017:

	Year ended December 31,				2018 versus 2017	
	2018		2017 (1)		Change	% Change
	(in thousands, except percentages)					
United States	$152,407	87.8 %	$158,825	86.0 %	$(6,418)	(4.0)%
International	21,227	12.2 %	25,768	14.0 %	(4,541)	(17.6)%
Total revenue	$173,634	100.0%	$184,593	100.0%	$(10,959)	(5.9)%

(1) Effective January 1, 2018 we adopted ASC 606 using the modified retrospective approach. Revenue in prior comparative periods reflects amounts previously reported and has not been restated. See Note 2 of Item 8, Financial Statements and Supplementary Data, for additional disclosures regarding revenue recognition and the impact of adoption of ASC 606.

United States Revenue

The decrease in United States revenue reflects the Consumer SaaS transition described above as the majority of Consumer sales are made domestically. The decline in United States revenue was partially offset by the increase in Literacy revenue from our Lexia business, which is predominately recorded as domestic revenue.

International Revenue

Nearly half of the decrease in international revenue reflects the absence of Fit Brains subscription revenue associated with our Canadian brain fitness consumer business that was recently shuttered. Revenue in the E&E Language France and Spain education business declined $1.9 million due to the exit of those unprofitable geographies as part of the 2016 Restructuring Plan.

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Revenue, Cost of Revenue, and Gross Profit by Subscription and Service Revenue and Product Revenue

The following table sets forth revenue, cost of revenue, and gross profit by subscription and service revenue and product revenue for the years ended December 31, 2018 and 2017:

	Year ended December 31,				2018 versus 2017	
	2018		2017 (1)		Change	% Change
	(in thousands, except percentages)					
Revenue:						
Subscription and service	$170,685	98.3 %	$168,442	91.3 %	$2,243	1.3 %
Product	2,949	1.7 %	16,151	8.7 %	(13,202)	(81.7)%
Total revenue	173,634	100.0%	184,593	100.0%	(10,959)	(5.9)%
Cost of revenue and cost of revenue as a percentage of related revenue						
Cost of subscription and service revenue	32,010	18.8 %	26,082	15.5 %	5,928	22.7 %
Cost of product revenue	3,912	132.7%	7,539	46.7 %	(3,627)	(48.1)%
Total cost of revenue	35,922	20.7 %	33,621	18.2 %	2,301	6.8 %
Gross profit and gross profit percentage	$137,712	79.3 %	$150,972	81.8 %	$(13,260)	(8.8)%

(1) Effective January 1, 2018 we adopted ASC 606 using the modified retrospective approach. Revenue in prior comparative periods reflects amounts previously reported and has not been restated. See Note 2 of Item 8, Financial Statements and Supplementary Data, for additional disclosures regarding revenue recognition and the impact of adoption of ASC 606.

Beginning in 2019, we expect to collapse “Subscription and service revenue” and “Product revenue” in a single revenue line and collapse “Cost of subscription and service revenue” and “Cost of product revenue” in a single cost of revenue line to better reflect our operational activity, offerings and strategy.

Subscription and Service Revenue

The Literacy segment falls entirely within the subscription and service revenue category, which increased $9.2 million year-over-year. As earlier noted, the 21% growth in Literacy revenue was driven by sales growth, strong retention rates, and an increase in implementation and training services. Consumer Language subscription and service revenue decreased by $3.0 million, which included a decrease of $2.5 million due to the absence of Fit Brains subscription revenue, a business that was recently shuttered. E&E Language service and subscription revenue decreased $3.9 million primarily due to lower revenue in the reseller channel.

Product Revenue

The decrease in product revenue was primarily due to the Consumer Language segment SaaS migration. Product revenue decreased $8.8 million in the DTC sales channel and $2.3 million in the global consumer retail sales channel due to the SaaS migration.

Cost of Subscription and Service Revenue

The increase in cost of subscription and service revenue was primarily due to higher amortization expense from capitalized internal-use software costs associated with the Literacy PowerUp SaaS offering that was released in early 2018 and an increase in allocated costs from a higher allocation rate associated with the shift in revenue mix in favor of subscription and service revenue.

Cost of Product Revenue

The dollar decrease in cost of product revenue is primarily due to the transition from packaged perpetual products to SaaS-based offerings in the retail and DTC channels of the Consumer Language segment. Cost of product revenue exceeded product revenue due to a $2.1 million inventory obsolescence charge during 2018 associated with the SaaS transition. Additionally, product margin declined as 2018 product sales were primarily comprised of audio practice materials, like headsets, which have a higher inventory cost than packaged software product.

Gross Profit and Gross Profit Percentage

The declines in gross profit and gross profit percentage were primarily attributable to the decline in revenue previously discussed.

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Operating Expenses

The following table sets forth operating expenses and the corresponding percentage of total revenue for the years ended December 31, 2018 and 2017:

	Year ended December 31,				2018 versus 2017	
	2018		2017		Change	% Change
	(in thousands, except percentages, which reflect expense as a percentage of total revenue)					
Sales and marketing	$98,911	57.0%	$96,660	52.4%	$2,251	2.3 %
Research and development	25,210	14.5%	24,747	13.4%	463	1.9 %
General and administrative	33,210	19.1%	34,066	18.5%	(856)	(2.5)%
Total operating expenses	$157,331		$155,473		$1,858	1.2 %

Sales and Marketing Expenses

The slight increase in sales and marketing expense was primarily due to investments in sales and marketing for Lexia. We anticipate sales and marketing expenses will increase year-over-year as the Company funds its growth initiatives in the Literacy, E&E Language and Consumer Language segments.

Research and Development Expenses

Research and development expense was nearly flat year-over-year. We expect research and development expenses will decline slightly in the near future as we anticipate more of our internal-use software development costs will be capitalizable as we execute our SaaS software development plans.

General and Administrative Expenses

General and administrative expenses were down slightly year-over-year. The dollar reduction was primarily due to lower variable incentive compensation expenses based on reduced funding expectations. We expect general and administrative expenses will increase in the near term.

Other Income and (Expense)

	Year ended December 31,		2018 versus 2017	
	2018	2017	Change	% Change
	(in thousands, except percentages)			
Interest income	$103	$66	$37	56.1 %
Interest expense	(313)	(491)	178	(36.3)%
Other income and (expense)	165	881	(716)	(81.3)%

Total other income and (expense)	$(45)	$456	$(501)	(109.9)%

Interest income represents interest earned on our cash and cash equivalents. Interest expense primarily represents interest on our capital leases and the recognition of our financing fees associated with our undrawn credit facility. The change in other income and (expense) was primarily attributable to foreign exchange fluctuations and the absence of the gain on sale associated with the sale of our Korea subsidiary in 2017.

Income Tax Expense (Benefit)

	Year ended December 31,		2018 versus 2017	
	2018	2017	Change	% Change
	(in thousands, except percentages)			
Income tax expense (benefit)	$1,809	$(2,499)	$4,308	(172.4)%

The 2017 income tax benefit reflects the $5.5 million deferred tax benefit associated with the reduction in the corporate tax rate from 35% to 21% under the Tax Act. The 2018 income tax expense relates to current year tax expense due to profits of operations in certain foreign jurisdictions and deferred tax expense related to indefinite-lived intangible assets.

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Comparison of the Year Ended December 31, 2017 and the Year Ended December 31, 2016

Our total revenue decreased $9.5 million to $184.6 million for the year ended December 31, 2017, from $194.1 million for the year ended December 31, 2016. The decrease in total revenue was primarily due to a decrease in Consumer Language revenue of $12.2 million and a decrease in E&E Language revenue of $6.8 million, which were partially offset by an increase in Literacy revenue of $9.5 million.

We reported an operating loss of $4.5 million for the year ended December 31, 2017, an improvement compared to an operating loss of $26.9 million for the year ended December 31, 2016. Operating expense decreased $31.2 million, comprised of decreases of $17.7 million in sales and marketing expense, $6.4 million in general and administrative expense, $3.9 million in impairment expense, $1.6 million in lease abandonment and termination expense, and $1.5 million in research and development expense. The declines in operating expense reflect the continued savings as a result of our restructuring plans and other ongoing expense reduction actions. The $31.2 million reduction in operating expenses was partially offset by a decrease in gross profit of $8.8 million, driven by a $9.5 million decrease in revenue.

Revenue, Segment Contribution, and Segment Contribution Margin by Operating Segment

The following table sets forth revenue, the corresponding percent of total revenue, segment contribution, and segment contribution margin for each of our operating segments for the years ended December 31, 2017 and 2016:

	Year ended December 31,				2017 versus 2016	
	2017		2016		Change	% Change
	(in thousands, except percentages)					
Revenue and Revenue as a Percent of Total Revenue						
Literacy	$43,608	23.6 %	$34,123	17.6 %	$9,485	27.8 %
Enterprise & Education Language	65,267	35.4 %	72,083	37.1 %	(6,816)	(9.5)%
Consumer Language	75,718	41.0 %	87,883	45.3 %	(12,165)	(13.8)%
Total Revenue	184,593	100.0%	194,089	100.0%	(9,496)	(4.9)%
Segment Contribution and Segment Contribution Margin						
Literacy	$4,964	11.4 %	$1,532	4.5 %	$3,432	224.0 %
Enterprise & Education Language	26,897	41.2 %	29,082	40.3 %	(2,185)	(7.5)%
Consumer Language	24,849	32.8 %	21,502	24.5 %	3,347	15.6 %
Language Shared Services	(17,369)		(20,759)		3,390	(16.3)%
Total Segment Contribution	$39,341		$31,357		$7,984	25.5 %

Literacy Segment

Literacy revenue increased partially reflecting the impact of purchase accounting. Adjusting for the impact of purchase accounting on Literacy revenue, revenue would have been $45.4 million for the year ended December 31, 2017 compared to $38.4 million for the year ended December 31, 2016, and the Literacy pro-forma growth would have been 18% year-over-year. The organic growth in Literacy revenue was primarily driven by a larger and more mature direct sales force in 2017 as compared to 2016, which drove stronger renewal rates, an increase in new business, and an increase in professional services.

The Literacy segment contribution dollar and margin increases were primarily due to the larger revenue base on which segment contribution is calculated, partially offset by increases in direct research and development expenses, cost of sales, and sales and marketing expenses due to the transition to a direct sales team and investments made to improve the Literacy product portfolio and infrastructure.

E&E Language Segment

The decrease in E&E Language revenue reflects a decrease of $3.6 million and $2.9 million in the corporate channel and education channel, respectively. Included within these declines is the reduction in revenue of $3.1 million from marketplaces exited due to the execution of our strategy to withdraw our direct presence in unprofitable geographies and manage the E&E Language business for profitable growth.

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Before shared Language research and development expense, the E&E Language segment contribution dollar decrease was primarily due to lower revenue while the slight margin improvement reflects lower direct expenses, primarily sales and marketing expenses and cost of sales.

Consumer Language Segment

Consumer Language revenue decreased largely due to a deliberate $8.9 million reduction in revenue in the direct-to-consumer sales channel due to the completed transformation from perpetual products that are recognized up front, to subscriptions that are recognized over time. Revenue from the global retail sales channel declined $1.7 million as the sales channel began to experience the delay in revenue recognition associated with the shift from perpetual packaged products to subscription offerings.

Before shared Language research and development expense, the Consumer Language segment dollar and margin increases were primarily due to a reduction in direct sales and marketing expense year over year.

Revenue by Geographic Area

The following table sets forth revenue by geographic area and the corresponding percent of total revenue for the years ended December 31, 2017 and 2016:

	Year ended December 31,				2017 versus 2016	
	2017		2016		Change	% Change
	(in thousands, except percentages)					
United States	$158,825	86.0 %	$162,815	83.9 %	$(3,990)	(2.5)%
International	25,768	14.0 %	31,274	16.1 %	(5,506)	(17.6)%
Total revenue	$184,593	100.0%	$194,089	100.0%	$(9,496)	(4.9)%

United States Revenue

The decrease in United States revenue reflects the Consumer DTC SaaS transition described above as most Consumer sales are made domestically. The decline in United States revenue was partially offset by an increase in Literacy revenue from our Lexia business, which is predominantly recorded as domestic revenue.

International Revenue

The decrease in international revenue reflects a decrease in the E&E Language revenue in France and Spain, which declined $3.2 million due to the exit of those unprofitable geographies as part of the 2016 Restructuring Plan. Additionally, FitBrains subscription revenue associated with the deemphasized Canadian brain fitness consumer business, declined $1.5 million.

Revenue, Cost of Revenue, and Gross Profit by Subscription and Service Revenue and Product Revenue

The following table sets forth revenue, cost of revenue, and gross profit by subscription and service revenue and product revenue for the years ended December 31, 2017 and 2016:

	Year ended December 31,				2017 versus 2016	
	2017		2016		Change	% Change
	(in thousands, except percentages)					
Revenue:						
Subscription and service	$168,442	91.3 %	$154,336	79.5 %	$14,106	9.1 %
Product	16,151	8.7 %	39,753	20.5 %	(23,602)	(59.4)%
Total revenue	184,593	100.0%	194,089	100.0%	(9,496)	(4.9)%
Cost of revenue and cost of revenue as a percentage of related revenue						
Cost of subscription and service revenue	26,082	15.5 %	23,676	15.3 %	2,406	10.2 %
Cost of product revenue	7,539	46.7 %	10,645	26.8 %	(3,106)	(29.2)%
Total cost of revenue	33,621	18.2 %	34,321	17.7 %	(700)	(2.0)%
Gross profit and gross profit percentage	$150,972	81.8 %	$159,768	82.3 %	$(8,796)	(5.5)%

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Subscription and Service Revenue

An increase in Literacy segment revenue, which entirely falls within the subscription and service revenue category, contributed $9.5 million of the $14.1 million increase. As earlier noted, the 28% increase in Literacy revenue was due to organic growth and maturity of the direct sales force, which drove stronger renewal rates, an increase in new business, and an increase in professional services. Consumer Language subscription and service revenue increased by $9.3 million, reflecting the migration from perpetual products, which were historically recognized up-front, to subscriptions, which are recognized over time. This SaaS migration was substantially completed in the direct-to-consumer sales channel in 2017. In the Consumer Language segment, we began shifting sales from our box-based and perpetual download products to subscription products. Historically, customers in the Consumer Language segment using our longer-length subscription products (greater than a one-year term) have generally only stayed for the duration of the subscription period. We are selling shorter duration subscriptions, which if we are successful in achieving an adequate level of renewals, will allow pricing that has the potential to open up new segment demographics. As our Consumer Language products are sold through shorter-term subscriptions, cash from those sales will be spread over the initial sale period and any subsequent renewals. Within the E&E Language segment, the education channel and corporate channel declined by $2.4 million and $2.2 million, respectively, due in part to the marketplaces exited in unprofitable geographies.

Product Revenue

Product revenue decreased $19.5 million in the direct-to-consumer sales channel due to the SaaS migration completed in 2017 from perpetual products to subscription offerings. Product revenue also declined in the global retail channel by $1.5 million.

Cost of Subscription and Service Revenue

The dollar increase in cost of subscription and service revenue was primarily due to increases in allocated costs from a higher allocation rate associated with the shift in revenue mix in favor of subscription and service revenue.

Cost of Product Revenue

The increase in cost as a percentage of revenue was primarily attributable to the intentional decline in product revenue and a $1.9 million inventory write-down associated with our request to our retail partners to return inventory. The dollar decrease in cost of product revenue is primarily due to the continued migration to subscription-based products, specifically declines of $1.2 million, $0.4 million, and $0.4 million in payroll and benefits, inventory costs, and freight costs, respectively.

Gross Profit

The dollar decrease in gross profit was primarily due to the decrease in revenue.

Operating Expenses

The following table sets forth operating expenses and the corresponding percentage of total revenue for the years ended December 31, 2017 and 2016:

	Year ended December 31,				2017 versus 2016	
	2017		2016		Change	% Change
	(in thousands, except percentages, which reflect expense as a percentage of total revenue)					
Sales and marketing	$96,660	52.4%	$114,340	58.9%	$(17,680)	(15.5)%
Research and development	24,747	13.4%	26,273	13.5%	(1,526)	(5.8)%
General and administrative	34,066	18.5%	40,501	20.9%	(6,435)	(15.9)%
Impairment	—	0.0%	3,930	2.0%	(3,930)	(100.0)%
Lease abandonment and termination	—	0.0%	1,644	0.8%	(1,644)	(100.0)%
Total operating expenses	$155,473		$186,688		$(31,215)	(16.7)%

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Included within our operating expenses are restructuring charges related to restructuring actions associated with employee severance and related benefits costs incurred in connection with headcount reductions, contract termination costs, and other related costs. As a result of these actions, we realized reductions in our operating expenses, primarily associated with reduced payroll and benefits costs. See Note 2 and Note 12 of Item 8, Financial Statements and Supplementary Data for additional information about these strategic undertakings. The following table presents restructuring costs included in the related line items of our results from operations:

	Year ended December 31,	
	2017	2016
	(in thousands)	
Cost of revenue	$378	$573
Sales and marketing	411	2,324
Research and development	318	913
General and administrative	100	1,383
Total	$1,207	$5,193

While there were restructuring costs associated with each of the years ended December 31, 2017 and 2016, the severance expenses in 2017 were significantly less than the severance expenses in 2016.

Sales and Marketing Expenses

The decrease in sales and marketing expense was primarily due to decreases in media spend, payroll and benefits, professional services, and rent. Media expenses decreased $11.9 million due to the change in focus in the general consumer market. Payroll and benefit expense decreased $3.2 million primarily due to salary savings from a reduction in headcount and lower severance expenses. Professional services expenses declined $1.4 million related to reduced spending in call centers. Rent expense declined $0.8 million related to the relocation of the corporate headquarters.

Research and Development Expenses

Research and development expenses were relatively flat for the year ended December 31, 2017 as compared to the year ended December 31, 2016.

General and Administrative Expenses

The decrease in general and administrative expenses was primarily due to reductions in professional services, amortization expense, and bad debt expense. Professional services declined $3.3 million due to the absence of external strategic advisor costs compared to 2016 and also due to lower external audit fees and lower legal fees. Amortization expense decreased $1.4 million due to the completed amortization of multiple projects in 2016. Bad debt expense decreased $0.8 million due to better collection efforts and lower reserve balances.

Impairment

There were no impairment expenses for the year ended December 31, 2017. The $3.9 million impairment in the year ended December 31, 2016 was due to the 2016 impairments related to Fit Brains goodwill of $1.7 million, Fit Brains intangible assets of $1.2 million, and a $1.0 million abandonment charge associated with a previously capitalized software project that no longer aligned to our strategic direction.

Lease Abandonment and Termination

There were no lease abandonment and termination expenses for the year ended December 31, 2017. The $1.6 million lease abandonment and termination charge for the year ended December 31, 2016 related to the planned space consolidation of our former headquarters location in Arlington, VA in the fourth quarter of 2016.

Other Income and (Expense)

	Year ended December 31,		2017 versus 2016	
	2017	2016	Change	% Change
	(in thousands, except percentages)			
Interest income	$66	$46	$20	43.5 %
Interest expense	(491)	(470)	(21)	4.5 %
Other income and (expense)	881	2,297	(1,416)	(61.6)%
Total other income and (expense)	$456	$1,873	$(1,417)	(75.7)%

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Interest income represents interest earned on our cash and cash equivalents. Interest expense primarily represents interest on our capital leases and the recognition of our financing fees associated with our undrawn credit facility. The change in other income and (expense) was primarily attributable to foreign exchange fluctuations.

Income Tax (Benefit) Expense

	Year ended December 31,		2017 versus 2016	
	2017	2016	Change	% Change
	(in thousands, except percentages)			
Income tax (benefit) expense	$(2,499)	$2,503	(5,002)	(199.8)%

The favorable change from income tax expense to income tax benefit was primarily related to the reduction in the corporate tax rate from 35% to 21% under the Tax Act. This resulted in a deferred tax benefit of $5.5 million, offset by current year tax expense due to profits of operations in Canada, Germany, and the U.K. Additionally, deferred tax expense in 2016 includes the tax impact of the amortization of U.S. indefinite-lived intangible assets and the inability to recognize tax benefits associated with current year losses of operations in certain foreign jurisdictions and in the U.S.

Liquidity and Capital Resources

Liquidity

Our principal source of liquidity at December 31, 2018 consisted of $38.1 million in cash and cash equivalents and short-term investments, a decrease of $4.9 million, from $43.0 million compared to December 31, 2017. Our primary operating cash requirements include the payment of salaries, employee benefits and other personnel related costs, as well as direct advertising expenses, costs of office facilities, and costs of information technology systems. Historically, we have primarily funded these requirements through cash flow from our operations. For the year ended December 31, 2018, we generated $10.4 million in cash flows from operations as reflected in our consolidated statements of cash flows.

Our operating segments are affected by different sales-to-cash patterns. Within our E&E Language and Literacy segments, revenue in our education, government, and corporate sales channels are seasonally stronger in the second half of the calendar year due to purchasing and budgeting cycles. Our Consumer Language revenue is affected by seasonal trends associated with the holiday shopping season. Consumer Language sales typically turn to cash more quickly than E&E Language and Literacy sales, which tend to have longer collection cycles. Historically, in the first half of the year we have been a net user of cash and in the second half of the year we have been a net generator of cash. We expect the trend to use cash in the first half of the year and generate cash in the second half of the year to continue.

On October 28, 2014, we executed a Loan and Security Agreement with Silicon Valley Bank ("Bank") to obtain a revolving credit facility. Since the original date of execution, we have executed several amendments to the credit facility to reflect updates to our financial outlook and extend the credit facility. Under the seventh amendment executed on March 4, 2019, we may borrow up to $15.0 million, including a sub-facility, which reduces available borrowings, for letters of credit in the aggregate availability amount of $4.0 million. The credit facility has a term that expires on April 1, 2021, during which time we may borrow and re-pay loan amounts and re-borrow the loan amounts subject to customary borrowing conditions. However, we must not have more than $5.0 million in outstanding borrowings for 30 consecutive days during each twelve month period beginning as of the date of execution. Interest will accrue at the Prime Rate and must be paid quarterly.

As of the date of this filing, no borrowings are outstanding under the revolving credit agreement. During the third quarter of 2018, a $4.0 million letter of credit that was previously issued by the Bank on our behalf was cancelled as it was deemed no longer necessary. We are subject to certain financial and restrictive covenants under the credit facility As of December 31, 2018, we were in compliance with all of the covenants under the revolving credit agreement. Effective as of March 4, 2019, our financial covenants were modified and we are required to maintain compliance with a minimum liquidity coverage ratio and maintain minimum financial performance requirements as defined in the credit facility.

The total amount of cash that was held by foreign subsidiaries as of December 31, 2018 was $4.9 million. As of December 31, 2018, if we were to repatriate this foreign cash, no tax liability would result due to the current period and carryforward net operating losses.

During the last three years, inflation has not had a material effect on our business and we do not expect that inflation or changing prices will materially affect our business in the foreseeable future.

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Capital Resources

We believe our current cash and cash equivalents, short-term investments, and funds generated from cash flows from operations will be sufficient to meet our cash needs for at least the next twelve months from the date of issuance of this report. We have generated significant operating losses as reflected in our accumulated loss and we may continue to incur operating losses in the future that may continue to require additional working capital to execute strategic initiatives. Our future capital requirements will depend on many factors, including development of new products, market acceptance of our products, the levels of advertising and promotion required to launch additional products and improve our competitive position in the marketplace, the expansion of our sales, support and marketing organizations, the optimization of office space in the U.S. and worldwide, building the infrastructure necessary to support our growth, the response of competitors to our products and services, and our relationships with suppliers. We extend payments to certain vendors in order to minimize the amount of working capital deployed in the business. In order to maximize our cash position, we will continue to manage our existing inventory, accounts receivable, and accounts payable balances. Borrowings under our credit facility can be utilized to meet working capital requirements, anticipated capital expenditures, and other obligations.

Cash Flow Analysis for the Year ended December 31, 2018 as compared to the year ended December 31, 2017

	Year ended December 31,		2018 versus 2017	
	2018	2017	Change	% Change
	(in thousands, except percentages)			
Net cash provided by operating activities	$10,443	$18,960	(8,517)	(44.9)%
Net cash used in investing activities	$(16,872)	$(12,822)	(4,050)	31.6 %
Net cash provided by (used in) financing activities	$1,791	$(118)	1,909	(1617.8)%

Net Cash Provided By Operating Activities

Net cash provided by operating activities was $10.4 million for the year ended December 31, 2018 compared to $19.0 million for the year ended December 31, 2017. One factor impacting the decline in cash provided by operating activities was the timing of cash receipts from our contractual relationship with SOURCENEXT. We received cash inflows of approximately $4.5 million in 2018, a decrease of $8.7 million as compared to the cash inflows of $13.2 million in 2017. After normalizing for the non-recurring cash received from SOURCENEXT, cash flows provided by operating activities is nearly flat year-over-year.

Net Cash Used in Investing Activities

Net cash used in investing activities was $16.9 million for the year ended December 31, 2018, compared to $12.8 million for the year ended December 31, 2017. The increase in cash used was primarily driven by an increase in capitalized software costs primarily related projects in connection with our Adobe Flash phase-out, our mobile English tutoring offering, and our English language learning offering for children.

Net Cash Provided by (Used in) Financing Activities

Net cash provided by financing activities was $1.8 million for the year ended December 31, 2018, compared to net cash used in financing activities of $0.1 million for the year ended December 31, 2017. The favorable change was primarily driven by an increase in proceeds from the exercise of stock options in 2018 as compared to 2017.

Cash Flow Analysis for the Year ended December 31, 2017 as compared to the year ended December 31, 2016

	Year ended December 31,		2017 versus 2016	
	2017	2016	Change	% Change
	(in thousands, except percentages)			
Net cash provided by operating activities	$18,960	$1,618	17,342	1071.8 %
Net cash used in investing activities	$(12,822)	$(12,476)	(346)	2.8 %
Net cash used in financing activities	$(118)	$(658)	540	(82.1)%

Net Cash Provided By Operating Activities

Net cash provided by operating activities was $19.0 million for the year ended December 31, 2017 compared to $1.6 million for the year ended December 31, 2016, a favorable change of $17.3 million. The factors affecting our operating cash flows during the year were our improvement in net loss from $27.6 million to $1.5 million, driven primarily by a reduction in operating expenses. For a summary of the factors that led to the net loss for the year ended December 31, 2017 see "Results of Operations" section above. Non-cash items primarily consisted of $12.0 million in depreciation and amortization expense and $4.1 million in stock-based compensation expense, partially offset by $4.2 million in deferred income tax benefit. The primary drivers of the change in operating assets and liabilities were a decrease in accounts receivable of $7.6 million, an increase in deferred revenue of $8.9 million, a decrease in inventory of $3.3 million, partially offset by a decrease in other current liabilities of $6.5 million, a decrease in accounts payable of $1.8 million, and a decrease in other long-term liabilities of $1.2 million. The decrease in accounts receivable was primarily related to improved collection efforts and lower revenues. The increase in deferred revenue was primarily due to the increase in sales in the Literacy segment, a sales shift from our box-based and perpetual download products to subscription product, and the increase in deferred revenue related to a significant transaction in Japan with SOURCENEXT. The decrease in inventory was primarily due to an inventory write down of finished packaged perpetual products due to the transition from box-based and perpetual download products to subscription product. The declines in other current liabilities, accounts payable, and other long-term liabilities reflect the ongoing cost reduction initiatives which resulted in lower operating expenses and fewer obligations due for marketing, advertising, rebates, and general business activities.

The dollar change between the net cash provided by operating activities for the year ended December 31, 2017 as compared to December 31, 2016 was due in part to the positive cash inflows totaling $13.2 million related to the execution of agreements with SOURCENEXT Corporation for the perpetual license of certain intellectual property for exclusive use and sale in Japan.

Net Cash Used in Investing Activities

Net cash used in investing activities was $12.8 million for the year ended December 31, 2017, compared to $12.5 million for the year ended December 31, 2016. Purchases of property and equipment, which primarily relates to capitalized labor on product and corporate IT projects was slightly higher in 2017 as compared to 2016.

Net Cash Used in Financing Activities

Net cash used in financing activities was $0.1 million for the year ended December 31, 2017, compared to $0.7 million for the year ended December 31, 2016. The favorable change was primarily driven by an increase in proceeds from the exercise of stock options in 2017 as compared to 2016.

Off-Balance Sheet Arrangements

We do not engage in any off-balance sheet financing arrangements. We do not have any material interest in entities referred to as variable interest entities, which include special purpose entities and other structured finance entities.

Contractual Obligations

As discussed in Notes 8 and 15 of Item 8, Financial Statements and Supplementary Data, we lease buildings, parking spaces, equipment, and office space under operating lease agreements. We also lease a building in France, certain equipment, and certain software under capital lease agreements. The following table summarizes our future minimum rent payments under non-cancellable operating and capital lease agreements as of December 31, 2018 and the effect such obligations are expected to have on our liquidity and cash flow in future periods.

	Total	Less than	1-3 Years	3-5 Years	More than

		1 Year			5 Years
	(in thousands)				
Capitalized leases and other financing arrangements	$1,951	$525	$1,037	$389	$ —
Operating leases	6,157	2,334	2,103	1,720	—
Total	$8,108	$2,859	$3,140	$2,109	$ —

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Foreign Currency Exchange Risk

The functional currency of our foreign subsidiaries is their local currency. Accordingly, our results of operations and cash flows are subject to fluctuations due to changes in foreign currency exchange rates. The volatility of the prices and applicable rates are dependent on many factors that we cannot forecast with reliable accuracy. In the event our foreign sales and expenses increase, our operating results may be more greatly affected by fluctuations in the exchange rates of the currencies in which we do business. At this time we do not, but we may in the future, invest in derivatives or other financial instruments in an attempt to hedge our foreign currency exchange risk.

Interest Rate Sensitivity

Interest income and expense are sensitive to changes in the general level of U.S. interest rates. However, based on the nature and current level of our marketable securities, which are primarily short-term investment grade and government securities and our notes payable, we believe that there is no material risk of exposure.

Credit Risk

Accounts receivable and cash and cash equivalents present the highest potential concentrations of credit risk. We reserve for credit losses and do not require collateral on our trade accounts receivable. In addition, we maintain cash and investment balances in accounts at various banks and brokerage firms. We have not experienced any losses on cash and cash equivalent accounts to date. We sell products to retailers, resellers, government agencies, and individual consumers and extend credit based on an evaluation of the customer's financial condition, without requiring collateral. Exposure to losses on accounts receivable is principally dependent on each customer's financial condition. We monitor exposure for credit losses and maintain allowances for anticipated losses. We maintain trade credit insurance for certain customers to provide coverage, up to a certain limit, in the event of insolvency of some customers.

Item 8. Financial Statements and Supplementary Data

Our consolidated financial statements, together with the related notes and the report of independent registered public accounting firm, are set forth on the pages indicated in Item 15.

Item 9. Changes In and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Management, with the participation of our Chief Executive Officer and our Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2018. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the Company's management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives, and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of December 31, 2018, our Chief Executive Officer and Chief Financial Officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Management's annual report on internal control over financial reporting

Management is responsible for establishing and maintaining adequate internal control over our financial reporting. Management has assessed the effectiveness of internal control over financial reporting as of December 31, 2018. Management's assessment was based on criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission, or COSO, in Internal Control—Integrated Framework (2013).

Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Our internal control over financial reporting includes those policies and procedures that:

(1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect our transactions and dispositions of our assets;
(2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that our receipts and expenditures are being made only in accordance with authorizations of management and Board of Directors; and
(3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of our assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Based on using the COSO criteria, management believes our internal control over financial reporting as of December 31, 2018 was effective.

Our independent registered public accounting firm, Deloitte & Touche LLP, has audited the financial statements included in this Annual Report on Form 10-K and has issued a report on the effectiveness of our internal control over financial reporting. The attestation report of Deloitte & Touche LLP is included on page F-3 of this Form 10-K.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting identified in connection with the evaluation required by Rule 13a-15(d) or 15d-15(d) of the Exchange Act that occurred during the quarter ended December 31, 2018 that had materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

On March 4, 2019, Rosetta Stone Ltd. and Lexia Learning Systems LLC, wholly-owned subsidiaries of the Company, entered into the Seventh Amendment to Loan and Security Agreement with Silicon Valley Bank. Please see Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations -- Liquidity and Capital Resources and Note 8. Financing Arrangements of the Company's Consolidated Financial Statements contained in Item 8, Financial Statements and Supplementary Data, for a description of this amendment.

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PART III

Certain information required by Part III is omitted from this Annual Report on Form 10-K as we intend to file our definitive Proxy Statement for the 2019 Annual Meeting of Stockholders pursuant to Regulation 14A of the Securities Exchange Act of 1934, as amended, not later than 120 days after the end of the fiscal year covered by this Annual Report, and certain information included in the Proxy Statement is incorporated herein by reference.

Item 10. Directors, Executive Officers and Corporate Governance

The information required by this Item is incorporated herein by reference to the information provided under the headings "Our Board of Directors and Nominees," "Executive Officers," "Security Ownership of Certain Beneficial Owners and Management—Section 16(a) Beneficial Ownership Reporting Compliance," "Corporate Governance—Code of Ethics and Business Conduct," "Corporate Governance—Composition of our Board of Directors; Classified Board," "Corporate Governance—Committees of our Board of Directors," "Corporate Governance—Audit Committee," "Corporate Governance—Compensation Committee," and "Corporate Governance—Corporate Governance and Nominating Committee" in our definitive proxy statement for the 2019 Annual Meeting of Stockholders to be filed with the SEC no later than 120 days after the fiscal year ended December 31, 2018 (the "2019 Proxy Statement").

Code of Ethics and Business Conduct

We have adopted a code of ethics and business conduct ("code of conduct") that applies to all of our employees, officers and directors, including without limitation our principal executive officer, principal financial officer, and principal accounting officer. Copies of both the code of conduct, as well as any waiver of a provision of the code of conduct granted to any senior officer or director or material amendment to the code of conduct, if any, are available, without charge, under the "Corporate Governance" tab of the "Investor Relations" section on our website at www.rosettastone.com. We intend to disclose any amendments or waivers of this code on our website.

Item 11. Executive Compensation

The information required by this Item is incorporated herein by reference to the information provided under the headings "Compensation Committee Report," "Executive Compensation," "Director Compensation," "Compensation Committee" and "Corporate Governance—Interlocks and Insider Participation" in the 2019 Proxy Statement.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required by this Item is incorporated herein by reference to the information provided under the headings "Security Ownership of Certain Beneficial Owners and Management" and "Equity Compensation Plan Information" in the 2019 Proxy Statement.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this Item is incorporated herein by reference to the information provided under the headings "Corporate Governance—Director Independence," and "Transactions with Related Persons" in the 2019 Proxy Statement.

Item 14. Principal Accounting Fees and Services

The information required by this Item is incorporated herein by reference to the information provided under the heading "Principal Accountant Fees and Services" in the 2019 Proxy Statement.

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PART IV

Item 15. Exhibits and Financial Statement Schedules

(a) Consolidated Financial Statements

1. Consolidated Financial Statements. The consolidated financial statements as listed in the accompanying "Index to Consolidated Financial Information" are filed as part of this Annual Report.
2. Consolidated Financial Statement Schedules. Schedules have been omitted because they are not applicable or are not required or the information required to be set forth in those schedules is included in the consolidated financial statements or related notes.

All other schedules not listed in the accompanying index have been omitted as they are either not required or not applicable, or the required information is included in the consolidated financial statements or the notes thereto.

(b) Exhibits

The exhibits listed in the Index to Exhibits are filed as part of this Annual Report on Form 10-K.

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EXHIBIT INDEX

	Index to exhibits
2.1	Purchase and Sale Agreement by and among Rosetta Stone Ltd., Rosetta Stone Japan Inc., and SOURCENEXT Corporation, dated April 25, 2017 (incorporated herein by reference to Exhibit 2.1 filed with the Company's Current Report on Form 8-K filed on April 25, 2017).
3.1	Second Amended and Restated Certificate of Incorporation (incorporated herein by reference to Exhibit 3.2 to Amendment No. 3 to the Company’s Registration Statement on Form S-1 (No. 333-153632) filed on February 23, 2009).
3.2	Third Amended and Restated Bylaws (incorporated herein by reference to Exhibit 3.1 filed with the Company's Current Report on Form 8-K filed on November 22, 2016).
4.1	Specimen certificate evidencing shares of common stock (incorporated herein by reference to Exhibit 4.1 to Amendment No. 3 to the Company’s Registration Statement on Form S-1 (No. 333-153632) filed on February 23, 2009).
10.1+	2009 Omnibus Incentive Plan, as amended and restated and effective May 19, 2017 (incorporated herein by reference to Appendix A to the Company’s Definitive Proxy Statement filed on April 7, 2017).
10.2+	Director Form of Option Award Agreement under the 2009 Plan (incorporated herein by reference to Exhibit 10.6 to the Company’s Annual Report on Form 10-K for the fiscal year ended December 31, 2014).
10.3+	Executive Form of Option Award Agreement under the 2009 Plan (incorporated herein by reference to Exhibit 10.5 to the Company’s Annual Report on Form 10-K for the fiscal year ended December 31, 2014).
10.4+	Amended Executive Form of Option Award Agreement under 2009 Plan effective for awards after October 1, 2011 (incorporated herein by reference to Exhibit 10.25 in the Company’s Annual Report on Form 10-K for the fiscal year ended December 31, 2011).
10.5+	Amended Executive Form of Option Award Agreement under 2009 Plan effective for awards granted May 9, 2016 (incorporated herein by reference to Exhibit 10.3 in the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2016.)
10.6+	Form of Annual Performance-Based Nonqualified Stock Option Award Agreement, dated April 4, 2016, between the Company and John Hass (incorporated herein by reference to Exhibit 10.3 in the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2017).
10.7+	Form of Long-Term Performance-Based Nonqualified Stock Option Award Agreement, dated April 4, 2016, between the Company and John Hass (incorporated herein by reference to Exhibit 10.4 in the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2017).
10.8+	

Form of Restricted Stock Award Agreement under the 2009 Plan (incorporated herein by reference to Exhibit 10.13 to Amendment No. 4 to the Company's Registration Statement on Form S-1 (No. 333-153632), filed on March 17, 2009).

10.9+	Amended Executive Form of Restricted Stock Award Agreement under 2009 Plan effective for awards after October 1, 2011 (incorporated herein by reference to Exhibit 10.26 in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2011).
10.10+	Amended Executive Form of Restricted Stock Award Agreement under 2009 Plan effective for awards after February 1, 2016 (incorporated herein by reference to Exhibit 10.11 in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2015).
10.11+	Director Form of Restricted Stock Unit Award Agreement under the 2009 Plan (incorporated herein by reference to Exhibit 10.12 in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2014).
10.12+	Director Form of Restricted Stock Unit Award Agreement under the 2009 Plan (for awards beginning June 2015) (incorporated herein by reference to Exhibit 10.2 of the Company's Quarterly Report on Form 10-Q for the period ended June 30, 2015).

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10.13+ Form of Annual Performance-Based Restricted Stock Award Agreement, dated April 4, 2016, between the Company

and John Hass (incorporated herein by reference to Exhibit 10.1 in the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2017).

10.14+ Form of Long-Term Performance-Based Restricted Stock Award Agreement, dated April 4, 2016, between the Company and John Hass (incorporated herein by reference to Exhibit 10.2 in the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2017).

10.15+ Policy on Recoupment of Performance Based Compensation (Clawback Policy) (incorporated herein by reference to Exhibit 10.26 in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2014).

10.16+ Rosetta Stone Inc. Change in Control Severance Plan (incorporated herein by reference to Exhibit 10.18 in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2015.)

10.17 Form of Indemnification Agreement entered into with each director and executive officer (incorporated herein by reference to Exhibit 10.7 to the Company's Registration Statement on Form S-1 (No. 333-153632) filed on September 23, 2008).

10.18 Form of Indemnification Agreement to be entered into with each director and executive officer, revised as of August 2015 (incorporated herein by reference to Exhibit 10.1 of the Company's Quarterly Report on Form 10-Q for the period ended September 30, 2015).

10.19+ Executive Employment Agreement between Rosetta Stone Ltd. and Thomas Pierno effective as of May 2, 2012 (incorporated herein by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on May 1, 2012).

10.20+ Director Agreement between Rosetta Stone Inc. and A. John Hass III effective as of November 18, 2014 (incorporated herein by reference to Exhibit 10.31 in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2014).

10.21+ Executive Employment Agreement between Rosetta Stone Ltd. and A. John Hass III effective as of April 1, 2016 (incorporated herein by reference to Exhibit 10.1 in the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2016.)

10.22+ Executive Employment Agreement between the Company and Sonia Cudd, effective as of January 2, 2015 (incorporated herein by reference to Exhibit 10.2 of the Company's Quarterly Report on Form 10-Q for the period ended March 31, 2015).

10.23+ Executive Employment Agreement between the Company and Mathew Hulett, effective as of August 4, 2017 (incorporated herein by reference to Exhibit 10.23 of the Company's Annual Report on Form 10-K for the period ended December 31, 2017).

10.24+ Executive Employment Agreement between the Company and Nicholas Gaehde, effective as of August 21, 2017 (incorporated herein by reference to Exhibit 10.24 of the Company's Annual Report on Form 10-K for the period ended December 31, 2017).

10.25+ Form of 2018 Annual Performance Stock Award Agreement with CEO (incorporated herein by reference to Exhibit 10.1 of the Company's Quarterly Report on Form 10-Q for the period ended March 31, 2018).

10.26+ Form of 2018 Long-Term Performance Stock Award Agreement with executive officers (incorporated herein by reference to Exhibit 10.2 of the Company's Quarterly Report on Form 10-Q for the period ended March 31, 2018).

10.27 Software License Agreement by and between The Regents of the University of Colorado and Fairfield & Sons Ltd. dated as of December 22, 2006 (incorporated herein by reference to Exhibit 10.12 to Amendment No. 2 to the Company's Registration Statement on Form S-1 (No. 333-153632), filed on January 21, 2009). ***

10.28 Loan and Security Agreement between Rosetta Stone Ltd. and Silicon Valley Bank, executed on October 28, 2014 (incorporated herein by reference to Exhibit 99.3 filed to the Company's Current Report on Form 8-K filed on October 29, 2014).

10.29 First Amendment to Loan and Security Agreement between Rosetta Stone Ltd. and Silicon Valley Bank, effective as of March 31, 2015 (incorporated herein by reference to Exhibit 10.1 of the Company's Quarterly Report on Form 10-Q for the period ended March 31, 2015).

10.30	Second Amendment to Loan and Security Agreement between Rosetta Stone Ltd. and Silicon Valley Bank, effective as of May 1, 2015 (incorporated herein by reference to Exhibit 10.3 of the Company's Quarterly Report on Form 10-Q for the period ended March 31, 2015).
10.31	Third Amendment to Loan and Security Agreement dated as of June 29, 2015 between Silicon Valley Bank and Rosetta Stone Ltd. (incorporated herein by reference to Exhibit 10.1 of the Company's Quarterly Report on Form 10-Q for the period ended June 30, 2015).
10.32	Fourth Amendment to Loan and Security Agreement dated as of December 29, 2015 between Silicon Valley Bank and Rosetta Stone Ltd (incorporated herein by reference to Exhibit 10.42 of the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2015.).
10.33	Fifth Amendment to Loan and Security Agreement dated as of March 14, 2016 between Silicon Valley Bank and Rosetta Stone Ltd. (incorporated herein by reference to Exhibit 10.1 of the Company's Quarterly Report on Form 10-Q for the period ended March 31, 2016).
10.34	Sixth Amendment to Loan and Security Agreement dated as of March 10, 2017 between Silicon Valley Bank and Rosetta Stone Ltd. (incorporated herein by reference to Exhibit 10.45 of the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2016).
10.35 *	Seventh Amendment to Loan and Security Agreement dated as of March 4, 2019 between Silicon Valley Bank and Rosetta Stone Ltd. and Lexia Learning Systems LLC
21.1 *	Rosetta Stone Inc. Subsidiaries.
23.1 *	Consent of Deloitte & Touche LLP, independent registered public accounting firm.
24.1 *	Power of Attorney.
31.1 *	Certifications of Principal Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2 *	Certifications of Principal Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1 *	Certifications of Principal Executive Officer Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2 *	Certifications of Principal Financial Officer Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS *	XBRL Instance Document.
101.SCH *	XBRL Taxonomy Extension Schema.
101.CAL *	XBRL Taxonomy Extension Calculation Linkbase.
101.DEF *	XBRL Taxonomy Extension Definition Linkbase.
101.LAB *	XBRL Taxonomy Extension Label Linkbase.

101.PRE * XBRL Taxonomy Extension Presentation Linkbase.

* Filed herewith.

*** Portions of this exhibit have been omitted pursuant to a request for confidential treatment.

\+ Identifies management contracts and compensatory plans or arrangements.

Item 16. Form 10-K Summary

Not applicable.

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SIGNATURES

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

ROSETTA STONE INC.

By: /s/ A. JOHN HASS III
A. John Hass III
Chief Executive Officer
and Chairman of the Board

Date: March 6, 2019

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/s/ A. JOHN HASS III A. John Hass III	Chief Executive Officer and Chairman of the Board (Principal Executive Officer)	March 6, 2019
/s/ THOMAS M. PIERNO Thomas M. Pierno	Chief Financial Officer (Principal Financial Officer)	March 6, 2019
/s/ M. SEAN HARTFORD M. Sean Hartford	Vice President, Controller and Principal Accounting Officer (Principal Accounting Officer)	March 6, 2019
/s/ PATRICK W. GROSS Patrick W. Gross	Director	March 6, 2019

/s/ LAURENCE FRANKLIN Laurence Franklin	Director	March 6, 2019
/s/ DAVID P. NIERENBERG David P. Nierenberg	Director	March 6, 2019
/s/ STEVEN P. YANKOVICH Steven P. Yankovich	Director	March 6, 2019
/s/ JESSIE WOOLLEY-WILSON Jessie Woolley-Wilson	Director	March 6, 2019
/s/ GEORGE A. LOGUE George A. Logue	Director	March 6, 2019

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INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the stockholders and Board of Directors of Rosetta Stone Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Rosetta Stone Inc. and subsidiaries (the "Company") as of December 31, 2018 and 2017, and the related consolidated statements of operations, comprehensive loss, changes in stockholders' equity (deficit), and cash flows for each of the three years in the period ended December 31, 2018, and the related notes (collectively referred to as the "financial statements"). In our opinion the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of operations and its cash flows for each of the three years in the period ended December 31, 2018, in conformity with accounting principles generally accepted in the United States of America.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated March 6, 2019, expressed an unqualified opinion on the Company's internal control over financial reporting.

Basis of Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ DELOITTE & TOUCHE LLP

McLean, Virginia

March 6, 2019

We have served as the Company's auditor since 2004.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the stockholders and Board of Directors of Rosetta Stone Inc.

Opinion on Internal Control over Financial Reporting

We have audited the internal control over financial reporting of Rosetta Stone Inc. and subsidiaries (the “Company”) as of December 31, 2018, based on criteria established in Internal Control-Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by COSO.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated financial statements as of and for the year ended December 31, 2018 of the Company and our report dated March 6, 2019, expressed an unqualified opinion on those financial statements.

Basis for Opinion

The Company’s management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management’s annual report on internal control over financial reporting. Our responsibility is to express an opinion on the Company’s internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control over Financial Reporting

A company’s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company’s internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company’s assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ DELOITTE & TOUCHE LLP

McLean, Virginia

March 6, 2019

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ROSETTA STONE INC.

CONSOLIDATED BALANCE SHEETS

(in thousands, except per share amounts)

	As of December 31,	
	2018	2017
Assets		
Current assets:		
Cash and cash equivalents	$38,092	$42,964
Restricted cash	82	72
Accounts receivable (net of allowance for doubtful accounts of $372 and $375, at December 31, 2018 and December 31, 2017, respectively)	21,950	24,517
Inventory	933	3,536
Deferred sales commissions	11,597	14,466
Prepaid expenses and other current assets	4,041	4,543
Total current assets	76,695	90,098
Deferred sales commissions	6,933	3,306
Property and equipment, net	36,405	30,649
Goodwill	49,239	49,857
Intangible assets, net	15,850	19,184
Other assets	2,136	1,661
Total assets	$187,258	$194,755
Liabilities and stockholders' (deficit) equity		
Current liabilities:		
Accounts payable	$8,938	$8,984
Accrued compensation	9,046	10,948
Income tax payable	328	384
Obligations under capital lease	450	450
Other current liabilities	13,475	16,454
Deferred revenue	113,378	110,670
Total current liabilities	145,615	147,890
Deferred revenue	49,507	40,593
Deferred income taxes	2,776	1,968
Obligations under capital lease	1,337	1,850
Other long-term liabilities	31	31
Total liabilities	199,266	192,332
Commitments and contingencies (Note 15)		
Stockholders' (deficit) equity:		
Preferred stock, $0.001 par value; 10,000 and 10,000 shares authorized, zero and zero shares issued and outstanding at December 31, 2018 and December 31, 2017, respectively)	—	—
Non-designated common stock, $0.00005 par value, 190,000 and 190,000 shares authorized, 24,426 and 23,783 shares issued, and 23,426 and 22,783 shares outstanding, at December 31, 2018 and December 31, 2017, respectively)	2	2

Additional paid-in capital	202,355	195,644
Treasury stock, at cost; 1,000 and 1,000 shares at December 31, 2018 and December 31, 2017, respectively)	(11,435)	(11,435)
Accumulated loss	(199,592)	(178,890)
Accumulated other comprehensive loss	(3,338)	(2,898)
Total stockholders' (deficit) equity	(12,008)	2,423
Total liabilities and stockholders' (deficit) equity	$187,258	$194,755

See accompanying notes to consolidated financial statements

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ROSETTA STONE INC.

CONSOLIDATED STATEMENTS OF OPERATIONS

(in thousands, except per share amounts)

	Years Ended December 31,		
	2018	2017	2016
Revenue:			
Subscription and service	$170,685	$168,442	$154,336
Product	2,949	16,151	39,753
Total revenue	173,634	184,593	194,089
Cost of revenue:			
Cost of subscription and service revenue	32,010	26,082	23,676
Cost of product revenue	3,912	7,539	10,645
Total cost of revenue	35,922	33,621	34,321
Gross profit	137,712	150,972	159,768
Operating expenses			
Sales and marketing	98,911	96,660	114,340
Research and development	25,210	24,747	26,273
General and administrative	33,210	34,066	40,501
Impairment	—	—	3,930
Lease abandonment and termination	—	—	1,644
Total operating expenses	157,331	155,473	186,688
Loss from operations	(19,619)	(4,501)	(26,920)
Other income and (expense):			
Interest income	103	66	46
Interest expense	(313)	(491)	(470)
Other income and (expense)	165	881	2,297
Total other income and (expense)	(45)	456	1,873
Loss before income taxes	(19,664)	(4,045)	(25,047)
Income tax expense (benefit)	1,809	(2,499)	2,503
Net loss	$(21,473)	$(1,546)	$(27,550)
Loss per share:			
Basic	$(0.95)	$(0.07)	$(1.25)
Diluted	$(0.95)	$(0.07)	$(1.25)
Common shares and equivalents outstanding:			
Basic weighted average shares	22,705	22,244	21,969
Diluted weighted average shares	22,705	22,244	21,969

See accompanying notes to consolidated financial statements

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ROSETTA STONE INC.

CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS

(in thousands)

	Years Ended December 31,		
	2018	2017	2016
Net loss	$(21,473)	$(1,546)	$(27,550)
Other comprehensive (loss) income, net of tax:			
Foreign currency translation (loss) gain	(440)	811	(1,483)
Other comprehensive (loss) income	(440)	811	(1,483)
Comprehensive loss	$(21,913)	$(735)	$(29,033)

See accompanying notes to consolidated financial statements

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ROSETTA STONE INC.

CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' (DEFICIT) EQUITY

(in thousands)

	Non-Designated Common Stock Shares	Amount	Additional Paid-in Capital	Treasury Stock	Accumulated Loss	Accumulated Other Comprehensive Loss	Total Stockholders' (Deficit) / Equity
Balance—January 1, 2016	21,806	$ 2	$ 185,863	$ (11,435)	$ (149,794)	$ (2,226)	$ 22,410
Stock issued upon the exercise of stock options	13	—	58	—	—	—	58
Restricted stock award vesting	255	—	—	—	—	—	—
Stock-based compensation expense	—	—	4,906	—	—	—	4,906
Net loss	—	—	—	—	(27,550)	—	(27,550)
Other comprehensive loss	—	—	—	—	—	(1,483)	(1,483)
Balance—December 31, 2016	22,074	$ 2	$ 190,827	$ (11,435)	$ (177,344)	$ (3,709)	$ (1,659)
Stock issued upon the exercise of stock options	79	—	676	—	—	—	676
Restricted stock award vesting	163	—	—	—	—	—	—
Stock-based compensation expense	—	—	4,141	—	—	—	4,141
Net loss	—	—	—	—	(1,546)	—	(1,546)
Other comprehensive income	—	—	—	—	—	811	811
Balance—December 31, 2017	22,316	$ 2	$ 195,644	$ (11,435)	$ (178,890)	$ (2,898)	$ 2,423
Stock issued upon the exercise of stock options	207	—	2,236	—	—	—	2,236
Restricted stock award and performance stock unit vesting	389	—	—	—	—	—	—
Stock-based compensation expense	—	—	4,475	—	—	—	4,475
Net loss	—	—	—	—	(21,473)	—	(21,473)
Cumulative effect adjustment - adoption of ASC 606	—	—	—	—	771	—	771
Other comprehensive loss	—	—	—	—	—	(440)	(440)
Balance—December 31, 2018	22,912	$ 2	$ 202,355	$ (11,435)	$ (199,592)	$ (3,338)	$ (12,008)

See accompanying notes to consolidated financial statements

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ROSETTA STONE INC.

CONSOLIDATED STATEMENTS OF CASH FLOWS

(in thousands)

	Years Ended December 31,		
	2018	2017	2016
CASH FLOWS FROM OPERATING ACTIVITIES:			
Net loss	$(21,473)	$(1,546)	$(27,550)
Adjustments to reconcile net loss to cash provided by operating activities:			
Stock-based compensation expense	4,475	4,141	4,906
Gain on foreign currency transactions	(298)	(573)	(2,449)
Bad debt expense (recovery)	168	(51)	709
Depreciation and amortization	14,616	12,009	13,322
Deferred income tax expense (benefit)	792	(4,201)	1,162
Loss (gain) on disposal of equipment	21	(5)	179
Amortization of deferred financing costs	114	296	274
Loss on impairment	—	—	3,930
Loss from equity method investments	—	100	45
Gain on divestiture of subsidiary	—	(506)	—
Net change in:			
Accounts receivable	2,219	7,584	14,681
Inventory	2,603	3,266	538
Deferred sales commissions	(781)	491	919
Prepaid expenses and other current assets	375	(604)	(167)
Income tax receivable or payable	(60)	(447)	719
Other assets	(525)	(455)	668
Accounts payable	4	(1,765)	(74)
Accrued compensation	(1,863)	69	2,701
Other current liabilities	(2,885)	(6,450)	(13,261)
Other long-term liabilities	—	(1,243)	558
Deferred revenue	12,941	8,850	(192)
Net cash provided by operating activities	10,443	18,960	1,618
CASH FLOWS FROM INVESTING ACTIVITIES:			
Purchases of property and equipment	(16,889)	(12,944)	(12,514)
Proceeds from sale of fixed assets	17	12	38
Proceeds on divestiture of subsidiary	—	110	—
Net cash used in investing activities	(16,872)	(12,822)	(12,476)
CASH FLOWS FROM FINANCING ACTIVITIES:			
Proceeds from the exercise of stock options	2,236	676	58
Payment of deferred financing costs	(4)	(232)	(183)
Payments under capital lease obligations	(441)	(562)	(533)
Net cash provided by (used in) financing activities	1,791	(118)	(658)
(Decrease) increase in cash, cash equivalents, and restricted cash	(4,638)	6,020	(11,516)

Effect of exchange rate changes in cash, cash equivalents, and restricted cash	(224)	419	251
Net (decrease) increase in cash, cash equivalents, and restricted cash	(4,862)	6,439	(11,265)
Cash, cash equivalents, and restricted cash—beginning of year	43,036	36,597	47,862
Cash, cash equivalents, and restricted cash—end of year	$38,174	$43,036	$36,597
SUPPLEMENTAL CASH FLOW DISCLOSURE:			
Cash paid during the periods for:			
Interest	$199	$195	$197
Income taxes, net of refund	$1,626	$1,896	$604
Noncash financing and investing activities:			
Accrued liability for purchase of property and equipment	$1,277	$967	$270
Equipment acquired under capital lease	$25	$—	$27

See accompanying notes to consolidated financial statements

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ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. NATURE OF OPERATIONS

Rosetta Stone Inc. and its subsidiaries ("Rosetta Stone," or the "Company") develop, market and support a suite of language-learning and literacy solutions consisting of web-based software subscriptions, perpetual software products, online and professional services, audio practice products and mobile applications. The Company's offerings are sold on a direct basis and through select third party retailers and distributors. The Company provides its solutions to customers through the sale of web-based software subscriptions, mobile applications, and packaged software, domestically and in certain international markets.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Principles of Consolidation

The accompanying consolidated financial statements include the accounts of Rosetta Stone Inc. and its wholly owned subsidiaries. All intercompany accounts and transactions have been eliminated in consolidation.

Use of Estimates

The preparation of financial statements in accordance with GAAP requires management to make certain estimates and assumptions. The amounts reported in the consolidated financial statements include significant estimates and assumptions that have been made, including, but not limited to, those related to revenue recognition, allowance for doubtful accounts, estimated sales returns and reserves, stock-based compensation, restructuring costs, fair value of intangibles and goodwill, disclosure of contingent assets and liabilities, disclosure of contingent litigation, allowance for valuation of deferred tax assets, and the Company's quarterly going concern assessment. The Company bases its estimates and assumptions on historical experience and on various other judgments that are believed to be reasonable under the circumstances. The Company continuously evaluates its estimates and assumptions. Actual results may differ from these estimates and assumptions.

Basis of Presentation

As discussed in this Note 2, the Company adopted certain recently issued accounting standards effective January 1, 2018. The new revenue recognition standard ("ASC 606") was adopted using the modified retrospective method. As such, the comparative information has not been restated under ASC 606 and continues to be reported under the accounting standards in effect for those prior comparative periods. See the Company’s Annual Report on Form 10-K filed with the SEC on March 7, 2018 for revenue recognition policies that were in effect in prior periods before adoption of ASC 606. Additionally, accounting standard update 2016-18 ("ASU 2016-18") related to the presentation of restricted cash in the statements of cash flow was adopted retrospectively for all comparative periods.

Recently Issued Accounting Standards

Accounting Standards Adopted During the Period: During 2018, the Company adopted the following recently issued Accounting Standard Updates ("ASU"):

In November 2016, the FASB issued ASU 2016-18, Statement of Cash Flows (Topic 230) Restricted Cash a consensus of the FASB Emerging Issues Task Force. Under ASU 2016-18, amounts generally described as restricted cash should be included with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statements of cash flows. The Company retrospectively adopted ASU 2016-18 beginning January 1, 2018. The Company does not consider its restricted cash balances to be material for further disclosure or reconciliation. The adoption of this guidance did not impact the Company’s consolidated financial position, results of operations, or footnote disclosures.

In February 2018, the FASB issued ASU No. 2018-02, Income Statement - Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income ("ASU 2018-02"). ASU 2018-02 provided financial statement preparers with an option to reclassify stranded tax effects within accumulated other comprehensive income to retained earnings in each period in which the effect of the change in the U.S. federal corporate income tax rate in the Tax Cuts and Jobs Act of 2017 (or portion thereof) was recorded. ASU 2018-02 is effective for fiscal years beginning after December 15, 2018. Early adoption is permitted for any interim period for which financial statements have not been issued. The Company adopted ASU 2018-02 effective January 1, 2018. Due to the presence of a full valuation allowance, adoption did not have a material impact on the Company's consolidated financial statements and the disclosure requirements under ASU 2018-02 were not applicable.

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ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

In May 2014, the FASB issued ASC 606 which provided a new standard related to revenue recognition. Under ASC 606, revenue is recognized when a customer obtains control of promised goods or services in an amount that reflects the consideration the entity expects to receive in exchange for those goods or services. In addition, the standard requires disclosure of the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers.

The Company adopted ASC 606 effective January 1, 2018. As a result, the Company has changed its accounting for revenue. The Company adopted ASC 606 using the modified retrospective method applied using hindsight to those contracts that were not complete as of January 1, 2018. The cumulative effect of initially applying ASC 606 totaled $0.8 million and was recognized as an adjustment to reduce the opening balance of accumulated loss at January 1, 2018. The comparative information has not been restated and continues to be reported under the accounting standards in effect for those periods.

The Company implemented or modified certain internal controls and key system functionality to enable the preparation of financial information under ASC 606.

The most significant impact of ASC 606 to the Company related to the accounting for offerings that contained perpetual software for which customers took possession, which occurs only in the Company's Consumer Language segment. Prior to the adoption of ASC 606, revenue was recognized at the time of delivery for these perpetual software products due to the fact that the Company had established vendor specific objective evidence of the fair value ("VSOE") for the undelivered services in the arrangement. To the extent that VSOE was not established for undelivered services bundled with perpetual software, all revenue was deferred and recognized as the services were provided. Under the new guidance in ASC 606, the requirement to establish VSOE of the undelivered services in order to recognize revenue at the time of delivery no longer exists and revenue is allocated to performance obligations by estimating the standalone selling price and using a relative value allocation method. Revenue recognition related to subscription services and professional services remained substantially unchanged. Adoption had no tax impact due to the presence of a full valuation allowance. The impact of adoption to the Company’s consolidated statement of operations for the year ended December 31, 2018 was as follows (in thousands except for per share amounts):

	Year ended December 31, 2018		
	As reported	Effect of change higher/(lower)	Balances without adoption of ASC 606
Revenue:			
Subscription and service	$170,685	$ (1,593)	$172,278
Product	2,949	3,337	(388)
Total revenue	173,634	1,744	171,890

Gross profit	137,712	1,744	135,968
Loss from operations	(19,619)	1,744	(21,363)
Loss before income taxes	(19,664)	1,744	(21,408)
Net loss	$(21,473)	$ 1,744	$(23,217)
Loss per share:			
Basic	$(0.95)	$ 0.07	$(1.02)
Diluted	$(0.95)	$ 0.07	$(1.02)

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ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Adoption of ASC 606 had impacts to the consolidated balance sheet as well, primarily related to the presentation of deferred commissions and the reduction to deferred revenue. The Company's prior methodology was to bifurcate deferred commissions between current and non-current classifications. Under ASC 606, deferred commissions are classified as non-current unless the original amortization period is one year or less. Deferred revenue decreased on adoption of ASC 606 due to the changes in the timing of revenue recognition noted above. The impact of adoption to the Company’s consolidated balance sheet as of December 31, 2018 was as follows (in thousands):

	As of December 31, 2018		
	As reported	Effect of change higher/(lower)	Balances without adoption of ASC 606
Deferred sales commissions - current	11,597	(3,935)	15,532
Total current assets	76,695	(3,935)	80,630
Deferred sales commissions - non-current	6,933	3,935	2,998
Other current liabilities	13,475	(172)	13,647
Deferred revenue	113,378	(2,343)	115,721
Total current liabilities	145,615	(2,515)	148,130
Total liabilities	199,266	(2,515)	201,781
Accumulated loss	(199,592)	2,515	(202,107)
Total stockholders' deficit	(12,008)	2,515	(14,523)

The impact of adoption to the Company’s reportable segments for the year ended December 31, 2018 was as follows (in thousands):

	Year ended December 31, 2018		
Segment Revenue:	As reported	Effect of change higher/(lower)	Balances without adoption of ASC 606

Literacy	$52,766	$ (136)	$52,902
E&E Language	60,376	14	60,362
Consumer Language	60,492	1,866	58,626
Total revenue	$173,634	$ 1,744	$171,890

Accounting Standards Not Yet Adopted: The following ASUs were recently issued but have not yet been adopted by the Company:

In August 2018, the FASB issued ASU No. 2018-13, Fair Value Measurement (Topic 820): Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement ("ASU 2018-13"). ASU 2018-13 modifies the disclosure requirements for fair value measurements by removing, modifying, or adding certain disclosures. ASU 2018-13 is effective for fiscal years beginning after December 15, 2019, and interim periods within those fiscal years, with early adoption permitted for any eliminated or modified disclosures. The Company is in the process of evaluating the effect of adopting this new accounting guidance to determine the impact it may have on the Company's consolidated financial statements.

In January 2017, the FASB issued ASU No. 2017-04, Intangibles - Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment ("ASU 2017-04"). ASU 2017-04 simplifies the subsequent measurement of goodwill and eliminates Step 2 from the goodwill impairment test. ASU 2017-04 is effective for annual and interim goodwill tests beginning after December 15, 2019. Early adoption is permitted for interim or annual goodwill impairment tests performed on testing dates on or after January 1, 2017. The Company is in the process of evaluating the guidance. Given the prospective adoption application, there is no impact on the Company's historical consolidated financial statements and disclosures.

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ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

In June 2016, the FASB issued ASU No. 2016-13, Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments ("ASU 2016-13"). ASU 2016-13 changes the methodology for measuring credit losses of financial instruments and the timing of when such losses are recorded. ASU 2016-13 is effective for fiscal years, and interim periods within those years, beginning after December 15, 2019. Early adoption is permitted for fiscal years, and interim periods within those years, beginning after December 15, 2018. The Company is in the process of evaluating the impact of the new guidance on the Company's consolidated financial statements and disclosures. However based on a preliminary assessment and as the Company does not hold significant financial instruments, the Company does not expect the adoption of this guidance to have a material impact on its consolidated financial statements.

In February 2016, the FASB issued ASU No. 2016-02, Leases (Topic 842) ("ASU 2016-02") that requires lessees to recognize assets and liabilities for most leases. In July 2018, the FASB issued ASU No. 2018-10, Leases (Topic 842): Codification Improvements which impacts narrow aspects of the guidance issued under ASU 2016-02. In July 2018, the FASB issued ASU No. 2018-11, Leases (Topic 842): Targeted Improvements which provides a new transition method and a practical expedient for separating components of a contract. Collectively these ASUs comprise the new lease standard ("New Lease Standard"). Under the New Lease Standard, entities will be required to record most leases on their balance sheets. A lessee would recognize a lease liability for the obligation to make lease payments and a right-of-use asset for the right to use the underlying asset for the lease term. Lease expense recognition is largely unchanged. The New Lease Standard is effective for public entities in fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. Early adoption is permitted, however the Company has not early adopted this guidance. The New Lease Standard is required to be adopted using a modified retrospective approach. The Company does not expect to recognize a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption as the Company expects to elect the package of practical expedients. The Company will continue to report comparative prior period information under the accounting standards in effect for those prior comparative periods. The Company expects its leases designated as operating leases in Note 15, "Commitments and Contingencies," will be reported on the consolidated balance sheets upon adoption. Upon adoption effective January 1, 2019, the Company expects to record right-of-use assets of approximately $5.4 million and corresponding lease liabilities of approximately $5.4 million on the consolidated balance sheets for its operating leases. The New Lease Standard is not expected to have a material impact on the consolidated statements of operations and comprehensive loss or the consolidated statements of cash flows. The Company is in the process of implementing the New Lease Standard.

Revenue Recognition

Nature of Revenue: The Company accounts for revenue contracts with customers by applying the requirements of ASC 606, which includes the following steps:

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

The Company's primary sources of revenue are web-based software subscriptions, mobile applications, online services, perpetual product software, and bundles of perpetual product software and online services. The Company also generates revenue from the sale of audio practice products and professional services. With the completion of the SaaS transition, perpetual software sales are no longer a significant portion of the business.

Revenue is recognized upon transfer of control of promised goods or services to customers in an amount that reflects the consideration expected to be received in exchange for those goods or services. Revenue is recognized net of allowances for returns. Revenue is also recognized net of any taxes collected from customers, which are subsequently remitted to governmental authorities.

Subscription and service revenue consists of fees associated with non-cancellable web-based software subscriptions, online services, professional services, and mobile applications. Subscription revenue is generated from contracts with customers that provide access to hosted software over a contract term without the customer taking possession of the software. Subscription revenue is recognized ratably over the contract period as the performance obligation is satisfied. Subscription revenue is generated by all three reportable segments and range from short-term to multi-year contracts. Online services are typically sold in short-term service periods and include dedicated online conversational coaching services and access to online communities of language learners. Professional services include implementation services. Online services revenue and professional services revenue are recognized as the services are provided. Expired services are forfeited and revenue is recognized upon expiry.

ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Product revenue primarily consists of revenue from perpetual language-learning software and audio practice products. Audio practice products are often combined with language-learning software and sold as a solution. Perpetual software revenue is recognized at the point in time when the software is made available to the customer. Audio practice products are recognized at the point in time that the audio practice products are delivered to the customer. As post-contract support ("PCS") is provided to customers who purchase perpetual software at no charge, a portion of the transaction price is allocated to PCS service revenue and recognized as the PCS services are provided, which is typically up to three months from the date of purchase. With the completion of the SaaS transition, perpetual software sales are no longer a significant portion of the business.

See Note 18 - "Segment Information" for further information on the disaggregation of revenue, including revenue by reportable segment, geographic area, and revenue type.

Performance Obligations: A performance obligation is a promise in a contract to transfer a distinct good or service to the customer, and is the unit of account in ASC 606. A contract's transaction price is allocated to each distinct performance obligation and recognized as revenue when, or as, the performance obligation is satisfied. The Company's performance obligations are satisfied at a point in time or over time as delivery occurs or as work progresses.

Significant Judgments: Some of the Company's contracts with customers include promises to transfer multiple products and services to a customer. Determining whether products and services are considered distinct performance obligations that should be accounted for separately, versus together, requires significant judgment. This includes determining whether distinct services are part of a series of distinct services that are substantially the same. When subscription services are sold with professional services, judgment is required to determine whether the professional services are distinct and can be accounted for separately. In the E&E Language segment, the Company has concluded that each promised service within the language-learning subscription is delivered concurrently with all other promised services over the contract term and, as such, concluded that these promises are a single performance obligation that includes a series of distinct services that have the same pattern of transfer to the customer. When there are multiple performance obligations, revenue is allocated to each performance obligation based on its relative standalone selling price ("SSP"). Judgment is required to determine the SSP for each distinct performance obligation where SSP is not directly observable, such as when the product or service is not sold separately, SSP is determined using internally published price lists which include suggested sales prices for each performance obligation based on the type of client and volume purchased. These price lists are derived from past experience and from the expectation of obtaining a reasonable margin based on the cost to fulfill each performance obligation.

Subscription revenue is recognized ratably over the contract period as the performance obligation is satisfied. Certain Consumer Language offerings have contracts with no fixed duration and are marketed as lifetime subscriptions. For these lifetime subscriptions, the Company estimates the expected contract period as the greater of the typical customer usage period or the longest fixed-period duration subscription that is currently marketed. The Company's current expected contract period for lifetime subscriptions is 24 months.

Certain Consumer Language offerings are sold with a right of return and the Company may provide other credits or incentives. These rights are accounted for as variable consideration when estimating the amount of revenue to recognize by utilizing the expected value method. Returns and credits are estimated at contract inception based on historical return rates, estimated channel inventory levels, the timing of new product introductions and other factors.

Reserves for returns and credits are updated at the end of each reporting period as additional information becomes available.

The Company distributes its products and services both directly to the end customer and indirectly through resellers. Resellers earn commissions generally calculated as a fixed percentage of the gross sale amount to the end customer. The Company evaluates each of its reseller relationships to determine whether it is the principal (where revenue is recognized at the gross amount) or agent (where revenue is recognized net of the reseller commission). In making this determination the Company evaluates a variety of factors including the amount of control the Company is able to exercise over the transactions.

Contract Balances: The timing of revenue recognition, invoicing, and cash collection results in accounts receivable and deferred revenue in the consolidated balance sheets. Payment from customers is often received in advance of services being provided, resulting in deferred revenue. Accounts receivable is recorded when there is an executed customer contract and the right to the consideration becomes unconditional. Contract assets such as unbilled receivables are not material.

The allowance for doubtful accounts reflects the best estimate of probable losses inherent in the accounts receivable balance. The Company establishes an allowance for doubtful accounts based on specific risks identified, historical experience, and other currently available evidence.

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ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Payment terms and conditions vary by contract type and customer. For the E&E Language and Literacy segments, payment terms generally range from 30 to 90 days. In the Consumer Language segment, resellers are generally granted payment terms of 45 days. Within Consumer Language, sales to end customers via the Rosetta Stone ecommerce website are done by credit card, which generally are settled within 7-10 days and may be made in installments. In instances where the timing of revenue recognition differs from the timing of invoicing, the Company has determined that contracts generally do not include a significant financing component. The primary purpose of invoicing terms is to provide customers with simplified and predictable ways of purchasing products and services and not to provide customers with financing.

Deferred revenue is comprised mainly of unearned revenue related to subscription services which is recognized ratably over the subscription period. Deferred revenue also includes payments for professional services and online services to be performed in the future which are earned as revenue when the service is provided. Our practice is to ship our products promptly upon receipt of purchase orders from customers; consequently, contract backlog is not material.

The opening and closing balances of the Company’s accounts receivable and deferred revenue are as follows (in thousands):

	Accounts Receivable	Deferred Revenue (current)	Deferred Revenue (non-current)
Opening balance as of January 1, 2018	$ 24,517	$ 110,670	$ 40,593
Increase/(decrease), net	(2,567)	2,708	8,914
Ending balance as of December 31, 2018	$ 21,950	$ 113,378	$ 49,507

The amount of revenue recognized in the year ended December 31, 2018 that was included in the opening January 1, 2018 deferred revenue balance was $116.5 million. The vast majority of this revenue consists of deferred subscription revenue. The amount of revenue recognized from performance obligations satisfied in prior periods was not material.

The following table sets forth deferred revenue by reportable segment which represents the Company's unfulfilled performance obligations as of December 31, 2018 and the estimated revenue expected to be recognized in the future related to these performance obligations (in thousands):

As of December 31, 2018				
Total	Less than	1-3 Years	3-5 Years	More than

		1 Year			5 Years
Literacy	$47,457	$38,252	$8,458	$711	$36
E&E Language	58,047	41,721	9,955	1,918	4,453
Consumer Language	57,381	33,405	10,462	1,764	11,750
Total	$162,885	$113,378	$28,875	$4,393	$16,239

The Company entered into a series of agreements with SOURCENEXT Corporation (“SOURCENEXT”), comprised of a single performance obligation associated with the perpetual license of certain intellectual property, software, and product code for exclusive development and sale of language and education-related products in Japan. The Company estimated a 20 year period to recognize the performance obligation. As of December 31, 2018, deferred revenue associated with SOURCENEXT totaled $16.2 million, which will be recognized ratably through April 2037 and comprised the majority of the Consumer Language non-current deferred revenue. As this customer relationship progresses, the Company will prospectively reassess the recognition period as needed.

Assets Recognized from Costs to Obtain a Contract with a Customer: Assets are recognized for the incremental costs of obtaining a contract with a customer, which primarily represent sales commissions paid when a customer contract is either recorded as revenue or deferred revenue. Sales commissions paid to obtain non-cancellable subscription contracts are deferred and amortized in proportion to the period over which the revenue is recognized from the related contract. Deferred sales commissions are amortized to sales and marketing expense on the consolidated statements of operations. Deferred sales commissions are classified as non-current unless the associated amortization period is one year or less. As of December 31, 2018, the total deferred sales commissions balance was $18.5 million. Amortization of deferred sales commissions recognized during the year ended December 31, 2018 was $23.0 million.

ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Cash and Cash Equivalents

Cash and cash equivalents consist of highly liquid investments with original maturities of three months or less and demand deposits with financial institutions.

Restricted Cash

Restricted cash is generally used to reimburse funds to employees under the Company's flexible benefit plan and deposits received on subleased properties.

Accounts Receivable and Allowance for Doubtful Accounts

Accounts receivable consist of amounts due to the Company from its normal business activities. The Company provides an allowance for doubtful accounts to reflect the expected non-collection of accounts receivable based on past collection history and specific risks identified.

Inventories

Inventories are stated at the lower of cost, determined on a first-in first-out basis, or market. The Company reviews inventory for excess quantities and obsolescence based on its best estimates of future demand, product lifecycle status and product development plans. The Company uses historical information along with these future estimates to establish a new cost basis for obsolete and potential obsolete inventory. See Note 3 "Inventory" for disclosures on the Company's inventory balances.

Concentrations of Credit Risk

Accounts receivable and cash and cash equivalents subject the Company to its highest potential concentrations of credit risk. The Company reserves for credit losses on its trade accounts receivable. In addition, the Company maintains cash and investment balances in accounts at various banks and brokerage firms. The Company has not experienced any losses on cash and cash equivalent accounts to date.

The Company sells its offerings to retailers, resellers, government agencies, and individual consumers and extends credit based on an evaluation of the customer's financial condition, and may require collateral, such as letters of credit, in certain circumstances. Exposure to losses on receivables is principally dependent on each customer's financial condition. The Company monitors its exposure for credit losses and maintains allowances for anticipated losses. No customer accounted for more than 10% of the Company's revenue during the years ended December 31, 2018, 2017 or 2016. The four largest distributor and reseller receivable balances collectively represented 19% and 17% of accounts receivable as of December 31, 2018 and 2017, respectively. One customer accounted for 12% of accounts receivable as of December 31, 2018. No customer accounted for more than 10% of accounts receivable as of December 31, 2017. The Company maintains trade credit insurance for certain customers to provide coverage, up to a certain limit, in the event of insolvency of some customers.

Fair Value of Financial Instruments

The Company values its assets and liabilities using the methods of fair value as described in ASC topic 820, Fair Value Measurements and Disclosures, ("ASC 820"). ASC 820 establishes a three-tier fair value hierarchy, which prioritizes the inputs used in measuring fair value. The three levels of the fair value hierarchy are described below:

Level 1: Quoted prices for identical instruments in active markets.

Level 2: Quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations whose inputs are observable or whose significant value drivers are observable.

Level 3: Significant inputs to the valuation model are unobservable.

The carrying amounts reported in the consolidated balance sheets for cash and cash equivalents, restricted cash, accounts receivable, accounts payable and other accrued expenses approximate fair value due to relatively short periods to maturity.

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ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Property and Equipment

Property and equipment are stated at cost, less accumulated depreciation. Depreciation on property, building and leasehold improvements, furniture, equipment, and software is computed on a straight-line basis over the estimated useful lives of the assets, as follows:

Software	3 years
Computer equipment	3-5 years
Automobiles	5 years
Furniture and equipment	5-7 years
Building	39 years
Building improvements	15 years
Leasehold improvements	lesser of lease term or economic life
Assets under capital leases	lesser of lease term or economic life

Expenses for repairs and maintenance that do not extend the life of equipment are charged to expense as incurred. Expenses for major renewals and betterments, which significantly extend the useful lives of existing property and equipment, are capitalized and depreciated. Upon retirement or disposition of property and equipment, the cost and related accumulated depreciation are removed from the accounts and any resulting gain or loss is recognized. See Note 4 "Property and Equipment" for the Company's additional disclosures.

Valuation of Long-Lived Assets

In accordance with ASC topic 360, Property, Plant and Equipment ("ASC 360"), the Company evaluates the recoverability of its long-lived assets. ASC 360 requires recognition of impairment of long-lived assets in the event that the net book value of such assets exceeds the future undiscounted net cash flows attributable to such assets. Impairment, if any, is recognized in the period of identification to the extent the carrying amount of an asset exceeds the fair value of such asset.

Software Developed for Internal Use

The Company capitalizes software development costs related to certain of its software platforms developed exclusively to provide its web-based subscription services and other general and administrative use software in accordance with ASC subtopic 350-40: Internal-Use Software. Development costs for internal-use software are expensed as incurred until the project reaches the application development stage. Internal-use software is defined to have the following characteristics: (a) the software is internally developed, or modified solely to meet the Company's internal needs, and (b) during the software's development or modification, no substantive plan exists or is being developed to market the software externally. Internally developed software is amortized over a three -year useful life. See Note 4 "Property and Equipment" for a discussion of the software developed for internal use.

Intangible Assets

Intangible assets consist of acquired technology, including developed and core technology, customer related assets, trade name and trademark, and other intangible assets. Those intangible assets with finite lives are recorded at cost and amortized on a straight line basis over their expected lives in accordance with ASC topic 350, Intangibles—Goodwill and Other ("ASC 350").

Annually, as of December 31, and more frequently if a triggering event occurs, the Company reviews its indefinite-lived intangible asset for impairment in accordance with ASC 350. This guidance provides the option to first assess qualitative factors to determine whether it is more likely than not that an indefinite-lived intangible asset is impaired as a basis for determining whether it is necessary to perform the quantitative test. If necessary, the quantitative test is performed by comparing the fair value of indefinite lived intangible assets to the carrying value. In the event the carrying value exceeds the fair value of the assets, the assets are written down to their fair value. The Rosetta Stone trade name is the Company's only indefinite-lived intangible asset.

See Note 6 "Intangible Assets" for a discussion and results associated with the Company's recent intangible asset impairment tests.

ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Goodwill

Goodwill represents purchase consideration paid in a business combination that exceeds the values assigned to the net assets of acquired businesses. The Company tests goodwill for impairment annually on June 30 of each year or more frequently if impairment indicators arise. Goodwill is tested for impairment at the reporting unit level using a fair value approach, in accordance with the provisions of ASC 350. This guidance provides the option to first assess qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying value. If, based on a review of qualitative factors, it is more likely than not that the fair value of a reporting unit is less than its carrying value the Company performs a quantitative impairment test by comparing the fair value of a reporting unit with its carrying amount. If the carrying value exceeds the fair value, the Company measures the amount of impairment loss, if any.

See Note 5 "Goodwill" for a discussion and results associated with the Company's recent goodwill impairment tests. For income tax purposes, the goodwill balances with tax basis are amortized over a period of 15 years.

Guarantees

Indemnifications are provided of varying scope and size to certain E&E Language and Literacy customers against claims of intellectual property infringement made by third parties arising from the use of its products. The Company has not incurred any costs or accrued any liabilities as a result of such obligations.

Cost of Revenue

The cost of subscription and service revenue primarily represents costs associated with supporting the web-based subscription services and online language-learning services, which includes online language conversation coaching, hosting costs and depreciation. Also included are the costs of credit card processing and customer technical support in both cost of product revenue and cost of subscription and service revenue. Cost of product revenue consists of the direct and indirect materials and labor costs to produce and distribute the Company's products. Such costs include packaging materials, computer headsets, freight, inventory receiving, costs associated with product assembly, third-party royalty fees and inventory storage, obsolescence and shrinkage.

Research and Development

Research and development expenses include employee compensation costs, consulting fees and overhead costs associated with the development of the Company's solutions. The Company develops a portion of its language-learning software products for perpetual sale to external customers. The Company considers technological feasibility to be established when all planning, designing, coding, and testing has been completed according to design specifications. The Company has determined that technological feasibility for such software products is reached shortly before the products are released to manufacturing. Costs incurred after technological feasibility is established have not been material, and accordingly, the Company has expensed all research and development costs when incurred.

Income Taxes

The Company accounts for income taxes in accordance with ASC topic 740, Income Taxes ("ASC 740"), which provides for an asset and liability approach to accounting for income taxes. Deferred tax assets and liabilities represent the future tax consequences of the differences between the financial statement carrying amounts of assets and liabilities versus the tax basis of assets and liabilities. Under this method, deferred tax assets are recognized for deductible temporary differences, and operating loss and tax credit carryforwards. Deferred liabilities are recognized for taxable temporary differences. Deferred tax assets are reduced by a valuation allowance when, in the opinion of management, it is more likely than not that some portion or all of the deferred tax assets will not be realized. The impact of tax rate changes on deferred tax assets and liabilities is recognized in the year that the change is enacted.

Significant judgment is required to determine whether a valuation allowance is necessary and the amount of such valuation allowance, if appropriate. The valuation allowance is reviewed at each reporting period and is maintained until sufficient positive evidence exists to support a reversal.

When assessing the realization of the Company's deferred tax assets, the Company considers all available evidence, including:

- the nature, frequency, and severity of cumulative financial reporting losses in recent years;
- the carryforward periods for the net operating loss, capital loss, and foreign tax credit carryforwards;

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ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

- predictability of future operating profitability of the character necessary to realize the asset;
- prudent and feasible tax planning strategies that would be implemented, if necessary, to protect against the loss of the deferred tax assets; and
- the effect of reversing taxable temporary differences.

The evaluation of the recoverability of the deferred tax assets requires that the Company weigh all positive and negative evidence to reach a conclusion that it is more likely than not that all or some portion of the deferred tax assets will not be realized. The weight given to the evidence is commensurate with the extent to which it can be objectively verified. The more negative evidence that exists, the more positive evidence is necessary and the more difficult it is to support a conclusion that a valuation allowance is not needed.

The establishment of a valuation allowance has no effect on the ability to use the deferred tax assets in the future to reduce cash tax payments. The Company will continue to assess the likelihood that the deferred tax assets will be realizable at each reporting period and the valuation allowance will be adjusted accordingly, which could materially affect the Company's financial position and results of operations.

See Note 14 "Income Taxes" for additional disclosures including the impact and additional disclosures associated with the tax legislation commonly referred to as the Tax Cuts and Jobs Act of 2017 (the “Tax Act”), that was enacted on December 22, 2017.

Stock-Based Compensation

The Company accounts for its stock-based compensation in accordance with ASC topic 718, Compensation—Stock Compensation ("ASC 718"). Under ASC 718, all stock-based awards, including employee stock option grants, are recorded at fair value as of the grant date. For options granted with service and/or performance conditions, the fair value of each grant is estimated on the date of grant using the Black-Scholes option pricing model. For options granted with market-based conditions, the fair value of each grant is estimated on the date of grant using the Monte-Carlo simulation model. These methods require the use of estimates, including future stock price volatility, expected term and forfeitures.

As the Company does not have sufficient historical option exercise experience that spans the full 10 year contractual term for determining the expected term of options granted, the Company estimates the expected term of options using a combination of historical information and the simplified method for estimating the expected term. The Company uses its own historical stock price data to estimate its forfeiture rate and expected volatility over the most recent period commensurate with the estimated expected term of the awards. For the risk-free interest rate, the Company uses a U.S. Treasury Bond rate consistent with the estimated expected term of the option award.

The Company's restricted stock and restricted stock unit grants are accounted for as equity awards. Stock compensation expense associated with service-based equity awards is recognized in the statement of operations on a straight-line basis over the requisite service period, which is the vesting period. For equity awards granted with performance-based conditions, stock compensation expense is recognized in the statement of operations ratably for each vesting tranche based on the probability that operating performance conditions will be met and to what extent. Changes in the probability estimates associated with performance-based awards will be accounted for in the period of change using a cumulative catch-up adjustment to retroactively apply the new probability estimates. In any period in which the Company determines that achievement of the performance metrics is not probable, the Company ceases recording compensation expense and all previously recognized compensation expense for the performance-based award is reversed. For equity awards granted with market-based conditions, stock compensation expense is recognized in the statement of operations ratably for each vesting tranche regardless of meeting or not meeting the market conditions. See Note 9 "Stock-Based Compensation" for additional disclosures.

Restructuring Costs

Restructuring plans have been initiated in each of the years ended December 31, 2017 and 2016 to reduce headcount and other costs in order to support the strategic shift in business focus. In connection with these plans, the Company incurred restructuring related costs, including employee severance and related benefit costs, contract termination costs, and other related costs. These costs are included within Cost of sales and Sales and marketing, Research and development, and General and administrative operating expense categories in the Company's consolidated statements of operations.

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ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Employee severance and related benefit costs primarily include cash payments, outplacement services, continuing health insurance coverage, and other benefits. Where no substantive involuntary termination plan previously existed, these severance costs are generally considered “one-time” benefits and recognized at fair value in the period in which a detailed plan has been approved by management and communicated to the terminated employees. Severance costs pursuant to ongoing benefit arrangements, including termination benefits provided for in existing employment contracts, are recognized when probable and reasonably estimable.

Contract termination costs include penalties to cancel certain service and license contracts and costs to terminate operating leases. Contract termination costs are recognized at fair value in the period in which the contract is terminated in accordance with the contract terms.

Other related costs generally include external consulting and legal costs associated with the strategic shift in business focus. Such costs are recognized at fair value in the period in which the costs are incurred. See Note 12 "Restructuring" for additional disclosures.

Basic and Diluted Net Loss Per Share

Net loss per share is computed under the provisions of ASC topic 260, Earnings Per Share. Basic loss per share is computed by dividing net loss by the weighted average number of common shares outstanding during the period. Diluted loss per share is computed by dividing net loss by the weighted average number of common shares and potential common shares outstanding during the period. Potential common shares are included in the diluted computation when dilutive. Potentially dilutive shares are computed using the treasury stock method and primarily consist of shares issuable upon the exercise of stock options, restricted stock awards, restricted stock units and conversion of shares of preferred stock. Common stock equivalent shares are excluded from the diluted computation if their effect is anti-dilutive. When there is a net loss, there is a presumption that there are no dilutive shares as these would be anti-dilutive. See Note 11 "Basic and Diluted Net Loss Per Share" for additional disclosures.

Comprehensive Loss

Comprehensive loss consists of net loss and other comprehensive (loss) income. Other comprehensive (loss) income refers to revenues, expenses, gains, and losses that are not included in net loss, but rather are recorded directly in stockholders' (deficit) equity. For the years ended December 31, 2018, 2017, and 2016, the Company's comprehensive loss consisted of net loss and foreign currency translation (losses) gains. The other comprehensive (loss) income presented in the consolidated financial statements and the notes are presented net of tax. There has been no tax expense or benefit associated with the components other comprehensive (loss) income due to the presence of a full valuation allowance for each of the years ended December 31, 2018, 2017, and 2016.

Components of accumulated other comprehensive loss as of December 31, 2018 are as follows (in thousands):

	Foreign Currency	Total

Balance at beginning of period	$ (2,898)	$(2,898)
Other comprehensive loss before reclassifications	(440)	(440)
Amounts reclassified from accumulated other comprehensive loss	—	—
Net current period other comprehensive loss	(440)	(440)
Accumulated other comprehensive loss	$ (3,338)	$(3,338)

Upon divestiture of an investment in a foreign entity, the amount attributable to the accumulated translation adjustment component of that foreign entity is removed as a component of other comprehensive (loss) income and reported as part of the gain or loss on sale or liquidation of the investment.

Foreign Currency Translation and Transactions

The functional currency of the Company's foreign subsidiaries is their local currency. Accordingly, assets and liabilities of the foreign subsidiaries are translated into U.S. dollars at exchange rates in effect on the balance sheet date. Income and expense items are translated at average rates for the period. Translation adjustments are recorded as a component of other comprehensive (loss) income in stockholders' (deficit) equity.

Cash flows of consolidated foreign subsidiaries, whose functional currency is the local currency, are translated to U.S. dollars using average exchange rates for the period. The Company reports the effect of exchange rate changes on cash balances held in foreign currencies as a separate item in the reconciliation of the changes in cash and cash equivalents during the period.

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ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Advertising Costs

Costs for advertising are expensed as incurred. Advertising expense for the years ended December 31, 2018, 2017, and 2016 were $23.4 million, $24.9 million and $37.0 million, respectively.

Going Concern Assessment

As part of its internal control framework, the Company routinely performs a quarterly going concern assessment in accordance with ASC sub-topic 205-40, Presentation of Financial Statements - Going Concern ("ASC 205-40"). Under ASC 205-40, management is required to assess the Company's ability to continue as a going concern. As further described below, management has concluded based on projections that the cash balance, funds available from the line of credit, and the cash flows from operations are sufficient to meet the liquidity needs through the one year period following the financial statement issuance date.

The consolidated financial statements have been prepared on a going concern basis, which contemplates the realization of assets and the satisfaction of liabilities in the normal course of business. Management has evaluated whether relevant conditions or events, considered in the aggregate, indicate that there is substantial doubt about the Company's ability to continue as a going concern. Substantial doubt exists when conditions and events, considered in the aggregate, indicate it is probable that the Company will be unable to meet its obligations as they become due within one year after the financial statement issuance date. The assessment is based on the relevant conditions that are known or reasonably knowable as of March 6, 2019.

The assessment of the Company's ability to meet its future obligations is inherently judgmental, subjective and susceptible to change. The inputs that are considered important in the Company's going concern analysis, include, but are not limited to, the Company's 2019 cash flow forecast, 2019 operating budget, and long-term plan that extends beyond 2019. These inputs consider information including, but not limited to, the Company’s financial condition, liquidity sources, obligations due within one year after the financial statement issuance date, funds necessary to maintain operations, and financial conditions, including negative financial trends or other indicators of possible financial difficulty.

The Company has considered both quantitative and qualitative factors as part of the assessment that are known or reasonably knowable as of March 6, 2019, and concluded that conditions and events considered in the aggregate, do not indicate that it is probable that the Company will be unable to meet obligations as they become due through the one year period following the financial statement issuance date.

3. INVENTORY

Inventory consisted of the following (in thousands):

	As of December 31,

	2018	2017
Raw materials	$797	$2,893
Finished goods	136	643
Total inventory	$933	$3,536

The total inventory balance as of December 31, 2018 reflected the Company's ongoing efforts to transition the Consumer Language segment to a SaaS model. During 2018, the Company recorded $2.1 million in inventory obsolescence charges in the retail and direct-to-consumer channels of the Consumer Language business. In the third quarter of 2017, the Company requested its consignment retail partners to return inventory totaling $1.9 million of finished packaged perpetual products. These non-cash inventory write-downs were reflected as a cost of product revenue on the Company's statements of operations.

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ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

4. PROPERTY AND EQUIPMENT

Property and equipment consisted of the following (in thousands):

	As of December 31,	
	2018	2017
Land	$916	$942
Buildings and improvements	9,760	10,030
Leasehold improvements	644	1,468
Computer equipment	16,178	15,635
Software	70,010	54,600
Furniture and equipment	2,184	2,427
	99,692	85,102
Less: accumulated depreciation	(63,287)	(54,453)
Property and equipment, net	$36,405	$30,649

The Company leases certain computer equipment, software, buildings, and machinery under capital lease agreements. As of December 31, 2018 and 2017, assets under capital lease included in property and equipment above were $5.7 million and $5.9 million, respectively. As of December 31, 2018 and 2017, accumulated depreciation and amortization relating to property and equipment under capital lease arrangements totaled $3.3 million and $2.8 million, respectively.

For the years ended December 31, 2018, 2017, and 2016 the Company capitalized $15.9 million, $12.7 million, and $11.4 million respectively, of internal-use software development costs. During the year ended December 31, 2016, the Company recorded $1.0 million in impairment expense related to the abandonment of previously capitalized internal-use software projects. There were no impairment charges during the years ended December 31, 2018 and 2017.

Depreciation and amortization expense related to property and equipment includes depreciation related to its physical assets and amortization expense related to amounts capitalized in the development of internal-use software. Depreciation and amortization expense associated with property and equipment consisted of the following (in thousands):

	Years Ended December 31,		
	2018	2017	2016

Included in cost of revenue:			
Cost of subscription and service revenue	$7,467	$3,863	$3,057
Cost of product revenue	913	1,117	1,377
Total included in cost of revenue	8,380	4,980	4,434
Included in operating expenses:			
Sales and marketing	764	546	489
Research and development	7	9	19
General and administrative	2,153	2,635	4,029
Total included in operating expenses	2,924	3,190	4,537
Total	$11,304	$8,170	$8,971

5. GOODWILL

The value of gross goodwill is primarily derived from the acquisition of Rosetta Stone Ltd. (formerly known as Fairfield & Sons, Ltd.) in January 2006, the acquisition of certain assets of SGLC International Co. Ltd ("SGLC") in November 2009, the acquisitions of Livemocha, Inc. ("Livemocha") in April 2013, the acquisition of Lexia Learning Systems, Inc. ("Lexia") in August 2013, and the acquisition of Tell Me More S.A. ("Tell Me More") in January 2014.

The Company tests goodwill for impairment annually on June 30 of each year at the reporting unit level using a fair value approach, in accordance with the provisions of ASC 350, or more frequently, if impairment indicators arise. The Company also routinely reviews goodwill at the reporting unit level for potential impairment.

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ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The following table shows the balance and changes in goodwill for the Company's operating segments and reporting units for the years ended December 31, 2018 and 2017 (in thousands):

	E&E		Consumer	
	Language	Literacy	Language	Total
Balance as of January 1, 2017				
Gross Goodwill	$ 38,289	$ 9,962	$ 27,514	$ 75,765
Accumulated Impairment	—	—	(27,514)	(27,514)
Goodwill as of January 1, 2017	$ 38,289	$ 9,962	$ —	$ 48,251
Effect of change in foreign currency rate	1,606	—	—	1,606
Balance as of December 31, 2017				
Gross Goodwill	$ 39,895	$ 9,962	$ 27,514	$ 77,371
Accumulated Impairment	—	—	(27,514)	(27,514)
Goodwill as of December 31, 2017	$ 39,895	$ 9,962	$ —	$ 49,857
Effect of change in foreign currency rate	(618)	—	—	(618)
Balance as of December 31, 2018				
Gross Goodwill	$ 39,277	$ 9,962	$ 27,514	$ 76,753
Accumulated Impairment	—	—	(27,514)	(27,514)
Goodwill as of December 31, 2018	$ 39,277	$ 9,962	$ —	$ 49,239

2018 Activity

The Company exercised its option to bypass the qualitative assessment for all reporting units with remaining goodwill balances and began our June 30, 2018 annual goodwill test with the quantitative test. The tested reporting units resulted in fair values that substantially exceeded the carrying values and therefore, no goodwill impairment charges were recorded in connection with the annual test.

2016 Activity

The Consumer Fit Brains reporting unit was evaluated, which resulted in a fair value that was significantly below the carrying value. As a result, the Company recorded a 2016 impairment loss of $1.7 million, which represented a full impairment of the remaining Consumer Fit Brains reporting unit's goodwill. The impairment charge was recorded in the "Impairment" line on the statement of operations.

6. INTANGIBLE ASSETS

Intangible assets consisted of the following items as of the dates indicated (in thousands):

	Trade name / trademark *	Core technology	Customer relationships	Patents and Other	Total
Gross Carrying Amount	$ 12,505	$ 15,636	$ 26,656	$ 312	$ 55,109
Accumulated Amortization/Impairment	(1,781)	(13,223)	(20,643)	(278)	(35,925)
Balance as of December 31, 2017	$ 10,724	$ 2,413	$ 6,013	$ 34	$ 19,184
Gross Carrying Amount	$ 12,322	$ 13,432	$ 25,689	$ 312	$ 51,755
Accumulated Amortization/Impairment	(1,715)	(12,505)	(21,380)	(305)	(35,905)
Balance as of December 31, 2018	$ 10,607	$ 927	$ 4,309	$ 7	$ 15,850

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ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

* Included within the Trade name/ trademark intangible asset category is the Rosetta Stone trade name with a carrying amount of $10.6 million. This intangible asset is considered to have an indefinite useful life and is therefore not amortized, but rather tested for impairment on at least an annual basis.

The Company computes amortization of intangible assets on a straight-line basis over the estimated useful life. Below are the weighted average remaining useful lives of the Company's amortizing intangible assets:

	Weighted Average Life
Trade name / trademark	Indefinite
Core technology	1.58
Customer relationships	4.58
Patents	0.25

Intangible asset amortization expense consisted of the following (in thousands):

	Years Ended December 31,		
	2018	2017	2016
Included in cost of revenue:			
Cost of subscription and service revenue	$522	$455	$404
Cost of product revenue	64	131	182
Total included in cost of revenue	586	586	586
Included in operating expenses:			
Sales and marketing	1,810	1,860	2,178
Research and development	915	1,393	1,587
General and administrative	—	—	—
Total included in operating expenses	2,725	3,253	3,765
Total	$3,311	$3,839	$4,351

The following table summarizes the estimated future amortization expense related to intangible assets as of December 31, 2018 (in thousands):

As of

	December 31, 2018
2019	$ 1,533
2020	1,282
2021	940
2022	940
2023	548
Thereafter	—
Total	$ 5,243

The Company evaluates its indefinite-lived intangible assets annually as of December 31 for indicators of impairment. The Company also routinely reviews indefinite-lived intangible assets and long-lived intangible assets for potential impairment as part of the Company’s internal control framework.

2018 Activity

The Company performed its annual indefinite-lived intangible asset impairment test on the Rosetta Stone tradename as of December 31, 2018 to determine if indicators of impairment exist. The Company elected to first assess qualitative factors to determine whether it is more likely than not that the Rosetta Stone trade name was impaired. Additionally, all other long-lived intangible assets were evaluated at December 31, 2018 to determine if indicators of impairment exist. As a result of these assessments, there were no indicators of impairment for the year ended December 31, 2018.

ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

2016 Activity

During 2016, the Company revised the business outlook and financial projections for the Consumer Fit Brains reporting unit, which prompted a long-lived intangible asset impairment analysis of the tradename, developed technology, and customer relationships associated with the Consumer Fit Brains reporting unit ("Consumer Fit Brains Intangible Assets"). The carrying values of the Consumer Fit Brains Intangible Assets exceeded the estimated fair values. As a result, the Company recorded an impairment loss of $1.2 million associated with the impairment of the remaining carrying value of the Consumer Fit Brains Intangible Assets as of June 30, 2016. The impairment charge was included in the "Impairment" line on the statement of operations.

7. OTHER CURRENT LIABILITIES

The following table summarizes other current liabilities (in thousands):

	As of December 31,	
	2018	2017
Accrued marketing expenses	$4,382	$5,316
Accrued professional and consulting fees	1,273	1,609
Sales return reserve	579	1,176
Sales, withholding, and property taxes payable	3,391	3,616
Other	3,850	4,737
Total Other current liabilities	$13,475	$16,454

8. FINANCING ARRANGEMENTS

Credit Facility

On October 28, 2014, Rosetta Stone Ltd (“RSL”), a wholly owned subsidiary of parent company Rosetta Stone Inc., executed a Loan and Security Agreement with Silicon Valley Bank (“Bank”) to obtain a revolving credit facility (the “credit facility”). Since the original date of execution, the Company and the Bank have executed several amendments to the credit facility to reflect updates to the Company's financial outlook and extend the credit facility.

On March 4, 2019, the Company executed the seventh amendment to the credit facility. Under the amended agreement, the Company may borrow up to $15.0 million, including a sub-facility, which reduces available borrowings, for letters of credit in the aggregate availability amount of $4.0 million. Borrowings by RSL under the credit facility are guaranteed by the Company as the ultimate parent. The credit facility has a term that expires on April 1, 2021, during which time RSL may borrow and re-pay loan amounts and re-borrow the loan amounts subject to customary borrowing conditions. However, the Company must have no more than $5.0 million in outstanding borrowings for 30 consecutive days during each twelve month period beginning as of the date of execution. Interest on borrowing accrues at the Prime Rate and must be paid quarterly.

Proceeds of loans made under the credit facility may be used as working capital or to fund general business requirements. All obligations under the credit facility, including letters of credit, are secured by a security interest on substantially all of the Company’s assets including intellectual property rights and by a stock pledge by the Company of 100% of its ownership interests in U.S. subsidiaries and 66% of its ownership interests in certain foreign subsidiaries.

The credit facility contains customary affirmative and negative covenants, including covenants that limit or restrict the ability to, among other things, incur additional indebtedness, dispose of assets, execute a material change in business, acquire or dispose of an entity, grant liens, make share repurchases, and make distributions, including payment of dividends. Effective as of March 4, 2019, the Company is required to maintain compliance with a minimum liquidity coverage ratio of 1.75 and minimum financial performance requirements, as defined in the credit facility. As of December 31, 2018, the Company was in compliance with all covenants in effect as of that date.

The credit facility contains customary events of default, including among others, non-payment defaults, covenant defaults, bankruptcy and insolvency defaults, and a change of control default, in each case, subject to customary exceptions. The occurrence of a default event could result in the Bank’s acceleration of repayment obligations of any loan amounts then outstanding.

As of December 31, 2018, under the agreement prior to the seventh amendment, there were no borrowings outstanding . During the third quarter of 2018, a $4.0 million letter of credit that was previously issued by the Bank on the Company's behalf was cancelled as

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

it was deemed no longer necessary. A quarterly commitment fee accrues on any unused portion of the credit facility at a nominal annual rate.

Capital Leases

The Company enters into capital leases under non-committed arrangements for equipment and software. In addition, as a result of the merger with Tell Me More, the Company assumed a capital lease for a building near Versailles, France, where Tell Me More’s headquarters were located. The fair value of the lease liability at the date of acquisition was $4.0 million.

As of December 31, 2018, the future minimum payments under capital leases with initial terms of one year or more are as follows (in thousands):

Periods Ending December 31,	
2019	$525
2020	520
2021	517
2022	388
2023	1
Thereafter	—
Total minimum lease payments	$1,951
Less amount representing interest	164
Present value of net minimum lease payments	$1,787
Less current portion	450
Obligations under capital lease, long-term	$1,337

Effective January 1, 2019, the Company will adopt the New Lease Standard as described in Note 2 "Summary of Significant Accounting Policies".

9. STOCK-BASED COMPENSATION

2006 Stock Incentive Plan

On January 4, 2006, the Company established the Rosetta Stone Inc. 2006 Stock Incentive Plan (the "2006 Plan") under which the Company's Board of Directors, at its discretion, could grant stock options to employees and certain directors of the Company and affiliated entities. The 2006 Plan initially authorized the grant of stock options for up to 1,942,200 shares of common stock. On May 28, 2008, the Board of Directors authorized the grant of additional stock options for up to 195,000 shares of common stock under the plan, resulting in total stock options available for grant under the 2006 Plan of 2,137,200 as of December 31, 2008. The stock options granted under the 2006 Plan generally expire at the earlier of a specified period after termination of service or the date specified by the Board or its designated committee at the date of grant, but not more than ten years from such grant date. Stock issued as a result of exercises of stock options will be issued from the Company's authorized available stock. All unissued stock associated with the 2006 Stock Incentive Plan expired in 2016 at the end of the ten year contractual term.

2009 Omnibus Incentive Plan

On February 27, 2009, the Company's Board of Directors approved the 2009 Omnibus Incentive Plan (the "2009 Plan") that provides for the ability of the Company to grant up to 2,437,744 of new stock incentive awards or options including Incentive and Nonqualified Stock Options, Stock Appreciation Rights, Restricted Stock, Restricted Stock Units, Performance Units, Performance Shares, Performance based Restricted Stock, Share Awards, Phantom Stock and Cash Incentive Awards. Restricted stock awards are considered outstanding at the time of grant as the stockholder is entitled to voting rights and to receive any dividends declared subject to the loss of the right to receive accumulated dividends if the award is forfeited prior to vesting. Unvested restricted stock awards are not considered outstanding in the computation of basic earnings per share. The stock incentive awards and options granted under the 2009 Plan generally expire at the earlier of a specified period after termination of service or the date specified by the Board or its designated committee at the date of grant, but not more than ten years from such grant date. Concurrent with the approval of the 2009 Plan, the 2006 Plan was terminated for purposes of future grants. Since the establishment of the 2009 Plan, the Board of Directors authorized and the Company's shareholders' approved the allocation of additional shares of common stock to the 2009 Plan as follows:

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Authorization Dates of 2009 Plan Additions	Number of Common Stock Shares Authorized to 2009 Plan
February 27, 2009	2,437,744
May 26, 2011	1,000,000
May 23, 2012	1,122,930
May 23, 2013	2,317,000
May 20, 2014	500,000
June 12, 2015	1,200,000
May 27, 2017	1,900,000

At December 31, 2018 there were 1,161,160 shares available for future grant under the 2009 Plan, which expires in 2019.

Valuation Assumptions

The determination of fair value of stock-based awards is affected by assumptions regarding subjective and complex variables. Generally, assumptions are based on historical information and judgment is required to determine if historical trends may be indicators of future outcomes. In accordance with ASC 718, the fair value of stock-based awards to employees is calculated as of the date of grant. Compensation expense is then recognized over the requisite service period of the award. Stock-based compensation expense recognized is based on the estimated portion of the awards that are expected to vest. Estimated forfeiture rates are applied in the expense calculation. The Company determines the fair values of stock-based awards as follows:

- Service-Based Restricted Stock Awards, Restricted Stock Units, Performance-Based Restricted Stock Awards, and Performance-Based Share Units: Fair value is determined based on the quoted market price of common stock on the date of grant.
- Service-Based Stock Options and Performance-Based Stock Options: Fair value is determined using the Black-Scholes pricing model, which requires the use of estimates, including the risk-free interest rate, expected volatility, expected dividends, and expected term.
- Market-Based Restricted Stock Awards and Market-Based Stock Options: The fair value is determined using a Monte-Carlo simulation model. The Monte Carlo valuation also estimates the quantity that would be awarded which is reflected in the fair value on the grant date.

For the years ended December 31, 2018, 2017, and 2016 the fair value of service-based stock options and performance-based stock options granted was calculated using the following assumptions in the Black-Scholes model:

	Years Ended December 31,		
	2018	2017	2016
Expected stock price volatility	39%-40%	42%-45%	46%-47%
Expected term of options	6 years	6 years	5.5-6.5 years
Expected dividend yield	—	—	—
Risk-free interest rate	2.73%-2.85%	1.97%-2.05%	1.24%-1.50%

For the years ended December 31, 2018, 2017, and 2016 the fair value of market-based stock options and market-based restricted stock awards granted was calculated using the following assumptions in the Monte-Carlo simulation model:

	Years Ended December 31,		
	2018	2017	2016
Expected stock price volatility	none	none	45%-49%
Expected term of options	none	none	1.7 years-7 years
Expected dividend yield	none	none	—
Risk-free interest rate	none	none	.71%-1.53%

Stock-Based Compensation Expense

Stock compensation expense associated with service-based equity awards is recognized in the statement of operations on a straight-line basis over the requisite service period, which is the vesting period. For equity awards granted with performance-based conditions, stock compensation expense is recognized in the statement of operations ratably for each vesting tranche based on the probability that operating performance conditions will be met and to what extent. Changes in the probability estimates associated with

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

performance-based awards will be accounted for in the period of change using a cumulative catch-up adjustment to retroactively apply the new probability estimates. In any period in which the Company determines that achievement of the performance metrics is not probable, the Company ceases recording compensation expense and all previously recognized compensation expense for the performance-based award is reversed. For equity awards granted with market-based conditions, stock compensation is recognized in the statement of operations ratably for each vesting tranche regardless of meeting or not meeting the market conditions.

The following table presents stock-based compensation expense included in the related financial statement line items (in thousands):

	Years Ended December 31,		
	2018	2017	2016
Included in cost of revenue:			
Cost of subscription and service revenue	$1	$15	$(4)
Cost of product revenue	(9)	54	52
Total included in cost of revenue	(8)	69	48
Included in operating expenses:			
Sales and marketing	759	561	998
Research & development	439	255	709
General and administrative	3,285	3,256	3,151
Total included in operating expenses	4,483	4,072	4,858
Total	$4,475	$4,141	$4,906

The following table presents the future stock-based compensation expense, net of forfeitures, for each equity award category as of December 31, 2018 and the weighted average period over which the expense will be recognized:

	Service-based Restricted Stock Awards	Service-based Stock Options	Restricted Stock Units	Performance Stock Units
Unrecognized compensation expense, net of forfeitures (in thousands)	$ 2,426	$ 493	$ 207	$ 1,670
Weighted average period over which the above expense will be recognized (in years)	2.41	0.85	0.46	1.07

Service-Based Restricted Stock Awards

Shares of service-based restricted stock are generally recognized as expense on a straight-line basis over the requisite service period of the awards, which is also the vesting period. Service-based restricted stock awards are granted at the discretion of the Board of Directors or the Compensation Committee (or its authorized member(s)) and generally vest over a four -year period based upon required service conditions and do not have performance or market conditions. The Company's service-based restricted stock awards are accounted for as equity awards. The grant date fair value is based on the market price of the Company's common stock at the date of grant. The Company did not grant any restricted stock prior to April 2009.

The following table summarizes the Company's service-based restricted stock activity from January 1, 2018 to December 31, 2018:

	Service-based Restricted Stock Awards	Weighted Average Grant Date Fair Value	Aggregate Intrinsic Value
Non-vested service-based awards, January 1, 2018	431,118	$ 8.07	$3,477,484
Service-based awards granted	218,006	13.87	
Service-based awards vested	(208,238)	8.82	
Service-based awards cancelled	(39,934)	9.14	
Non-vested Service-based awards, December 31, 2018	400,952	10.72	4,299,689

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The following table summarizes the Company's weighted average grant date fair value and vested fair value for the years ended December 31, 2018, 2017, and 2016:

	Years Ended December 31,		
	2018	2017	2016
Weighted-average grant-date fair value of service-based restricted stock awards granted	$13.87	$7.92	$7.59
Fair value of service-based restricted stock awards vested (in thousands)	$3,881	$1,545	$1,511

Service-Based Stock Options

Service-based stock options are granted at the discretion of the Board of Directors or the Compensation Committee (or its authorized member(s)) and expire 10 years from the date of the grant. Service-based stock options generally vest over a four -year period based upon required service conditions and do not have performance or market conditions.

The aggregate intrinsic value disclosed below represents the total intrinsic value (the difference between the fair market value of the Company's common stock as of December 31, 2018, and the exercise price, multiplied by the number of in-the-money service-based stock options) that would have been received by the option holders had all option holders exercised their options on December 31, 2018. This amount is subject to change based on changes to the fair market value of the Company's common stock.

The following table summarizes the Company's service-based stock option activity from January 1, 2018 to December 31, 2018:

	Service-based Options	Weighted Average Exercise Price	Weighted Average Contractual Life (years)	Aggregate Intrinsic Value
Service-based options outstanding, January 1, 2018	1,628,711	$ 9.81	6.79	$5,203,196
Service-based options granted	60,603	16.05		
Service-based options exercised	(207,218)	10.79		
Service-based options cancelled	(80,148)	14.09		
Service-based options outstanding, December 31, 2018	1,401,948	9.69	6.17	9,492,949
Vested and expected to vest at December 31, 2018	1,394,022	9.70	6.16	9,429,510
Exercisable at December 31, 2018	1,194,092	9.80	5.97	$7,974,164

The following table summarizes the Company's weighted average grant date fair value and intrinsic value of options exercised for the years ended December 31, 2018, 2017, and 2016:

	Years Ended December 31,		
	2018	2017	2016
Weighted average grant date fair value of service-based stock options granted	$6.76	$5.02	$3.41
Intrinsic value of options exercised (in thousands)	$3,324	$878	$99

Restricted Stock Units

Restricted stock units are granted to members of the Board of Directors as part of their compensation package. Restricted stock units convert to common stock following the separation of service with the Company. All restricted stock unit awards vest quarterly over a one year period from the date of grant, with expense recognized straight-line over the vesting period. The Company's restricted stock units are accounted for as equity awards. The grant date fair value is based on the market price of the Company's common stock at the date of grant. The Company did not grant any restricted stock units prior to April 2009.

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ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The following table summarizes the Company's restricted stock unit activity from January 1, 2018 to December 31, 2018:

	Units Outstanding	Weighted Average Grant Date Fair Value	Aggregate Intrinsic Value
Units outstanding, January 1, 2018	234,658	$ 10.19	$2,926,185
Units granted	31,929	16.03	
Units released	(30,682)	8.74	
Units cancelled	—	—	
Units outstanding, December 31, 2018	235,905	11.17	3,868,842
Vested and expected to vest at December 31, 2018	235,483	11.16	3,861,917
Vested and deferred at December 31, 2018	220,550	$ 10.82	$3,617,020

The following table summarizes the Company's weighted average grant date fair value and fair value of units converted for the years ended December 31, 2018, 2017, and 2016:

	Years Ended December 31,		
	2018	2017	2016
Weighted average grant date fair value of restricted stock units granted	$16.03	$11.23	$7.70
Fair value of restricted stock units converted (in thousands)	$495	$—	$427

Performance-Based Restricted Stock Units

Beginning in the first quarter of 2017, the Company began granting annual performance-based restricted stock units ("PSUs") to certain employees which will become earned or eligible to vest based on the Company's achievement of certain pre-defined key operating performance goals during a one to three-year period. The number of PSUs earned or eligible to vest following the performance period is subject to approval by the Compensation Committee of the Board of Directors. Once earned, certain PSUs are then subject to additional service and vesting requirements, while certain PSUs vest shortly after being earned. The PSUs were granted at "target" (at 100% of target). Based upon actual attainment of the operating performance results relative to target and the recipient's terms, actual issuance of PSUs can be eligible for vest anywhere between a maximum of 200% and 0% of the target number of PSUs originally granted.

The following table summarizes the Company's PSU activity from January 1, 2018 to December 31, 2018:

	PSUs	Weighted Average Grant Date Fair Value	Aggregate Intrinsic Value
Non-vested PSUs, January 1, 2018	433,588	$ 9.43	$ 5,406,842
PSUs granted	334,714	13.85	
PSUs vested	(54,298)	9.43	
PSUs cancelled	(54,344)	10.47	
Non-vested PSUs, December 31, 2018	659,660	$ 11.59	$ 10,818,424

The following table summarizes the Company's weighted average grant date fair value and fair value of PSUs vested for the years ended December 31, 2018, 2017, and 2016:

	Years Ended December 31,		
	2018	2017	2016
Weighted average grant date fair value of PSUs granted	$ 13.85	$ 9.43	$ —
Fair value of PSUs vested (in thousands)	$ 724	$ —	$ —

CEO 2016 Performance and Market Conditioned Restricted Stock Awards and Stock Options Grants

On April 4, 2016, the Company named Mr. John Hass as President, CEO and Chairman of the Board. In conjunction with his appointment, the Compensation Committee approved a stock-based compensation package for Mr. Hass aimed to provide significant reward potential for achieving outstanding Company operating performance results and building stockholder value. The package was comprised of 70,423 performance-based restricted stock awards (PRSAs), 314,465 performance-based stock options (PSOs), 70,423 market-based restricted stock awards (MRSAs), and 314,465 market-based stock options (MSOs). The April 4, 2016 grant date fair values associated with these grants were $7.10, $3.24, $6.17 and $0.94, respectively.

On February 20, 2017, the Compensation Committee approved 64,719 PRSAs and 144,497 PSOs as eligible for further service vesting requirements. The non-eligible 5,704 and 169,968 PRSAs and PSOs, respectively, were cancelled as of February 20, 2017. PRSAs and PSOs vest 50%, 25% and 25% on April 4, 2017, 2018 and 2019, respectively. As of December 31, 2018, 48,540 PRSAs were vested and 108,372 PSOs were vested. As of December 31, 2018, no PSOs have been exercised. As of December 31, 2018, future compensation cost related to the non-vested portion of the PRSAs and PSOs not yet recognized in the consolidated statement of operations was $20,000 and is expected to be recognized over a weighted average period of 0.26 years. On February 22, 2018, the Compensation Committee approved the maximum quantity of 140,846 MRSAs and 314,465 MSOs as eligible for further service vesting requirements. MRSAs and MSOs vest annually on a pro-rata basis over three years beginning April 4, 2018. As of December 31, 2018, 46,949 MRSAs were vested and 104,822 MSOs were vested. As of December 31, 2018, no MSOs have been exercised. As of December 31, 2018, future compensation cost related to the non-vested portion of the MRSAs and MSOs not yet recognized in the consolidated statement of operations was $0.1 million and is expected to be recognized over a weighted average period of 1.09 years.

10. STOCKHOLDERS' (DEFICIT) EQUITY

At December 31, 2018, the Company's Board of Directors had the authority to issue 200,000,000 shares of stock, of which 190,000,000 were designated as Common Stock, with a par value of $0.00005 per share, and 10,000,000 were designated as Preferred Stock, with a par value of $0.001 per share. At December 31, 2018 and 2017, the Company had shares of Common Stock issued of 24,426,248 and 23,782,773, respectively, and shares of Common Stock outstanding of 23,426,248 and 22,782,773, respectively.

On August 22, 2013, the Company's Board of Directors approved a share repurchase program under which the Company is authorized to repurchase up to $25.0 million of its outstanding common stock from time to time in the open market or in privately negotiated transactions depending on market conditions, other corporate considerations, debt facility covenants and other contractual limitations, and applicable legal requirements. For the year ended December 31, 2013, the Company paid $11.4 million to repurchase 1,000,000 shares at a weighted average price of $11.44 per share as part of this program. No shares were repurchased during the years ended December 31, 2014, 2015, 2016, 2017, or 2018. Shares repurchased under the program were recorded as treasury stock on the Company's consolidated balance sheet. The shares repurchased under this program during the year ended December 31, 2013 were not the result of an accelerated share repurchase agreement. Management has not made a decision on whether shares purchased under this program will be retired or reissued.

Holders of the Company's common stock are entitled to receive dividends when and if declared by the Board of Directors out of assets or funds legally available for that purpose. Future dividends are dependent on the Company's financial condition and results of operations, the capital requirements of its business, covenants associated with financing arrangements, other contractual restrictions, legal requirements, regulatory constraints, industry practice and other factors deemed relevant by its Board of Directors. The Company has not paid any cash dividends on its common stock and does not intend to do so in the foreseeable future.

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ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

11. BASIC AND DILUTED NET LOSS PER SHARE

The following table sets forth the computation of basic and diluted net loss per common share:

	Years Ended December 31,		
	2018	2017	2016
	(amounts in thousands, except per share amounts)		
Numerator:			
Net loss	$(21,473)	$(1,546)	$(27,550)
Denominator:			
Basic weighted average shares	22,705	22,244	21,969
Diluted weighted average shares	22,705	22,244	21,969
Loss per share:			
Basic	$(0.95)	$(0.07)	$(1.25)
Diluted	$(0.95)	$(0.07)	$(1.25)

The Company calculates dilutive common stock equivalent shares using the treasury stock method. In periods where the Company has a net loss, no dilutive common stock equivalent shares are included in the calculation for diluted shares as they are considered anti-dilutive. The following table sets forth the dilutive common stock equivalent shares calculated using the treasury stock method (in thousands).

	Years Ended December 31,		
	2018	2017	2016
	(in thousands)		
Stock options	663	231	16
Restricted stock units	230	209	174
Restricted stocks	681	296	129
Total common stock equivalent shares	1,574	736	319

Share-based awards to purchase approximately 0.2 million, 0.7 million, and 2.0 million shares of common stock that had an exercise price in excess of the average market price of the common stock during the years ended December 31, 2018, 2017, and 2016, respectively, were not included in the calculation of diluted loss per share because they were anti-dilutive.

12. RESTRUCTURING AND OTHER EMPLOYEE SEVERANCE

2016 Restructuring Actions

In the first quarter of 2016, the Company announced and initiated actions to withdraw the direct sales presence in almost all of its non-U.S. and non-northern European geographies related to the distribution of E&E Language offerings. Restructuring charges included in the Company's consolidated statement of operations related to the 2016 Restructuring Plan include the following:

- Employee severance and related benefits costs incurred in connection with headcount reductions involving employees primarily in France, China, Brazil, Canada, Spain, Mexico, U.S. and the U.K.;
- Contract termination costs associated with operating lease terminations from office closures; and
- Other related costs.

The following tables summarize activity with respect to the restructuring charges for the 2016 Restructuring Plan during the years ended December 31, 2018, 2017 and 2016 (in thousands):

	Balance at January 1, 2016	Cost Incurred	Cash Payments	Other Adjustments (1)	Balance at December 31, 2016
Severance costs	$ —	$ 4,367	$ (3,867)	$ —	$ 500
Contract termination costs	—	165	(74)	(69)	22
Other costs	—	590	(399)	(121)	70
Total	$ —	$ 5,122	$ (4,340)	$ (190)	$ 592

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ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

	Balance at January 1, 2017	Cost Incurred	Cash Payments	Other Adjustments (1)	Balance at December 31, 2017
Severance costs	$ 500	$ (50)	$ (303)	$ —	$ 147
Contract termination costs	22	—	(22)	—	—
Other costs	70	14	(84)	—	—
Total	$ 592	$ (36)	$ (409)	$ —	$ 147

	Balance at January 1, 2018	Cost Incurred	Cash Payments	Other Adjustments (1)	Balance at December 31, 2018
Severance costs	$ 147	$ (34)	$ (19)	$ —	$ 94
Contract termination costs	—	—	—	—	—
Other costs	—	—	—	—	—
Total	$ 147	$ (34)	$ (19)	$ —	$ 94

(1) Other Adjustments includes non-cash period changes in the liability balance, which may include non-cash lease closure expense and foreign currency translation adjustments.

As of December 31, 2018, the remaining 2016 Restructuring Plan liability of $0.1 million was classified as a current liability within accrued compensation and other current liabilities on the consolidated balance sheets. The Company does not expect to incur any additional restructuring costs in connection with the 2016 Restructuring Plan. In future financial statements, detailed activity of the 2016 Restructuring Plan will no longer be disclosed as the remaining balance is considered minor.

Other Employee Severance Actions

In 2017, the Company initiated actions to reduce headcount in its Fit Brains business and in the U.S. and China locations within consumer product operations. Primarily comprised of severance costs associated with these actions, the Company recorded expense of $1.2 million in 2017. Of these amounts, $1.1 million was paid in 2017. During

2018, the Company made final payments of $0.1 million in accrued severance costs.

Cost Table

The following table summarizes the major types of costs associated with the Company's restructuring plans and other employee severance actions for the years ended December 31, 2018, 2017, and 2016 and total costs incurred through December 31, 2018 (in thousands):

	Years ended December 31,		
	2018	2017	2016
Severance costs	$(24)	$1,144	$4,438
Contract termination costs	—	37	165
Other costs	21	26	590
Total	$(3)	$1,207	$5,193

The following table presents restructuring costs associated with the Company's restructuring plans and other employee severance actions included in the related line items of the Statement of Operations (in thousands):

	Years ended December 31,		
	2018	2017	2016
Cost of revenue	$16	$378	$573
Sales and marketing	(2)	411	2,324
Research and development	(2)	318	913
General and administrative	(15)	100	1,383
Total	$(3)	$1,207	$5,193

ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

These restructuring expenses are not allocated to any reportable segment under the Company's definition of segment contribution as defined in Note 18 "Segment Information."

13. LEASE ABANDONMENT AND TERMINATION

As part of the Company’s effort to reduce general and administrative expenses through a planned space consolidation at its Arlington, Virginia headquarters location, the Company incurred a lease abandonment charge of $3.2 million during 2014. Prior to January 31, 2014, the Company occupied the 6th and 7th floors at its Arlington, Virginia headquarters. The Company estimated the liability under the operating lease agreements and accrued lease abandonment costs in accordance with ASC 420, Exit or Disposal Cost Obligations ("ASC 420"), as the Company had no future economic benefit from the abandoned space. All leased space related to the 6th floor was abandoned and ceased to be used by the Company on January 31, 2014. The operating lease period for this space terminated on December 31, 2018.

In a further effort to reduce general and administrative expenses through a planned space consolidation, the Company relocated its headquarters location to 1621 North Kent Street, Suite 1200, Arlington, Virginia 22209. The previously leased space at the 7th floor of 1919 North Lynn Street was abandoned and ceased to be used by the Company on October 10, 2016 and resulted in $1.6 million in lease abandonment expense in 2016. The operating lease period for this space terminated on December 31, 2018.

A summary of the Company’s lease abandonment activity for the years ended December 31, 2018, 2017 and 2016 is as follows (in thousands):

	As of December 31,		
	2018	2017	2016
Accrued lease abandonment costs, beginning of period	$1,081	$2,123	$1,282
Costs incurred and charged to expense	—	—	1,644
Principal reductions	(816)	(1,042)	(803)
Accrued lease abandonment costs, end of period	$265	$1,081	$2,123
Accrued lease abandonment costs liability:			
Short-term	$265	$1,081	$1,047
Long-term	—	—	1,076
Total	$265	$1,081	$2,123

In January 2019, the Company paid the remaining $0.3 million in accrued lease abandonment costs.

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ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

14. INCOME TAXES

The new Tax Act legislation, was enacted on December 22, 2017. ASC 740, Accounting for Income Taxes, requires companies to recognize the effect of tax law changes in the period of enactment even though the effective date for most provisions is for tax years beginning after December 31, 2017, or in the case of certain other provisions, January 1, 2018.

During the year of enactment, the Company recorded reasonable estimates of the effects of the Tax Act, which principally related to a) the reduction in the U.S. corporate income tax rate from 35% to 21%, and b) the change in the carryforward period of net operating losses. In the fourth quarter of 2017, the Company recorded an income tax benefit of $2.4 million to remeasure deferred tax liabilities associated with indefinite-lived intangible assets that will reverse at the new 21% rate. Absent this deferred tax liability, the Company was in a net deferred tax asset position that is offset by a full valuation allowance. Though the impact of the rate change has a net tax effect of zero, the accounting to determine the gross change in the deferred tax position and the offsetting valuation resulted in a $26.3 million reduction in both. Additionally, the Company recorded an income tax benefit of $3.1 million in the fourth quarter of 2017 related to the release of the valuation allowance associated with the post-2017 reversing deferred tax assets to offset 80% of the deferred tax liability associated with our indefinite-lived intangible asset.

In the third quarter of 2018, the Company recorded a $0.2 million tax expense in addition to the estimates made in the year of enactment. The accounting for the Tax Act are considered final as the Company obtained, prepared, and analyzed the information necessary to finalize the accounting and the 2017 U.S. income tax return.

The Tax Act included a one-time mandatory repatriation transition tax on the net accumulated earnings and profits of a U.S. taxpayer's foreign subsidiaries. The Company had a deficit in net accumulated earnings and profits so no transition tax was reported on the 2017 U.S. income tax return. Other Tax Act provisions that may impact income taxes include: a limitation of net operating losses generated after 2017 to 80% of taxable income, the inclusion of commissions and performance based compensation in determining the excess compensation limitation, and a minimum tax on certain foreign earnings in excess of 10% of the foreign subsidiaries tangible assets (i.e., global intangible low-taxed income or GILTI). The Company has elected to treat GILTI as a period expense.

The following table summarizes the significant components of the Company's deferred tax assets and liabilities as of December 31, 2018 and 2017 (in thousands):

	As of December 31,	
	2018	2017
Deferred tax assets:		
Inventory	$351	$847
Net operating and capital loss carryforwards	51,806	46,683
Deferred revenue	14,401	11,534
Accrued liabilities	2,853	4,064
Stock-based compensation	3,854	3,790

Amortization and depreciation	1,157	773
Bad debt reserve	86	90
Foreign and other tax credits	2,175	2,047
Gross deferred tax assets	76,683	69,828
Valuation allowance	(66,431)	(60,302)
Net deferred tax assets	10,252	9,526
Deferred tax liabilities:		
Goodwill and indefinite lived intangibles	(6,106)	(5,033)
Deferred sales commissions	(5,392)	(4,996)
Prepaid expenses	(475)	(619)
Foreign currency translation	(1,039)	(846)
Gross deferred tax liabilities	(13,012)	(11,494)
Net deferred tax liabilities	$(2,760)	$(1,968)

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ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

For the year ended December 31, 2018, the Company recorded an income tax expense of $1.8 million. The tax expense primarily related to current year profits of operations in the U.K., Germany, Canada, and China. Additionally, the tax expense relates to the tax impact of the amortization of U.S. indefinite-lived intangible assets.

For the year ending December 31, 2017, the Company recorded an income tax benefit of $2.5 million. The tax benefit primarily related to the reduction in the corporate tax rate from 35% to 21% which resulted in a tax benefit of $5.5 million, offset by current year profits of operations in Canada, Germany, and the U.K. Additionally, the tax expense relates to the tax impact of the amortization of U.S. indefinite-lived intangible assets and the inability to recognize tax benefits associated with current year losses of operations in certain foreign jurisdictions and in the U.S.

As of December 31, 2018, a full valuation allowance was provided for domestic and certain foreign deferred tax assets in those jurisdictions where the Company has determined the deferred tax assets will more likely than not be realized. If future events change the outcome of the Company's projected return to profitability, a valuation allowance may not be required to reduce the deferred tax assets. The Company will continue to assess the need for a valuation allowance.

As of December 31, 2018, the Company had federal, state and foreign tax NOL carryforward amounts and expiration periods as follows (in thousands):

Year of Expiration	U.S. Federal	State	Brazil	France	Spain	Mexico	Total
2019-2023	$ —	$415	$—	$—	$—	$ —	$415
2024-2028	—	6,624	—	—	—	396	7,020
2029-2033	16,313	18,015	—	—	258	9	34,595
2034-2038	114,059	115,527	—	—	—	—	229,586
2039-2043	—	21,434	—	—	—	—	21,434
Indefinite	19,761	1,531	3,464	3,804	522	—	29,082
Totals	$ 150,133	$163,546	$3,464	$3,804	$780	$ 405	$322,132

As of December 31, 2018, the Company had federal and state capital loss carryforward amounts and expiration periods as follows (in thousands):

Year of Tax Capital Loss Expiration	U.S. Federal	State
2019-2023	$21,972	$17,341
2024-2028	—	—
2029-2033	—	526
2034-2038	—	—
2039-2043	—	—
Indefinite	—	—

Totals	$21,972	$17,867

As of December 31, 2018, the Company had federal tax credit carryforward amounts and expiration periods as follows (in thousands):

Year of Tax Credit Expiration	U.S. Federal
2019-2023	$ 967
2024-2028	836
2029-2033	128
2034-2038	218
2039-2043	—
Indefinite	26
Totals	$ 2,175

ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The components of loss before income taxes and the provision for taxes on income consist of the following (in thousands):

	Years Ended December 31,		
	2018	2017	2016
United States	$(21,873)	$(12,648)	$(24,963)
Foreign	2,209	8,603	(84)
Loss before income taxes	$(19,664)	$(4,045)	$(25,047)
The provision for taxes on income consists of the following (in thousands):			
Federal	$—	$—	$—
State	12	(21)	78
Foreign	1,006	1,701	1,250
Total current	$1,018	$1,680	$1,328
Deferred:			
Federal	$60	$(4,541)	$1,147
State	750	335	169
Foreign	(19)	27	(141)
Total deferred	791	(4,179)	1,175
Provision (benefit) for income taxes	$1,809	$(2,499)	$2,503

Reconciliation of income tax (benefit) provision computed at the U.S. federal statutory rate to income tax expense (benefit) is as follows (in thousands):

	Years Ended December 31,		
	2018	2017	2016
Income tax benefit at statutory federal rate	$(4,129)	$(1,416)	$(8,766)
Rate differential on income tax related to global intangible low-taxed income ("GILTI")	450	—	—
Remeasurement of deferred tax liability related to indefinite-lived intangible due to U.S. rate reduction, effective January 1, 2018	—	(2,586)	—
Release of valuation allowance due to change in U.S. net operating loss carry forward period	206	(3,103)	—
(Windfall) shortfall in tax benefit - stock compensation	(4)	233	—
State income tax expense, net of federal income tax effect	556	314	219
Tax capital loss in excess of book loss on sale of Japan subsidiary	—	(5,297)	—
Nondeductible goodwill impairment	—	—	604
Other nondeductible expenses	528	398	384
Tax rate differential on foreign operations	172	(816)	(474)
Increase in valuation allowance	3,902	9,446	10,404

Change in prior year estimates	—	150	—
Other tax credits	128	173	129
Other	—	5	3
Income tax expense (benefit)	$1,809	$(2,499)	$2,503

The Company accounts for uncertainty in income taxes under ASC topic 740-10-25, Income Taxes: Overall: Recognition, ("ASC 740-10-25"). ASC 740-10-25 prescribes a recognition threshold and measurement attribute for the financial statement recognition and measurement of a tax position taken or expected to be taken in a tax return. ASC 740-10-25 also provides guidance on derecognition, classification, interest and penalties, accounting in interim periods, disclosure, and transition.

The Company recognizes interest and penalties related to unrecognized tax benefits as a component of income tax expense (benefit). As of December 31, 2018 and 2017, the Company had no unrecognized tax benefits or interest and penalties.

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ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The Company is subject to taxation in the U.S. and various states and foreign jurisdictions. The Company's tax years 2011 and forward are subject to examination by the tax authorities.

The Company was in an aggregate net foreign deficit position for U.S. tax purposes so the Company was not liable for the transition tax enacted as part of the Tax Act on its 2017 U.S. income tax return. As such, all prior earnings of the foreign subsidiaries with unremitted earnings are deemed to be previously taxed income for U.S. tax purposes.

The Company made income tax payments of $1.6 million, $2.2 million, and $0.8 million, in 2018, 2017 and 2016, respectively.

15. COMMITMENTS AND CONTINGENCIES

Operating Leases

The Company leases copiers, parking spaces, buildings, a warehouse, and office space under operating lease and site license arrangements, some of which contain renewal options.

The following table summarizes future minimum operating lease payments as of December 31, 2018 and the years thereafter (in thousands):

	As of December 31, 2018
Periods Ending December 31,	
2019	$ 2,334
2020	1,155
2021	948
2022	977
2023	743
Thereafter	—
Total future minimum operating lease payments	$ 6,157

Total expenses under operating leases were $2.5 million, $2.6 million and $4.0 million during the years ended December 31, 2018, 2017, and 2016, respectively.

The Company accounts for its leases under the provisions of ASC topic 840, Accounting for Leases ("ASC 840"), which require that leases be evaluated and classified as operating leases or capital leases for financial reporting purposes. Certain operating leases contain rent escalation clauses, which are recorded on a straight-line basis over the initial term of the lease with the difference between the rent paid and the straight-line rent recorded as either a deferred rent asset or liability depending on the calculation. Lease incentives received from landlords are recorded as deferred rent liabilities and are amortized on a straight-line basis over the lease term as a reduction to rent expense. Effective January 1, 2019, the Company will adopt the New Lease Standard as described in Note 2 "Summary of Significant Accounting Policies".

Royalty Agreements

The Company has entered into agreements to license software from vendors for incorporation in the Company's offerings. Pursuant to some of these agreements, the Company is required to pay minimum royalties or license fees over the term of the agreement regardless of actual license sales. In addition, such agreements typically specify that, in the event the software is incorporated into specified Company products, royalties will be due at a contractual rate based on actual sales volumes. These agreements are subject to various royalty rates typically calculated based on the level of sales for those products. The Company expenses these amounts to cost of sales or research and development expense, as appropriate. Royalty expense was $0.9 million, $1.0 million, and $0.3 million for the years ended December 31, 2018, 2017, and 2016, respectively.

Employment Agreements

The Company has agreements with certain of its executives and key employees which provide guaranteed severance payments upon termination of their employment without cause.

Litigation

From time to time, the Company has been subject to various claims and legal actions in the ordinary course of its business. The Company is not currently involved in any legal proceeding the ultimate outcome of which, in its judgment based on information currently available, would have a material impact on its business, financial condition or results of operations.

ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

16. EMPLOYEE BENEFIT PLAN

The Company maintains a defined contribution 401(k) Plan. The Company matches employee contributions to the 401(k) Plan up to 4% of their compensation. The Company recorded Company contribution matching expenses for the 401(k) Plan totaling $2.3 million, $2.1 million, and $2.0 million for the years ended December 31, 2018, 2017, and 2016, respectively.

17. RELATED PARTIES

As of December 31, 2018 and 2017, there were no outstanding receivables from stockholders and there were outstanding receivables from employees in the amount of $10 thousand and $0.1 million, respectively.

18. SEGMENT INFORMATION

The Literacy segment derives the majority of its revenue from the sales of literacy solutions to educational institutions serving grades K through 12. The E&E Language segment derives revenue from sales of language-learning solutions to educational institutions, corporations, and government agencies worldwide. The Consumer Language segment derives the majority of its revenue from sales of language-learning solutions to individuals and retail partners. Revenue from transactions between the Company's operating segments is not material. The Company's current operating segments also represent the Company's reportable segments. Effective January 1, 2018 the Company adopted ASC 606 using the modified retrospective approach. Segment revenue in prior comparative periods reflects amounts previously reported and has not been restated. See Note 2 "Summary of Significant Accounting Policies" for additional disclosures regarding revenue recognition and the impact of adoption of ASC 606.

The Company and its Chief Operating Decision Maker ("CODM") assess profitability and performance of each of its current operating segments in terms of segment contribution. Segment contribution is calculated as segment revenue less expenses directly incurred by or allocated to the segment. Direct segment expenses include costs and expenses that are directly incurred by or allocated to the segment and include materials costs, service costs, customer care and coaching costs, sales and marketing expenses, and bad debt expense. In addition to the previously referenced expenses, the Literacy segment includes direct research and development expenses and Combined Language includes shared research and development expenses, cost of revenue, and sales and marketing expenses applicable to the Consumer Language and E&E Language segments. Segment contribution excludes depreciation, amortization, stock compensation, restructuring and other related expenses. The Company does not allocate expenses beneficial to all segments, which include certain general and administrative expenses such as legal fees, payroll processing fees, accounting related expenses, lease abandonment, impairment, and non-operating income and expense. These expenses are included below the segment contribution line in the unallocated expenses section of the tables presented below. The E&E Language segment and Consumer Language segment are characterized as "Language" since both of these segments primarily address the language-learning market and share many of the same costs. These shared language costs are included in the "Shared Services" column of the tables presented below. General and administrative expenses directly incurred by the Language segments consist only of bad debt expense, net of recoveries. Additionally, research and development expenses are included in as shared Language costs. The depreciation, amortization, stock compensation, restructuring and other related expenses which are included in cost of revenue, sales and marketing, research and development, and general and administrative are presented in total as unallocated costs. The Company will continue to evaluate its management reporting and will update its operating and reportable segments as appropriate. With the exception of goodwill, the Company does not identify or allocate its assets by operating segment. Consequently, the Company does not present assets or liabilities by operating segment.

ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Operating results by segment for the year ended December 31, 2018 was as follows (in thousands, except percentages):

	Literacy Segment	Language E&E Language Segment	Consumer Language Segment	Shared Services	Combined Language	Total Company
Revenue	$52,766	$60,376	$ 60,492	$—	$ 120,868	$ 173,634
Cost of revenue	8,665	6,780	11,436	69	18,285	26,950
Sales and marketing	27,100	30,699	36,178	1,228	68,105	95,205
Research and development	7,785	—	—	14,856	14,856	22,641
General and administrative	2,043	45	107	—	152	2,195
Segment contribution	$7,173	$22,852	$ 12,771	$(16,153)	$ 19,470	$26,643
Segment contribution margin %	13.6 %	37.8 %	21.1 %			
Unallocated depreciation and amortization, stock compensation, restructuring and other expenses (net) included in:						
Cost of revenue						8,972
Sales and marketing						3,706
Research and development						2,569
General and administrative						5,453
Subtotal						20,700
Corporate unallocated expenses, net:						
Unallocated general and administrative						25,562
Unallocated non-operating expense						45
Subtotal						25,607
Loss before income taxes						$(19,664)

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ROSETTA STONE INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Operating results by segment for the year ended December 31, 2017 was as follows (in thousands, except percentages):

	Literacy Segment	Language E&E Language Segment	Consumer Language Segment	Shared Services	Combined Language	Total Company
Revenue (1)	$43,608	$65,267	$ 75,718	$ —	$ 140,985	$ 184,593