

ELECTRONICS FOR IMAGING INC

Form 10-K

February 27, 2019

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2018

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

Commission File Number: 000-18805

ELECTRONICS FOR IMAGING, INC.

(Exact name of registrant as specified in its charter)

Delaware 94-3086355

(State or other Jurisdiction of (I.R.S. Employer incorporation or organization) Identification No.)

6750 Dumbarton Circle, Fremont, CA 94555

(Address of principal executive offices) (Zip Code)

(650) 357-3500

(Registrant's telephone number, including area code)

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

Title of Each Class Name of Exchange on which Registered

Common Stock, \$.01 Par Value The Nasdaq Stock Market LLC

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 Section 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 (§ 229.405 of this chapter) is not contained herein, and will not be contained, to the best of 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.

Large accelerated filer Accelerated filer

Non-accelerated filer Smaller reporting company

Emerging growth company”

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

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

The aggregate market value of the voting and non-voting common stock held by non-affiliates computed by reference to the price at which the common stock was last sold on June 29, 2018 was \$1,431,471,129*

The number of shares outstanding of the registrant’s common stock, \$.01 par value per share, as of February 22, 2019 was 42,642,184.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the definitive Proxy Statement to be delivered to stockholders in connection with the 2019 Annual Meeting of Stockholders are incorporated by reference into Part III hereof.

* Based on the last trade price of the registrant’s common stock reported on The Nasdaq Global Select Market on June 29, 2018, the last business day of the registrant’s second quarter of the 2018 fiscal year.

Electronics For Imaging, Inc.
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FORWARD-LOOKING STATEMENTS

Certain of the information contained in this Annual Report on Form 10-K, including, without limitation, statements made under this Part I, Item 1, “Business,” Part II, Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” and Part II Item 7A, “Quantitative and Qualitative Disclosures about Market Risk,” which are not historical facts, may include “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933, as amended (“Securities Act”), and Section 21E of the Securities Exchange Act of 1934, as amended (“Exchange Act”), and is subject to risks and uncertainties and actual results or events may differ materially. When used herein, words such as “address,” “anticipate,” “believe,” “consider,” “continue,” “develop,” “estimate,” “expect,” “goal,” “intend,” “may,” “plan,” “potential,” “project,” “seek,” “should,” “target,” “will,” variations of such words, and similar as they relate to the Company or its management are intended to identify such statements as “forward-looking statements.” Such statements reflect the current views of the Company and its management with respect to future events and are subject to certain risks, uncertainties, and assumptions. Should one or more of these risks or uncertainties materialize, or should underlying assumptions prove incorrect, the Company’s actual results, performance, or achievements could differ materially from the results expressed in, or implied by, these forward-looking statements. Important factors that could cause the Company’s actual results to differ materially from those included in the forward-looking statements made herein include, without limitation, those factors discussed in Item 1, “Business,” in Item 1A, “Risk Factors,” and elsewhere in this Annual Report on Form 10-K and in the Company’s other filings with the Securities and Exchange Commission (“SEC”), including the Company’s most recent Quarterly Report on Form 10-Q and Current Reports on Form 8-K, and any amendments thereto. The Company assumes no obligation to revise or update these forward-looking statements to reflect actual results, events, or changes in factors or assumptions affecting such forward-looking statements.

PART I

References to “EFI,” the “Company,” “we,” “us,” and “our” mean Electronics For Imaging, Inc. and its subsidiaries, unless the context indicates otherwise.

Item 1: Business

Overview

EFI is a world leader in customer-centric digital printing innovation focusing on the transformation of the printing, packaging, ceramic tile decoration, and textile industries from the use of traditional analog based printing to digital on-demand printing. EFI was incorporated in Delaware in 1988 and commenced operations in 1989. Our initial public offering of common stock was completed in 1992. Our common stock is traded on The Nasdaq Global Select Market under the symbol EFII. Our corporate headquarters are located at 6750 Dumbarton Circle, Fremont, California 94555.

We offer a wide-range of products and services for industrial digital printing. Our products and services are grouped in the following categories: Industrial Inkjet, Productivity Software, and Fiery.

Products and Services

Industrial Inkjet

Our Industrial Inkjet products address the high-growth industrial digital inkjet markets where significant conversion of production from analog to digital inkjet printing is occurring. The Industrial Inkjet operating segment consists of our VUTEk super-wide and wide format display graphics, Nozomi corrugated packaging and display, Reggiani textile,

and Cretaprint ceramic tile decoration and building material industrial digital inkjet printers; digital ultra-violet ("UV") curable, light emitting diode ("LED") curable, ceramic, water-based, thermoforming, and specialty inks, as well as a variety of textile inks including dye sublimation, pigmented, reactive dye, acid dye, pure disperse dye, water-based dispersed printing ink, and

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coatings; digital inkjet printer parts; and professional services. Printing surfaces include paper, vinyl, corrugated, textile, glass, plastic, aluminum composite, ceramic tile, wood, and many other flexible and rigid substrates.

Display Graphics. Our display graphics products consist of super-wide format VUTEk printers (including h-series, HS-series and GS/LX-series,) and roll-to-roll product families (including r-series). Our new VUTEk hybrid LED printer h-series debuted in October 2018 when we launched VUTEk h3 which offers maximum throughput of up to 74 boards per hour. In January 2019, we launched VUTEk h5, our newest higher-speed, premium-quality hybrid flatbed/roll-to-roll super-wide format LED printer, which can run up to 109 boards per hour and offers eight-color and optional four-color printing modes plus white, as well as an up to nine-layer print capability.

Our HS series of high-speed printers are alternatives to analog presses used by high volume graphic producers and are based on pin & cure printing technology. In 2018, we launched the HS125 F4 and HS 100 F4 inkjet presses for “Fast Graphics” out-of-home applications of hybrid flatbed/roll super-wide format products. The two new printers reconfigure the eight ink channels of the VUTEk HS series platform in a CMYK x 2 setup, efficiently addressing the need for cost-effective production on banners, billboards, building wraps and similar applications.

VUTEk super-wide format roll-to-roll printers include advanced material handling features such as in-line cutting and slitting. In 2018, we launched the VUTEk 3r+ and 5r+ LED roll-to-roll printers, which print at speeds up to 4,896 square feet per hour, with resolutions up to 1,200 dpi, and incorporate 7-picoliter Ultra-Drop technology.

Our wide format display graphics products consist of roll-to-roll, flatbed, and hybrid product families for the entry-level and mid-range industrial digital inkjet printer market. In 2018, we launched a new 3.2-meter Pro 32r wide format roll-to-roll LED printer providing a more competitive and economical, all-in-one, production-level printer, delivering up to 5,000 square meters per month. In 2017, we launched our wide format Pro 24f flatbed and Pro 16h LED hybrid printers.

Corrugated Packaging and Display. Our first single pass, ultra-high-speed LED industrial inkjet corrugated packaging press, Nozomi C18000, debuted in 2017. It is a revolutionary cost-effective solution for the corrugated, paper packaging, display printing, and other markets as it produces on-demand and just-in-time customized campaigns with direct to substrate printing as well as proofs on demand. In 2018, we announced new Nozomi print capabilities including a white ink feature and updated corrugated production workflow. With the new white ink feature, packaging converters can create impressive photographic images and vivid colors directly on brown kraft liner board.

Our VUTEk display graphics super-wide and wide format, and Nozomi corrugated packaging and display industrial digital inkjet printers incorporate “cool cure” LED printing technology. LED technology uses less heat than the traditional curing process resulting in increased uptime and greater reliability.

Textile. Our textile industrial inkjet products consist of the Reggiani and VUTEk FabriVU product families.

Reggiani industrial inkjet textile printers address the full scope of advanced textile printing with versatile printers suitable for dye sublimation, pigmented, reactive dye, acid dye, pure disperse dye, and water-based dispersed printing ink. Reggiani is at the forefront of digital printing as an alternative to either analog printing or single color (dyed) garments. Reggiani provides an overall solution for the entire textile printing process from yarn treatment to fabric printing and finishing for a wide variety of substrates and applications (fashion, home textile, sportswear, signage, automotive, and outdoor).

A significant driver for the adoption of digital textile printing is the growth of “fast fashion,” which is a term used by fashion retailers to express the need for designs to move quickly from the runway to the retailer to capture current

fashion trends. The digital textile printing market has also benefited from sports apparel with short run production quantities, closer geographic proximity to end-use markets, and environmental awareness, as digital printing has a significantly lower environmental footprint than analog production, consuming less water, and generating less waste.

We demonstrated our new Reggiani BOLT textile printer in November 2018. It is an advanced ultra-high-speed digital single-pass printer with the potential to revolutionize the textile printing market, designed to provide users with high uptime and reliability, outstanding performance, superior printing uniformity and accuracy, long print head life and minimal maintenance needs. We anticipate commercially releasing this product in 2019.

In 2018 we launched the COLORS and POWER industrial digital textile inkjet printers. The COLORS printer offers 12 color printing for the most accurate color reproduction in our product line and vivid colors on a variety of textiles. The POWER printer features our recirculating ink system which increases inkjet head life and our ink recovery system that reduces overall ink consumption.

Our VUTEk FabriVU textile printers are specialty hybrid flatbed/roll-fed printers that produce digitally printed fabrics, soft signage, or deep draw thermoformed and other custom applications. We launched the 3.4M FabriVU 340i in 2018 which features in-line sublimation for direct to textile signage printing in a single step, eliminating the need for running the textile in a heat press after printing.

Ceramic Tile Decoration. Our Cretaprint ceramic tile decoration inkjet printers are utilized by the ceramic tile and building material manufacturing industries.

In 2018, we launched Cretaprint C5 and D5 models which feature the new e•D5 print head that optimizes printer performance by assuring better alignment and higher throughput speeds. In 2017, we launched the Cretaprint C4 Twin, featuring a dual print head approach with up to four double print bars and widths up to 0.7 meters. We also launched the Cretaprint P4 in 2017 featuring up to 12 print bars, 1.4 meter print widths, and resolution of 360 dpi.

Ink. Our ink provides a recurring revenue stream generated from sales to our existing customer base of installed printers.

VUTEk printers primarily use digital UV and LED curable ink, although our solvent ink printers remain in use in the field. We were first to market with digital UV curable ink incorporating “cool cure” LED technology for use in high-end production super-wide, wide format, and corrugated packaging and display digital inkjet printing systems. We sell a variety of third party branded textile ink to users of our textile digital inkjet printers, including dye sublimation, pigmented, reactive dye, acid dye, water-based dispersed printing ink, and coatings. We launched our internal formulation of our reactive dye ink in 2016. In 2016, we introduced our soluble salt-based ceramic digital ink formulation.

Rialco Limited (“Rialco”), which we acquired in 2016, supplies dye powders and color products for the textile, digital print, and other decorating industries. Rialco’s pure disperse dyes are particularly important in the manufacture of high-quality dye sublimation inkjet ink for textile applications, which is a key growth area in the global migration from analog to digital print. Rialco’s technical and commercial capabilities benefit the Industrial Inkjet segment in the sourcing, specification, and purification of high quality dyes and expand our research, development, and innovation base to develop ink for our markets.

Label Printing. We entered into a Support Services and License Agreement (“Agreement”) with Xeikon, N.V. (“Xeikon”), a division of the Flint Group, in November 2017. Pursuant to the Agreement, we provided Xeikon access to the Jetrion customer list, which enabled Xeikon to sell Jetrion printers and re-sell our UV and LED label ink. Xeikon will purchase UV and LED label ink exclusively from us and resell to both our current customer base as well as new Xeikon inkjet customers over the four-year term of the Agreement. We cannot sell Jetrion printers during the four-year term of the Agreement.

Customer Base. Our industry-leading VUTEk display graphics super-wide and wide format UV, LED, and thermoforming industrial inkjet printers and inks are used by commercial photo labs, large sign shops, graphic screen printers, specialty commercial printers, and digital and billboard graphics providers serving the out-of-home advertising and industrial specialty print segments by printing banners, signage, building wraps, flags, point of purchase and exhibition signage, backlit displays, fleet graphics, photo-quality graphics, art exhibits, customized

architectural elements, billboards, thermoplastic decoration, and other large graphic displays. Our Nozomi single-pass industrial digital inkjet platform and ink are sold to the corrugated, paper packaging, display graphics, and other markets. We sell our hybrid, roll-to-roll, and flatbed UV wide format graphics printers and ink to the industrial digital inkjet display graphics printer market. We sell Reggiani textile digital inkjet printers and textile ink to the display graphics soft signage market and textile contract printers serving major textile brand owners and fashion designers, the home furnishings market, as well as the global printed textile industry. We sell Cretaprint ceramic tile decoration and building material digital inkjet printers and ceramic ink to the ceramic tile and building materials manufacturing industries.

Our primary industrial digital inkjet printers and their related features are summarized as follows:

Printer Type	Models	Capabilities	Application Examples
	h3 and h5	Offers maximum throughput of up to 74 and 108 boards per hour for h3 and h5, respectively	Super-wide format banners, signage, building wraps, flags, point of purchase and exhibition signage, backlit displays, fleet graphics, photo-quality graphics, art exhibits, customized architectural elements, billboards, and thermoplastic decoration.
VUTEk super-wide format	HS, GS/LX, H/QS, and FabriVU Series printers EFI and 3M(R) co-branded Digital UV and LED, and thermoforming UV ink	Printing widths of 2 to 5 meters; up to two-inch thickness; 6, 7, and 8 colors, plus white and greyscale; up to 2400 dpi; flexible and rigid substrates; 1.8-meter and 3.4-meter wide aqueous-based soft signage printer models with speeds up to 500 square meters per hour; UV curable, LED “cool cure,” aqueous, and thermoforming digital UV inks	
VUTEk super-wide roll-to-roll	VUTEk 3r and 5r, Quantum series, Q series, and Flex series printers Quantum LED curable ink Matan UV curable ink MatanFlex stretchable ink	Speeds up to 455 square meters per hour Printing widths of 3 to 5 meters; up to two-inch thickness; 4, 7, and 8 colors, plus white and greyscale; up to 1200 dpi; flexible and rigid substrates; UV curable and LED “cool cure” ink	Fleet graphics, traffic signage, labels, tags, decals, membranes, license plates, and sign printing
EFI wide format	EFI Pro hybrid and flatbed EFI H1625 LED 3M ink SD thermoforming ink 32R roll-to-roll	Speeds up to 207 square meters per hour (flatbed) and 91 square meters per hour (hybrid), up to 1200 dpi, 4 colors plus white and greyscale, up to two-inch thickness, flexible and rigid substrates, UV curable, and LED “cool cure” ink	Wide format indoor and outdoor graphics with photographic image quality. Entry-level and mid-range markets. Overflow and specialty markets
Nozomi	EFI Nozomi C18000	High-quality, high-speed digital LED printing up to 75 linear meters per minute on substrates up to 1.8 meters wide	Corrugated packaging and merchandise display printing
Reggiani textile	Reggiani textile printers Dye sublimation, pigmented, reactive dye, acid dye, and water-based dispersed printing ink	Speeds up to 325 square meters per hour. Substrates from ultra-light to heavy, up to 2400 dpi; dye sublimation, pigmented, reactive dye, acid dye, and water-based dispersed printing ink	Contract printers serving major textile brand owners and fashion designers. Textile soft signage market. Global printed textile industry
Cretaprint ceramic tile decoration	Cretaprint C4, C4 twin, and C5; Cretaprint P4, D4, and D5;	Single chassis accommodates up to 8 print bars. 1,000 customizable settings controlling printer widths up to 1.4 meters, speed, direction, and discharge.	Ceramic tile industry Construction materials industry

Cretaprint M4 and
SOL;
Cretaprint ink

Cretaprint building materials	Cubik building materials	Cubik: printing width up to 1.8 meters print speed up to 75 linear m/min, up to 8 printing bars	Construction materials industry
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Productivity Software

To provide our customers with solutions to manage and streamline their printing and packaging operations, we have developed technology that enhances printing workflow and makes printing and packaging operations more powerful, productive, cost-effective, and easier to manage. Most of our software solutions have been developed with the express goal of automating print processes and streamlining workflow via open, integrated, and inter-operable products, services, and solutions.

The Productivity Software operating segment consists of a complete set of productivity software suites that enable efficient and automated end-to-end business and production workflows for the print and packaging industries. These productivity software suites also provide tools to enable revenue growth, efficient scheduling, and optimization of processes, equipment, and personnel. Customers are provided the financial and technical flexibility to deploy locally within their business or to be hosted in the cloud. The productivity software suites address all segments of the print industry and consist of the: (i) Packaging Suite, with Radius at its core, for tag & label, cartons, and flexible packaging businesses; (ii) Corrugated

Packaging Suite, with Corrugated Technologies, Inc. ("CTI") at its core, for corrugated packaging businesses, including corrugated control capability; (iii) Enterprise Commercial Print Suite with Monarch at its core, for enterprise print businesses; (iv) Publication Print Suite, with Monarch or Technique at its core, for publication print businesses; (v) Midmarket Print Suite, with Pace at its core, for medium size print businesses; (vi) Quick Print Suite, with PrintSmith Vision and essential capabilities of Digital StoreFront at its core, for small printers and in-plant sites; and (vii) Value Added Products, available with the suite and standalone, such as web-to-print, e-commerce, cross media marketing, warehousing, fulfillment, shop floor data collection, and shipping to reduce costs, increase profits, and offer new products and services to their existing and future customers. We also provide Optitex textile two-dimensional ("2D") and three-dimensional ("3D") computer aided fashion design ("CAD") applications, which facilitate increased efficiency in the textile and fashion industries. Optitex markets integrated 2D and 3D CAD software that shortens the design cycle, reduces our customers' costs, and helps accelerate the adoption of fast fashion.

Our enterprise resource planning and collaborative supply chain business process automation software solutions are designed to enable printers and print buyers to improve productivity and customer service while reducing costs. Web-to-print applications for print buyers and print producers facilitate web-based collaboration across the print supply chain. Customers recognize that business process automation is essential to improving their business practices and profitability. We are focused on making our business process automation solutions the global industry standard. We provide consulting and support services, as well as warranty support for our software products. We sell annual full-service maintenance agreements with each license that provide warranty protection from date of shipment, and Software as a Service ("SaaS") subscriptions. The sale and renewal of annual maintenance agreements and SaaS agreements provide us with recurring revenue streams.

Escada Innovations Limited and Escada Systems, Inc. (collectively, "Escada"), which we acquired in 2017, offer the corrugated packaging market corrugator control systems, which provide comprehensive control and traceability for the entire corrugation process. The acquisition of Optitex Ltd. ("Optitex") in 2016 expanded our presence in the digital inkjet textile printing workflow market through the synergy of Optitex technology with the Reggiani digital inkjet textile printer business.

New Version Releases and Product Offerings. Integration among our software offerings is achieved through end-to-end automation including certified workflows and synchronized releases across multiple products afforded by our Productivity Suite. Integration of our software product offerings provides:

- Out-of-the-box, end-to-end optimized workflows;
- Certified integration and automation;
- Global visibility that makes effective and proactive decision making possible; and
- a solid modular, flexible, and scalable software foundation supporting product and customer diversification.

New versions have been released for each of our significant software components and new product offerings have resulted from strategic business acquisitions, which are described under "Growth and Expansion Strategies" below.

The Packaging Suite includes 22 certified workflows that provide unprecedented levels of business and production automation geared toward folding carton, tag and label, and flexible package converting environments. Enhancements integrate Radius software, intelligent estimating and planning with iQuote software, automated planning optimization with Metrix software, and key third party software such as the Esko Automation Engine.

The Corrugated Packaging Suite was enhanced with the acquisition of Escada in 2017, a leading provider of corrugator control systems for the corrugated packaging market. The Enterprise Commercial Print Suite includes improvements in inventory and purchasing, support for Digital StoreFront web-to-print services, stronger customer

relationship management tools including the ability to add attachments to forms and expanded reporting capabilities and extended capabilities in dynamic estimating and planning. The Midmarket Print Suite includes web-to-print, cross-media marketing, estimating, scheduling, accounting, and fulfillment applications.

Enhancements include easier access to quotes, improved estimating, and more advanced filtering tools to drive efficiency in job estimating and production. Product-specific applications unique to the super-wide format print space, such as fleet and vehicle wraps, point-of-purchase signage and outdoor graphics. The Quick Print Suite includes a cloud-based platform for in-plant and quick print operations to reduce the customer deployment and maintenance burden.

The Optitex Collaborate Application was released in early 2017 and is driven by cloud-based textile design technology that enables instant sharing among pattern makers, designers, and print teams for faster and more accurate apparel prototyping. In 2018, we launched the Optitex 3D Design Illustrator, a plug-in tool that allows designers the freedom to validate and customize 3D garments in Adobe® Illustrator®. This helps designers to visualize 3D garments, with accurate proportion and scaling, and customize the garment’s fabric, texture, print patterns and graphic placement without waiting for a printed sample.

We have established a new e-commerce platform specifically for fabric soft signage production operations and ink. The on-line ordering technology offers a new level of turnkey flexibility for increasingly popular fabric graphics applications, including outdoor, trade show, and point-of-purchase displays.

Our primary software offerings are summarized as follows:

Software Suite	Description	Users
Packaging Suite: with Radius at its core	Business and production workflows for tag & label, cartons, and flexible packaging companies	All users with a production facility associated with the sales, item specification, production, material purchasing, billing and shipping of packaging related products
Corrugated Packaging Suite: with CTI at its core, including corrugated control capability using EFI Escada	Business and production workflows for corrugated board and packaging manufacturers	Administration, sales, production and logistics employees producing corrugated sheets and/or corrugated boxes
Enterprise Commercial Print Suite; with Monarch at its core	Business and production workflows for Enterprise commercial print businesses, (offset, digital, large format, direct mail, specialty printing and shipping / logistics companies)	Front office sales, management and finance and shop floor production, inventory controllers, mailing and logistics employees involved in the production of various commercial print products
Publication Print Suite: with Monarch or Technique at its core	Business and production workflows for Publication Print companies (books and periodicals)	Sales, contract administrators, production planners and shop floor personnel associated production of books, catalogs, magazines, and periodicals
Midmarket Print Suite: with Pace at its core	Business and production workflows for mid size Print companies (including commercial, digital, display graphics, in-plant, and print for pay printing companies; government printing operations)	Business & Production personnel, e.g., sales, estimators, customer service, production schedulers, finance and floor personnel & logistics
Quick Print Suite: with PrintSmith Vision and essential capabilities of Digital StoreFront at its core	Hosted and modular, web-enabled digital printing and business management	Owners, managers, sales, estimators, customer service and accounting

Value Added Products	Web-to-print, e-commerce, cross media marketing, imposition solutions, warehousing, fulfillment, shop floor data collection, and logistics	Marketing professionals, production planners, production floor staff, warehouse and inventory managers, shipping and logistics
Optitex Textile 3D Design Software	Development and production software that builds patterns, visualize in 3D, streamlines marker making and cut order workflow, and cloud-based applications for show case design	Leading fashion brands, fashion retailers, and manufacturers in commercial and apparel industries

Fiery

Fiery products include (i) stand-alone Digital Front Ends ("DFEs"), which are connected to digital printers, copiers, and other peripheral devices, (ii) embedded DFEs and design-licensed solutions used in digital copiers and multi-functional devices, (iii) optional software integrated into our DFE solutions such as Fiery JobMaster, Graphics Arts Package, and Color Profiler (iv) Fiery Self Serve, our self-service and payment solution, and (v) stand-alone software-based solutions such as our proofing and textile solutions.

Fiery and FFPS DFEs. Our Fiery segment consists of Fiery and the FreeFlow Print Server business (“FFPS”), which was acquired from Xerox Corporation (“Xerox”) in January 2017. DFEs transform digital copiers and printers into high performance networked printing devices for the office, commercial, and industrial printing markets. We have direct relationships with several leading printer manufacturers with whom we work closely to design, develop, and integrate Fiery DFE and software technology to maximize the capability of each print engine. The printer manufacturers act as distributors and sell Fiery products to end customers through reseller channels. End customer and reseller channel preference for the Fiery DFE and software solutions drives demand for Fiery products through the printer manufacturers.

In 2018, we launched two new Fiery DFEs, the Color Controller E-85A and E-45A, driving Ricoh Pro™ C7200X Series production printers. The new Fiery DFEs include powerful tools to make expert color adjustments, plus job make-ready and automation enhancements. We also launched a new Fiery proServer Premium DFE technology in 2018 offering faster processing on individual jobs for EFI super-wide format printers. The Fiery NX Pro was launched in 2017, which provides faster views of job status and easier device management. The Fiery FS300 Pro was launched in 2017 with enhanced functionality with throughput up to 2,400 ppm.

Software Options for DFEs. Fiery Command WorkStation 6.0 job management interface software was released in 2017 featuring automated job presets, faster job searching capabilities, new user interface, advanced tools for printing multi-bank and bleed-edge tabbed documents, and the Home integrated interface, which is a new feature that provides at-a-glance status information for all connected Fiery servers and a snapshot of key print production statistics.

Fiery Workflow Suite is an integrated set of Fiery products, including Fiery Central, Fiery JobFlow, and Fiery JobMaster, among others, to deliver a fully integrated workflow from job submission and business management to scheduling, preparation, and production.

In January 2019, we launched our new Fiery FS350 software which further enhances graphic design productivity and versatility. Fiery Navigator is a cloud-based digital printing business intelligence tool for digital production presses that was first launched in 2016. Fiery Navigator provides printers with more insight into their production data to optimize resource allocation, ensure compliance with operating procedures, and make equipment decisions by capturing key operational data points and displaying production analytics in a comprehensive, customizable dashboard.

Fiery Self Serve is a leading solution of self-service and payment solutions that allows service providers to offer access to business machines including printers, copiers, computers, internet access, fax machines, and photo printing kiosks from mobile phones, iPad®, and USB drives. The M600 kiosk is a flexible and scalable system, which addresses demands for printing from any mobile device as well as from popular cloud storage services, and accepts credit cards, campus cards, and cash cards at the device, thereby eliminating the need for coin-operated machines.

Standalone Software Solutions. Our standalone Fiery software solutions include Fiery XF and Generation Digital Solutions, Inc. (“Generation Digital”). Fiery XF is an interface for the management, layout, and editing of digital print jobs. The 2017 acquisition of Generation Digital strengthens our fast fashion offerings, with design software for the textile and fashion industries. The Generation Digital textile design workflow is marketed under the name Fiery DesignPro and combines with our Fiery textile DFEs and Reggiani digital textile printers linking textile design and production.

Our DFE platforms, primary printer manufacturer customers, and end user environments are summarized as follows:

Platform	Printer Manufacturers or Customers	User Environments
Fiery and FFPS external DFEs	Xerox, Ricoh, Canon, Konica Minolta, Fuji Xerox, Sharp, Kyocera Document Solutions, RISO, Landa, and Oki Data	Print for pay, corporate reprographic departments, graphic arts, advertising agencies, and transactional & commercial printers
Fiery embedded DFEs and design-licensed solutions	Canon, Xerox, Konica Minolta, Kyocera Document Solutions, and Sharp	Office, print for pay, and quick turnaround printers
Fiery Central, Fiery Navigator, Fiery Workflow Suite	Canon, Konica Minolta, Kyocera Document Solutions, Ricoh, Sharp, Xerox	Corporate reprographic departments, commercial printers, and production workflow solutions
Fiery Self Serve	Canon, FedEx Office, Konica Minolta, Ricoh, Staples, Xerox	ExpressPay self-service and payment solutions for retail copy and print stores, hotel business centers, college campuses, and convention centers
Production Inkjet and Proofing software: ColorProof XF, Pro, Fiery XF, Fiery proServer, textile	Digital color proofing and inkjet production print solutions offering fast, flexible workflow, power, and expandability; creation and design of prints, patterns, and color palettes	Digital, commercial and hybrid printers, prepress providers, publishers, creative agencies and photographers, ceramic tile, decoration, and super-wide & wide format print providers; fashion and textile designers
Fiery DesignPro	Designers of fashion, textile, fabric, wallpaper, and other pattern-based material	Independent designers, fashion and textile manufactures, and textile printers

Sales, Marketing, and Distribution

We have assembled, internally and through acquisitions, an experienced team of technical support, sales, and marketing personnel with backgrounds in color reproduction, digital pre-press, image processing, business process automation systems, networking, and software and hardware engineering, as well as market knowledge of the sectors we serve. We expect to continue to expand the scope and sophistication of our products and gain access to new markets and channels of distribution by applying our expertise in these areas.

Industrial Inkjet

Our Industrial Inkjet products are sold primarily through our direct sales force, augmented by some select distributors. We entered the corrugated inkjet printer market with the introduction of our Nozomi digital inkjet corrugated printer in 2017. We are leveraging our existing display graphics sales team together with dedicated packaging specialists and participation in corrugated packaging trade shows in most major markets around the globe. The market for corrugated digital printers is new and our team will also be building market demand for this approach as well as selling our printers.

Textile digital printing is an alternative to either analog printing or dyed garments. Widespread adoption of digital textile printing depends on the willingness and ability of businesses in the printed textile industry to replace their

existing analog printing systems with digital printing systems. The adoption of digital textile printing is dependent to some extent on the growth of “fast fashion,” and has also benefited from sports apparel with shorter production runs, closer geographic proximity to end-use markets, and environmental awareness. A key element of our inkjet textile printing growth strategy is to market digital inkjet printing systems to contract printers that serve major textile brand owners and fashion designers. We have a dedicated team of textile sales and support personnel located in geographies around the world and leverage a select group of distributors and agents in a number of markets to augment our capabilities.

The ceramic tile industry has undergone a shift from southern Europe (e.g., Spain and Italy) to the emerging markets of China, India, Brazil, and Indonesia. As a result, we operate a Cretaprint sales and support center in Foshan, Guangdong,

China, in addition to our facilities in Spain. Foshan is home to the largest concentration of ceramic tile manufacturers in China.

We promote our Industrial Inkjet products through public relations, direct mail, advertising, promotional material, trade shows, and ongoing customer communication programs. The majority of sales leads for our inkjet printer sales are generated from trade shows, including our recent 20th EFI Connect User Conference held in January 2019 in Las Vegas, NV, at which our management and sales force interacted with existing and potential customers directly to demonstrate certain products and help customers understand our product capabilities through workshops, exhibits, and keynote speeches.

Productivity Software

Our enterprise resource planning and collaborative supply chain business process automation software solutions within our Productivity Software portfolio are primarily sold directly to end users by our direct sales force. An additional distribution channel for our Productivity Software products is through sales by authorized distributors, dealers, and resellers who in turn sell the software solutions to end users either stand-alone or bundled with other solutions they offer.

We have distribution agreements with some of these channel partners, including Canon, Konica Minolta, Ricoh, Xerox, Esko, and Veritiv (formerly xpedx). There are a number of small private resellers of our business process automation software in different geographic regions throughout the world where a direct sales force is not cost-effective. We sell Optitex directly to the leading fashion brands and manufacturers through a direct sales force and distribution channels consisting of authorized distributors, dealers, and resellers.

Fiery

The primary distribution channel for our Fiery products is through our direct relationships with several leading printer manufacturers. We work closely together to design, develop, and integrate Fiery DFE and software technology to maximize the capability of each print engine. The printer manufacturers act as distributors and sell Fiery products to end customers through reseller channels. End customer and reseller channel preference for our Fiery DFE and software solutions drives demand for Fiery products through the printer manufacturers.

Our relationships with the leading printer and copier industry companies are important to our business and we have established relationships with Canon, Seiko Epson, Fuji Xerox, Kodak, Konica Minolta, Kyocera Document Solutions, Landa, OKI Data, Ricoh, Riso, Sharp, Toshiba, and Xerox. These relationships are based on business relationships that have been established over time. As of December 31, 2018, our agreements generally do not require them to make any future purchases from us. They are generally free to purchase and offer products from our competitors, or build their own products for sale to the end customer, or cease purchasing our products at any time, for any reason, or no reason.

Fiery Self Serve is our self-service and payment solution that is sold to Canon, FedEx Office, Konica Minolta, Ricoh, Staples, and Xerox. Fiery Self Serve is also marketed to college campuses and libraries.

We sell our proofing products primarily to authorized distributors, dealers, and resellers who in turn sell the solutions to end users either stand-alone or bundled with other solutions they offer. Primary customers with whom we have established distribution agreements include Canon, Epson, Xerox, and Heidelberg. We sell color matching, color palette creation, and print design software to the fashion industry. There can be no assurance that we will continue to successfully distribute our products through these channels.

Growth and Expansion Strategies

The growth and expansion of our revenue will be derived from (i) product innovation through internal development efforts or business acquisition, (ii) increasing market coverage through internal efforts or business acquisition, (iii) expanding the addressable market, and (iv) establishing enterprise coherence and leveraging industry standardization.

Product Innovation. We achieve product innovation through internal research and development efforts, as well as by acquiring businesses with technology that is synergistic with our product lines and may be attractive to our customers. We expect to continue to expand and improve our offerings of new generations of products to our customers.

We have established relationships with many leading distribution companies in the graphic arts and commercial print industries such as Nazdar, 3M, and Veritiv, as well as significant printer manufacturing companies including Xerox, Ricoh, Canon, and Konica Minolta. We have also established global relationships with many of the leading print providers, such as R.R. Donnelley, FedEx Office, and Staples. These direct sales relationships, along with dealer arrangements, are important for our understanding of the end markets for our products and serve as a source of future product development ideas. In many cases, our products are customized for the needs of large customers yet maintain the common intuitive interfaces that we are known for around the world.

Increasing Market Coverage. We are increasing our market coverage through penetration of our sales and distribution networks, expansion into emerging markets in China, India, Latin America and Asia Pacific (“APAC”), and acquisitions that are synergistic with our other businesses such as the Generation Digital and Escada acquisitions. The Generation Digital textile design workflow is integrated with our Fiery textile DFEs and Reggiani digital textile printers linking textile design and production. Escada offers the corrugated packaging market corrugation control systems, which provide comprehensive control and traceability for the entire corrugation process and can ensure better quality corrugated materials are consumed by our Nozomi digital printers.

Expanding the Addressable Market. We are expanding our addressable market by extending into new markets within each of our operating segments. Further growth in the addressable markets for Industrial Inkjet, Productivity Software, and Fiery has been driven by our integration of the production workflow among these operating segments. Growth in the addressable market for corrugated packaging has resulted from our new Nozomi printer and we expect our new Bolt textile printer to expand our addressable market in textile production.

Establishing Enterprise Coherence and Leveraging Industry Standardization. Our goal is to offer best in class solutions that are inter-operable and conform to open standards, which will allow customers to configure the most efficient solution for their business by establishing enterprise coherence and leveraging industry standardization.

We establish coherence across our product lines by designing products and platforms that provide a consistent “look and feel” to the end user. Cross-product coherence creates higher productivity levels as a result of shortened learning curves. The integration that end users can achieve using our products for all of their digital printing and imaging needs leads to a lower total cost of ownership. Open architecture utilizing industry-established standards to provide interoperability across a range of digital printing devices and software applications ultimately provides end users with more choice and flexibility in their selection of products with advantages when a customer selects an EFI product as part of that architecture. For example, integration between our cloud-based Digital StoreFront application, our Pace business process automation application, and our Fiery XF Production Color RIP including integration to our Fiery or VUTEk product lines, is achieved by leveraging the industry standard Job Definition Format. Our Productivity Suite has taken this integration further through end-to-end automation including certified workflows and synchronized releases across multiple products consisting of our Packaging Suite, Corrugated Packaging Suite, Enterprise Commercial Print Suite, Publication Print Suite, Midmarket Print Suite, Quick Print Suite, and Value Added Products.

Recent Business Acquisitions. We achieve product innovation through internal research and development efforts, as well as by acquiring businesses with technology that is synergistic with our product lines and may be attractive to our customers. We also acquire businesses to expand our market coverage and customer base.

Recent business acquisitions are summarized as follows:

Year	Acquired Business	Acquired Product Line or Customer Base
2018	None	
2017	FFPS	FFPS servers and customer base
	CRC Information Systems (“CRC”)	North America print MIS customer base
	Generation Digital	Software for textile and fashion designers
	Escada	Machine control for corrugated packaging systems
2016	Rialco	Dye powders and color products for digital printing and industrial manufacturing
	Optitex	Integrated 3D design software

We intend to continue to make strategic acquisitions in the future that support our product innovation, market coverage, and total addressable market expansion strategies.

Backlog

Although we obtain firm purchase orders from our significant printer manufacturer customers in our Fiery operating segment, these customers typically do not issue such purchase orders until 30 to 90 days before shipment. The non-linear nature of our Industrial Inkjet and Productivity Software operating segments results in limited customer contracts and purchase orders that are not shipped at the end of the period, which are not material and are not a meaningful indicator of future business prospects. See also Note 4 - Revenue of Notes to Consolidated Financial Statements for additional discussion.

Significant Relationships

We have established and continue to build and expand relationships with the leading printer manufacturers and distributors of digital printing technology to benefit from their products, distribution channels, and marketing resources. Our customers include domestic and international manufacturers, distributors, and sellers of digital printers. We work closely with the leading printer manufacturers to develop solutions that incorporate leading technology and work optimally in conjunction with their products. The top revenue-generating printer manufacturers, that we sold products to in 2018, in alphabetical order, were Canon, Fuji Xerox, Konica Minolta, Kyocera, Landa, OKI Data, Ricoh, Sharp, Toshiba, Seiko Epson, and Xerox Document Solutions. Because sales of our printer and copier-related products constitute a significant portion of our Fiery revenue and there are a limited number of printer manufacturers producing copiers and printers in sufficient volume to be attractive customers for us, we expect to continue to depend on a relatively small number of printer manufacturers for a significant portion of our revenue in future periods. Revenue from these leading printer manufacturers was 22%, 26%, and 28% of our consolidated revenue, during 2018, 2017, and 2016, respectively.

We customarily enter into development and distribution agreements with our significant printer manufacturer customers. These agreements can be terminated under a range of circumstances and often on relatively short notice. The circumstances under which an agreement can be terminated vary from agreement to agreement and there can be no assurance that these significant printer manufacturers will continue to purchase products from us in the future, despite such agreements. Our agreements generally do not commit such customers to make future purchases from us. They could decline to purchase products from us in the future and could purchase and offer products from our competitors, or develop their own products for sale to the end customer. We recognize the importance of, and strive to

maintain, our relationships with the leading printer manufacturers. Relationships with these companies are affected by a number of factors including, among others: competition from other suppliers, competition from their own internal development efforts, and changes in general economic, competitive, or market conditions including changes in demand for our products, changes in demand for the printer manufacturers' products, industry consolidation, or fluctuations in currency exchange rates. There can be no assurance that we will continue to maintain or build the relationships we have developed to date.

We have a continuing relationship pursuant to a license agreement with Adobe Systems, Inc. ("Adobe"). We license PostScript® software from Adobe for use in many of our Fiery solutions under the OEM Distribution and License Agreement

entered into in September 2005, as amended from time to time. Under our agreement with Adobe, we have a non-exclusive, non-transferable license to use the Adobe deliverables (including any software, development tools, utilities, software development kits, fonts, drivers, documentation, or related materials). The scope of additional licensing terms varies depending on the type of Adobe deliverable. Our agreement with Adobe was amended on February 1, 2018, to automatically renew annually. The agreement can be terminated by either party upon 120 days prior written notice. All royalties due to Adobe under the agreement are payable within 45 days after the end of each calendar quarter.

Each Fiery solution requires page description language software provided by Adobe, which is a leader in providing page description software. Adobe's PostScript® software is widely used to manage the geometry, shape, and typography of hard copy documents. Adobe can terminate our current PostScript® software license agreement without cause. Although to date we have successfully obtained licenses to use Adobe's PostScript® software when required, Adobe is not required to, and we cannot be certain that Adobe will, grant future licenses to Adobe PostScript® software on reasonable terms, in a timely manner, or at all. In addition, to obtain licenses from Adobe, Adobe requires that we obtain quality assurance approvals from them for our products that use Adobe software. If Adobe does not grant us such licenses or approvals, if the Adobe licenses are terminated, or if our relationship with Adobe is otherwise materially impaired, we would likely be unable to sell products that incorporate Adobe PostScript® software. If that occurred, we would have to license, acquire, develop, or re-establish our own competing software as a viable alternative for Adobe PostScript® software and our financial condition and results of operations could be significantly harmed for a period of time.

Our industrial inkjet printers require inkjet print heads that are manufactured by a limited number of suppliers. If we experience difficulty obtaining print heads, our inkjet printer production would be limited. In addition, we manufacture UV curable, textile digital, and ceramic digital ink for use in our printers and rely on a limited number of suppliers for certain pigments and other components used in our ink. Our ink sales would decline significantly if we were unable to obtain the pigments and other components when needed.

Corporate Responsibilities and Environmental Sustainability

We have taken steps to reduce the environmental impact of our operations and products and to promote sustainability. Our efforts include the following:

Transitioning from chemical-based to water-based inks. We have expended considerable resources in the development of water-based inks and printers that can use them. We have introduced new water-based printers and inks and are developing additional products using water-based technology. These printers can reduce emissions from the curing process which would otherwise result in greenhouse gases.

- Transitioning printer ink curing technology from mercury vapor UV lamps to LED UV lamps. Our display graphics and corrugated printres offer LED "cool cure" technology. LED technology uses less heat than the traditional curing process resulting in increased uptime and greater reliability. Energy assessments conducted by the Fogra Graphic Technology Research Association have shown that our super-wide format printers with LED curing can reduce energy consumption by up to 82% when compared with printers that use conventional mercury arc lamps. Transition to LED UV lamp curing also has the additional benefits of reducing ozone created during the curing process as well as the ability to use thinner substrates. The use of thinner substrates reduces the material load used in the overall image and the substrate thickness by over 30% compared to standard mercury UV lamp systems. In addition, use of LED UV lamps in our printers reduces the amount of landfill waste because LED UV lamps generally last about 16,000 hours before replacement, whereas mercury vapor UV lamps typically only last about 1000 hours before replacement.

Reggiani Sustainability Initiatives. Our textile business is a worldwide provider of complete solutions for the textile market, with a focus on the development of sustainable processes. All our industrial printers can be used with a complete range of water-based inks. In 2010, we undertook a certification process as a commitment to our customers in order to offer eco-sustainable processes guaranteed by “Green Label” certification issued by the Association of Italian Textile Machinery Manufacturers, a private non-profit association. EFI Reggiani’s innovations are the result of extensive research targeted to improve productivity and quality, optimize the textile manufacturing process, and reduce energy and water consumption, as well as environmental impact. For example, our TERRA pigment solution is a unique in-line polymerization process for faster, greener printing that eliminates the need for steaming or washing on

direct-to-textile applications. As a result, users can achieve superior printing results while using less time, water and energy.

We are committed to sustainable business practices and products and will continue our efforts to proactively evaluate any potential changes that will benefit the environment.

Employees

As of December 31, 2018, we have approximately 3,400 full time employees.

Research and Development

As of December 31, 2018, 1,200 of our 3,400 full-time employees were involved in research and development. We believe that development of new products and enhancement of existing products are essential to our continued success. We intend to continue to devote substantial resources to research and new product development, as well as improvements to existing products. New platforms and ink formulations will continue to be developed for our Industrial Inkjet products as the industry accelerates its transition from analog to digital technology, from solvent-based printing to UV curable ink printing, and adopts digital textile printing due to the growth of “fast fashion.” We are developing new software applications designed to maximize work flow efficiencies and meet the needs of the graphic arts, packaging, and commercial print professions, including business process automation, web-to-print, e-commerce, cross-media marketing, imposition, proofing solutions, and 3D textile CAD applications. We are developing products to support additional printing devices including high-end color copiers and multi-functional devices. We have research and development sites in numerous U.S. locations, as well as in India, Europe, Israel, the United Kingdom (“U.K.”), Brazil, and Canada. Substantial additional expense is expected to be required to complete and bring to market products that are currently under development.

Manufacturing

We are leveraging efficiencies in our worldwide digital inkjet printer manufacturing operations by centralizing certain aspects of our product manufacturing. Our VUTEk display graphics super-wide, wide format industrial hybrid and flatbed inkjet printers were primarily manufactured in our Meredith, New Hampshire facility until March 2018. Starting in April 2018, we began to manufacture these printers in our new facility in Manchester, New Hampshire. In 2016, we transferred VUTEk roll-to-roll printer production to our Rosh Ha’Ayin, Israel, facility, our FabriVU textile digital inkjet printer production to our Bergamo, Italy, facility, and certain wide format industrial digital inkjet printers to our Castellon, Spain, facility.

We utilize subcontractors to manufacture our Fiery products and, to a lesser extent, our super-wide and wide format industrial printers. These subcontractors work closely with us to promote low cost and high quality while manufacturing our products. Subcontractors purchase components needed for our products from third parties. We are dependent on the ability of our subcontractors to produce the products we sell. Although we supervise our subcontractors, there can be no assurance that such subcontractors will perform efficiently or effectively. We have outsourced our Fiery production with Avnet, Inc. (“Avnet”), formulation of ceramic ink to two subcontractors, and formulation of textile ink to third party branded suppliers, with the exception of reactive dye textile ink, which we formulate in our Bedford, U.K. facility.

Should our subcontractors experience inability or unwillingness to manufacture or deliver our products, then our business, financial condition, and operations could be harmed. Since we generally do not maintain long-term agreements with our subcontractors and such agreements may be terminated with relatively short notice, any of our

subcontractors could terminate their relationship with us and/or enter into agreements with our competitors that might restrict or prohibit them from manufacturing our products or could otherwise lead to an inability or unwillingness to fill our orders in a timely manner or at all.

Our VUTEk roll-to-roll super-wide format industrial printers are manufactured in a single location in our Rosh Ha' Ayin, Israel facility. Our Reggiani textile industrial printers are manufactured in a single location in our Bergamo, Italy facility. Our Cretaprint ceramic tile decoration and Nozomi corrugated packaging printers are manufactured in a single location in our Castellon, Spain facility. Our UV curable and LED curable digital ink that is used in our display graphics super-wide and wide-format industrial digital inkjet printers are formulated in a single location in our Ypsilanti, Michigan facility. Our

reactive dye ink that is used in our textile digital inkjet printers is formulated in a single location in our Bedford, U.K., facility.

Most components used to manufacture our printers and ink are available from multiple suppliers, except for inkjet print heads, branded textile ink, and certain key ingredients (primarily pigments and photoinitiators) for our digital UV curable ink. Although typically in low volumes, many key components are sourced from single vendors. If we were unable to obtain the print heads currently used, we would be required to redesign our printers to use different print heads. If we were unable to obtain the branded textile ink or the components required for our digital ceramic, digital textile, or digital UV curable inks, we would have to qualify other sources, if possible, or reformulate and test the new ink formulations. In our Industrial Inkjet facilities, we use hazardous materials to formulate digital UV curable, digital textile, and ceramic digital ink, as well as store internally formulated and third-party ink. The storage, use, and disposal of those materials must meet the requirements of various environmental regulations.

Significant components necessary for manufacturing our products are obtained from a sole supplier or a limited group of suppliers. We depend largely on the following sole and limited source suppliers for our components and manufacturing services:

Supplier	Components
Intel	Central processing units (“CPUs”); chip sets
Toshiba	Application-specific integrated circuits (“ASIC”) & inkjet print heads
Open Silicon	ASICs
Altera	ASICs & programmable devices
Tundra	Chip sets
Avnet	Electric components, Contract manufacturing (Fiery)
Adobe	PostScript® (Fiery and Productivity Software)
Dell Electronics	Contract manufacturing (FFPS)
HCL Technologies	Sustaining engineering (FFPS)
Third party branded: DuPont, Huntsman, Sensient	Textile ink
Ink pigment and component suppliers	Ink pigments, photoinitiators, and other components
Columbia Tech	Inkjet sub-assemblies
Schneider Electric	Inkjet electrical sub-assemblies
Phoseon	LED lamps
Shenzhen Runtianzhi Tech	Inkjet sub-assemblies
Seiko	Inkjet print heads
Xaar	Inkjet print heads
Ricoh	Inkjet print heads
Kyocera Mita	Inkjet print heads
Progress Software	Monarch and Radius operating system
Printable	Digital StoreFront modular offering
Enabling Technologies Ltd	Sensor interface and electronics

We generally do not maintain long-term agreements with our component suppliers. We primarily conduct business with such suppliers largely on a purchase order basis. If any of our sole or limited source suppliers were unwilling or unable to supply us with the components for which we rely on them, we may be unable to continue manufacturing our products utilizing such components.

Competition

Competition in our markets is significant and involves rapidly changing technologies and frequent new product introductions. To maintain and improve our competitive position, we must continue to develop and introduce new products and features on a timely and cost-effective basis to keep pace with the evolving needs of our customers and the product offerings of our competitors. We believe the principal competitive factor affecting our markets is the market acceptance rates for new printing technology.

Industrial Inkjet

Our super-wide and wide format industrial digital inkjet printers compete with printers produced by Agfa, Durst, Canon, Hewlett-Packard (“HP”), Inca, Mimaki, Roland, and Mutoh throughout most of the world. There are also Chinese and Korean printer manufacturers in the marketplace, but their products are typically sold in their domestic markets and are not currently perceived as viable alternatives in most other markets, given product quality and more limited after-sales service and support. Our UV and LED curable ink is sold to users of our UV industrial inkjet printers, which have advanced quality control systems to ensure that correct color and non-expired ink is used to prevent damage to the printer. This results in most ink used in our printers being sold by us. While third party ink is available, its use may compromise the printer’s quality control system and also voids certain provisions of our printer warranty and service contracts. Our Nozomi corrugated packaging digital inkjet printers compete with printers offered by Barberan, Durst, HP, and Sun Automation.

Our Reggiani industrial digital inkjet textile printers compete with Dover, Durst, Mimaki, Roland, Epson, Konica Minolta, Robustelli, Atexco, Shenzhen Homer Textile, Kornit, Ricoh, and Digital Graphics. Competitive digital inkjet textile printers are manufactured in Italy, Japan, China, and smaller emerging markets such as Indonesia. Key competitors driving digitalization of the textile printer market include Dover and Kornit. Reggiani also competes with other digital inkjet textile printing technologies including pre-washing and post-washing printing techniques.

Our Cretaprint ceramic tile decoration digital inkjet printers compete with ceramic tile decoration printers manufactured in Spain (KERAJet), Austria (Durst), Italy (Technoferrari, Projecta, Intesa, and System), China (Flora, Hope, Meijia, and Teckwin), and smaller emerging competition in other markets such as Indonesia. The ceramic tile industry has experienced a relocation from southern Europe to the emerging markets of China, India, Brazil, and Indonesia, among others. Competition in the Chinese market consists of small Chinese ceramic tile decoration digital inkjet printers and European manufacturers that are reducing prices to gain market share.

Productivity Software

Our Productivity Software segment, which includes our business process automation, cloud-based order entry and order management systems, cross media marketing, and imposition solution systems faces competition from software application vendors that specifically target the printing and packaging industries. These vendors are typically small, privately-owned companies. We also face competition from larger vendors that currently offer, or are seeking to develop, business process automation printing products including HP, Epicor, and SAP. We face competition from Oracle, SAP, Kiwiplan, and Heidelberg in the packaging software market.

Our Optitex 3D CAD software competes with Lectra, Assyst, CLO, Browzwear, and Gerber. Optitex provides 2D CAD design and 3D CAD visualization in the same application. Therefore, the CAD information and the 3D information are tightly integrated. Furthermore, the incremental learning curve from using 2D to using 3D is minimal.

Fiery

The principal competitive factors affecting the market for our Fiery solutions include customer service and support, product reputation, quality, performance, price, and product features such as functionality, scalability, ease of use, and ability to interface with products produced by the significant printer manufacturers. Although we have direct relationships with each of the leading printer manufacturers and work closely with them to integrate Fiery DFE and software technology into the design and development of their print engines to maximize their quality and capability, our primary competitors for stand-alone color DFEs, embedded DFEs, and design-licensed solutions are these same leading printer manufacturing companies. They

each maintain substantial investments in research and development. Some of this investment is targeted at integrating products and technology that we have designed and some of this investment is targeted at developing products and technology that compete with our Fiery brand.

We are the largest third party DFE developer, although our market compared with DFEs developed internally by the leading printer manufacturers, since we primarily focus on production printers, rather than office or consumer printers, is small. We believe that our advantages include continuously advancing technology, short time-to-market, brand recognition, end user loyalty, sizable installed base, number of products supported, price driven by lower development costs, and market knowledge. We intend to continue to develop new DFEs with capabilities that meet the changing needs of the printer manufacturers' product development road maps. Although we do not directly control the distribution channels, we provide a variety of features as well as unique "look and feel" to the printer manufacturers' products to differentiate our customers' products from those of their competitors. Ultimately, we believe that end customer and reseller channel preference for the Fiery DFE and software solutions drives demand for Fiery products through the printer manufacturers.

Intellectual Property Rights

We rely on a combination of patent, copyright, trademark, and trade secret laws; non-disclosure agreements; and other contractual provisions to establish, maintain, and protect our intellectual property rights. Although we believe that our intellectual property rights are important to our business, no single patent, copyright, trademark, or trade secret is solely responsible for the development and manufacturing of our products.

We are currently pursuing patent applications in the U.S. and certain foreign jurisdictions to protect various inventions. Over time, we have accumulated a portfolio of patents issued in these jurisdictions. We own or have rights to the copyrights of the software code in our products and rights to the trademarks under which our products are marketed. We have registered certain trademarks in the U.S. and certain foreign jurisdictions and will continue to evaluate the registration of additional trademarks as appropriate.

Certain of our products include intellectual property licensed from our customers. We have also granted and may continue to grant licenses to our intellectual property, when and as we deem appropriate.

Financial Information about Foreign and Domestic Operations and Export Sales

See Note 3 – Segment, Geographic, and Major Customer Information and Note 17 – Income Taxes of Notes to Consolidated Financial Statements. See also Item 1A: Risk Factors – We face risks from currency fluctuations and We face risks from our international operations.

Available Information

Our Internet address is www.efi.com. We make the following filings available free of charge through our Investor Relations website (ir.efi.com): our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, proxy statements, and, if applicable, amendments to those reports filed or furnished pursuant to the Exchange Act as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. The information contained, or referred to, on our website is not part of this annual report or any other report that we file with, or furnish to, the SEC unless expressly noted.

We file Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, proxy statements, and other documents with the SEC under the Exchange Act. Such reports, proxy statements and other

documents are available on the SEC website (www.sec.gov).

Item 1A: Risk Factors

If we fail to continue to introduce new products that achieve market acceptance on a timely basis, we will not be able to compete effectively, and we will be unable to increase or maintain net revenue and gross margins.

We operate in a highly competitive and quickly changing environment. Our future success depends in large part upon our ability to identify demand trends and quickly develop or acquire, and manufacture and sell, products that satisfy these demands in a cost-effective manner. In order to differentiate our products from our competitors' products, we must continue to invest in research and development. For example, we need a broad product portfolio and have identified gaps such as those we are currently experiencing in the high-end of Display Graphics, and are committing substantial resources to develop new products to strengthen our product portfolio.

Successfully predicting demand trends is difficult, and it is very difficult to predict the effect introducing any new products will have on our existing product sales. We will also need to respond effectively to new product announcements by our competitors and quickly introduce or enhance competitive products. Any delays in product development and introduction, or product introductions that do not meet broad market acceptance, or unsuccessful launches of new product lines, could result in:

- loss of or delay in revenue and loss of market share;
- negative publicity and damage to our reputation and brands;
- a decline in the average selling price of our products;
- adverse reactions in our sales channels, such as reduced online product visibility, or loss of a sales channel;
- product returns; or
- failure to recover amounts invested.

We face competition in our Industrial Inkjet and Productivity Software operating segments which could cause downward pressure on prices and loss of market share.

We operate in highly competitive markets in our Industrial Inkjet and Productivity Software segments.

Our super-wide and wide format industrial inkjet products compete against several companies that market industrial inkjet printing systems based on electrostatic, drop-on-demand, and continuous drop-on-demand inkjet and other technologies and printers utilizing UV curable ink, including Agfa, Durst, Canon, HP, Inco, Mimaki, Roland, and Mutoh;

• Our Reggiani industrial inkjet textile printers compete with printers offered by Dover, Durst, Mimaki, Roland, Epson, Konica Minolta, Robustelli, Atexco, Shenzhen Homer Textile, Kornit and Digital Graphics;

• Our Cretaprint ceramic tile decoration inkjet printers compete with ceramic tile decoration printers manufactured in Spain, Austria, Italy, Brazil, China, and smaller emerging competitors in other markets such as Indonesia;

• Our Productivity Software operating segment faces competition from software application vendors, which include many small private companies, that specifically target the printing industry, as well as larger vendors that currently offer, or are seeking to develop, business process automation printing products. Competitors include HP, Epicor and SAP; and

• Our packaging software market faces competition from Oracle, SAP, SolarSoft, and Heidelberg, and our Optitex 3D CAD software competes with Lectra, Assyst, CLO, Browzwear, and Gerber.

Some of our competitors have greater resources to develop new products and technologies and market those products, as well as acquire or develop critical components at lower costs, which would provide them with a competitive advantage. Our competitors could also exert downward pressure on product pricing to gain market share.

For example, the local competitors in the Chinese and Korean markets are developing, manufacturing, and selling inexpensive printers mainly to the local markets and in the ceramic tile decoration market, small Chinese ceramic tile decoration digital inkjet printer manufacturers and European manufacturers have been reducing prices to gain market share. We also face competition from existing conventional and digital inkjet super-wide and wide format printing methods,

including screen printing and offset printing and Reggiani faces competition from other digital inkjet textile printing technologies including pre-washing and post-washing printing techniques.

We face strong competition for printing supplies such as ink and we have experienced supply issues in ink production, which may limit our growth in ink sales.

We compete with independent manufacturers in the ink market consisting of smaller vendors, as well as larger vendors such as DuPont Digital Printing and Sun Chemical.

Our UV curable ink is sold to users of our super-wide and wide format UV industrial inkjet printers, which have advanced quality control systems to ensure that correct color and non-expired ink is used to prevent damage to the printer. This results in most ink used in our super-wide and wide format printers being sold by us. While third party ink is available, its use compromises the printer's quality control system and voids most provisions of our printer warranty and service contracts. Nevertheless, we cannot guarantee we will be able to remain the principal ink supplier for our super-wide and wide format UV industrial inkjet printers. We could experience an overall price reduction within the ink market, which would also adversely affect our gross profit.

We sell both our own inks and third party branded textile ink to users of our textile inkjet printer. We offer a strong value proposition with our own and third party branded inks, but cannot guarantee that we will be the primary supplier of textile ink to the users of our printers as these branded inks are available on the market.

Our solvent-based ceramic ink is sold to users of our ceramic tile decoration inkjet printers. The ceramic ink market is generally an open system for ink and therefore customers may change between suppliers. Although we are focused on developing this recurring revenue stream, we cannot guarantee that we will become the primary supplier of ceramic ink to the users of our printers.

In addition, we have recently experienced supply issues, primarily in China, where we saw changes in tariff structure, price increases in ink components, and short supplies of ink components due to reduced production levels at a number of suppliers, which limited the amount of ink we could manufacture. Although we are working to increase purchases from new sources for ink components, we may not be able to supply the same volume of ink as we have historically and may lose market share to our competitors, thereby limiting our growth in ink sales.

If the market for digital textile printing does not develop as we anticipate, we may not be able to grow our digital inkjet textile printing business.

If the global printed textile industry does not broadly accept digital printing as an alternative to either analog printing or single color (dyed) garments, our revenue may not grow as quickly as expected. Widespread adoption of digital textile printing depends on the willingness and ability of businesses in the printed textile industry to replace their existing analog printing systems and single color (dyed) garments with digital printing systems. The adoption of digital textile printing is dependent to some extent on the growth of "fast fashion."

A key element of our digital inkjet textile printing growth strategy is to market digital inkjet printing systems to contract printers that serve major textile brand owners and fashion designers. If leading textile brand owners and fashion designers are not convinced of the benefits of digital inkjet textile printing or if there is a significant reduction in the popularity of printed textiles, especially those that are customized or personalized, among the consumers to whom such brand owners and fashion designers cater, or if these businesses decide that digital inkjet printing processes are less reliable, less cost-effective, lower quality, or otherwise less suitable for their commercial needs than analog printing processes and single color (dyed) garments, then the market for digital textile printers and software

may not develop as we anticipate and we may not be able to grow our inkjet textile printing business.

We do not typically have long-term purchase commitments with the printer manufacturer customers that purchase and resell our Fiery DFE and software solutions. They have in the past reduced or ceased to purchase products from us, and could at any time in the future reduce or cease to purchase products from us, thereby harming our operating results and business.

Although end customer and reseller channel preference for Fiery DFE and software solutions drives demand, most Fiery revenue relies on printer manufacturers to integrate Fiery technology into the design and development of their print engines. We have established direct relationships with several leading printer manufacturers and work closely with them to design, develop, and integrate Fiery DFE and software technology to maximize the capability of their print engines. These manufacturers act as distributors and sell Fiery products to end customers through reseller channels. A significant portion of our revenue is, and has been, generated by sales of our Fiery DFE and software solutions to a relatively small number of leading printer manufacturers. Our reliance on revenue from the leading printer manufacturers was 22%, 26%, and 28% of our consolidated revenue, during 2018, 2017, and 2016, respectively. Because sales of our Fiery products constitute a significant portion of our revenue and there are a limited number of printer manufacturers producing printers in sufficient volume to be attractive customers for us, we expect that we will continue to depend on a relatively small number of printer manufacturers for a significant portion of our Fiery revenue in future periods. Accordingly, if we lose or experience reduced sales to one of these printer manufacturer customers, we will have difficulty replacing that revenue with sales to new or existing customers.

With the exception of certain minimum purchase obligations, we typically do not have long-term volume purchase contracts with our significant printer manufacturer customers, including Konica Minolta, Ricoh, and Canon, and they are not obligated to purchase products from us. Accordingly, our printer manufacturer customers could at any time reduce their purchases from us or cease purchasing our products altogether. In the past, these printer manufacturer customers have elected to develop products on their own for sale to end customers, incorporated technologies developed by other companies into their products, and have directly sold third party competitive products, rather than rely solely or partially on our products. We expect that these printer manufacturer customers will continue to make such elections in the future.

Many of the products and technologies we are developing require that we coordinate development, quality testing, marketing, and other tasks with these printer manufacturers. We cannot control their development efforts or the timing of these efforts. We rely on these printer manufacturers to develop new printer and copier solutions, applications, and product enhancements that utilize our Fiery DFE technologies and software solutions in a timely and cost-effective manner. Our success in the DFE industry depends on the ability of these printer manufacturers to utilize our technologies to develop the right solutions with the right features to meet ever changing customer requirements and responding to emerging industry standards and other technological changes.

Because our printer manufacturer customers incorporate our products into products they manufacture and sell, any decline in demand for copiers or laser printers or any other negative developments affecting our major customers or the computer industry in general, including reduced end user demand, would likely harm our results of operations. Certain printer manufacturer customers have experienced serious financial difficulties in the past, which led to a decline in sales of our products. If any significant customers face such difficulties in the future, our operating results could be harmed through, among other things, decreased sales volume, write-off of accounts receivable, and write-off of inventories related to products we have manufactured for these customers' products.

Economic uncertainty has negatively affected our business in the past and may negatively affect our business in the future.

Our revenue and profitability depend significantly on the overall demand for information technology products that enable printing of digital data, which in turn depends on a variety of macro- and micro-economic conditions. In addition, revenue growth and profitability in our Industrial Inkjet operating segment depends on demand and spending for advertising and marketing products and programs, which also depends on a variety of macro-and micro-economic conditions.

Uncertainty about current global economic conditions poses a risk as our customers may delay purchases of our products in response to tighter credit, negative financial news, and/or declines in income or asset values. For example, during the fourth quarter, we experienced many of our customers delaying spending on capital equipment and software as they became

increasingly concerned about the economic environment. Any financial turmoil affecting the banking system and financial markets and the possibility that financial institutions may consolidate or terminate their activities have resulted in a tightening in the credit market, a low level of liquidity in many financial markets, and extreme volatility in fixed income, credit, currency, and equity markets. There could be a number of follow-on effects from a credit crisis on our business, including insolvency of key suppliers resulting in product delays; inability of customers and distributors to obtain credit to finance purchases of our products and/or customer and distributor insolvencies; increased difficulty in managing inventories; and other financial institutions negatively impacting our treasury operations.

Economic uncertainty remains in the European countries due to uncertainty associated with Brexit, uncertainty in Spain related to Catalonia, and uncertainty in Italy related to significant public debt and uncollectible loans in the banking system, among other considerations. We have no European sovereign debt investments. Our European debt investments consist of non-sovereign corporate debt securities of \$4.5 million, which represents 10% of our corporate debt instruments (4% of our short-term investments) as of December 31, 2018. European debt investments are with corporations domiciled in the northern and central European countries of Netherlands, Sweden, and France. We do not have any short-term investments with corporations domiciled in the higher risk “southern European” countries (i.e., Italy, Spain, and Portugal). We believe that we do not have significant exposure with respect to our money market and corporate debt investments in Europe, although we do have some exposure due to the interdependencies among the European Union countries.

Economic conditions and regulatory changes leading up to and following the United Kingdom’s likely exit from the European Union could have a material adverse effect on our business and results of operations.

There remains significant uncertainty about the process for and the impacts of the U.K.’s leaving the European Union, typically referred to as Brexit. While the full effects of Brexit will not be known for some time, Brexit could cause disruptions to, and create uncertainty surrounding, our business and results of operations. The most immediate effect has been significant volatility in global equity and debt markets and currency exchange rate fluctuations. Ongoing global market volatility and a deterioration in economic conditions due to uncertainty surrounding Brexit, could significantly disrupt the markets in which we operate and lead our customers to closely monitor their costs and delay capital spending decisions.

The effects of Brexit will depend on any agreements the U.K. makes to retain access to E.U. markets, either during a transitional period or more permanently. The measures could potentially disrupt the markets we serve and may cause us to lose customers and employees. In addition, Brexit could lead to legal uncertainty and potentially divergent national laws and regulations as the U.K. determines which E.U. laws to replace or replicate as well as potential import duties for the products we produce in the U.K. and export to the European Union.

We have significant customers and operations in the U.K. and any of these effects of Brexit could adversely affect our business, results of operations and financial condition.

Our business, results of operations, and financial condition may be negatively impacted by conditions abroad, including local economies, political environments, fluctuating foreign currencies, shifting regulatory schemes, and the imposition of tariffs.

A significant amount of our revenue is generated from operations outside the U.S. We expect that sales outside of the U.S. will continue to represent a significant portion of our total revenue. We maintain significant operations and acquire or manufacture many of our products and/or their components outside the U.S. Our future revenue, costs, and results of operations could be significantly affected by changes in each country’s economic conditions, foreign

currency exchange rates relative to the U.S. dollar, political conditions, trade protection measures, licensing requirements, local tax issues, capitalization, and other related legal matters. If our future revenue, costs, and results of operations are significantly affected by economic conditions abroad, our results of operations and financial condition could be negatively impacted. Specifically, the deceleration of the economy in China has negatively impacted, and may continue to negatively impact, our results of operations as our customers in China reduce their spending. The Chinese government continues to rebalance the country's economic model with tightening real estate and environmental regulation.

In addition, we work with some suppliers located in China to obtain certain components for our products. The United States government has recently announced import tariffs on goods manufactured in China. These tariffs, depending upon the

ultimate scope, duration and how they are implemented, could negatively impact our business by continuing to increase our costs and by making our products less competitive. We may not be able to pass such increased costs on to our customers. In addition, any changes to suppliers outside of China may increase our costs and could impact the global competitiveness of our products. We sell U.S. origin products in the Chinese market and any tariffs on U.S. goods imposed by the Chinese government, depending upon the ultimate scope, duration and how they are implemented, could negatively impact our business by making our products less competitive in that market.

We face risks from currency fluctuations.

Given the significance of non-U.S. sales to our total revenue, we face a continuing risk from the fluctuation of the U.S. dollar versus foreign currencies. Although the majority of our receivables are invoiced and collected in U.S. dollars, we have exposure from non-U.S. dollar-denominated sales (consisting primarily of the Euro, British pound sterling, and Chinese renminbi). We have a substantial number of international employees and facilities, resulting in material operating expenses denominated in foreign currencies. We have exposure from non-U.S. dollar-denominated operating expenses in foreign countries (primarily the Euro, British pound sterling, Israeli shekel, and Indian rupee).

We can benefit from or be adversely affected by either a weaker or stronger U.S. dollar relative to major currencies worldwide with respect to our consolidated financial statements. Accordingly, we can benefit from a stronger U.S. dollar due to the corresponding reduction in our foreign operating expenses translated into U.S. dollars and at the same time we can be adversely affected by a stronger U.S. dollar due to the corresponding reduction in foreign revenue translated into U.S. dollars. From time to time we have hedged our operating expense exposure in Indian rupees. We did not have any foreign currency derivative contracts designated as cash flow hedges as of December 31, 2018.

We hedge balance sheet remeasurement exposures using forward contracts not designated for hedge accounting treatment with notional amounts of \$191.8 million as of December 31, 2018. Forward contracts not designated as hedging instruments consist of hedges of Australian dollars, British pounds sterling, Canadian dollars, Chinese renminbi, Euro, Israeli shekel, and Japanese yen. Please refer to Note 11 – Derivatives and Hedging of Notes to Consolidated Financial Statements for further information.

As of December 31, 2018, we had not entered into hedges against any other currency exposures, but we may consider hedging against movements in other currencies in the future. Our efforts to reduce risk from our international operations and from fluctuations in foreign currencies or interest rates may not be successful, which could harm our financial condition and operating results.

We face risks from our international operations.

We are subject to certain risks because of our international operations including:

- restrictions on our ability to access cash generated by international operations, especially in China and Brazil, due to restrictions on the repatriation of dividends, distribution of cash to shareholders outside such countries, foreign exchange control, and other restrictions;
- security concerns, such as armed conflict and civil or military unrest, crime, political instability, and terrorist activity;
- customer credit risk, especially in emerging or economically challenged regions, with accompanying challenges to enforce our legal rights should collection issues arise;
- changes in governmental regulation, including labor regulations, and our inability or failure to obtain required approvals, permits, or registrations could harm our international and domestic sales and adversely affect our revenue, business, and operations;

violations of governmental regulation, including labor regulations, could result in fines and penalties, including prohibiting us from exporting our products to one or more countries, and could materially adversely affect our business;

trade legislation in either the U.S. or other countries, such as a change in the current tariff structures, export compliance laws, or other trade policies, could adversely affect our ability to sell or manufacture in international markets;

adverse tax consequences, including imposition of withholding or other taxes on payments by subsidiaries, and some of our sales to international customers are made under export licenses that must be obtained from the U.S. Department of Commerce (“DOC”) and certain transactions require prior approval of the DOC or other governmental agencies.

We incur additional legal compliance costs associated with our international operations and could become subject to legal penalties in foreign countries if we do not comply with local laws and regulations, which may be substantially different from those in the U.S. In many foreign countries, particularly those with developing economies, it may be common to engage in business practices that are prohibited by U.S. regulations such as the Foreign Corrupt Practices Act of 1977, as amended. Although we have implemented policies and procedures designed to ensure compliance with these laws, there can be no assurance that all of our employees, contractors, and agents, as well as outsourced business operations, including those based in or from countries where practices that violate such U.S. laws may be customary, will not take actions in violation of our policies. Furthermore, there can be no assurance that employees, contractors, and agents of acquired companies did not take actions in violation of such laws and regulations prior to the date they were acquired by us, although we perform due diligence procedures to endeavor to discover any such actions prior to the acquisition date.

We license software used in most of our Fiery products and certain Productivity Software products from Adobe and the loss of these licenses would prevent shipment of these products.

We are required to obtain separate licenses from Adobe for the right to use Adobe PostScript® software in each copier or printer model that uses a Fiery DFE, and other Adobe software for certain Productivity Software products. Although to date we have successfully obtained licenses to use Adobe PostScript® and other Adobe software when required, Adobe is not required to, and we cannot be certain that Adobe will, grant future licenses to Adobe PostScript® and other Adobe software on reasonable terms, in a timely manner, or at all. To obtain licenses from Adobe, Adobe requires that we obtain quality assurance approvals from them for our products that use Adobe software. Although to date we have successfully obtained such quality assurance approvals from Adobe, we cannot be certain they will grant us such approvals in the future. If Adobe does not grant us such licenses or approvals, if the Adobe licenses are terminated, or if our relationship is otherwise materially impaired, we would likely be unable to sell products that incorporate Adobe PostScript® or other Adobe software and our financial condition and results of operations would be significantly harmed.

We manufacture super-wide and wide format industrial digital inkjet printers and formulate UV curable, LED curable, and reactive dye ink in single locations. Any significant interruption in the manufacturing process at these facilities could adversely affect our business.

Our VUTEk hybrid super-wide and wide format industrial digital inkjet printers are primarily manufactured in a single location in our Manchester, New Hampshire facility. Our VUTEk roll-to-roll super-wide format industrial digital inkjet printers are manufactured in a single location in our Rosh Ha’Ayin, Israel facility. Our FabriVU and other Reggiani industrial digital inkjet textile printers are manufactured in a single location in our Bergamo, Italy facility. Our Cretaprint ceramic tile decoration and Nozomi corrugated packaging digital inkjet printers are manufactured in a single location in our Castellon, Spain facility. We formulate our UV curable and LED curable digital ink that is used in our display graphics super-wide and wide-format industrial digital inkjet printers in a single location in our Ypsilanti, Michigan facility. We formulate our reactive dye ink that is used in our textile digital inkjet printers in a single location in our Bedford, U.K., facility. Any significant interruption in the manufacturing process at any of these facilities could affect the supply of our products, our ability to meet customer demand, and our ability to maintain market share.

We are developing contingency plans utilizing our manufacturing facilities in multiple locations and the capabilities of certain contract manufacturers in the event of a significant interruption in the manufacturing process at any of the aforementioned facilities. Until those plans are complete, disruptions in the manufacturing process at any of our sole source internal facilities could adversely affect our business.

We depend on a limited group of suppliers for key components in our products. The loss of any of these suppliers, the inability of any of these suppliers to meet our requirements, or delays or shortages of supply of these components, could adversely affect our business.

Certain components necessary for the manufacture of our products are obtained from a sole supplier or a limited group of suppliers. These include CPUs, chip sets, ASICs, and other related semiconductor components; inkjet print heads for our industrial inkjet printers; branded textile ink; and certain key ingredients (primarily pigments and photoinitiators) for our digital UV curable ink. We generally do not maintain long-term agreements with our component suppliers and conduct business with such suppliers largely on a purchase order basis. If we are unable to continue to procure these sole or limited sourced components from our current suppliers in the required quantities, we will have to qualify other sources, if possible, or redesign our products. If we were unable to obtain the branded textile ink or the pigments required for our digital UV curable ink, we would have to qualify other sources, if possible, or reformulate and test the new ink formulations. These suppliers may be concentrated within similar industries or geographic locations, which could potentially exacerbate these risks. We cannot provide assurance that other sources of these components exist or will be willing to supply us on reasonable terms or at all, or that we will be able to design around these components. Any unavailability, delays, or shortages of these components or any inability of our suppliers to meet our requirements, could harm our business.

Because the purchase of certain key components involves long lead times, in the event of unanticipated volatility in demand for our products, we have in the past been, and may in the future be, unable to manufacture certain products in a quantity sufficient to meet current demand. Further, as has occurred in the past, in the event that anticipated demand does not materialize, we may hold excess quantities of inventory that could become obsolete. To meet projected demand, we maintain an inventory of components for which we are dependent on sole or limited source suppliers and components with prices that fluctuate significantly. As a result, we are subject to risk of inventory obsolescence, which could adversely affect our operating results and financial condition.

Market prices and availability of certain components, particularly memory subsystems and Intel-designed components, which collectively represent a substantial portion of the total manufactured cost of our products, have fluctuated significantly in the past. Such fluctuations could have a material adverse effect on our operating results and financial condition including reduced gross profit.

We are dependent on a limited number of subcontractors, with whom we generally do not have long-term contracts, to manufacture and deliver products to our customers. The loss of any of these subcontractors could adversely affect our business.

We subcontract with other companies to manufacture certain of our products and we generally do not have long-term agreements with these subcontractors. While we closely monitor our subcontractors' performance, we cannot be assured that such subcontractors will continue to manufacture our products in a timely and effective manner. In the past, a weakened economy led to the dissolution, bankruptcy, or consolidation of some of our subcontractors, which decreased the available number of subcontractors. If the available number of subcontractors were to decrease in the future, it is possible that we would not be able to secure appropriate subcontractors to fulfill our demand in a timely manner, or at all, particularly if demand for our products increases.

The existence of fewer subcontractors may reduce our negotiating leverage, thereby potentially resulting in higher product costs. Financial problems resulting in the inability of our subcontractors to make or ship our products, could harm our business, operating results, and financial condition. If we change subcontractors, we could experience delays in finding, qualifying, and commencing business with new subcontractors, which would result in delayed delivery of our products and potentially the cancellation of orders for our products.

We have outsourced our Fiery production with Avnet, FFPS production with Dell, FFPS sustaining engineering with HCL, ceramic ink formulation with subcontractors in China and Italy, and formulation of certain textile ink with third party branded suppliers. Certain Industrial Inkjet sub-assemblies and wide format printer products are manufactured in the U.S. and China. Should our manufacturers experience any inability, or unwillingness, to manufacture or deliver our products, then our business, financial condition, and operations could be harmed. Since we generally do not maintain long-term agreements with our manufacturers, any of our manufacturers could enter into agreements with our competitors that might restrict or prohibit

them from manufacturing our products or could otherwise lead to an inability to fill our orders in a timely manner. In such event, we may not be able to find suitable replacements, in which case our financial condition and operations would likely be harmed.

We may face increased risk of inventory obsolescence, excess, or shortages related to our Industrial Inkjet printers and ink.

We procure raw materials and internally manufacture our super-wide format, textile, and ceramic tile decoration industrial inkjet printers and formulate digital UV curable and reactive dye ink based on our sales forecasts. If we do not accurately forecast demand for our products, we may produce or purchase excess inventory, which may result in our inventory becoming obsolete. We might not produce the correct mix of products to match actual demand if our sales forecast is not accurate, resulting in lost sales. If we have excess printers, ink, or other products, we may need to lower prices to stimulate demand.

Our ink products have a defined shelf life. If we do not sell our ink before the end of its shelf life, it will have to be written off. We have also experienced UV curable ink shortages in the past and may continue to experience such shortages in the future. UV curable ink shortages may require that we incur additional costs to respond to increased demand and overcome such shortages.

If we are not able to hire and retain skilled employees, we may not be able to develop and manufacture products, or meet demand for our products, in a timely fashion.

We depend on skilled employees, such as software and hardware engineers, quality assurance engineers, chemists, chemical engineers, and other technical professionals with specialized skills. We are headquartered in the Silicon Valley and have research and development employees in facilities in 15 U.S. locations. We also have research and development employees in facilities in India, Europe, Israel, the U.K., Brazil, and Canada. Competition has historically been intense among companies hiring engineering and technical professionals. In times of professional labor imbalances, it has in the past and is likely in the future, to be difficult to locate and hire qualified engineers and technical professionals and to retain these employees. There are many technology companies located near our corporate offices in the Silicon Valley and our operations in India that may attempt to hire our employees.

The movement of our stock price may also impact our ability to hire and retain employees. If we do not offer competitive compensation, we may not be able to recruit or retain employees, which may have an adverse effect on our ability to develop products in a timely fashion, which could harm our business, financial condition, and operating results.

We rely on our distribution channels to ensure sales growth.

The leading printer manufacturers, which comprise the majority of the customer base in our Fiery operating segment, are typically large profitable customers with little credit risk to us. Our Productivity Software and Industrial Inkjet operating segments sell primarily through a direct sales force, augmented by some select distributors, to a broader base of customers than Fiery. Any interruption of these distribution channels could negatively impact us in the future.

Successfully managing the interaction of our direct and indirect channel efforts to reach various potential customer industries for our products and services is a complex process. For example, in response to our direct sales strategies or for other business reasons, our current distributors may choose to represent our competitors in place of us. In addition, from time to time we grant concessions to some of our distributors and allow them to return previously purchased products. Accordingly, reserves for estimated returns and exchanges are recorded as a reduction of revenues upon

applicable product shipment, and are based upon our historical experience. Our reliance upon indirect distribution methods may reduce visibility to demand and pricing issues, and therefore make forecasting more difficult and, to the extent that returns exceed estimates, our revenues and operating results may be adversely affected.

The sales cycle for our products is long and we may incur substantial non-recoverable expenses or devote significant resources to sales that do not occur when anticipated.

Potential or existing customers, particularly larger enterprise customers, generally commit significant resources to an evaluation of available products and require us to expend substantial time, effort and money educating them as to the value of our products and services. Sales of our products to these customers often require an extensive education and marketing effort.

We could expend significant funds and resources during a sales cycle and ultimately fail to win the customer. Our sales cycle for all our products and services is subject to significant risks and delays over which we have little or no control, including:

- our customer's budgetary constraints;
- the timing of our customers' budget cycles and approval processes;
- our customers' willingness to replace their current print solutions;
- our need to educate potential customers about the uses and benefits of our products and services; and
- the timing of the expiration of our customers' current outsourcing agreements for similar products and services.

If our sales cycles lengthen unexpectedly, they could adversely affect the timing of our revenues or increase costs, which may cause fluctuations in our quarterly revenues and results of operations. Finally, if we are unsuccessful in closing sales of our products after spending significant funds and management resources, our operating margins and results of operations could be adversely impacted, and the price of our common stock could decline.

Our revenue for a particular period is difficult to predict, and a shortfall in revenue may harm our operating results.

Our revenue for a particular quarter is difficult to predict, especially in light of a challenging and inconsistent global macroeconomic environment and related market uncertainty. Our revenue may grow at a slower rate than in past periods or decline on a year-over-year basis. Our ability to meet financial expectations could also be adversely affected if the nonlinear sales pattern seen in some of our past quarters recurs in future periods. We have experienced periods of time during which bookings have exceeded shipments or manufacturing issues have delayed shipments, leading to nonlinearity in shipping patterns. In addition to making it difficult to predict revenue for a particular period, nonlinearity in shipping can increase costs, because irregular shipment patterns result in periods of underutilized capacity and periods in which overtime expenses may be incurred, as well as in potential additional inventory management-related costs. In addition, to the extent that manufacturing issues and any related component shortages result in delayed shipments in the future, and particularly in periods in which our contract manufacturers are operating at higher levels of capacity, it is possible that revenue for a quarter could be adversely affected if such matters occur and are not remediated within the same quarter.

The timing of large orders can also have a significant effect on our business and operating results from quarter to quarter, primarily in the United States and in emerging countries. From time to time, we receive large orders that have a significant effect on our operating results in the period in which the order is recognized as revenue. The timing of such orders is difficult to predict, and the timing of revenue recognition from such orders may affect period to period changes in revenue. As a result, our operating results could vary materially from quarter to quarter based on the receipt of such orders and their ultimate recognition as revenue.

Inventory management remains an area of focus. We have experienced longer than normal manufacturing lead times in the past which have caused some customers to place the same order multiple times within our various sales channels and to cancel the duplicative orders upon receipt of the product, or to place orders with other vendors with shorter manufacturing lead times. Such multiple ordering (along with other factors) or risk of order cancellation may

cause difficulty in predicting our revenue and, as a result, could impair our ability to manage parts inventory effectively. In addition, our efforts to improve manufacturing lead-time performance may result in corresponding reductions in order backlog. A decline in backlog levels could result in more variability and less predictability in our quarter-to-quarter revenue and operating results. In addition, when facing component supply-related challenges, we have increased our efforts in procuring components in order to meet customer expectations which in turn contributes to an increase in purchase commitments. Increases in our purchase commitments to shorten lead times could also lead to excess and obsolete inventory charges if the demand for our products is less than our expectations.

We plan our operating expense levels based primarily on forecasted revenue levels. These expenses and the impact of long-term commitments are relatively fixed in the short term. A shortfall in revenue could lead to operating results being below expectations because we may not be able to quickly reduce these expenses in response to short-term business changes.

Any of the above factors could have a material adverse impact on our operations and financial results.

Growing market share in the Productivity Software and Industrial Inkjet operating segments increases the possibility that we will experience increased bad debt expense and increased accounts receivable.

Many of the Productivity Software and Industrial Inkjet customers are smaller and potentially less credit worthy than the leading printer manufacturers that purchase from our Fiery segment. Our ceramic tile decoration digital inkjet customer base is primarily located in geographic regions, which have recently been subject to economic challenges, including southern Europe (primarily Spain and Italy) and emerging markets in APAC. Furthermore, if we increase the percentage of Productivity Software and Industrial Inkjet products that are sold internationally, it may be challenging to enforce our legal rights should collection issues arise. In addition, many of our Industrial Inkjet customers are requesting extended payment terms, and we have been granting them on a limited basis in response to our competitors offers. Due to these and other factors, growing Industrial Inkjet and Productivity Software market share may cause us to experience an increase in bad debt expense and an increase in days sales outstanding (“DSOs”).

DSOs increased during the year ended December 31, 2018, compared with December 31, 2017, primarily due to higher DSO across our businesses, except for Fiery and the textile market. We calculate DSO by dividing net accounts receivable at the end of the quarter by revenue recognized during the quarter, multiplied by the total days in the quarter, which is a measure of the relationship between sales and accounts receivable.

Acquisitions may result in unanticipated accounting charges or otherwise adversely affect our results of operations and result in difficulties assimilating and integrating operations, personnel, technologies, products, and information systems of acquired businesses.

We seek to develop new technologies and products from both internal and external sources. We have also purchased companies and businesses for the primary purpose of acquiring their customer base. As part of this effort, we have in the past made, and will likely continue to make, acquisitions of other businesses. Acquisitions involve numerous risks, including:

- difficulties integrating operations, employees, technologies, products, information systems, and the required focus of management attention, time, and effort to accomplish successful integration;
- information systems may be inadequate to operate the business of the acquired company until we are able to integrate the acquired business into our information technology system;
- integration of acquired business into our information system may be delayed, which may limit our ability to manage the acquired business and implement financial and operational controls;
- information systems may be poorly maintained by the acquired business;
- risk of entering markets in which we have little or no prior experience, or entering markets where competitors have stronger market positions;
- possible write-downs of impaired assets;
- changes in the fair value of contingent consideration;
- possible restructuring of personnel or leased facilities;
- potential loss of key employees of the acquired company;
-

possible overruns (compared to expectations) relative to the expense levels and cash outflows of the acquired business;

adverse reactions by customers, suppliers, or parties transacting business with the acquired company or us;

risk of negatively impacting stock analyst ratings;

potential litigation or any administrative proceedings arising from prior transactions or prior actions of the acquired company;

inability to protect or secure technology rights;

possible overruns of direct acquisition and integration costs; and

equity securities issued in connection with acquisitions may be dilutive to our existing stockholders unless mitigating actions are taken such as treasury stock purchases; alternatively, acquisitions made entirely or partially for cash reduce cash reserves.

Mergers and acquisitions of companies are inherently risky. We cannot provide assurance that previous or future acquisitions will be successful or will not harm our business, operating results, financial condition, or stock price.

We face risks relating to the potential impairment of goodwill and long-lived assets.

We complete a review of the carrying value of our goodwill and long-lived assets annually and, based on a combination of factors (i.e., triggering events), we may be required to perform an interim analysis.

Given the uncertainty of the economic environment and its potential impact on our business, there can be no assurance that our estimates and assumptions regarding the duration of any economic downturn, or the period or strength of any subsequent recovery, made for purposes of our goodwill impairment testing as of December 31, 2018 will prove to be accurate predictions of the future. If our assumptions regarding forecasted revenue or gross profit rates are not achieved, we may be required to record goodwill impairment charges in future periods relating to any of our reporting units, whether in connection with the next annual impairment testing in the fourth quarter of 2019 or prior to that, if an interim triggering event were to occur. It is not possible to determine if any such future impairment charge would result or, if it does, whether such charge would be material. No goodwill impairment foreshadowing events have occurred as of December 31, 2018.

During the fourth quarter of 2017, management approved a plan to sell approximately 31.5 acres of land and two related manufacturing buildings located in Meredith, New Hampshire (“Meredith facility”). The fair value of the Meredith facility, based on expected sales proceeds less cost to sell, was estimated to be less than the carrying amount of the assets. As a result, we incurred an impairment loss of approximately \$0.9 million in our consolidated results of operations for the year ended December 31, 2017. During the year ended December 31, 2018, we sold one of the buildings and associated land but the remaining building and land continue to be held-for-sale as of December 31, 2018. In the fourth quarter of 2018, we updated our analysis of the expected sales proceeds less cost to sell, and recognized an additional impairment charge of \$0.3 million on the remaining Meredith facility. We may be required to record additional impairment charges or a loss on sale if the sales proceeds for the remaining Meredith facility do not meet our expectations. We may also need to record impairment charges if we decide to sell or dispose of other long-term assets.

We are currently subject to securities lawsuits and we may be subject to similar or other litigation in the future, which may divert management’s attention and have a material adverse effect on our business, financial condition, and results of operations.

The market price of our common stock declined significantly following our August 3, 2017 announcement concerning our assessment of the timing of recognition of revenue and the effectiveness of our current and historical disclosure controls and internal control over financial reporting. Subsequently in August, a purported class action lawsuit was filed alleging, among other things, that we and certain of our officers violated federal securities laws by making allegedly false and misleading statements concerning our financial reporting, revenue recognition, internal controls, and disclosure controls and procedures, prior to our August 2017 announcement. The plaintiffs seek unspecified monetary damages on behalf of the putative class and an award of costs and expenses, including attorney’s fees. In addition, later in August 2017, a shareholder derivative complaint was filed alleging, among other things, that certain of our officers and directors had breached fiduciary duties and had been unjustly enriched and had made allegedly false and misleading statements concerning our financial reporting, revenue recognition, internal controls, and

disclosure controls and procedures. The complaint alleges that the Company has suffered damages and seeks an unspecified amount of damages, restitution, and declaratory and other relief.

We cannot predict the outcome of these lawsuits, and we may be subject to other similar litigation in the future. Monitoring and defending against legal actions, whether or not meritorious, is time-consuming for our management and detracts from our ability to fully focus our internal resources on our business activities. In addition, we may incur substantial legal fees and costs in connection with litigation. Although we maintain insurance coverage, recovery could be denied or prove to be insufficient. We are not currently able to estimate the possible cost to us from the currently pending lawsuits, and we cannot be certain how long it may take to resolve these matters or the possible amount of any damages that we may be required to

pay. We have not established any reserves for any potential liability relating to these or future securities lawsuits. It is possible that we could, in the future, incur judgments or enter into settlements of claims for monetary damages. A decision adverse to our interests on these actions could result in the payment of substantial damages and could have a material adverse effect on our business, results of operations, and financial condition. In addition, the uncertainty of the currently pending lawsuits could lead to more volatility in our stock price.

We are subject to numerous federal, state, and foreign employment laws and may face claims in the future under such laws.

We are subject to numerous federal, state, and foreign employment laws and from time to time face claims by our employees and former employees under such laws. There are no material claims pending or threatened against us under federal, state, or foreign employment laws, but we cannot be sure that material claims under such laws will not be made in the future against us, nor can we predict the likely impact of any such claims on us, or that, if asserted, we would be able to successfully resolve any such claims without incurring significant expense.

We may be unable to adequately protect our proprietary information and may incur expenses to defend our proprietary information.

We rely on copyright, patent, trademark, and trade secret protection, in addition to nondisclosure agreements, licensing, and cross-licensing arrangements to establish, maintain, and protect our intellectual property rights, all of which afford only limited protection. We have patents and pending patent applications in the U.S. and various foreign countries. There can be no assurance that patents will issue from our pending applications or from any future applications, or that, if issued, any claims allowed will be sufficiently broad to protect our technology. Any failure to adequately protect our proprietary information could harm our financial condition and operating results. We cannot be certain that any patents that have been, or may in the future be issued to us, or which we license from third parties, or any other proprietary rights will not be challenged, invalidated, or circumvented. In addition, we cannot be certain that any rights granted to us under any patents, licenses, or other proprietary rights will provide adequate protection of our proprietary information.

Many countries in which we derive revenue do not have comprehensive and highly developed legal systems, particularly with respect to the protection of intellectual property rights, which, among other things, can result in a prevalence of infringing products and counterfeit goods in certain countries, which could harm our business and reputation.

As different areas of our business change or mature, from time to time we evaluate our patent portfolio and decide to either pursue or not pursue specific patents and patent applications related to such areas. Choosing not to pursue certain patents, patentable applications, and failing to file applications for potentially patentable inventions, may harm our business by, among other things, enabling our competitors to more effectively compete with us, reducing potential claims we can bring against third parties for patent infringement, and limiting our potential defenses to intellectual property claims brought by third parties.

Litigation has been, and may continue to be, necessary to defend and enforce our proprietary rights. Such litigation, whether or not concluded successfully, could involve significant expense and the diversion of our attention and other resources, which could harm our financial condition and operating results.

We face risks from third party claims of infringement and potential litigation.

Third parties have claimed in the past, and may claim in the future, that our products infringe, or may infringe, their proprietary rights. Such claims have resulted in lengthy and expensive litigation in the past and could have a similar result in the future. Such claims and any related litigation, whether or not we are successful in the litigation, could result in substantial costs and diversion of our resources, which could harm our financial condition and operating results. Although we may seek licenses from third parties covering intellectual property that we are allegedly infringing, we cannot assure that any such licenses could be obtained on acceptable terms, if at all.

We are subject to risk of loss due to fire or earthquakes, floods, or other natural disasters.

We use flammable materials in the digital UV curable and ceramic digital ink formulation process; therefore, we may be subject to risk of loss resulting from fire. We maintain insurance policies to cover losses caused by fire, including business interruption insurance. If one or more of our facilities is damaged or otherwise ceases operations as a result of fire, it would reduce our digital UV curable and ceramic digital ink manufacturing capacity, which may reduce revenue and adversely affect our business.

Our corporate headquarters, including a significant portion of our research and development facilities, are located in the San Francisco Bay Area, which is known for seismic activity. This area has also experienced flooding in the past. Many of the components necessary for our products are purchased from suppliers based in areas that are subject to risk from natural disasters, including the San Francisco Bay Area, China, and Japan. A significant natural disaster, such as an earthquake, flood, tsunami, hurricane, typhoon, or other business interruptions due, for example, to power shortages and other interruptions have harmed our business, financial condition, and operating results in the past and could do so again in the future.

We may be subject to environmental-related liabilities due to our use of hazardous materials and solvents.

Our business operations involve the use of certain hazardous materials at certain of our locations. We formulate UV curable, reactive dye, and ceramic ink at certain locations and store UV curable, ceramic, solvent, and thermoforming ink, as well as a variety of textile ink including dye sublimation, pigmented, reactive dye, acid dye, and water-based dispersed printing ink at certain locations. Our outsourced partners in China and Italy formulate our ceramic solvent-based ink. The solvents used in ceramic digital ink formulation have low volatility and flammability by design. As a result, ceramic digital ink poses less environmental risk compared with true solvent ink. We launched internal formulation of reactive dye ink during 2016 at our facility in Bedford, U.K. Reactive dye is a water-based dye.

The hazardous materials and solvents that we use are subject to various governmental regulations relating to their transfer, handling, packaging, use, and disposal. We store ink at warehouses worldwide, including Europe, China, Israel, the U.K., and the U.S., and shipping companies distribute ink at our direction. We face potential liability for problems such as large spills or fires that may arise at ink manufacturing locations. While we customarily obtain insurance coverage typical for this kind of risk, such insurance may not be sufficient. If we fail to comply with these laws or an accident involving our ink waste or chemicals occurs, or if our insurance coverage is not sufficient, then our business and financial results could be harmed.

Future sales of our products could be limited if we do not comply with current and future environmental and chemical content regulations.

We believe that our products are currently compliant with RoHS, WEEE, REACH, and other regulations for the European Union as well as with China RoHS and other applicable international, U.S., state, and local environmental regulations. We monitor environmental compliance regulations to ensure that our products are fully compliant prior to the implementation of any potential new requirements. However, new unforeseen legislation could require us to re-engineer our products, complete costly analyses, or perform supplier surveys, which could harm our business and negatively impact our financial results. We could also incur additional costs, sanctions, and liabilities in connection with non-compliant product recalls, regulatory fines, and exclusion of non-compliant products from certain markets.

Environmental regulations and their enforcement have tightened in China, which has resulted in the closure of facilities without notice. Although such closures have not occurred with respect to our suppliers, the unexpected

shutdown of supplier factories in China may impact our supply of raw material for digital inkjet ink. Some of our ceramic printing customers in China have experienced plant closures due to stricter environmental enforcement, which has impacted our sales of ceramic ink and may impact our sales in the future.

Our products may contain defects, which are not discovered until after shipping, which could subject us to warranty claims in excess of our warranty reserves.

Our products consist of hardware and software developed by ourselves and others, which may contain undetected defects. We have in the past discovered software and hardware defects in certain of our products after their introduction, resulting in warranty expense and other expenses incurred in connection with rectifying such defects or, in certain circumstances, replacing the defective product, which may damage our relationships with our customers. Defects could be found in new versions of our products after commencement of commercial shipment and any such defects could result in a loss or delay in market acceptance of such products and thus harm our reputation and revenue. Defects in our products (including defects in licensed third-party software) detected prior to new product releases could result in delays in the introduction of new products and the incurrence of additional expense, which could harm our operating results. We generally provide a thirteen-month hardware limited warranty commencing upon installation for certain Industrial Inkjet printers, which may cover both parts and labor. Our Fiery DFE limited warranty is 12 to 15 months.

Our standard warranties contain limits on damages and exclusions, including but not limited to alteration, modification, misuse, mishandling, and storage or operation in improper environments. While we recorded an accrual of \$12.8 million at December 31, 2018, for estimated warranty costs that are estimable and probable based on historical experience, we may incur additional costs of revenue and operating expenses if our warranty provision does not reflect adequately the cost to resolve or repair defects in our products or if our liability limitations are declared enforceable, which could harm our business, financial condition, and operating results.

Actual or perceived security vulnerabilities in our products could adversely affect our revenue or costs.

Maintaining the security of our software and hardware products is an issue of critical importance to our customers and for us. There are individuals and groups who develop and deploy viruses, worms, and other malicious software programs that could attack our products. Although we take preventive measures to protect our products, and we have a response team that is notified of high risk malicious events, these procedures may not be sufficient to mitigate damage to our products. Actual or perceived security vulnerabilities in our products could lead some customers to seek to return products, reduce or delay future purchases, or purchase competitive products. Any actual security vulnerabilities in our products could require us to incur additional costs to eliminate the vulnerabilities. Customers may also increase their expenditures to protect their computer systems from attack, which could delay or reduce purchases of our products. Any of these actions or responses by customers could adversely affect our revenue.

System failures, or system unavailability, could harm our business.

We rely on our network infrastructure, internal and external technology systems and websites for our operations, development, marketing, support, and sales activities. These systems are also subject to potential disruptions and acts of vandalism. Any event that causes failures or interruption in our hardware or software systems could harm our business, financial condition, and operating results.

Our business could be adversely impacted in the event of a failure of our information technology infrastructure or adversely impacted by a successful cyber-attack.

We have experienced cyber-security threats, threats to our information technology infrastructure and unauthorized attempts to gain access to our sensitive information. Prior cyber-attacks directed at us have not had a material impact on our business or financial results; however, this may not continue to be the case in the future. Cyber-security assessment analyses undertaken by us have identified and prioritized steps to enhance our cyber-security safeguards.

We are in the process of implementing these recommendations. Nevertheless, there can be no assurance that we will adequately protect our information or that we will not experience any future successful attacks. Due to the evolving nature of security threats, the impact of any future incident cannot be predicted, and we may be required to expend significant additional resources to modify our cyber-security protective measures, to investigate and remediate vulnerabilities or other exposures or to make required notifications. In addition, we may be subject to litigation and financial losses. These costs related to cyber or other security threats or disruptions may not be fully insured or indemnified by other means. Occurrence of any of these events could adversely affect our operations, the services we provide to our customers, our financial results or our reputation; or such events could result in

the loss of competitive advantages derived from our research and development efforts or other intellectual property or early obsolescence of our products and services.

Our stock price has been volatile historically and may continue to be volatile.

The market price for our common stock has been and may continue to be volatile. During the twelve months ended December 31, 2018, the price of our common stock as reported on The Nasdaq Global Select Market ranged from a low of \$23.01 to a high of \$35.62. We expect our stock price to be subject to fluctuations as a result of a variety of factors, including factors beyond our control. These factors include:

- actual or anticipated variations in our quarterly or annual operating results;
- ability to initiate or complete stock repurchase programs;
- announcements of technological innovations or new products or services by our competitors or by us;
- announcements relating to strategic relationships, acquisitions, or investments;
- announcements by our customers regarding their businesses or the products in which our products are included;
- changes in financial estimates or other statements by securities analysts;
- any failure to meet security analyst expectations;
- changes in the securities analysts' rating of our securities;
- terrorist attacks and the affects of military engagements or natural disasters;
- commencement of litigation or adverse results of pending litigation;
- changes in the financial performance and/or market valuations of other software and high technology companies; and
- changes in general economic conditions.

Because of this volatility, we may fail to meet the expectations of our stockholders or of securities analysts from time to time and the trading price of our securities could decline as a result. The stock market has experienced significant price and volume fluctuations that have particularly affected the trading prices of equity securities of many high technology companies. These fluctuations have often been unrelated or disproportionate to the operating performance of these companies. Any negative change in the public's perception of high technology companies could depress our stock price regardless of our operating results.

Our stock repurchase program could affect our stock price and add volatility.

In November 2015, our board of directors authorized \$150 million for the repurchase of our outstanding common stock. This authorization was scheduled to expire on December 31, 2018. On September 11, 2017, the board of directors approved the repurchase of an additional \$125 million for our share repurchase program commencing September 11, 2017 and ending December 31, 2018. At that time, \$28.8 million remained available for repurchase under the 2015 authorization. The 2017 authorization thereby increased the repurchase authorization to \$153.8 million of our common stock. As of December 31, 2018, we have completed purchases of \$275 million under our authorized stock repurchase program which expired at the end of 2018.

Any repurchases pursuant to our stock repurchase program could affect our stock price and add volatility. There can be no assurance that repurchases will be made at the best possible price. Potential risks and uncertainties also include, but are not necessarily limited to, the amount and timing of future stock repurchases and the origin of funds used for such repurchases. The existence of a stock repurchase program could also cause our stock price to be higher than it would be in the absence of such a program and could potentially reduce the market liquidity for our stock. Depending on market conditions and other factors, these repurchases may be commenced or suspended from time to time. Any such suspension could cause the market price of our stock to decline.

Our profitability may be affected by unanticipated changes in our tax provisions, the adoption of new U.S. or foreign tax legislation, or exposure to additional income tax liabilities.

We are subject to income taxes in the U.S. and many foreign countries. Intercompany transaction pricing can impact our tax liabilities. We are potentially subject to tax audits in various countries and tax authorities may disagree with our tax treatments, including intercompany pricing or other matters, and assess additional taxes. We regularly review the likely

outcomes of these audits to determine whether our tax provisions are sufficient. However, there can be no assurance that we will accurately predict the outcomes of these audits, and the final assessments of these audits can have a material impact on our net income (loss).

Our effective tax rate in the future may be impacted by changes in the mix of earnings in countries with differing statutory tax rates, changes in the valuation of deferred tax assets and liabilities, changes in tax laws, new information discovered during the preparation of our tax returns, deemed repatriation of foreign earnings, and enactment of future U.S. and foreign tax legislative initiatives, such as tax reform legislation (“2017 Tax Act”) enacted on December 22, 2017 in the United States (“U.S.”) or multi-jurisdictional actions to address “base erosion and profit-shifting” by multinational companies. The Organisation for Economic Co-operation and Development, or OECD, issued a series of reports on October 5, 2015 recommending changes to numerous well-established tax principles. Many countries are beginning to implement legislation to align their international tax rules with these recommendations. These actions could adversely impact our effective tax rate.

The 2017 Tax Act may significantly impact our tax liabilities, current business deductions, and the U.S. taxation of income earned by our foreign subsidiaries. Many of the provisions significantly differ from prior U.S. tax law resulting in changes to tax reporting and potentially increasing tax liabilities incurred.

In December 2017, the 2017 Tax Act was enacted, which included a broad range of changes impacting businesses, including corporate tax rates, business deductions, and international tax provisions. Many of the provisions significantly differ from previous U.S. tax law.

The 2017 Tax Act also will also significantly impact current and future tax liabilities including, but not limited to the reduction of the U.S. federal corporate tax rate from 35% to 21%, a minimum tax to address base erosion and profit shifting from the U.S., the elimination of U.S. federal income taxes on dividends from foreign subsidiaries, a new tax on global intangible low-tax income (“GILTI”), a limitation of deductible interest expense, and the repeal of the domestic production activity deduction. There are additional limitations imposed on the deductibility of certain executive compensation, the use of foreign tax credits to reduce U.S. income tax liabilities, and the utilization of net operating losses generated after December 31, 2017. Final regulations have not been issued to interpret many provisions of the 2017 Tax Act. These regulations, when issued, may have an adverse effect to our financial results.

We may not have the ability to raise the funds necessary to settle conversions of our 0.75% Convertible Senior Notes due 2019 (“2019 Notes”) and 2.25% Convertible Senior Notes due 2023 (“2023 Notes”) and together with the 2019 Notes, the “Notes”) in cash, repay the Notes at maturity, or repurchase the Notes upon a fundamental change.

In September 2014, we completed a private placement of \$345 million principal amount of 2019 Notes and in November 2018, we completed a private placement of \$150 million principal amount of the 2023 Notes. Holders of the Notes will have the right to require us to repurchase all or a portion of their Notes upon the occurrence of a fundamental change at a repurchase price equal to 100% of the principal amount of the Notes to be repurchased, plus accrued and unpaid interest, if any, as described in Note 12 – Debt of Notes to Consolidated Financial Statements.

Upon conversion of the Notes, we will be required to make conversion payments in cash, unless we elect to deliver solely shares of our common stock to settle such conversion, as described in Note 12–Debt of Notes to Consolidated Financial Statements. Moreover, we will be required to repay the Notes in cash at their maturity, unless earlier converted or repurchased. However, we may not have enough available cash or be able to obtain financing when the Notes are to be repurchased, converted, or at their maturity.

The conditional conversion feature of the Notes, if triggered, may adversely affect our financial condition and results of operations.

In the event the conditional conversion feature of the Notes is triggered, holders of Notes will be entitled to convert the Notes at any time during specified periods at their option. If one or more holders elect to convert their Notes, unless we elect to satisfy our conversion obligation by delivering solely shares of our common stock, we would be required to settle all or a portion of the conversion obligation through the payment of cash, which could adversely affect our liquidity. Even if holders do not elect to convert their Notes, we could be required under applicable accounting rules to reclassify all or a portion of the

outstanding principal of the 2023 Notes as a current liability, which would result in a material reduction of our net working capital.

The accounting method for convertible debt securities that may be settled in cash (such as the Notes) could have a material effect on our reported financial results.

Financial Accounting Standards Board (“FASB”) ASC 470-20, Debt with Conversion and Other Options, requires us to separately account for the liability and equity components of the Notes that may be settled entirely or partially in cash upon conversion in a manner that reflects our non-convertible debt interest rate. Accordingly, the equity component of the Notes is included in additional paid-in capital within stockholders’ equity in our Consolidated Balance Sheet and the value of the equity component is treated as original issue discount for purposes of accounting for the debt component of the Notes. As a result, we are required to recognize non-cash interest expense in our Consolidated Statement of Operations in current and future periods as a result of the amortization of the discounted carrying value of the Notes to their principal amount over their term. We will report lower net income (loss) because ASC 470-20 requires interest to include both the current period’s amortization of the original issue discount and the Notes’ non-convertible interest rate. This could adversely affect our future consolidated financial results, the trading price of our common stock, and the trading price of the Notes.

Under certain circumstances, in calculating earnings per share, convertible debt instruments (such as the Notes) that may be settled entirely or partially in cash are accounted for utilizing the treasury stock method. The effect of the treasury stock method is that the shares of common stock issuable upon conversion of the Notes, if any, are not included in the calculation of diluted earnings per share except to the extent that the conversion value of the Notes exceeds their principal amount. Under the treasury stock method, diluted earnings per share is calculated as if the number of shares of common stock that would be necessary to settle such excess were issued, if we elected to settle such excess in shares. We cannot be sure that accounting standards will continue to permit the use of the treasury stock method in the future. If we are unable to use the treasury stock method in accounting for the shares issuable upon conversion of the Notes, if any, then our diluted consolidated earnings per share would be adversely affected.

Our debt obligations may be a burden on our future cash flows and cash resources.

On January 2, 2019, we entered into a credit agreement (the “Credit Agreement”) which provides for revolving commitments of up to \$150 million (including up to \$10 million for swing line loans and up to \$25 million for letters of credit). The Credit Agreement also contains a feature permitting us, subject to certain requirements, to arrange with lenders for additional revolving commitments or term loans for up to an aggregate of \$50 million. As of December 31, 2018, we had \$345 million principal amount outstanding of the 2019 Notes and \$150 million principal amount outstanding of the 2023 Notes. Our ability to repay the principal of, to pay interest on or to refinance our indebtedness, or to make cash payments in connection with any conversion of the Notes depends on our future performance, which is subject to economic, financial, competitive, and other factors beyond our control. Our business may not continue to generate cash flow from operations in the future sufficient to service our debt and make necessary capital expenditures. If we are unable to generate such cash flow, we may be required to adopt one or more alternatives, such as selling assets, restructuring debt, or obtaining additional equity capital on terms that may be onerous or highly dilutive. Our ability to refinance our indebtedness will depend on the capital markets and our financial condition at such time. We may not be able to engage in any of these activities or engage in these activities on desirable terms, which could result in a default on our debt obligations.

Our Credit Agreement contains restrictions that could limit our flexibility in operating our business.

Our Credit Agreement contains various covenants that could limit our ability to engage in specified types of transactions under certain conditions. These covenants could limit our ability to, among other things:

- incur additional debt;
- create liens;
- make certain investments, acquisitions, loans and advances;
- sell assets or enter into sale and leaseback transactions;
- pay dividends or make distributions or make other restricted payments;
- prepay other indebtedness;
- engage in certain transactions with affiliates; and

amend certain charter documents and material agreements relating to other indebtedness.

A breach of any of these covenants could result in a default under the Credit Agreement. In the event of a default under the Credit Agreement, the lenders could elect to declare all amounts outstanding to be immediately due and payable. If our lenders accelerate the repayment of borrowings, we may not be able to repay our debt obligations. If we were unable to repay amounts due to the lenders under our credit facility, those lenders could proceed against the collateral granted to them to secure that indebtedness.

Certain provisions contained in our amended and restated certificate of incorporation, our amended and restated bylaws, and under Delaware law could delay or impair a change in control.

Certain provisions in our amended and restated certificate of incorporation and amended and restated bylaws could have the effect of rendering more difficult or discouraging an acquisition of the Company deemed undesirable by our board of directors. Our amended and restated certificate of incorporation allows the board of directors to issue preferred stock, which may include powers, preferences, privileges, and other rights superior to our common stock, thereby limiting our stockholders' ability to transfer their shares and may affect the price they are able to obtain. Our amended and restated bylaws do not allow stockholders to call special meetings and include, among other things, procedures for advance notification of stockholder nominations and proposals, which may have the effect of delaying or impairing attempts by our stockholders to remove or replace management, to commence proxy contests, or to effect changes in control or hostile takeovers of the Company.

As a Delaware corporation, we are subject to Delaware law, including Section 203 of the Delaware General Corporation Law, which imposes restrictions on certain transactions between a corporation and certain significant stockholders. These provisions could also have the effect of delaying or impairing the removal or replacement of management, proxy contests, or changes in control. Any provision of our amended and restated certificate of incorporation and amended and restated bylaws that has the effect of delaying or impairing a change in control of the Company could limit the opportunity for our stockholders to receive a premium for their shares of our common stock and could affect the price that certain investors may be willing to pay for our common stock.

Item 1B: Unresolved Staff Comments:
None.

Item 2: Properties

Our corporate and Fiery segment headquarters is located in Fremont, California where we currently own approximately 119,000 square feet of space. We lease 16.9 acres (736,166 square feet) of land from the City of Manchester in New Hampshire and we lease 225,000 square feet of manufacturing and office space in Manchester, NH consisting of our display graphics operations and manufacturing facility. The lease is for a six-year term with MUFG Americas Capital Leasing & Finance, LLC ("MUFG"), formerly Bank of Tokyo – Mitsubishi UFJ Leasing & Finance LLC ("BTMU").

We own and lease additional facilities throughout the United States and various international locations, including, but not limited to, Belgium, China, Germany, India, Israel, Italy, Netherlands, Spain, and the United Kingdom.

In 2018, land and one building we owned in Meredith, NH were sold for \$1.1 million that was held-for-sale as of December 31, 2017. The second building and related land we own in Meredith, NH continue to be classified as

held-for-sale on the Consolidated Balance Sheet as of December 31, 2018.

We believe that our current facilities are adequate to meet our ongoing needs, and that, if we require additional space, we will be able to obtain additional facilities on commercially reasonable terms.

Item 3: Legal Proceedings

We may be involved, from time to time, in a variety of claims, lawsuits, investigations, or proceedings relating to contractual disputes, securities laws, intellectual property rights, employment, or other matters that may arise in the normal course of business. We assess our potential liability in each of these matters by using the information available to us. We develop our views on estimated losses in consultation with inside and outside counsel, which involves a subjective analysis of potential results and various combinations of appropriate litigation and settlement strategies. We accrue estimated losses from contingencies if a loss is deemed probable and can be reasonably estimated.

For a description of our significant pending legal proceedings, please see Note 13 – Commitments and Contingencies of Notes to Consolidated Financial Statements.

Item 4: Mine Safety Disclosures

Not applicable.

PART II

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

Our common stock has traded on The Nasdaq Global Select Market (formerly The NASDAQ National Market) under the symbol EFII since October 2, 1992.

As of February 1, 2019, there were 100 stockholders of record, excluding a substantially greater number of “street name” holders or beneficial holders of our common stock, whose shares are held of record by banks, brokers, and other financial institutions.

We did not declare or pay cash dividends on our common stock during 2018 and 2017. We anticipate that we will retain all available funds for the repayment of our indebtedness and the operation of our business, and we do not plan to pay any cash dividends in the foreseeable future. We believe that the most strategic uses of our cash resources include business acquisitions, strategic investments to gain access to new technologies, repurchases of shares of our common stock, and working capital.

Equity Compensation Plan Information

Information regarding our equity compensation plans may be found in Note 15 – Stock-based Compensation and Other Employee Benefits of Notes to Consolidated Financial Statements and Item 12 – Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters of this Annual Report on Form 10-K and is incorporated herein by reference.

Repurchases of Equity Securities

Our stock repurchases during the year ended December 31, 2018 were as follows (in thousands except per share amounts):

Fiscal month	Total number of shares purchased ⁽¹⁾	Average price paid per share	Total number of shares purchased as part of publicly announced plans ⁽¹⁾	Approximate dollar value of shares that may yet be purchased under the plans ⁽²⁾
January 2018	174	\$ 30.03	174	\$ 104,199
February 2018	229	28.12	224	97,890
March 2018	211	28.07	209	92,019
April 2018	154	27.93	138	88,168
May 2018	47	28.53	45	86,878
June 2018	170	34.01	169	81,117
July 2018	176	34.01	176	75,142
August 2018	219	31.18	200	68,333
September 2018	297	35.92	279	58,921
October 2018	350	31.34	348	48,005
November 2018	1,513	27.62	1,457	8,004
December 2018	317	26.06	307	4
Total	3,857	29.43	3,726	

The difference between total number of shares purchased and total number of shares purchased as part of publicly ⁽¹⁾ announced program is the shares withheld by us to satisfy any tax withholding obligations incurred in connection with the vesting of restricted stock units ("RSUs").

On September 11, 2017, the board of directors approved \$125.0 million for our share repurchase program in addition to the \$150.0 million previously authorized in November 2015. At that time, \$28.8 million remained ⁽²⁾ available for repurchase under the 2015 authorization. The 2017 authorization thereby increased the repurchase authorization to \$153.8 million. This authorization commenced on the date of approval and expired December 31, 2018. Under this publicly announced program, we repurchased 3.7 million shares for an aggregate purchase price of \$109.4 million during the year ended December 31, 2018.

Comparison of Cumulative Total Return among Electronics For Imaging, Inc., NASDAQ Composite, and NASDAQ Computer Manufacturers Index

The stock price performance graph below includes information required by the SEC and shall not be deemed incorporated by reference by any general statement incorporating by reference in this Annual Report on Form 10-K into any filing under the Securities Act or under the Exchange Act, except to the extent the Company specifically incorporates this information by reference, and shall not otherwise be deemed soliciting material or filed under the Securities Act or the Exchange Act, or subject to the liabilities of Section 18 of the Exchange Act.

The following graph compares cumulative total returns based on an initial investment of \$100 in our common stock to the NASDAQ Composite and the NASDAQ Computer Manufacturers Index. The stock price performance shown on the graph below is not indicative of future price performance and only reflects the Company's relative stock price for the five-year period ending on December 31, 2018. All values assume reinvestment of dividends and are calculated at December 31 of each year.

Item 6: Selected Financial Data

The following table summarizes selected consolidated financial data as of and for the five years ended December 31, 2018. This information should be read in conjunction with Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and the audited consolidated financial statements and related notes thereto. For a more detailed description, see Part II, Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations.”

(in thousands, except per share amounts):

	For the years ended December 31,				
	2018	2017	2016	2015	2014
Operations ⁽¹⁾					
Revenue	\$ 1,015,021	\$ 993,260	\$ 992,065	\$ 882,513	\$ 790,427
Gross profit	\$ 498,573	\$ 506,456	\$ 508,165	\$ 457,430	\$ 429,737
Income from operations ⁽²⁾	\$ 19,686	\$ 27,547	\$ 55,819	\$ 54,689	\$ 53,439
Net income (loss) ^{(2) (3)}	\$ (971)	\$ (15,345)	\$ 44,949	\$ 32,199	\$ 33,714
Net income (loss) per basic common share	\$ (0.02)	\$ (0.33)	\$ 0.96	\$ 0.68	\$ 0.72
Net income (loss) per diluted common share	\$ (0.02)	\$ (0.33)	\$ 0.94	\$ 0.67	\$ 0.70
Shares used in basic per-share calculation	44,429	46,281	46,900	47,217	46,866
Shares used in diluted per-share calculation	44,429	46,281	47,797	48,150	48,406
	As of December 31,				
	2018	2017	2016	2015	2014
Financial Position					
Cash, cash equivalents, and short-term investments	\$ 411,401	\$ 319,042	\$ 459,741	\$ 497,367	\$ 616,732
Working capital ⁽⁴⁾	212,131	456,668	549,668	584,782	666,405
Total assets	1,499,034	1,458,001	1,478,929	1,448,246	1,297,422
Convertible senior notes, net ^{(4) (5)}	118,688	318,957	304,484	290,734	277,670
Stockholders’ equity	726,108	781,311	826,015	822,902	788,689

(1) Includes acquired company results of operations beginning on the date of each acquisition (there were no acquisitions during the year ended December 31, 2018). See Item 1 – Business for a summary of recent acquisitions.

(2) Income from operations and net income (loss) includes the following:

	For the years ended December 31,				
	2018	2017	2016	2015	2014
Amortization of identified intangibles	\$ 45,291	\$ 47,339	\$ 39,560	\$ 26,510	\$ 20,673
Stock-based compensation expense	45,281	26,532	31,826	34,071	36,061
Restructuring and other costs	13,581	7,562	6,731	5,731	6,578
Revenue recognition and accounting review costs ⁽⁶⁾	1,888	6,443	—	—	—
Litigation settlement expenses	99	436	1,027	584	897
Change in fair value of contingent consideration ⁽⁷⁾	(21,486)	6,472	6,939	(2,135)	(3,810)
Acquisition-related transaction costs	1,193	2,058	2,241	5,494	1,501
Total charges, net of recoveries	\$ 85,847	\$ 96,842	\$ 88,324	\$ 70,255	\$ 61,900

(3) Net income (loss) includes the following:

Tax charge of \$27.5 million during the year ended December 31, 2017, and a tax benefit of \$1.2 million in the year ended December 31, 2018, resulting from the enactment of the 2017 Tax Act and our accounting under SAB 118.

Net tax benefits of \$3.6, \$3.5, \$16.6, \$7.4, and \$2.9 million for the years ended December 31, 2018, 2017, 2016, 2015 and 2014, respectively, resulting from the release of previously unrecognized tax benefits due to the expiration of U.S. federal, state, and foreign statutes of limitations.

Tax benefit of \$3.1 million during the year ended December 31, 2014 resulting from the increased valuation of intangible assets for Brazilian tax reporting.

In September 2014, we completed a private placement of \$345 million principal amount of the 2019 Notes. These notes contained rights to convert the note principal into common stock under certain circumstances. The notes (4) mature on September 1, 2019. They were previously classified as long-term debt through December 31, 2017 but are classified as current debt on the Consolidated Balance Sheet as of December 31, 2018. See further information in Note 12 – Debt of Notes to Consolidated Financial Statements.

In November 2018, we completed a private placement of \$150 million principal amount of the 2023 Notes. These (5) notes contained rights to convert the note principal into common stock under certain circumstances. See further information in Note 12 – Debt of Notes to Consolidated Financial Statements.

As of December 31, 2017, our management concluded that we had material weaknesses in our internal control over financial reporting related to revenue recognition practices and the valuation of certain textile printer inventories. The review of our revenue recognition practices and valuation of textile printer inventories required that we expend (6) significant management time and incurred significant accounting, legal, and other expenses of \$1.9 and \$6.4 million in the years ended December 31, 2018 and 2017, respectively, to investigate and remediate these material weaknesses. Please see Item 9A for management's report on internal control over financial reporting as of December 31, 2018 in which we concluded that the material weaknesses had been remediated.

Many of our acquisitions include contingent consideration based on future financial performance of the acquired business against targets established in the acquisition agreements. We estimate the fair value of this contingent consideration at the acquisition date and record the amount as part of the initial purchase accounting. Over time, as (7) new information becomes available concerning the acquired business's actual and projected performance against the targets, the fair value of the contingent consideration is periodically updated resulting in a charge, or credit to general and administrative expenses in the Consolidated Statements of Operations. These non-cash charges and (credits) are presented on this line item to provide additional information about fluctuations in our operating and net income (loss) by period.

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

The following discussion and analysis should be read in conjunction with the audited consolidated financial statements and related notes thereto included in this Annual Report on Form 10-K.

All assumptions, anticipations, expectations, and forecasts contained herein are forward-looking statements within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act that involve risks and uncertainties. Forward-looking statements include, among others, those statements including words such as "address," "anticipate," "believe," "consider," "continue," "develop," "estimate," "expect," "further," "goal," "intend," "may," "plan," "p", "seek," "should," "target," "will," variations of such words, and similar expressions. Our actual results could differ materially from those discussed here. For a discussion of the factors that could impact our results, readers are referred to Item 1A, "Risk Factors," in Part I of this Annual Report on Form 10-K and to our other reports filed with the SEC,

including the Company's most recent Quarterly Report on Form 10-Q and Current Reports on Form 8-K, and any amendments thereto. We do not assume any obligation to update the forward-looking statements provided to reflect events that occur or circumstances that exist after the date on which they were made.

Results of Operations

Consolidated results of operations are summarized as follows (in thousands):

	Year Ended December 31,				Year Ended December 31,			
	2018	2017	Change		2017	2016	Change	
			Amount	Percent			Amount	Percent
Revenue	\$1,015,021	\$993,260	\$21,761	2 %	\$993,260	\$992,065	\$1,195	— %
Cost of revenue	516,448	486,804	29,644	6 %	486,804	483,900	2,904	1 %
Gross profit	498,573	506,456	(7,883)	(2)%	506,456	508,165	(1,709)	— %
Operating expenses:								
Research and development	159,941	157,358	2,583	2 %	157,358	151,395	5,963	4 %
Sales and marketing	183,498	173,697	9,801	6 %	173,697	169,042	4,655	3 %
General and administrative	76,576	92,953	(16,377)	(18)%	92,953	85,618	7,335	9 %
Amortization of identified intangibles	45,291	47,339	(2,048)	(4)%	47,339	39,560	7,779	20 %
Restructuring and other	13,581	7,562	6,019	80 %	7,562	6,731	831	12 %
Total operating expenses	478,887	478,909	(22)	— %	478,909	452,346	26,563	6 %
Income from operations	19,686	27,547	(7,861)	(29)%	27,547	55,819	(28,272)	(51)%
Interest expense	(20,169)	(19,505)	(664)	3 %	(19,505)	(17,716)	(1,789)	10 %
Interest income and other income, net	1,604	4,088	(2,484)	(61)%	4,088	545	3,543	*
Income before income taxes	\$1,121	\$12,130	\$(11,009)	*	\$12,130	\$38,648	\$(26,518)	(69)%

* Percentage not meaningful.

Out-of-Period Adjustments

As discussed more fully in Note 1 – The Company and Summary of Significant Accounting Policies of Notes to Consolidated Financial Statements, during the year ended December 31, 2017, we recorded out-of-period adjustments related to certain bill and hold transactions, which decreased revenue by \$3.4 million, decreased gross profit by \$0.5 million, and increased net loss by \$0.3 million (or \$0.01 per diluted share).

Consolidated Revenue

Consolidated revenue grew by \$21.8 million or 2% in the year ended December 31, 2018 compared to the year ended December 31, 2017, reflecting growth of 6% in Industrial Inkjet, 7% growth in Productivity Software, and a decrease of 10% in Fiery revenues. Sales in the Americas grew by 3%, sales in EMEA declined by 1%, and sales in APAC increased by 9% in the year ended December 31, 2018 compared to the year ended December 31, 2017.

Consolidated revenue grew by \$1.2 million or less than 1% in the year ended December 31, 2017 compared to the year ended December 31, 2016, reflecting growth of 1% in Industrial Inkjet, 3% growth in Productivity Software, and a decrease of 4% in Fiery revenues. Sales in the Americas decreased by 2%, while sales in EMEA and APAC both increased by 3% in the year ended December 31, 2017 compared to the year ended December 31, 2016.

We completed our acquisitions of FFPS, Generation Digital, CRC, and Escada in the year ended December 31, 2017. Post-acquisition revenue was \$27.1 million in 2017 related to these four acquisitions. We completed our acquisitions of Rialco and Optitex in the year ended December 31, 2016. Post-acquisition revenue was \$19.8 million in 2016 related to these two acquisitions.

Revenue by Operating Segment

We manage our business in three operating segments as follows:

Industrial Inkjet, which consists of super-wide and wide format display graphics, corrugated packaging and display, textile, and ceramic tile and building material industrial digital inkjet printers; digital UV curable, LED curable, ceramic, water-based, and thermoforming and specialty ink, as well as a variety of textile ink including dye sublimation, pigmented, reactive dye, acid dye, pure disperse dye, water-based dispersed printing ink, and coatings; digital inkjet printer parts; and professional services.

Productivity Software, which consists of a complete software suite that enables efficient and automated end-to-end business and production workflows for the print and packaging industry. This Productivity Suite also provides tools to enable revenue growth, efficient scheduling, and optimization of processes, equipment, and personnel. Customers are provided the financial and technical flexibility to deploy locally within their business or to be hosted in the cloud. The Productivity Suite addresses all segments of the print industry. We also market Optitex fashion CAD software, which facilitates fast fashion and increased efficiency in the fashion and textile industries.

Fiery, which consists of Fiery and FFPS, that transform digital copiers and printers into high performance networked printing devices for the office, industrial, and commercial printing markets. This operating segment is comprised of (i) stand-alone DFEs connected to digital printers, copiers, and other peripheral devices, (ii) embedded DFEs and design-licensed solutions used in digital copiers and multi-functional devices, (iii) optional software integrated into our DFE solutions, (iv) self-service and payment solutions, and (v) stand-alone software-based solutions such as our proofing, textile, and scanning solutions.

See additional discussion of our business and operating segments in Item 1: Business.

Revenue by operating segment is presented below (in thousands):

Revenue by Segment	Year Ended December 31,				Year Ended December 31,			
	2018	2017	Change Amount	Percent	2017	2016	Change Amount	Percent
Industrial Inkjet	\$607,559	\$570,688	\$36,871	6 %	\$570,688	\$562,583	\$8,105	1 %
Productivity Software	168,284	156,561	11,723	7	156,561	151,737	4,824	3
Fiery	239,178	266,011	(26,833)	(10)	266,011	277,745	(11,734)	(4)
Total	\$1,015,021	\$993,260	\$21,761	2 %	\$993,260	\$992,065	\$1,195	— %

The percentage of consolidated revenue by operating segment was as follows (in thousands):

	For the Years Ended December 31,					
	2018		2017		2016	
Industrial Inkjet	\$607,559	60 %	\$570,688	57 %	\$562,583	57 %
Productivity Software	168,284	17	156,561	16	151,737	15
Fiery	239,178	23	266,011	27	277,745	28
Total	\$1,015,021	100 %	\$993,260	100 %	\$992,065	100 %

Overview

During the past several years, revenue from our Industrial Inkjet and Productivity Software segments has grown while revenue from our Fiery segment has decreased. This shifting in product mix has important implications for us because our gross profit margins have historically been lower in the Industrial Inkjet segment than in either the Productivity Software or Fiery segments. If this trend continues our consolidated gross profit margin may be lower in future

periods, although management is implementing plans to improve gross margins in the Industrial Inkjet segment to help mitigate this impact.

Industrial Inkjet

Industrial Inkjet revenue increased by \$36.9 million or 6% in the year ended December 31, 2018 compared to the year ended December 31, 2017. Industrial Inkjet revenue increased primarily due to:

continuing sales of our Nozomi single-pass industrial digital inkjet platform for the corrugated market which was launched in the second half of 2017, and reached total revenue of \$65.7 million in 2018, compared to \$16.1 million in 2017,

increased ink revenue due to the increase in our installed printer base and the high utilization that our industrial inkjet printers are experiencing in the field, and

- increased revenue from parts and service.

These increases were partially offset by decreased printer sales in the display graphics and ceramic market segments due to reduced customer demand.

Industrial Inkjet revenue increased by \$8.1 million or 1% in the year ended December 31, 2017 compared to the year ended December 31, 2016. Industrial Inkjet revenue increased primarily due to:

the launch of our Nozomi single-pass industrial digital inkjet platform in 2017,

a full year of post-acquisition Rialco ink products revenue, which closed in March 2016,

increased ink revenue due to the increase in our installed printer base and the high utilization that our industrial digital inkjet printers are experiencing in the field, and

increased revenue from parts and service, partially offset by

- decreased digital inkjet printer revenue due to reduced demand in anticipation of future product launches and

printer revenue, which would have been higher by \$3.4 million when considering out-of-period adjustments related to certain bill and hold transactions, which were recorded during the year ended December 31, 2017.

Productivity Software

Productivity Software revenue increased by \$11.7 million or 7% in the year ended December 31, 2018 compared to the year ended December 31, 2017, primarily due to post-acquisition revenue from Escada, which was acquired in October 2017, increased license revenue in our other products, and post-acquisition revenue from CRC, which was acquired in May 2017.

Productivity Software revenue increased by \$4.8 million or 3% in the year ended December 31, 2017 compared to the year ended December 31, 2016, primarily due to post-acquisition revenue from Optitex, which was acquired in June 2016, post-acquisition revenue from CRC, post-acquisition revenue from Escada, increased service revenue, and annual price increases related to our maintenance contracts, partially offset by decreased license revenue.

Fiery

Fiery revenue decreased by \$26.8 million or 10% in the year ended December 31, 2018 compared to the year ended December 31, 2017. Although end customer and reseller preference for Fiery products drives demand, most Fiery revenue relies on printer manufacturers to design, develop, and integrate Fiery technology into their print engines. We believe sales of the printers on which Fiery is available decreased during 2018. In addition, several of these leading printer manufacturers have developed competing DFEs for their printers in lieu of using Fiery DFEs. The leading printer manufacturers further reduced their purchases during 2018 compared to 2017 for controller units, software options, and DFE solutions. These decreases were partially offset by post-acquisition revenue from Generation Digital, which was acquired in August 2017.

Fiery revenue decreased by \$11.7 million or 4% in the year ended December 31, 2017 compared to the year ended December 31, 2016. The leading printer manufacturers tightly managed their inventory levels in the first half of 2017, which decreased demand, partially offset by increased inventory levels and increased demand in the second half of 2017. This decrease in volume was partially offset by post-acquisition revenue from FFPS, which was acquired in January 2017, and post-acquisition revenue from Generation Digital.

Recurring Revenue

We define recurring revenue as ongoing sales of products and services which by their nature are expected to continue over a reasonable period of time. We include ink sales in recurring revenue because our customers typically buy their ink from us throughout the life of our printers. We include revenue from extended service, warranty, and maintenance plans because we generally provide these services over an extended contract period. We include revenue from software subscriptions because it is provided over a contractual period of time, and our experience is that most customers renew their subscriptions on an ongoing basis.

Our recurring revenue by segment and the percentage of total segment revenue is summarized as follows (in thousands):

Recurring Revenue	Year Ended December 31,					
	2018		2017		2016	
	Amount	Percent	Amount	Percent	Amount	Percent
Industrial Inkjet	\$226,887	37 %	\$221,316	39 %	\$206,540	37 %
Productivity Software	91,487	54	89,375	57	83,051	55
Fiery	18,169	8	14,642	6	14,379	5
Total	\$336,543		\$325,333		\$303,970	

Recurring revenue increased by \$11.2 million or 3% in the year ended December 31, 2018 compared to the year ended December 31, 2017, primarily due to increased ink volume and higher software maintenance and support revenues, partially offset by a slight decline in extended warranty revenue within the Industrial Inkjet segment.

Recurring revenue increased by \$21.4 million or 7% in the year ended December 31, 2017 compared to the year ended December 31, 2016, primarily due to increased ink volume and higher software maintenance and support revenues.

From time to time we may experience supply issues like we did during the third quarter of 2018, primarily in China, where we saw changes in tariff structure, price increases in ink components, and short supplies of ink components due to reduced production levels at a number of suppliers, which limited the amount of ink we could manufacture. We are working to increase purchases from new sources for ink components but we could still experience some negative impact on ink volume growth in the short term.

Revenue by Geographic Region

Revenue by geographic region is summarized as follows (in thousands):

Revenue by Region	Year Ended December 31,				Year Ended December 31,			
	2018	2017	Change		2017	2016	Change	
			Amount	Percent			Amount	Percent
Americas	\$502,820	\$487,968	\$14,852	3 %	\$487,968	\$500,411	(12,443)	(2)%
EMEA	364,908	369,610	(4,702)	(1)	369,610	360,305	9,305	3
APAC	147,293	135,682	11,611	9	135,682	131,349	4,333	3
Total	\$1,015,021	\$993,260	\$21,761	2 %	\$993,260	\$992,065	\$1,195	— %

Americas

Revenue in the Americas increased by \$14.9 million or 3% in the year ended December 31, 2018 compared to the year ended December 31, 2017. The Americas accounted for 50% of consolidated revenue compared to 49% in the prior year. The increase was driven by a 13% increase in Industrial Inkjet revenues in the region due primarily to sales of our Nozomi corrugated printers, and an increase in sales to the textile market segment, partially offset by reduced

sales in the display graphics market. Productivity Software sales in the Americas increased by 2% while Fiery sales decreased by 11% compared to the prior year.

Americas revenue decreased by \$12.4 million or 2% in the year ended December 31, 2017 compared to the year ended December 31, 2016. The Americas accounted for 49% of consolidated revenue compared to 51% in the prior year. The decrease was primarily due to decreased Industrial Inkjet printer revenue resulting from reduced demand in anticipation of future product launches, Industrial Inkjet revenue that would have been higher by \$3.4 million when considering out-of-period adjustments related to certain bill and hold transactions, and decreased Fiery revenue, partially offset by increased ink revenue.

EMEA

Revenue in EMEA decreased by \$4.7 million or 1% in the year ended December 31, 2018 compared to the year ended December 31, 2017. EMEA accounted for 36% of consolidated revenue compared to 37% in the prior year. The decrease was attributable to a decrease of 18% in Fiery sales in the region due to reduced demand, partially offset by a 16% increase in Productivity Software revenues and a 1% increase in Industrial Inkjet sales compared to the prior year. Movements in currency exchange rates reduced the year-over-year decrease.

EMEA revenue increased by \$9.3 million or 3% in the year ended December 31, 2017 compared to the year ended December 31, 2016. EMEA accounted for 37% of consolidated revenue compared to 36% in the prior year. The increase was primarily due to increased Industrial Inkjet revenue from the Nozomi corrugated printer, higher ink revenue, post-acquisition Optitex revenue, and post-acquisition Escada revenue, partially offset by decreased Fiery revenue.

APAC

Revenue in APAC increased by \$11.6 million or 9% in the year ended December 31, 2018 compared to the year ended December 31, 2017. APAC accounted for 14% of consolidated revenue compared to 14% in the prior year. The increase was primarily due to a 15% increase in Fiery sales in the region, as well as a 4% increase in Industrial Inkjet and a 32% increase in Productivity Software sales compared to the prior year. Within Industrial Inkjet, sales of textile printers increased while sales of ceramic printers decreased.

APAC revenue increased by \$4.3 million or 3% in the year ended December 31, 2017 compared to the year ended December 31, 2016. APAC accounted for 14% of consolidated revenue compared to 13% in the prior year. The increase was primarily due to increased industrial digital inkjet printer and ink revenue and post-acquisition Optitex revenue, partially offset by decreased Fiery revenue.

Revenue Concentration

A substantial portion of our revenue over the years has been attributable to sales of products through the leading printer manufacturers and independent distributor channels. We have a direct relationship with several leading printer manufacturers and work closely to design, develop, and integrate Fiery technology into their print engines. The printer manufacturers act as distributors and sell our DFE products to end customers through reseller channels. End customer and reseller channel preference for our DFE and software solutions drives demand for Fiery products through the printer manufacturers.

Although end customer and reseller channel preference for Fiery products drives demand, most Fiery revenue relies on printer manufacturers to design, develop, and integrate Fiery technology into their print engines. A significant portion of our revenue is, and has been, generated by sales of our Fiery DFE products to a relatively small number of leading printer manufacturers. During the year ended December 31, 2017, Xerox provided 11% of our consolidated revenue. No customer accounted for more than 10% of our revenue for the years ended December 31, 2018 or December 31, 2016.

Our reliance on revenue from the leading printer manufacturers was 22%, 26%, and 28% during the years ended December 31, 2018, 2017, and 2016, respectively. Over time, we expect our revenue from the leading printer manufacturers to decline as a percentage of our consolidated revenue as we grow our Industrial Inkjet and Productivity Software segments. Because sales of our Fiery DFE products constitute a significant portion of our revenue and there are a limited number of printer manufacturers producing copiers and printers in sufficient volume to be attractive customers for us, we expect that we will continue to depend on a relatively small number of printer manufacturers for a significant portion of our Fiery DFE revenue in future periods. Accordingly, if we lose or experience reduced sales to one of these printer manufacturer/distributors, we will have difficulty replacing that revenue with sales to new or existing customers.

Consolidated Gross Profit

Gross profit declined by \$7.9 million and gross margin decreased from 51.0% in year ended December 31, 2017 to 49.1% in the year ended December 31, 2018. The decrease in gross profit and margin was primarily due to shifts in product mix resulting in a greater proportion of our consolidated revenues coming from the Industrial Inkjet segment and a lower proportion coming from the Fiery segment. We have historically earned higher gross margins in the Fiery segment than in the Industrial Inkjet segment. We also recognized a \$1.2 million increase in stock-based compensation expense within cost of revenues compared to the prior year.

Gross profit declined by \$1.7 million and gross margin decreased from 51.2% in the year ended December 31, 2016 to 51.0% in the year ended December 31, 2017. The decrease in gross profit and margin was primarily due to shifts in product mix resulting in a greater proportion of our consolidated revenues coming from the Industrial Inkjet segment and a lower proportion coming from the Fiery segments compared to the prior year.

Gross Profit by Segment

Operating income is not reported by operating segment because operating expenses include significant shared expenses and other costs that are managed outside of the operating segments. Such operating expenses include various corporate expenses such as stock-based compensation, corporate sales and marketing, research and development, amortization of identified intangibles, various non-recurring charges, and other separately managed general and administrative expenses.

Gross profit by operating segment, excluding stock-based compensation, was as follows (in thousands):

	Year Ended December 31,			
Segment Gross Profit	2018	2017	2016	
Industrial Inkjet				
Revenue	\$607,559	\$570,688	\$562,583	
Gross profit	210,792	208,620	198,923	
Gross profit percentages	34.7	% 36.6	% 35.4	%
Productivity Software				
Revenue	\$168,284	\$156,561	\$151,737	
Gross profit	119,470	114,460	114,179	
Gross profit percentages	71.0	% 73.1	% 75.2	%
Fiery				
Revenue	\$239,178	\$266,011	\$277,745	
Gross profit	172,081	185,937	198,322	
Gross profit percentages	71.9	% 69.9	% 71.4	%

Industrial Inkjet Gross Profit

The Industrial Inkjet gross profit percentage decreased to 34.7% in the year ended December 31, 2018 compared to 36.6% in the year ended December 31, 2017. The decrease was primarily due to lower gross margins on ink sales reflecting an increase in customer incentive discount programs during 2018, as well as higher ink and ink component costs due to a change in supplier. In addition, printer gross margins also declined slightly due to a higher mix of revenue coming from our Nozomi corrugated printers, which were not at their targeted gross margin levels until the end of 2018.

The Industrial Inkjet gross profit percentage increased to 36.6% in the year ended December 31, 2017 compared to 35.4% in the year ended December 31, 2016. Gross profit percentages improved in ink, parts, and service, while

printer gross profit percentages were comparable. The printer gross profit percentage continued to benefit from manufacturing efficiencies related to super-wide format printer production, reduced warranty expense due to engineering and quality improvements, and increased ink revenue at a higher gross profit percentage, partially offset by lower gross profit during the launch of our Nozomi single-pass platform and inventory write downs as a result of our Xeikon License Agreement.

Productivity Software Gross Profit

The Productivity Software gross profit percentage decreased to 71.0% in the year ended December 31, 2018 compared to 73.1% in the year ended December 31, 2017. The decrease was primarily due to a higher mix of lower margin hardware and decreased gross margins on maintenance contracts, partially offset by increased gross margins on licenses and subscriptions.

The Productivity Software gross profit percentage decreased to 73.1% in the year ended December 31, 2017 compared to 75.2% in the year ended December 31, 2016. The decrease was primarily due to decreased license revenue and increased product maintenance costs, partially offset by price increases on annual maintenance renewal contracts.

Fiery Gross Profit

The Fiery gross profit percentage increased to 71.9% in the year ended December 31, 2018 compared to 69.9% in the year ended December 31, 2017. The Fiery gross profit percentage was negatively impacted by a charge of \$1.4 million to cost of revenue in the year ended December 31, 2017, which reflects the cost of manufacturing plus a portion of the expected profit margin related to the acquired FFPS inventories. Inventory acquired in the acquisition of FFPS was required to be recorded at fair value rather than historical cost in accordance with ASC 805, Business Combinations. This amount is not included in the financial information regularly reviewed by management as this acquisition-related charge is not indicative of the gross margin trends in the FFPS business. Excluding this charge, the Fiery gross profit percentage would have been 70.4% during the year ended December 31, 2017. The remainder of the increase was primarily due to improved margins on customized solutions provided to customers.

The Fiery gross profit percentage decreased to 69.9% in the year ended December 31, 2017 compared to 71.4% in the year ended December 31, 2016. The Fiery gross profit percentage, excluding the fair value adjustment related to acquired FFPS inventories of \$1.4 million, would have been 70.4% during the year ended December 31, 2017. The revenue mix between standalone and embedded DFEs, which have a lower margin compared with higher margin software options, accounts for this margin fluctuation between the periods.

Reconciliation to Consolidated Gross Profit

A reconciliation of operating segment gross profit to the consolidated statements of operations for the years ended December 31, 2018, 2017, and 2016 is as follows (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Segment gross profit	\$502,343	\$509,017	\$511,424
Stock-based compensation expense	(3,770)	(2,561)	(2,784)
Other items excluded from segment profit	—	—	(475)
Gross profit	\$498,573	\$506,456	\$508,165

Operating Expenses

We are a global company and much of our operating expense is incurred in foreign locations. Accordingly, our operating expenses, as reported in U.S. Dollars, fluctuate due to changes in foreign currency exchange rates. We expect that if the U.S. dollar remains volatile against the British pound sterling, Euro, Indian rupee, Israeli shekel, or other currencies, operating expenses reported in U.S. dollars could fluctuate.

Research and Development

Research and development expenses include personnel, consulting, travel, research and development facilities, prototype materials, and non-recurring engineering expenses.

Research and development expense increased by \$2.6 million or 2% in the year ended December 31, 2018 compared to the year ended December 31, 2017. The increase was primarily due to increased performance-based compensation of \$2.0 million and increased stock-based compensation of \$3.9 million due to higher probability of achieving certain performance based restricted stock units ("PSUs"). Partially offsetting these increases were reduced expenditures for outside consulting of \$2.7 million and a \$0.7 million reduction in prototype costs.

Research and development expense increased by \$6.0 million or 4% in the year ended December 31, 2017 compared to the year ended December 31, 2016. The increase was primarily related to prototypes and non-recurring engineering, consulting, contractors, supplies, freight, and related travel expenses which increased by \$7.6 million related to future product launches and FFPS sustaining engineering. Partially offsetting these increases were decreased personnel costs of \$4.2 million primarily due to reduced variable compensation expense. The remaining increase of \$2.6 million is primarily due to facilities and information technology expenses related to our research and development activities.

Sales and Marketing

Sales and marketing expenses include personnel, trade shows, marketing programs and promotional materials, sales commissions, travel and entertainment, depreciation, and worldwide sales office expenses.

Sales and marketing expense increased by \$9.8 million or 6% in the year ended December 31, 2018 compared to the year ended December 31, 2017. The increase was primarily due to higher personnel costs including increased salaries, and variable compensation of \$7.0 million, and increased stock-based compensation expense of \$2.4 million due to higher probability of achieving certain performance-based awards.

Sales and marketing expense increased by \$4.7 million or 3% in year ended December 31, 2017 compared to the year ended December 31, 2016. The increase was primarily due to higher personnel costs of \$4.8 million primarily due to increased head count related to our business acquisitions. Stock-based compensation expense decreased by \$1.1 million primarily due to reduced probability of achieving certain performance-based awards and delayed timing of granting our annual stock awards, partially offset by increased ESPP participation by employees compared to the prior year. The remaining increase of \$1.0 million is primarily due to facilities and information technology expenses related to our sales and marketing activities.

General and Administrative

General and administrative expenses consist primarily of human resources, legal, finance, bad debts, and accounting expenses, as well as changes in the fair value of earnout liabilities.

General and administrative expense decreased by \$16.4 million or 18% in the year ended December 31, 2018 compared to the year ended December 31, 2017. The decrease was primarily due to a change of \$27.9 million in fair value adjustments to contingent consideration liabilities on previous acquisitions. The net contingent consideration liability reductions of \$21.5 million in 2018 compare to a net increase of \$6.5 million recognized during 2017, for a total change of \$27.9 million. During 2018 we recorded a \$20.9 million reduction in the contingent consideration liability for our 2016 acquisition of Optitex based on updated actual and projected performance against the earnout targets specified in the acquisition agreement. We also recognized a \$2.6 million reduction in the contingent consideration liability for our prior acquisition of Generation Digital and a \$2.2 million increase in the contingent consideration liability of our 2017 acquisition of Escada during the year ended December 31, 2018.

In addition to the fair value adjustments, bad debts expense decreased by \$2.0 million in the current year compared to the prior year. Legal, accounting, and consulting expenses decreased by \$2.1 million in 2018 compared to 2017 primarily related to our revenue recognition and accounting review costs which were higher in 2017. Partially offsetting these reductions were increases of \$11.3 million in stock-based compensation due to the impacts of the transition of our Chief Executive Officer ("CEO") position, which required acceleration of stock-based compensation expense recognition on prior grants to our previous CEO at the date of change in his employment status, and higher probability of achieving certain performance-based awards for other employees. In addition, salaries increased by \$2.7 million compared to the prior year due to increased headcount and annual merit adjustments and increased building rent and maintenance of \$1.5 million.

General and administrative expenses increased by \$7.3 million, or 9% in the year ended December 31, 2017 compared to the year ended December 31, 2016. Personnel costs increased by \$2.3 million primarily due to head count increases related to our business acquisitions. Professional services fees increased by \$1.2 million. Reserves for litigation and doubtful accounts increased by \$0.6 million and the fair value adjustments to contingent consideration increased by \$0.4 million. Legal and accounting fees related to the revenue recognition and accounting review were \$6.4 million. Stock-based compensation expense decreased by \$4.2 million primarily due to reduced probability of achieving certain performance-based awards and delayed timing of granting our annual awards.

The fair value of contingent consideration increased by \$6.5 million during the year ended December 31, 2017, including earnout interest accretion of \$1.7 million related to all acquisitions. The Optitex, CTI, and Rialco earnout performance probabilities increased while the Shuttleworth earnout performance probability decreased during 2017. The estimated probabilities of achieving the Optitex, Reggiani, DirectSmile, and CTI earnout performance targets increased during the year ended December 31, 2016, partially offset by reduced probabilities of achieving the DIMS and Shuttleworth earnout performance targets, resulting in an increase in the associated liability and a charge to general and administrative expense of \$6.9 million, including accretion of interest related to all acquisitions.

Many of our acquisitions have included elements of contingent consideration in the purchase price which are primarily linked to financial performance of the acquired business following our acquisition. The fair value of this contingent consideration is estimated and recorded at the acquisition date. In subsequent periods, as the actual and expected financial performance of the business changes, the contingent consideration liabilities are adjusted to updated estimated fair values.

We recorded impairment losses of \$0.3 and \$0.9 million during the years ended December 31, 2018 and 2017, respectively, related to the Meredith, NH manufacturing facilities and related land. For additional information, please refer to Note 9 – Property and Equipment, net of Notes to Consolidated Financial Statements for details. There were no asset impairment charges recognized during the year ended December 31, 2016.

Amortization of Identified Intangibles

Amortization of identified intangibles decreased by \$2.0 million or 4% in the year ended December 31, 2018 compared to the year ended December 31, 2017, primarily because we made no acquisitions during 2018, and certain identified intangibles from earlier acquisitions became fully amortized.

Amortization of identified intangibles increased by \$7.7 million, or 20% in the year ended December 31, 2017 compared to the year ended December 31, 2016, primarily due to amortization of identified intangibles resulting from the Escada, Generation Digital, CRC, and FFPS acquisitions made in 2017, as well as full year amortization expense recognized on 2016 acquisitions, partially offset by decreased amortization due to certain intangible assets from prior year acquisitions becoming fully amortized.

Restructuring and Other

Restructuring and other expenses were \$13.6 million in the year ended December 31, 2018 and included severance costs of \$7.6 million related to head count reductions of 148. Severance costs include severance payments, related employee benefits, retention bonuses, outplacement fees, recruiting, and relocation costs. We also incurred facilities relocation and downsizing expenses of \$1.7 million, primarily consisting of costs to relocate operations from our prior Meredith, NH facilities to our new Manchester, NH facility and to consolidate our headquarters in Fremont, CA from two buildings into one. Facilities restructuring and other expenses are primarily related to the relocation of certain manufacturing and administrative locations to accommodate decreased or different space requirements. We also recognized \$4.3 million in integration costs incurred to integrate our previously acquired businesses, including costs incurred in the project to implement SAP at our Reggiani subsidiary.

Restructuring and other expenses were \$7.6 million in the year ended December 31, 2017 and included severance costs of \$4.7 million related to head count reductions of 144. We incurred facilities relocation and downsizing expenses of \$0.6 million consisting of costs to relocate certain manufacturing and administrative locations to accommodate decreased or different space requirements. We also recognized \$2.3 million in integration costs incurred to integrate our previously-acquired businesses.

Restructuring and other expenses were \$6.7 million in the year ended December 31, 2016 and included severance costs of \$4.1 million related to head count reductions of 128. We incurred facilities relocation and downsizing expenses of \$0.5 million primarily consisting of costs to relocate certain manufacturing and administrative locations to accommodate decreased or different space requirements. We also recognized \$2.1 million in integration costs incurred to integrate our previously-acquired businesses.

Stock-based Compensation

Stock-based compensation expense for the years ended December 31, 2018, 2017, and 2016 was \$45.3, \$26.5, and \$31.8 million, respectively. Stock-based compensation expense is included in cost of sales, research and development, sales and marketing, and general and administrative expenses in the Consolidated Statement of Operations.

We account for stock-based payment awards in accordance with ASC 718, Stock Compensation, which requires stock-based compensation expense to be recognized based on the fair value of such awards on the date of grant. We amortize compensation cost on a graded vesting basis over the vesting period, after assessing the probability of achieving requisite performance criteria with respect to performance-based awards. Stock-based compensation cost is recognized over the requisite service period for each separately vesting tranche of the award as though the award were, in substance, multiple awards. This has the impact of greater stock-based compensation expense recognized during the initial years of the vesting period for awards with multiple tranches.

Stock-based compensation expense increased by \$18.7 million or 71% in the year ended December 31, 2018 compared to the year ended December 31, 2017 primarily due to increased probability of achieving performance-based awards and the impacts of the transition of our CEO during 2018, which required acceleration of stock-compensation expense recognition on prior grants to our previous CEO at the date of change in his employment status. Stock-based compensation expense decreased by \$5.3 million or 17% in the year ended December 31, 2017 compared to the year ended December 31, 2016 primarily due to reduced probability of achieving performance-based awards and delayed timing of granting our annual awards, partially offset by increased ESPP expense resulting from higher employee participation compared to the prior year.

Interest Expense

Interest expense increased by \$0.7 million or 3% in the year ended December 31, 2018 compared to the year ended December 31, 2017, primarily due to interest recognized on the 2023 Notes issued in November 2018. Interest expense increased by \$1.8 million or 10% in the year ended December 31, 2017 compared to the year ended December 31, 2016 primarily due to interest accretion related to the FFPS purchase liability, long-term warranties, the Reggiani non-compete agreement liability, and contingent consideration liabilities.

Interest Income and Other Income, Net

Interest income and other income, net, includes interest income on our cash equivalents and short-term investments, gains and losses from sales of our cash equivalents and short-term investments, and net foreign currency exchange gains and losses.

Interest income and other income, net decreased by \$2.5 million or 61% in the year ended December 31, 2018 compared to the year ended December 31, 2017, primarily due to reduced interest income of \$0.8 million due to reduced levels of cash investments during most of the year and a \$0.8 million increase in loss on investments. Interest income and other income, net increased by \$3.5 million in the year ended December 31, 2017 compared to the year ended December 31, 2016, primarily due to increased investment income of \$0.8 million resulting from increased market interest rates, decreased foreign currency exchange losses of \$2.2 million, and \$0.3 million related to the Xeikon License Agreement.

Income (Loss) before Income Taxes

Income (loss) before income taxes is summarized as follows (in thousands):

	Year Ended December 31,		
	2018	2017	2016
U.S.	\$(64,810)	\$(27,926)	\$8,254

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Foreign	65,931	40,056	30,394
Total income before income taxes	\$1,121	\$12,130	\$38,648

For the year ended December 31, 2018, income before income taxes of \$1.1 million consisted of a U.S. loss before income taxes of \$64.8 million and foreign income before income taxes of \$65.9 million, respectively. Loss before income taxes attributable to U.S. operations included stock-based compensation of \$45.3 million, interest expense related to our Notes of \$14.2 million, amortization of identified intangible assets of \$11.7 million, restructuring and other of \$9.2 million, legal and

accounting fees related to the revenue recognition review and assessment of \$2.4 million, acquisition-related costs of \$1.3 million, loss on investments of \$0.9 million, and asset impairment charges of \$0.3 million, partially offset by a decrease in the fair value of contingent consideration of \$2.6 million. Income before income taxes attributable to foreign operations included amortization of identified intangible assets of \$33.6 million, restructuring and other of \$4.2 million, and a decrease in the fair value of contingent consideration of \$19.1 million. The exclusion of these items from income before income taxes would result in U.S. and foreign income before income taxes of \$17.7 and \$84.7 million, respectively, during the year ended December 31, 2018.

For the year ended December 31, 2017, income before income taxes of \$12.1 million consisted of U.S. loss before income taxes of \$27.9 million and foreign income before income taxes of \$40.1 million, respectively. Loss before income taxes attributable to U.S. operations included amortization of identified intangible assets of \$13.6 million, stock-based compensation of \$26.5 million, restructuring and other of \$5.5 million, legal and accounting fees related to the revenue recognition review and assessment of \$6.4 million, asset impairment of \$0.9 million, acquisition-related costs of \$1.8 million, cost of revenue resulting from the fair value adjustment of FFPS inventory of \$0.6 million, increased fair value of contingent consideration of \$0.7 million, and interest expense related to our Notes of \$17.1 million. Income before income taxes attributable to foreign operations included amortization of identified intangible assets of \$33.7 million, restructuring and other of \$2.1 million, cost of revenue resulting from the fair value adjustment of FFPS inventory of \$0.8 million, litigation settlement expense of \$0.3 million, earnout interest accretion of \$1.7 million, acquisition-related costs of \$0.3 million, and increased fair value of contingent consideration of \$4.1 million. The exclusion of these items from income before income taxes would result in U.S. and foreign income before income taxes of \$45.2 and \$83.0 million, respectively, during the year ended December 31, 2017.

For the year ended December 31, 2016, income before income taxes of \$38.6 million consisted of U.S. and foreign income before income taxes of \$8.3 and \$30.4 million, respectively. The income before income taxes attributable to U.S. operations included amortization of identified intangibles of \$7.6 million, stock-based compensation of \$31.8 million, restructuring and other costs of \$3.8 million, acquisition-related costs of \$0.6 million, litigation settlement expense of \$1.0 million, and interest expense and amortization of debt issuance costs related to our Notes of \$16.3 million, and the change in fair value of contingent consideration of \$0.6 million. The income before income taxes attributable to foreign operations included amortization of identified intangibles of \$31.9 million, restructuring and other costs of \$2.9 million, acquisition-related costs of \$1.6 million, earnout interest accretion of \$2.7 million, and the change in fair value of contingent consideration of \$3.7 million. The exclusion of these items from income before income taxes would result in a U.S. and foreign income before income taxes of \$69.9 and \$73.2 million, respectively, for the year ended December 31, 2016.

Provision for (Benefit from) Income Taxes

Our provision for (benefit from) income taxes are as follows (in thousands):

Income Tax Provision (Benefit)	Year Ended December 31,		
	2018	2017	2016
Income Before Tax	\$1,121	\$12,130	\$38,648
Provision for (benefit from) income taxes	2,092	27,475	(6,301)
Effective income tax rate	186.6 %	226.5 %	(16.3)%

Primary differences between our effective tax rate and U.S. statutory tax rate of 21% in 2018 and 35% in 2017 and 2016 include taxes on permanently reinvested foreign earnings, the tax effects of stock-based compensation expense pursuant to ASC 718-740, Stock Compensation – Income Taxes, which are non-deductible for tax purposes, the release of previously unrecognized tax benefits due to the expiration of U.S. federal, state and foreign statute of limitations,

and tax benefits related to research and development tax credits.

In December 2017, the U.S. enacted the 2017 Tax Act which has wide ranging impacts including, but not limited to, a deemed repatriation transition tax and the revaluation of U.S. deferred tax assets and liabilities. The SEC issued SAB 118 which allowed us to record a provisional estimate of the income tax effects of the 2017 Tax Act in the period in which we

could make a reasonable estimate of its effects. We initially recorded a \$27.5 million tax charge in the year ended December 31, 2017 as a provisional estimate. This charge included an estimated charge of \$17.0 million related to the deemed repatriation transition tax, which was comprised of a gross transition tax of \$27.0 million offset by foreign tax credits of \$10.0 million. In addition, we recorded a \$10.5 million charge related to the remeasurement of U.S. deferred tax assets and liabilities. In 2018, pursuant to SAB 118, we recorded a net adjustment of a \$1.2 million benefit to the deemed repatriation tax and remeasurement of U.S. deferred tax balances, as a result of the filing of our 2017 U.S. federal and state tax returns. We have completed our accounting for the impacts of the 2017 Tax Act.

The 2017 Tax Act also created a minimum tax on certain foreign earnings, also known as the GILTI provision, commencing in the year ending December 31, 2018. In 2018, we recorded a net charge of \$4.7 million (GILTI inclusion less GILTI foreign tax credits) for the full year. In addition, we have made an accounting policy election to record GILTI as a period expense and not record deferred tax assets associated with GILTI.

During the years ended December 31, 2018 and 2017, we recognized tax benefits (including state tax benefit) of \$3.6 million and \$3.5 million, respectively, from the release of previously unrecognized tax benefits due to the expiration of U.S. federal, state, and foreign statute of limitations. During the year ended December 31, 2016, we recognized a \$16.6 million tax benefit from the release of previously unrecognized tax benefits due to the expiration of U.S. federal, state, and foreign statutes of limitations, of which \$10.3 million related to the 2012 gain on sale of our Foster City building and land.

We earn a significant amount of our operating income outside the U.S., which is permanently reinvested in foreign jurisdictions. Of the income generated in foreign jurisdictions, most is earned in the Netherlands, Spain, U.K., Italy, Israel, and the Cayman Islands. In 2017 and 2016, we realigned the ownership of certain intellectual property to augment operational synergies and parallel both our worldwide intellectual property ownership and our worldwide supply chain. Our effective tax rate could fluctuate significantly and be adversely impacted if anticipated earnings in the Netherlands, Spain, Italy, U.K., Israel, and the Cayman Islands are materially different than current projections.

While we currently do not foresee a need to repatriate the earnings of foreign operations, should we require more capital in the U.S. than our cash and cash equivalents and short-term investments located in the U.S., along with cash generated by our U.S. operations and potential borrowings under our revolving line of credit, we may elect to repatriate funds held in our foreign jurisdictions or raise capital in the U.S. through debt or equity issuances. These alternatives could result in higher effective tax rates, the cash payment of taxes and/or increased interest expense, and foreign income and withholding taxes.

As of December 31, 2018, the Company has accumulated undistributed earnings generated by our foreign subsidiaries of approximately \$301 million. Since these earnings were subjected to the one-time transition tax on foreign earnings as required by the 2017 Tax Act, any additional taxes due with respect to such earnings or the excess of the amount for financial reporting over the tax basis of our foreign investments would generally be limited to foreign and state taxes. We intend, however, to indefinitely reinvest these earnings and expect future U.S. cash generation to be sufficient to meet future U.S. cash needs.

In *Altera Corp. v. Commissioner*, the U.S. Tax Court issued an opinion on July 27, 2015 to exclude stock-based compensation expense in an intercompany cost-sharing arrangement. To date, the U.S. Department of the Treasury has not withdrawn the requirement to include stock-based compensation in intercompany cost-sharing arrangements from its regulations. On July 24, 2018, the Ninth Circuit Court reversed the Tax Court decision to require U.S. corporations to share their stock-based compensation with their foreign affiliates. The Ninth Circuit Court subsequently withdrew its initial decision on August 7, 2018. A final decision has not been reached as of December 31, 2018. Due to the uncertainty related to the status of both the current regulations and the appeal that has been filed

by the Internal Revenue Service, we have not recorded any benefit as of December 31, 2018 in our Consolidated Statements of Operations. We will continue to monitor ongoing developments and potential impacts to our consolidated financial statements.

We assess the likelihood that our deferred tax assets will be recovered from future taxable income by considering both positive and negative evidence relating to their recoverability. If we believe that recovery of these deferred tax assets is not more likely than not, we establish a valuation allowance.

Significant judgment is required in determining any valuation allowance recorded against deferred tax assets. In assessing the need for a valuation allowance, we considered all available evidence, including recent operating results, projections of future taxable income, our ability to utilize loss and credit carryforwards, and the feasibility of tax planning strategies. Other than valuation allowances on deferred tax assets related to California, Luxembourg, Israel, Netherlands, Turkey, and the Optitex business unit that are likely to not be realized based on the size of the net operating loss and research and development credits being generated, we have determined that it is more likely than not that we will realize the benefits related to all other deferred tax assets. To the extent we increase a valuation allowance, we will include an expense in the Consolidated Statement of Operations in the period in which such determination is made.

Liquidity and Capital Resources

Overview

	As of December 31,		
	2018	2017	2016
Cash and cash equivalents	\$309,052	\$170,345	\$164,313
Short-term investments	102,349	148,697	295,428
Cash, cash equivalents, and short-term investments	\$411,401	\$319,042	\$459,741

During the year ended December 31, 2018, cash, cash equivalents, and short-term investments increased by \$92.4 million to \$411.4 million as of December 31, 2018. The increase was primarily due to net proceeds of \$146.3 million generated by the issuance of the 2023 Notes, cash flows from operating activities of \$83.5 million, and \$10.5 million received from the issuance of stock. These cash inflows were partially offset by purchases of treasury stock and net stock settlements totaling \$113.5 million, net purchases of property and equipment of \$12.3 million, \$11.2 million paid in satisfaction of acquisition-related debt, and \$7.3 million in funding of restricted cash related to the build-to-suit lease project in Manchester, NH.

During the year ended December 31, 2017, cash, cash equivalents, and short-term investments decreased by \$140.7 million to \$319.0 million as of December 31, 2017. The decrease was primarily due to purchases of treasury stock and net share settlements totaling \$101.8 million, payments related to business acquisitions of \$63.6 million, restricted cash equivalent funding of \$26.3 million related to the build-to-suit lease construction project in Manchester, NH, and net purchases of property and equipment of \$13.8 million. These cash outflows were partially offset by cash flows from operating activities of \$51.3 million and \$12.1 million received from the issuance of stock.

During the year ended December 31, 2016, cash, cash equivalents, and short-term investments decreased by \$37.6 million to \$459.7 million as of December 31, 2016. The decrease was primarily due to purchases of treasury stock and net share settlements totaling \$83.3 million, payments related to acquisitions of \$56.3 million, cash payments for property and equipment of \$22.4 million, and restricted cash equivalent funding of \$6.3 million related to the build-to-suit lease construction project in Manchester, NH. These cash outflows were partially offset by cash flows provided by operating activities of \$121.0 million and proceeds from issuance of stock of \$11.1 million.

As of December 31, 2018, we have approximately \$301.0 million of unremitted foreign earnings which are deemed to be permanently reinvested. Cash, cash equivalents, and short-term investments held outside of the U.S. in various foreign subsidiaries were \$155.6 and \$88.4 million as of December 31, 2018 and 2017, respectively. These foreign-based funds are expected to be used to fund local operations and finance international acquisitions.

Based on past performance and current expectations, we believe that our cash, cash equivalents, short-term investments, cash generated from operating activities, and available borrowing under our \$150 million Revolving

Credit Facility will be adequate to satisfy our debt service, working capital, capital expenditure, investment, stock repurchase, commitments, and other liquidity requirements associated with our existing operations through at least the next twelve months. Our 2019 Notes mature on September 1, 2019 and on that date we expect to pay the \$345 million principal amount in cash. We believe that the most strategic uses of our cash resources include business acquisitions, strategic investments to gain access to new technologies, repurchases of shares of our common stock, and working capital. See Note 9 – Property and Equipment, net, Note 12 – Debt, and Note 13 – Commitments and Contingencies of Notes to Consolidated Financial Statements, as well as

Contractual Obligations below, for additional information about our expected obligations. As of December 31, 2018, cash, cash equivalents, and short-term investments available were \$411.4 million.

Operating Activities

Net cash provided by operating activities is summarized as follows (in thousands):

	As of December 31,		
	2018	2017	2016
Net income (loss)	\$(971)	\$(15,345)	\$44,949
Depreciation and amortization	65,557	65,647	55,081
Deferred taxes	(11,381)	8,753	(11,091)
Stock-based compensation, net of cash settlements	45,281	26,532	31,726
Change in fair value of contingent obligations	(21,486)	6,980	6,813
Non-cash accretion of interest expense on convertible notes and imputed financing obligation	15,239	14,981	13,489
Other non-cash charges and credits	11,295	18,378	15,024
Changes in operating assets and liabilities, net of effect of acquired business	(20,029)	(74,631)	(34,987)
Net cash provided by operating activities	\$83,505	\$51,295	\$121,004

Net cash provided by operating activities in the year ended December 31, 2018 consisted primarily of net loss of \$1.0 million, depreciation and amortization of \$65.6 million, a deferred tax benefit of \$11.4 million, non-cash stock-based compensation of \$45.3 million, non-cash changes in the fair value of contingent obligations from prior acquisitions of \$21.5 million, non-cash interest accretion of \$15.2 million, and other non-cash charges and credits and changes in operating assets and liabilities. The change in fair value of contingent obligations is primarily due to a reduction in the obligation related to Optitex. Other non-cash charges and credits included a provision for bad debts and sales-related allowances of \$7.0 million and a provision for inventory obsolescence of \$6.0 million. Changes in operating assets and liabilities included a net increase in accounts receivable of \$7.4 million, a \$18.1 million increase in inventories reflecting lower than anticipated sales volumes in the fourth quarter, an increase in other current assets of \$18.9 million primarily due to increased lease receivables, and an increase in accounts payable and accrued liabilities of \$27.4 million reflecting timing of payments to vendors.

Net cash provided by operating activities in the year ended December 31, 2017 consisted primarily of net loss of \$15.3 million, depreciation and amortization of \$65.6 million, a deferred tax provision of \$8.8 million, non-cash stock-based compensation of \$26.5 million, non-cash changes in the fair value of contingent obligations from acquisitions of \$7.0 million, non-cash interest accretion of \$15.0 million, and other non-cash charges and credits and changes in operating assets and liabilities. The change in fair value of contingent obligations is primarily due to interest accretion on the obligations and increases in the estimated liabilities for Optitex, CTI, and Rialco, partially offset by a reduction for Shuttleworth. Other non-cash charges and credits included a provision for bad debts and sales-related allowances of \$12.4 million and provision for inventory obsolescence of \$6.3 million. Changes in operating assets and liabilities included a net increase in accounts receivable of \$29.2 million, a \$24.4 million increase in inventories reflecting lower than anticipated sales volumes in the fourth quarter, an increase in other current assets of \$9.2 million, and a decrease in accounts payable and accrued liabilities of \$6.2 million reflecting timing of payments to vendors.

Net cash provided by operating activities in the year ended December 31, 2016 consisted primarily of net income of \$44.9 million, depreciation and amortization of \$55.1 million, a deferred tax benefit of \$11.1 million, non-cash stock-based compensation of \$31.7 million, non-cash changes in the fair value of contingent obligations from acquisitions of \$6.8 million, non-cash interest accretion of \$13.5 million, and other non-cash charges and credits and changes in operating assets and liabilities. The change in fair value of contingent obligations is primarily due to

interest accretion on the obligations and increases in the estimated liabilities for Optitex, Reggiani, DirectSmile, and CTI, partially offset by a reduction for DIMS and Shuttleworth. Other non-cash charges and credits included a provision for bad debts and sales-related allowances of \$10.7

million and provision for inventory obsolescence of \$5.7 million. Changes in operating assets and liabilities included a net increase in accounts receivable of \$31.2 million.

Accounts Receivable

Our primary source of operating cash flow is the collection of accounts receivable from our customers. One measure of the effectiveness of our collection efforts is DSO. DSOs were 87, 84, and 76 days as of December 31, 2018, 2017, and 2016, respectively.

DSOs increased during the year ended December 31, 2018, compared to the year ended December 31, 2017, primarily due to sales with extended payment terms and reduced down payment requirements as a result of a higher portion of our sales coming from our two direct-sales businesses; Industrial Inkjet and Productivity Software. DSOs increased during the year ended December 31, 2017 compared to the year ended December 31, 2016, primarily due to sales with extended payment terms and a non-linear sales cycle resulting in significant billings at the end of the quarter.

Industrial Inkjet and Productivity Software were 76%, 73%, and 72% of consolidated revenue during the years ended December 31, 2018, 2017, and 2016, respectively. Our DSOs related to the Industrial Inkjet and Productivity Software segments are traditionally higher than those related to the significant printer manufacturer customers or distributors in our Fiery segment as, historically, these Fiery customers have been granted shorter payment terms and have paid on a more timely basis. We expect DSOs to continue to vary from period to period because of changes in the mix of business between direct customers and the leading printer manufacturers, the effectiveness of our collection efforts both domestically and overseas, and variations in the linearity of our sales. If the percentage of Industrial Inkjet and Productivity Software related revenue increases, we expect DSOs will trend higher.

We have facilities in the U.S. and Italy that enable us to sell to third parties, on an ongoing basis, certain trade receivables. Trade receivables sold are generally short-term receivables with payment due dates of less than 10 days from date of sale, which are subject to a servicing obligation. We also have facilities in Spain and Italy that enable us to sell to third parties, on an ongoing basis, certain trade receivables. Trade receivables sold without recourse are generally short-term receivables with payment due dates of less than one year, which are secured by international letters of credit. Trade receivables sold under these facilities were \$27.0 million during the year ended December 31, 2018, which approximates the cash received. The receivables that were sold to third parties were removed from the Consolidated Balance Sheets and were reflected as cash provided by operating activities in the Consolidated Statements of Cash Flows.

Inventories

Our inventories are procured primarily in support of the Industrial Inkjet and Fiery operating segments. The majority of our Industrial Inkjet products are manufactured internally, while Fiery production is primarily outsourced. One result of this approach is lower inventory turnover for Industrial Inkjet inventories compared with Fiery inventories.

Our net inventories increased by \$8.5 million to \$134.3 million as of December 31, 2018, compared to \$125.8 million as of December 31, 2017, primarily due to an increase in Industrial Inkjet inventories, including our Nozomi product line, due to actual sales in the fourth quarter of 2018 being lower than expected. Inventory turnover was 3.9 during the quarter ended December 31, 2018, compared to 4.4 turns during the quarter ended December 31, 2017. We calculate inventory turnover by dividing annualized current quarter cost of revenue by ending inventories.

Working Capital

Our working capital, defined as current assets minus current liabilities, was \$212.1 million and \$456.7 million as of December 31, 2018 and 2017, respectively. The reduction in working capital is primarily due to the classification of our 2019 Notes within current liabilities as of December 31, 2018, due to their maturity date being September 1, 2019.

Investing Activities

Net cash provided by (used for) investing activities was \$36.2 million, \$107.8 million, and \$(10.9) million for the years ended December 31, 2018, 2017, and 2016, respectively.

Investing Activities	Year Ended December 31,		
	2018	2017	2016
Purchases of short-term investments	\$—	\$(87,623)	\$(216,349)
Proceeds from sales and maturities of short-term investments	46,624	233,633	252,856
Purchases (Sales) of restricted cash investments	—	5,115	(5,110)
Purchases, net of proceeds from sales, of property and equipment	(12,290)	(13,754)	(22,373)
Proceeds from sale of held-for-sale building and land	1,130	—	—
Businesses and technology purchased, net of cash acquired and dispositions	697	(29,559)	(19,932)
Net cash provided by (used for) investing activities*	\$36,161	\$107,812	\$(10,908)

* Certain prior period amounts have been revised due to the implementation of ASU 2016-18. See Note 1 – The Company and Summary of Significant Accounting Policies of Notes to Consolidated Financial Statements for details.

Investments

We invest cash in excess of our current operating needs in highly liquid, high-quality investment vehicles, of generally short-term duration. Our investments are made with a policy of capital preservation and liquidity as primary objectives. We may hold investments in fixed income debt securities to maturity; however, we may sell an investment at any time if the quality rating of the investment declines, the yield on the investment is no longer attractive, or we have better uses for the cash. Since we invest primarily in investment securities that are highly liquid with a ready market, we believe the purchase, maturity, or sale of our investments has no material impact on our overall liquidity.

Restricted Cash and Investments

We have restricted cash equivalents that are required to be maintained by the lease related to our Manchester, NH facility described more fully in Note 9 – Property and Equipment, net, of Notes to Consolidated Financial Statements. The funds are pledged as collateral against the lease of that facility and are held on deposit with MUFG, our landlord for the facility. We had \$39.8 million and \$32.5 million of these restricted funds included in non-current assets on the Consolidated Balance Sheets, as of December 31, 2018 and 2017, respectively.

Property and Equipment

Net purchases of property and equipment were \$12.3 million, \$13.8 million, and \$22.4 million in the years ended December 31, 2018, 2017, and 2016, respectively. Our property and equipment additions have historically been funded from cash flows from operating activities. We anticipate that we will continue to purchase necessary property and equipment in the normal course of our business. The amount and timing of these purchases and the related cash outflows in future periods is difficult to predict and is dependent on a number of factors including the hiring of employees, the rate of change in computer hardware and software used in our business, new product development, and our business outlook.

Property Held-for-Sale

During the year ended December 31, 2018, we sold one of our two buildings and the related land in Meredith, NH for net proceeds of \$1.1 million and recognized a gain of \$0.1 million. See additional discussion in Note 9 – Property and Equipment, net.

Acquisitions

On October 1, 2017, we acquired Escada for cash consideration of \$11.9 million, net of cash acquired, plus an additional potential future cash earnout contingent on achieving certain revenue and operating profit performance targets. Escada offers the corrugated packaging market corrugator control systems, which provide comprehensive control and traceability for the entire corrugated packaging process.

On August 14, 2017, we acquired Generation Digital for cash consideration of \$3.2 million, net of cash acquired, plus an additional potential future cash earnout contingent on achieving certain revenue and operating profit performance targets. Generation Digital provides software to textile and fashion designers for the creation and design of prints and patterns, color matching, and color palette creation and management.

On May 8, 2017, we acquired CRC for cash consideration of \$7.6 million. CRC provides business process automation software for commercial, label, and packaging printers.

On January 31, 2017, we purchased the FFPS business from Xerox for cash consideration of \$5.9 million, plus \$18.0 million of future cash payments, of which \$9.0 million was paid in July 2017 and \$9.0 million was paid in July 2018. The FFPS business manufactures and markets the FFPS DFE, which previously competed with our Fieri DFE.

On June 16, 2016, we purchased Optitex for cash consideration of \$11.6 million, net of cash acquired, plus an additional potential future cash earnout contingent on achieving revenue and operating profit performance targets. We received a \$0.2 million purchase price adjustment payment in 2017. Optitex has developed and markets integrated 2D and 3D CAD software that is shortening the design cycle, reducing costs, and accelerating the adoption of fast fashion.

On March 1, 2016, we purchased Rialco for cash consideration of \$8.4 million, net of cash acquired, plus an additional potential future cash earnout contingent on achieving revenue and gross profit targets. Rialco is a leading European supplier of dye powders and color products for the textile, digital print, and other decorating industries.

A tax recovery liability of \$1.0 million related to the Creta Print S.L. “(Cretaprint”) acquisition was paid during the year ended December 31, 2016. The escrow of \$1.5 million related to the Reggiani acquisition was remitted to us in return for the issuance of shares of common stock for the year ended December 31, 2016. We also purchased additional intellectual property related to the Reggiani business for \$0.2 and \$0.3 million in 2017 and 2016, respectively. We paid \$1.4 million, which was the first payment related to a four-year non-compete agreement with the sellers of the Reggiani business in 2017.

We acquired privately-held CTI and Shuttleworth during the fourth quarter of 2015, which have been included in our Productivity Software operating segment, for aggregate cash consideration of \$9.3 million, net of cash acquired, \$9.7 million in shares of EFI stock, plus a potential future cash earnout contingent on achieving certain performance targets.

Xeikon License Agreement

On November 1, 2017, we entered into an Agreement with Xeikon to license the right to the manufacturing, technology, marketing, and support of the Jetrion product line. During 2017, pursuant to the Agreement, we received \$1.5 million of royalty payments, which are reflected as operating cash inflows, and \$0.5 million of intellectual property payments, which are reflected as investing cash inflows.

Financing Activities

Net cash provided by (used for) financing activities was \$28.8 million, \$(125.9) million, and \$(109.1) million for the years ended December 31, 2018, 2017, and 2016, respectively.

Convertible Senior Notes

In November 2018, we completed a private placement of \$150 million principal amount of 2.25% convertible notes due in 2023. The net proceeds from this offering were \$146.3 million, after deducting commissions and offering expenses paid by us. We used \$40.0 million of the net proceeds to repurchase our common shares.

In September 2014, we completed a private placement of \$345.0 million principal amount of 0.75% convertible notes due September 1, 2019. The Notes are not callable and will mature on September 1, 2019, unless previously purchased or converted in accordance with their terms prior to such date. Our management believes the likelihood of conversion prior to the maturity date is low, and expects to repay the principal in cash utilizing the Company's existing cash, cash equivalents, and short-term investments, cash generated from operations prior to the maturity date, and available borrowings under the Company's revolving credit facility. At the maturity date, payment of the principal equal to the original discount of \$63.6 million will be reported within cash flows from operating activities.

See Note 12 – Debt of Notes to Consolidated Financial Statements for additional information about the Company's convertible notes.

Revolving Credit Facility

On January 2, 2019, we entered into a 5-year \$150 million revolving credit agreement with an option for an additional \$50 million, subject to certain requirements. Interest is variable with a premium applied to an index rate. This credit facility is secured by substantially all of our domestic assets and the pledge of 65% of the stock of our foreign subsidiaries. See Note 12 – Debt for additional information about the Company's revolving credit facility.

Stock Option and ESPP Proceeds

We received proceeds from the issuance of our common stock through exercise of stock options and employee purchases of ESPP shares of \$10.5 million, \$12.1 million, and \$11.1 million, respectively, during the years ended December 31, 2018, 2017, and 2016. While we may continue to receive proceeds from these plans in future periods, the timing and amount of such proceeds are difficult to predict and are contingent on a number of factors including the price of our common stock, the timing and number of stock options exercised by employees that had participated in these plans, net settlement options, employee participation in our ESPP, and general market conditions. We anticipate that cash provided from the exercise of stock options will decline over time as we have shifted to issuance of RSUs, rather than stock options, although we may grant stock option awards in the future.

Treasury Stock Purchases

The most significant use of funds for financing activities during the years ended December 31, 2018, 2017, and 2016 was the repurchase of our common stock, which totaled \$113.5 million, \$101.8 million, and \$83.3 million, respectively. These totals include cash used for net settlement of shares for the exercise price of certain stock options and any tax withholding obligations incurred connected with such exercises and tax withholding obligations that arose on the vesting of RSUs.

The repurchases of our stock was made under a plan approved and publicly announced and as of December 31, 2018, the program has ended and there is no remaining authorization for additional purchases. See Item 5 – Market for Registrant's Common Equity, Related Stockholder Matters, and Issuer Purchases of Equity Securities for further discussion of our common stock repurchase programs.

Contingent Consideration (Earnout) Payments

Cash payments related to contingent consideration totaled \$3.2 million during the year ended December 31, 2018. These payments related to the prior acquisitions of Rialco, Generation Digital, Shuttleworth, and PrintLeader.

Cash payments related to contingent consideration totaled \$30.9 million during the year ended December 31, 2017. These payments related to the acquisitions of Reggiani, Optitex, Rialco, and Shuttleworth. The portion of the Reggiani earnout

representing performance targets achieved in excess of the fair value recorded in the opening balance sheet as of the acquisition date was \$5.9 million and is reflected as cash used for operating activities in the Consolidated Statement of Cash Flows. The remaining \$15.6 million related to the Reggiani earnout is included in cash used for financing activities.

Cash payments related to contingent consideration totaled \$28.1 million during the year ended December 31, 2016. These payments related to the acquisitions of Reggiani, DirectSmile, SmartLinc, Inc. (SmartLinc), and Metrix Software (“Metrix”).

Acquisition-related Debt Payments

We made \$11.2 million, \$9.0 million, and \$8.3 million of acquisition-related debt payments in the years ended December 31, 2018, 2017, and 2016. These payments included \$9.0 million to Xerox for the purchase of FFPS in both 2018 and 2017. The payments in the year ended December 31, 2016 primarily related to indebtedness assumed in the Optitex and Matan acquisitions.

New Leases Accounting Standard

Effective January 1, 2019, we will adopt the new accounting standard for leases using the optional transition method to initially apply the new lease standard at the adoption date, and will recognize a cumulative-effect adjustment to the opening balance of retained earnings. We expect to record total right of use assets and lease liabilities on our opening Consolidated Balance Sheet of between \$35.0 and \$40.0 million as of January 1, 2019. Please see Note 1 – The Company and Summary of Significant Accounting Policies of Notes to Consolidated Financial Statements for additional information. The Company and Summary of Significant Accounting Policies for additional information.

Contractual Obligations

The following table summarizes our significant contractual obligations as of December 31, 2018 and the effect that such obligations are expected to have on our liquidity and cash flows in future periods (in thousands):

	Total	Payments Due by Period					
		2019	2020	2021	2022	2023	Thereafter
Operating lease obligations	\$45,315	\$6,559	\$6,216	\$4,355	\$2,582	\$1,423	\$ 24,180
Contingent consideration ⁽¹⁾	10,501	8,269	2,232	—	—	—	—
Purchase obligations ⁽²⁾	74,092	69,736	4,356	—	—	—	—
Convertible senior notes ⁽³⁾	514,463	350,963	3,375	3,375	3,375	153,375	—
Noncurrent tax liabilities ⁽⁴⁾	32,007	—	—	—	—	—	—
Total ⁽²⁾	\$676,378	\$435,527	\$16,179	\$7,730	\$5,957	\$154,798	\$ 24,180

Represents the fair value of acquisition-related contingent consideration liabilities. The current portion is included in accrued and other liabilities, representing earnout liabilities that are payable within one year, and those that are payable beyond one year are included in noncurrent contingent and other liabilities on the Consolidated Balance Sheets.

(1) Excludes contractual obligations recorded on the balance sheet as current liabilities and cancellable purchase orders.

(2) Obligations to make interest and principal payments related to the 2019 and 2023 Notes. See Note 12 – Debt of Notes to Consolidated Financial Statements for further information.

(3) As of December 31, 2018, the liability for noncurrent tax liabilities, including interest and penalties, is reflected in the Consolidated Balance Sheet as \$15.5 million of noncurrent income taxes payable and \$16.5 million as a

reduction of deferred tax assets. Due to the uncertainty of the timing of future payments, noncurrent tax liabilities are presented in the total column on a separate line in this table. Please refer to Note 17–Income Taxes of Notes to the Consolidated Financial Statements for additional discussion of noncurrent tax liabilities.

Purchase obligations in the table above include agreements to purchase goods or services that are enforceable, noncancellable, and legally binding that specify all significant terms including fixed or minimum quantities to be purchased; fixed, minimum, or variable price provisions; and the approximate timing of the transactions. Purchase obligations exclude purchase orders for raw materials and other goods and services that are cancellable without penalty. Our purchase orders are

based on current manufacturing needs and are generally fulfilled by our vendors within short time horizons. We also enter into contracts for outsourced services; however, the obligations under these contracts were not significant and the contracts generally contain clauses allowing for cancellation without significant penalty. Accordingly, such contracts are not included in the preceding table. The expected timing of payment for the obligations listed above is estimated based on current information. Timing of payments and actual amounts paid may be different depending on when the goods or services are received or changes to agreed-upon amounts for some obligations.

Off-Balance Sheet Financing

In August 2016, we entered into a lease agreement for a term of 48.5 years, inclusive of two renewal options of 5.0 and 3.5 years, with the City of Manchester to lease 16.9 acres of land adjacent to the Manchester Regional Airport. Minimum lease payments are \$13.3 million during the entire 48.5 year term of the land lease, excluding six months of the land lease which was financed by the manufacturing facility lease. This obligation is included in the Contractual Obligations table above within the operating lease category.

In August 2016, we entered into a six-year lease with BTMU whereby a 225,000 square foot manufacturing and warehouse facility in Manchester, New Hampshire was constructed for our Industrial Inkjet operating segment. Construction was completed in April 2018 at a total cost of \$39.8 million. Minimum lease payments during the six-year term are \$1.8 million. This obligation is included in the Contractual Obligations table above within the operating lease category. Upon completion of the six-year term, we have the option to renew the lease, purchase the facility, or return the facility to BTMU subject to an 89% residual value guarantee. We are treated as the owner of the facility for federal income tax purposes. Cash and cash equivalents of \$39.8 million are on deposit with BTMU and restricted as collateral until the end of the lease term.

Critical Accounting Policies

The preparation of consolidated financial statements requires estimates and judgments that affect the reported amounts of assets, liabilities, revenue, expenses, and related disclosures. We evaluate our estimates on an ongoing basis. Estimates are based on historical and current experience, the impact of the current economic environment, and various assumptions believed to be reasonable under the circumstances at the time of the estimate, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

Our critical accounting policies and estimates include the following:

- revenue recognition;
- allowances for doubtful accounts,
- inventory valuation and purchase commitment reserves,
- warranty reserves,
- litigation accruals,
- restructuring reserves,
- fair value of financial instruments;
- accounting for stock-based compensation;
- accounting for income taxes;
- valuation analysis of goodwill and intangible assets;
- business combinations;
- build-to-suit leases; and
- determination of functional currencies for consolidating international operations.

Revenue recognition. Significant management judgments and estimates must be made and used in connection with the revenue recognized in any accounting period. Please refer to Note 1 – The Company and Summary of Significant Accounting Policies and Note 4 – Revenue of Notes to Consolidated Financial Statements for additional description of our revenue recognition accounting policies.

The key estimates and assumptions and corresponding uncertainties for recognizing revenue are summarized as follows:

Key Estimates and Assumptions

For customer arrangements that include multiple products or services, judgment is required to determine the standalone selling price (“SSP”) for each distinct performance obligation. Where an observable price is not available, we gather all reasonable available data points, consider adjustments based on market conditions, entity-specific factors, and the need to stratify selling prices into meaningful groups (e.g., geographic region) in determining SSP. We allocate the total contract consideration to each distinct performance obligation on a relative SSP basis. Revenue is then recognized in accordance with the timing of the transfer of control to the customer for each performance obligation.

Distributors and resellers participate in various marketing and other programs, and we maintain estimated accruals and allowances for these programs based on contractual terms and historical experience.

If the arrangement includes a customer-negotiated refund or right of return relative to the delivered item and the delivery and performance of the undelivered item is considered probable and substantially in our control, the delivered element constitutes a separate unit of accounting. We limit revenue recognition for delivered elements to the amount that is not contingent on the future delivery of products or services, future performance obligations, or subject to customer-specified return or refund privileges.

Estimated period over which contract acquisition costs are amortized.

Allowances for doubtful accounts. We establish an allowance for doubtful accounts to ensure that trade receivables are not overstated due to uncollectibility. To ensure that we have established an adequate allowance for doubtful accounts, management analyzes accounts receivable and historical bad debts, customer concentrations, customer creditworthiness, current economic trends and macroeconomic conditions, changes in customer payment terms, the length of time receivables are past due, and significant one-time events. We record specific reserves for individual accounts when we become aware of specific customer circumstances, such as bankruptcy filings, deterioration in the customer’s operating results or financial position, or potential unfavorable outcomes from disputes with customers or vendors.

Key Uncertainties

As our business and offerings evolve over time, modifications to our pricing and discounting methodologies, changes in the scope and nature of service offerings and/or changes in customer segmentation may result in a lack of consistency required to establish and/or maintain SSP or to maintain consistent SSP. Additionally, technological changes resulting in variability in product costs and gross margins may require changes to our SSP model. Changes in SSP may result in a different allocation of revenue to the deliverables in multiple-element arrangements. These factors, among others, may adversely impact the amount of revenue and gross margins we report in a particular period.

If we experience changes in market or competitive conditions resulting in credits issued to our distributors and partners deviating significantly from our estimates, our revenue may be adversely impacted.

Revenue recognition is dependent on proper identification of the separate units of accounting in an arrangement and determining whether they have stand-alone value. Significant contract interpretation can be required to determine the appropriate accounting, including whether the deliverables specified in a multiple element arrangement should be treated as separate units of accounting for revenue recognition purposes, and, if so, how the price should be allocated among the elements and when to recognize revenue for each element.

The period of time over which our customers purchase products from us could be different than our estimate.

Inventory valuation. We state our inventory at the lower of cost and market. Management estimates potential inventory obsolescence and noncancellable purchase commitments to properly value inventory and establish reserves for potential losses on purchase commitments. Significant management judgment and estimates must be made related to inventory valuation including the evaluation of current economic trends, changes in customer demand, product design changes, product life cycle and development plans, product pricing, physical deterioration, and quality issues.

Warranty reserves. An accrual is established when the warranty liability is estimable and probable based upon historical experience. A provision for estimated future warranty work is recorded in cost of revenue when revenue is recognized. The warranty liability is reviewed regularly and periodically adjusted to reflect changes in warranty estimates. Significant management judgments and estimates must be made in connection with establishing and updating warranty reserves including estimated potential inventory return rates and replacement or repair costs.

Litigation accruals. We may be involved, from time to time, in a variety of claims, lawsuits, investigations, or proceedings relating to contractual disputes, securities laws, intellectual property rights, employment, or other matters that may arise in the normal course of business. We assess our potential liability in each of these matters by using the information available to

us. We develop our views on estimated losses in consultation with inside and outside counsel, which involves a subjective analysis of potential results and various combinations of appropriate litigation and settlement strategies. We accrue estimated losses from contingencies if a loss is deemed probable and can be reasonably estimated. The material assumptions used by management to estimate litigation accruals include:

- consultation with our external attorneys regarding the expected duration of a claim or lawsuit, the potential outcome, and the likelihood of settlement;
- likelihood of assertion of unasserted claims and assessments;
- our strategy regarding the claim or lawsuit;
- expected insurance coverage under our policies; and
- past experiences with similar claims and lawsuits.

Litigation is inherently unpredictable, and while we believe that we have valid defenses with respect to legal matters pending against us, our financial statements could be materially affected in any particular period by the unfavorable resolution of one or more of these contingencies or because of the diversion of management's attention and the incurrence of significant expenses.

Restructuring reserves. We have engaged, and may continue to engage, in restructuring actions, which require management to utilize significant estimates related to the timing and the expense for severance and other employee separation costs, realizable values of assets made obsolete, lease cancellation, facility downsizing, and other exit costs. If actual amounts differ from our estimates, the amount of the restructuring charges could be materially impacted.

Fair value of financial instruments. We invest our excess cash on deposit with major banks in money market, U.S. Treasury and government-sponsored entity, corporate debt, municipal, and asset-backed securities. By policy, we invest primarily in high-grade marketable securities. We are exposed to credit risk in the event of default by the financial institutions or issuers of these investments to the extent of amounts recorded in the Consolidated Balance Sheets.

As a basis for considering market participant assumptions in fair value measurements, ASC 820 establishes a three-tier fair value hierarchy as more fully defined in Note 8 – Fair Value Measurements of Notes to Consolidated Financial Statements. We utilize the market approach to measure fair value of our fixed income securities. The market approach is a valuation technique that uses prices and other relevant information generated by market transactions involving identical or comparable assets or liabilities. The fair value of our fixed income securities is obtained using readily-available market prices from a variety of industry standard data providers, large financial institutions, and other third-party sources for the identical underlying securities.

As part of this process, we engage pricing services to assist management in its analysis. All estimates, key assumptions, and forecasts are either provided by or reviewed by us. While we utilize third party pricing services, the impairment analysis and related valuations represent the conclusions of management and not the conclusions or statements of any third party.

We obtain the fair value of our Level 2 financial instruments from third party asset managers, the custodian bank, and the accounting service provider. Independently, these service providers use professional pricing services to gather pricing data, which may include quoted market prices for identical or comparable instruments or inputs other than quoted prices that are observable either directly or indirectly.

The validation procedures performed by management include the following:

obtaining an understanding of the pricing service's valuation methodologies, including the timing and frequency,
evaluating the type, nature, and complexity of our investments in financial instruments,
evaluating the activity level in the market for the type of securities in which we have invested including the volatility
of price movements requiring analysis, and
validating the quoted market prices provided by our service providers by completing a three-way reconciliation,
comparing the assessment of the fair values provided by the asset manager, the custody bank, and the accounting book
of record provider for each portfolio.

Accounting for stock-based compensation. We recognize stock-based compensation based on the fair value of such awards on the date of grant. We amortize stock-based compensation expense on a graded vesting basis over the vesting period, after assessing the probability of achieving the requisite performance criteria with respect to performance-based awards. Stock-based compensation expense is recognized over the requisite service period for each separately vesting tranche as though the award were, in substance, multiple awards. We account for forfeitures when they occur. We use the Black-Scholes-Merton (“BSM”) option pricing model to value stock-based compensation for all equity awards, except market-based awards which are valued using a Monte Carlo valuation model. Option pricing models were developed to estimate the value of traded options that have no vesting or hedging restrictions and are fully transferable. We must use judgment in determining and applying the assumptions needed for the valuation of stock awards and issuance of common stock under our ESPP.

Accounting for income taxes. Significant management judgment is required to determine our provision for income taxes, our deferred tax assets and liabilities, and any valuation allowance recorded against our deferred tax assets. We estimate our actual current tax expense, including permanent charges and benefits, and temporary differences resulting from differing treatment of items, such as deferred revenue for tax and book accounting purposes. These temporary differences result in deferred tax assets and liabilities, which are included within our Consolidated Balance Sheets. We assess the likelihood that our deferred tax assets will be recovered from future taxable income by considering both positive and negative evidence relating to their recoverability. If we believe that recovery of these deferred tax assets is not more likely than not, we establish a valuation allowance. To the extent that we adjust a valuation allowance in a period, we include the impact in the Consolidated Statement of Operations in the period in which such determination is made.

In assessing the need for a valuation allowance, we considered all available evidence, including recent operating results, projections of future taxable income, our ability to utilize loss and credit carryforwards, and the feasibility of tax planning strategies.

We account for uncertainty in income taxes by recognizing a tax position only when it is more likely than not that the tax position, based on its technical merits, will be sustained upon ultimate settlement with the applicable tax authority. The tax benefit recognized is the largest amount of tax benefit that is greater than fifty percent likely of being realized upon ultimate settlement with the applicable tax authority that has full knowledge of all relevant information.

Significant management judgment is required in evaluating our uncertain tax positions. Our gross unrecognized benefits are \$36.5 million as of December 31, 2018. Our evaluation of uncertain tax positions is based on factors including, but not limited to, changes in facts or circumstances, changes in tax law, effectively settled issues under audit, and new audit activity. If actual settlements differ from these estimates, or we adjust these estimates in future periods, we may need to recognize additional tax benefits or charges that could materially impact our financial position and results of operations.

Valuation analysis of goodwill and intangible assets. We perform our annual goodwill impairment analysis in the fourth quarter of each year or more frequently if we believe indicators of impairment exist. Triggering events that may require an interim impairment analysis include indicators such as adverse industry or economic trends, restructuring actions, significant changes in the manner of our use of the acquired assets, significant changes in the strategy for our overall business, our assessment of growth and profitability in each reporting unit for future years, significant decline in our stock price for a sustained period, or a sustained decline in our market capitalization relative to net book value. In our goodwill impairment assessment, we compare the fair value of each reporting unit to its carrying value. If the fair value of a reporting unit exceeds the carrying amount of the net assets assigned to that reporting unit, goodwill is not impaired. If the fair value of the reporting unit is less than its carrying amount, goodwill is impaired and the excess of the reporting unit’s carrying value over the fair value is recognized as an impairment loss.

Our goodwill valuation analysis is based on our respective reporting units (Industrial Inkjet, Productivity Software, and Fiery), which are consistent with our operating segments identified in Note 3 – Segment, Geographic, and Major Customer Information of Notes to Consolidated Financial Statements. We determined the fair value of our reporting units as of December 31, 2018 by equally weighting the market and income approaches. Under the market approach, we estimated fair value based on market multiples of revenue or earnings of comparable companies. Under the income approach, we estimated fair value based on a discounted projected cash flow method using a discount rate determined by our management to be commensurate with the risk inherent in our current business model.

The key estimates and assumptions and corresponding uncertainties for goodwill impairment analysis are summarized as follows:

- identification of comparable companies to benchmark under the market approach giving due consideration to the following factors:
 - financial condition and operating performance of the reporting unit being evaluated relative to companies operating in the same or similar businesses,
 - economic, environmental, and political factors faced by such companies, and companies that are considered to be reasonable investment alternatives.
- impact of goodwill impairments recognized in prior years,
- susceptibility of each of our reporting units to fair value fluctuations,
- reporting unit revenue, gross profit, and operating expense growth rates,
- financial forecasts,
- discount rate to apply to estimated cash flows,
- terminal values based on the Gordon growth methodology,
- appropriate market comparables,
- estimated multiples of revenue and earnings before interest expense and taxes (“EBIT”) that a willing buyer is likely to pay,
- reasonable gross profit levels,
- estimated control premium a willing buyer is likely to pay, including consideration of the following:
 - the most similar transactions in relevant industries and determined the average premium indicated by the transactions deemed to be most similar to a hypothetical transaction involving our reporting units
 - weighted average and median control premiums offered in relevant industries,
 - industry specific control premiums, and
 - specific transaction control premiums.
- significant events or changes in circumstances including the following:
 - significant negative industry or economic trends,
 - significant decline in our stock price for a sustained period,
 - our market capitalization relative to net book value,
 - significant changes in the manner of our use of the acquired assets,
 - significant changes in the strategy for our overall business, and
 - our assessment of growth and profitability in each reporting unit over the coming years.

Given the inherent uncertainty of forecasting future economic activity or financial results, there can be no assurance that our estimates and assumptions made for purposes of our goodwill impairment testing as of December 31, 2018 will prove to be accurate predictions of the future. If our assumptions regarding forecasted revenue or gross profit rates are not achieved, we may be required to record goodwill impairment charges in future periods relating to any of our reporting units, whether in connection with the next annual impairment testing in the fourth quarter of the following fiscal year or prior to that, if any such change constitutes an interim triggering event.

Business combinations. We account for business acquisitions as purchase business combinations in accordance with ASC 805, which requires that the acquisition method of accounting be used for all business combinations. Please refer to Note 1 – The Company and Summary of Significant Accounting Policies of Notes to Consolidated Financial Statements for our accounting policy with respect to accounting for business combinations.

We allocate the purchase price of acquired companies to the tangible and intangible assets acquired, including in-process research & development (“IPR&D”), and liabilities assumed based on their estimated fair values. Such a

valuation requires management to make significant estimates and assumptions, especially with respect to intangible assets. The results of operations for each acquisition are included in our financial statements from the date of acquisition.

The key estimates and assumptions and corresponding uncertainties to account for business acquisitions are summarized as follows:

Key Estimates and Assumptions

Management estimates fair value based on assumptions believed to be reasonable. These estimates are based on historical experience and information obtained from the management of the acquired companies. Critical estimates in valuing certain intangible assets include, but are not limited to: future expected cash flows; acquired developed technologies and patents; expected costs to develop IPR&D into commercially viable products and estimating cash flows from the projects when completed; the acquired company's brand awareness and market position, as well as assumptions about the period of time the acquired brand will continue to be used in our product portfolio; and discount rates.

We estimate fair value of acquisition-related contingent consideration based on the probability of realization of the performance targets. This estimate is based on significant inputs that are not observable in the market, which ASC 820-10-35 refers to as Level 3 inputs, reflecting our assessment of the assumptions market participants would use to value these liabilities. The fair value of contingent consideration is measured at each reporting period, with any changes in the fair value recognized as a component of general and administrative expense.

Other estimates associated with the accounting for acquisitions include severance costs and the costs to vacate or downsize facilities, including the future costs to operate and eventually abandon or relinquish duplicate facilities. These costs are recognized as restructuring and other expenses (i.e., not included in purchase accounting), are based on management estimates, and are subject to refinement.

Build-to-Suit leases. If we are deemed to be the accounting owner of a facility we account for the property as a depreciable asset and the related lease agreement is accounted for as an imputed financing obligation. If we are not deemed to be the accounting owner, then we account for the property as an operating lease. Significant judgments are required to make this determination, which relate to actions, guarantees, and investments that we make as a lessee that may be considered to be actions that only an owner would take. In addition, our potential investments in these facilities must comply with the maximum guarantee test to ensure that potential investments cannot exceed 90% of the fair value of each facility. We have three leases subject to the build-to-suit accounting requirements, located in New Hampshire, Spain, and the Netherlands. The New Hampshire and Spain facilities consist of construction of new facilities. The facility in the Netherlands was an existing facility, but was not functional in its current form at lease inception, and thus, represented a construction project subject to the guidance. When leasing an existing facility, we must consider whether the leased asset is fully functional and may be occupied by any lessee in its current form without requiring improvement (commonly referred to as the "second tenant scope exception").

Key Uncertainties

Our financial projections may ultimately prove to be inaccurate and unanticipated events and circumstances may occur. As a result, these estimates are inherently uncertain and unpredictable, assumptions may be incomplete or inaccurate, and unanticipated events and circumstances may occur, which may affect the accuracy or validity of such assumptions, estimates or other actual results. Therefore, no assurance can be given that the underlying assumptions used to establish the valuation for these acquired businesses will prove to be correct.

We typically engage a third party valuation firm to assist management in its analysis. All estimates, key assumptions, and forecasts were either provided by or reviewed by us. While we chose to utilize a third party valuation firm, the valuations represent the conclusions of management and not the conclusions or statements of any third party.

Estimated costs may change as additional information becomes available regarding assets acquired and liabilities assumed and as management continues its assessment of the pre-merger operations.

In August 2016, we entered into a six-year lease with MUFG (formerly BTMU) whereby a 225,000 square foot manufacturing and warehouse facility in New Hampshire was constructed for our Industrial Inkjet operating segment. Upon completion of the six-year term, we have the option to renew the lease, purchase the facility, or return the facility to BTMU subject to an 89% residual value guarantee under which we would recognize additional rent expense in the form of a variable rent payment. We have assessed our exposure in relation to the residual value guarantee and believe that there is no deficiency to the guaranteed value with respect to funds expended by MUFG to construct the facility. We are not deemed to be the accounting owner of this facility as we do not have responsibility for actions, guarantees, or investments for which only an owner would accept responsibility.

We are not deemed to be the accounting owner of the leased facilities in the Netherlands or Spain as we only have responsibility for normal tenant improvement costs in each of these facilities. Similarly, we are not responsible for actions, guarantees, or investments for which only an owner would accept responsibility.

Determining functional currencies for the purpose of consolidating our international operations. We have a number of foreign subsidiaries, which together account for approximately 50% of our net revenue, approximately 37% of our total assets, and approximately 38% of our total liabilities as of December 31, 2018.

For those subsidiaries that operate in a local functional currency environment, all assets and liabilities are translated into U.S. dollars using current exchange rates, while revenue and expenses are translated using monthly exchange rates, which approximate the average exchange rates in effect during each period. Resulting translation adjustments are reported as a separate component of accumulated other comprehensive income (“AOCI”), adjusted for deferred income taxes. Consequently, determination of the functional currency of each entity has a material impact on our financial position and results of operations. Management assesses the salient economic factors, both individually and collectively when determining the functional currency. The economic factors that must be evaluated include cash flows, sales price, sales market, expense, financing, and intercompany transaction indicators.

Recent Accounting Pronouncements

See Note 1 – The Company and Summary of Significant Accounting Policies of Notes to Consolidated Financial Statements for a full description of recent accounting pronouncements (adopted and not yet adopted) including the respective and prospective dates of adoption.

Item 7A: Quantitative and Qualitative Disclosures about Market Risk

The following discussion of our risk management activities includes “forward-looking statements” that involve risks and uncertainties. Actual results could differ materially from those projected in the forward-looking statements. Please refer to the discussion of Forward-Looking Statements preceding Part I of this Annual Report on Form 10-K.

Market Risk

We are exposed to various market risks. Market risk is the potential loss arising from adverse changes in market rates and prices, general credit conditions, foreign currency exchange rate fluctuations, liquidity, and interest rates. From time to time we have and may in the future enter into financial instrument contracts to manage and reduce the impact of changes in foreign currency exchange rates on earnings and cash flows. The counter parties to such contracts are major financial institutions. We do not enter into derivatives or other financial instruments for trading or speculative purposes.

Europe represents a significant portion of our revenue and cash flow. Since Europe is comprised of varied countries and regional economies, our European risk profile is somewhat more diversified due to the varying economic conditions among the countries. Approximately 37% of our receivables are with European customers as of December 31, 2018. Of this amount, 27% of our European receivables (10% of consolidated gross receivables) are in the higher risk southern European countries (mostly Italy, Spain, and Portugal), which our management believes to be adequately reserved.

Marketable Securities

We maintain an investment portfolio of short-term fixed income debt securities of various holdings, types, and maturities. These short-term investments are generally classified as available-for-sale and, consequently, are recorded on our Consolidated Balance Sheets at fair value. During the year ended December 31, 2018, we recognized a \$0.9 million loss on this investment portfolio due to changes in fair value of the underlying securities. In early 2019, we liquidated all of our available for sale securities in the anticipation of satisfying our obligation on the 2019 Notes that mature in September 2019. The proceeds have been deposited in highly liquid interest-bearing saving deposit accounts with variable interest rates. We do not have material future exposure to the valuation of these funds from future changes in interest rates.

We have no European sovereign debt investments. Our European debt investments consist of non-sovereign corporate debt securities of \$4.5 million, which represents 10% of our corporate debt instruments (4% of our short-term investments) as of December 31, 2018. European debt investments are with corporations domiciled in the northern and central European countries of Sweden, Netherlands and France. We believe that we do not have significant exposure with respect to our money market and corporate debt investments in Europe.

Interest Rate Risk on Marketable Securities

Hypothetical changes in the fair values of financial instruments held by us as of December 31, 2018 that are sensitive to changes in interest rates are presented below. The modeling technique measures the change in fair value arising from selected potential changes in interest rates. Market changes reflect immediate hypothetical parallel shifts in the yield curve of plus or minus 100 basis points over a twelve-month time horizon (in thousands):

Valuation of securities assuming an interest rate decrease of 100 basis points	No change in interest rates	Valuation of securities assuming an interest rate increase of 100 basis points
\$131,764	\$131,064	\$130,363

Market Risk on Convertible Notes

As of December 31, 2018, we have a total of \$495.0 million principal amount of Notes outstanding. We carry these instruments at face value less unamortized discount on our Consolidated Balance Sheets. Since these instruments bear interest at fixed rates, we have no financial statement risk associated with changes in interest rates. Although the fair value of these instruments fluctuates when interest rates change, the market value of our Notes is also influenced by the conversion premium. Please refer to Note 8 – Fair Value Measurements and Note 12 – Debt of Notes to Consolidated Financial Statements for additional information.

Foreign Currency Exchange Risk

A large portion of our business is conducted in countries outside of the U.S. We are primarily exposed to changes in exchange rates for the Euro, British pound sterling, Indian rupee, Chinese renminbi, and Israeli shekel. Although the majority of our receivables are invoiced and collected in U.S. dollars, we have exposure from non-U.S. dollar-denominated sales (primarily consisting of the Euro, British pound sterling, and Chinese renminbi) and operating expenses (primarily the Euro, British pound sterling, Chinese renminbi, Israeli shekel, and Indian rupee) in foreign countries. Accordingly, we can benefit from a stronger U.S. dollar resulting in the corresponding reduction in our foreign operating expenses translated to U.S. dollars and at the same time we can be adversely affected by a stronger U.S. dollar resulting in the corresponding reduction in foreign revenue translated to U.S. dollars.

We hedge balance sheet remeasurement exposures using forward contracts not designated for hedge accounting treatment with notional amounts of \$191.8 million as of December 31, 2018. Please refer to Note 11 – Derivatives and Hedging of Notes to Consolidated Financial Statements for further information.

The impact of hypothetical changes in foreign exchanges rates on revenue and income from operations are presented below. The modeling technique measures the change in revenue and income from operations resulting from hypothetical changes in selected foreign exchange rates with respect to the Euro, British pound sterling, and Chinese renminbi of plus or minus one percent during the year ended December 31, 2018 as follows (in thousands):

	Impact of a foreign exchange rate decrease of one percent	No change in foreign exchange rates	Impact of a foreign exchange rate increase of one percent
Revenue	\$ 1,017,735	\$ 1,015,021	\$ 1,012,307

Income from operations	\$ 20,067	\$ 19,686	\$ 19,305
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Item 8: Financial Statements and Supplementary Data

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the stockholders and the Board of Directors of Electronics For Imaging, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Electronics For Imaging, Inc. and subsidiaries (the “Company”) as of December 31, 2018 and 2017, and the related consolidated statements of operations, comprehensive income, cash flows, and stockholders’ equity for each of the three years in the period ended December 31, 2018, and the related notes and schedule listed in the Index at Item 15(2) (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 its 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 February 27, 2019, expressed an unqualified opinion on the Company’s internal control over financial reporting.

Adoption of New Revenue Recognition Accounting Standard (ASC 606)

As discussed in Note 1 to the financial statements, the Company has changed its method of accounting for revenue from contracts with customers in 2018 due to the adoption of the new revenue standard. The Company adopted the new revenue standard using the modified retrospective approach.

Basis for 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

San Jose, California
February 27, 2019

We have served as the Company's auditor since 2014.

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Electronics For Imaging, Inc.
Consolidated Balance Sheets

(in thousands)	December 31,	
	2018	2017
Assets		
Current assets:		
Cash and cash equivalents	\$309,052	\$170,345
Short-term investments	102,349	148,697
Accounts receivable, net of allowances of \$32.3 and \$32.2 million, respectively	241,841	244,416
Inventories	134,348	125,813
Income taxes receivable	4,926	4,565
Assets held for sale	2,800	4,200
Other current assets	44,623	41,799
Total current assets	839,939	739,835
Property and equipment, net	77,613	98,762
Restricted cash equivalents	39,809	32,531
Goodwill	390,109	403,278
Intangible assets, net	74,722	123,008
Deferred tax assets	39,449	45,083
Other assets	37,393	15,504
Total assets	\$1,499,034	\$1,458,001
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	\$148,587	\$123,935
Accrued and other liabilities	79,323	98,090
Deferred revenue	60,547	55,833
Convertible senior notes, net – current	334,274	—
Income taxes payable	5,077	5,309
Total current liabilities	627,808	283,167
Convertible senior notes, net – noncurrent	118,688	318,957
Imputed financing obligation related to build-to-suit lease	—	13,944
Noncurrent contingent and other liabilities	7,179	28,801
Deferred tax liabilities	3,770	11,652
Noncurrent income taxes payable	15,481	20,169
Total liabilities	772,926	676,690
Commitments and contingencies (Note 13)		
Stockholders' equity:		
Preferred stock, \$0.01 par value; 5,000 shares authorized; none issued and outstanding	—	—
Common stock, \$0.01 par value; 150,000 shares authorized; 55,347 and 54,249 shares issued, respectively	553	542
Additional paid-in capital	821,205	745,661
Treasury stock, at cost; 12,927 and 9,070 shares, respectively	(489,083)	(375,574)
Accumulated other comprehensive income (loss)	(12,814)	8,138
Retained earnings	406,247	402,544
Total stockholders' equity	726,108	781,311
Total liabilities and stockholders' equity	\$1,499,034	\$1,458,001
See accompanying notes to consolidated financial statements.		

Electronics For Imaging, Inc.
Consolidated Statements of Operations

(in thousands, except per share amounts)	Year Ended December 31,		
	2018	2017	2016
Revenue	\$1,015,021	\$993,260	\$992,065
Cost of revenue	516,448	486,804	483,900
Gross profit	498,573	506,456	508,165
Operating expenses:			
Research and development	159,941	157,358	151,395
Sales and marketing	183,498	173,697	169,042
General and administrative	76,576	92,953	85,618
Amortization of identified intangibles	45,291	47,339	39,560
Restructuring and other	13,581	7,562	6,731
Total operating expenses	478,887	478,909	452,346
Income from operations	19,686	27,547	55,819
Interest expense	(20,169)) (19,505)) (17,716)
Interest income and other income, net	1,604	4,088	545
Income before income taxes	1,121	12,130	38,648
Provision for (benefit from) income taxes	2,092	27,475	(6,301)
Net income (loss)	\$(971)) \$(15,345)) \$44,949
Net income (loss) per basic common share	\$(0.02)) \$(0.33)) \$0.96
Net income (loss) per diluted common share	\$(0.02)) \$(0.33)) \$0.94
Shares used in basic per-share calculation	44,429	46,281	46,900
Shares used in diluted per-share calculation	44,429	46,281	47,797

See accompanying notes to consolidated financial statements.

Electronics For Imaging, Inc.
Consolidated Statements of Comprehensive Income (Loss)

(in thousands)	Year Ended December 31,		
	2018	2017	2016
Net income (loss)	\$(971)	\$(15,345)	\$44,949
Net unrealized investment gains (losses):			
Unrealized holding gains (losses), net of tax provision of \$0.4 million for the year ended December 31, 2018, and net of tax benefit of less than \$0.1 million for the years ended December 31, 2017 and 2016, respectively	678	(84)	(97)
Reclassification adjustments included in net income, net of tax*	19	(140)	—
Net unrealized investment gains (losses)	697	(224)	(97)
Currency translation adjustments, net of tax benefit of \$0.3 million for the year ended December 31, 2018, and tax provision of \$0.5 and \$0.1 million for the years ended December 31, 2017 and 2016, respectively	(21,608)	32,905	(7,111)
Unrealized gains (losses) on cash flow hedges	(41)	32	8
Comprehensive income (loss)	\$(21,923)	\$17,368	\$37,749

* Tax effect was less than \$0.1 million for each of the periods presented above.

See accompanying notes to consolidated financial statements.

Electronics For Imaging, Inc.

Consolidated Statements of Stockholders' Equity

(in thousands)	Common stock		Additional paid-in capital	Treasury stock		Accumulated Other comprehensive income (loss)	Retained earnings	Total stockholders' equity
	Shares	Amount		Shares	Amount			
Balances as of December 31, 2015	51,808	\$ 518	\$ 657,354	(4,476)	\$(190,439)	\$(17,375)	\$372,844	\$ 822,902
Comprehensive income (loss), net of tax						(7,200)	44,949	37,749
Exercise of common stock options	116	1	1,344					1,345
Restricted stock vested	787	8	(8)					—
Common stock issued in connection with business acquisition	30	—	(73)					(73)
Cumulative effect adjustment upon adoption of ASU 2016-09			2,743				96	2,839
Stock-based compensation, net of cash settlements			31,726					31,726
Non-cash settlement of vacation liabilities by issuing RSUs			3,059					3,059
Stock repurchases				(1,981)	(83,291)			(83,291)
Stock issued pursuant to ESPP	297	3	9,756					9,759
Balances as of December 31, 2016	53,038	\$ 530	\$ 705,901	(6,457)	\$(273,730)	\$(24,575)	\$417,889	\$ 826,015
Comprehensive income (loss), net of tax						32,713	(15,345)	17,368
Exercise of common stock options	166	2	2,064					2,066
Restricted stock vested	761	7	(7)					—
Stock-based compensation			26,532					26,532
Non-cash settlement of employee-related liabilities by issuing RSUs			1,166					1,166
Stock repurchases				(2,613)	(101,844)			(101,844)
Stock issued pursuant to ESPP	284	3	10,005					10,008
Balances as of December 31, 2017	54,249	\$ 542	\$ 745,661	(9,070)	\$(375,574)	\$ 8,138	\$402,544	\$ 781,311
Comprehensive loss, net of tax						(20,952)	(971)	(21,923)
Cumulative effect adjustment upon adoption of							4,674	4,674

ASC 606

Exercise of common stock options	75	1	1,070					1,071
Restricted stock vested	639	6	(6)				—
Common stock issued in connection with business acquisition	5	—	123					123
Escrow settlement in connection with business acquisition			(945)				(945)
Equity component of convertible senior notes issued			20,573					20,573
Stock-based compensation			45,281					45,281
Stock repurchases					(3,857)	(113,509)		(113,509)
Stock issued pursuant to ESPP	379	4	9,448					9,452
Balances as of December 31, 2018	55,347	\$ 553	\$ 821,205	(12,927)	\$(489,083)	\$(12,814)	\$406,247	\$ 726,108

See accompanying notes to consolidated financial statements.

Electronics For Imaging, Inc.
Consolidated Statements of Cash Flows

(in thousands)	For the years ended December 31,		
	2018	2017	2016
Cash flows from operating activities:			
Net income (loss)	\$(971)	\$(15,345)	\$44,949
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Depreciation and amortization	65,557	65,647	55,081
Deferred taxes	(11,381)	8,753	(11,091)
Provision for bad debts and sales-related allowances	7,034	12,416	10,678
Provision for inventory obsolescence	6,016	6,312	5,716
Stock-based compensation, net of cash settlements	45,281	26,532	31,726
Change in fair value of contingent obligations	(21,486)	6,980	6,813
Payments of contingent obligations	(699)	(5,906)	—
Non-cash accretion of interest expense on convertible notes and imputed financing obligation	15,239	14,981	13,489
Net change in derivative assets and liabilities	(2,286)	2,938	(2,125)
Other non-cash charges and credits	1,230	2,618	755
Changes in operating assets and liabilities, net of effect of acquired businesses:			
Accounts receivable	(7,394)	(29,189)	(31,221)
Inventories	(18,068)	(24,398)	4,510
Other current assets	(18,898)	(9,218)	(6,498)
Accounts payable and other accrued liabilities	27,389	(6,235)	651
Income taxes receivable/payable, net	(3,058)	(5,591)	(2,429)
Net cash provided by operating activities	83,505	51,295	121,004
Cash flows from investing activities:			
Purchases of short-term investments	—	(87,623)	(216,349)
Proceeds from sales and maturities of short-term investments	46,624	233,633	252,856
Purchases (Sales) of restricted cash investments	—	5,115	(5,110)
Purchases, net of proceeds from sales, of property and equipment	(12,290)	(13,754)	(22,373)
Proceeds from sale of held-for-sale building and land	1,130	—	—
Businesses and technology purchased, net of cash acquired and dispositions	697	(29,559)	(19,932)
Net cash provided by (used for) investing activities*	36,161	107,812	(10,908)
Cash flows from financing activities:			
Proceeds from issuance of convertible senior notes	150,000	—	—
Debt issuance costs	(3,750)	—	—
Proceeds from issuance of common stock	10,522	12,074	11,100
Purchases of treasury stock and net share settlements	(113,509)	(101,844)	(83,292)
Repayment of acquisition-related debt	(11,209)	(9,000)	(8,275)
Contingent consideration payments related to businesses acquired	(2,503)	(25,018)	(28,111)
Repayment of short-term obligations	(755)	(2,094)	(528)
Net cash provided by (used for) financing activities	28,796	(125,882)	(109,106)
Effect of foreign exchange rate changes on cash and cash equivalents	(2,477)	4,196	374
Increase (decrease) in cash and cash equivalents*	145,985	37,421	1,364
Cash, cash equivalents, and restricted cash at beginning of year*	202,876	165,455	164,091
Cash, cash equivalents, and restricted cash at end of year*	\$348,861	\$202,876	\$165,455

* Certain prior period amounts have been revised due to the implementation of ASU 2016-18. See Note 1 for details.

See accompanying notes to consolidated financial statements.

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Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements

Note 1. The Company and Summary of Significant Accounting Policies

The Company

We are a world leader in customer-centric digital printing innovation focused on the transformation of the printing, packaging, ceramic tile decoration, and textile industries from the use of traditional analog based printing to digital on-demand printing.

Our products include industrial super-wide and wide format display graphics, corrugated packaging and display, textile, and ceramic tile decoration digital inkjet printers, digital ink, industrial digital inkjet printer parts, and professional services; print production workflow, web-to-print, cross-media marketing, fashion design, and business process automation software solutions; and color printing DFEs creating an on-demand digital printing ecosystem. Our ink includes digital UV curable, LED curable, ceramic, water-based, thermoforming, and specialty ink, as well as a variety of textile ink including dye sublimation, pigmented, reactive dye, acid dye, pure disperse dye, water-based dispersed printing ink, and coatings. Our business process automation solutions are integrated from creation to print and are vertically integrated with our industrial inkjet printers, and products produced by the leading printer manufacturers that are driven by our Fiery DFEs.

2017 Out-of-Period Adjustments

During the year ended December 31, 2017, we recorded out-of-period adjustments related to certain bill and hold transactions, which decreased revenue by \$3.4 million, decreased gross profit by \$0.5 million, and increased net loss by \$0.3 million (or \$0.01 per diluted share). We evaluated these adjustments considering both qualitative and quantitative factors and the impact of these adjustments in relation to each period, as well as the periods in which they originated. Management believes these adjustments were immaterial to these consolidated financial statements and all previously issued financial statements.

Significant Accounting Policies

Basis of Presentation

The accompanying consolidated financial statements include the accounts of EFI and our subsidiaries. All intercompany accounts and transactions have been eliminated in consolidation.

Use of Estimates

The preparation of consolidated financial statements requires estimates and judgments that affect the reported amounts of assets, liabilities, revenue, expenses, comprehensive income, cash flows, and related disclosure of contingent assets and liabilities. We evaluate our estimates, including those related to revenue recognition, bad debts, inventory valuation and purchase commitment reserves, warranty obligations, litigation expenses, restructuring activities, fair value of financial instruments, stock-based compensation, income taxes, valuation of goodwill and intangible assets, business combinations, build-to-suit lease accounting, functional currency determination, contingent consideration in acquisitions, and contingencies on an ongoing basis. Estimates are based on historical and current experience, the impact of the current economic environment, and various other assumptions believed to be reasonable under the circumstances at the time of the estimate, the results of which form the basis for making judgments about the carrying

values of assets and liabilities that are not readily apparent from other sources. Actual results may differ materially from these estimates.

Cash, Cash Equivalents, and Short-term Investments

We invest our excess cash on deposit with major banks in money market, U.S. Treasury and government-sponsored entity, corporate, municipal government, and asset-backed securities. By policy, we invest primarily in high-grade marketable securities. We are exposed to credit risk in the event of default by the financial institutions or issuers of these investments to the extent of amounts recorded on our Consolidated Balance Sheets.

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

We consider all highly liquid investments with an original maturity of three months or less at the time of purchase to be cash equivalents. Typically, the cost of these investments has approximated fair value. Marketable investments with a maturity greater than three months are classified as available-for-sale short-term investments. Available-for-sale securities are stated at fair value with unrealized gains and losses reported as a separate component of AOCI, adjusted for deferred income taxes. The credit portion of any other-than-temporary impairment is included in net income (loss). Realized gains and losses on sales of financial instruments are recognized upon sale of the investments using the specific identification method.

We review investments in debt securities for other-than-temporary impairment whenever the fair value is less than the amortized cost and evidence indicates the investment's carrying amount is not recoverable within a reasonable period of time. We assess the fair value of individual securities as part of our ongoing portfolio management. Our other-than-temporary assessment includes reviewing the length of time and extent to which fair value has been less than amortized cost; the seniority and durations of the securities; adverse conditions related to a security, industry, or sector; historical and projected issuer financial performance, credit ratings, issuer specific news; and other available relevant information. To determine whether an impairment is other-than-temporary, we consider whether we have the intent to sell the debt security or if it will be more likely than not that we will be required to sell the debt security prior to the anticipated recovery of its amortized cost basis, and whether evidence indicating the cost of the investment is recoverable outweighs evidence to the contrary.

In determining whether a credit loss existed, we used our best estimate of the present value of cash flows expected to be collected from each debt security. For these cash flow estimates, including prepayment assumptions, we rely on data from widely accepted third party data sources and internal estimates. In addition to prepayment assumptions, cash flow estimates vary based on assumptions regarding the underlying collateral including default rates, recoveries, and changes in value. Expected cash flows were discounted using the effective interest rate implicit in the securities.

Based on this analysis, we determined that there were other-than-temporary impairments in our available for sale securities at December 31, 2018. In the three months ended December 31, 2018 we determined that it was more likely than not we would sell a substantial portion of our available for sale securities in anticipation of satisfying our obligation on the 2019 Notes when they mature in September 2019. We recognized an unrealized loss of \$0.9 million which has been reported in interest income and other income, net in the Consolidated Statements of Operations. There were no other than temporary impairments, including credit-related impairments, during the years ended December 31, 2017 and 2016. We classify our investments as current or noncurrent based on the nature of the investments and their availability for use in current operations.

Fair Value of Financial Instruments

We assess the fair value of our financial instruments each reporting period. The carrying amounts of cash, cash equivalents, accounts receivable, accounts payable, and accrued and other liabilities, approximate their respective fair values due to the short maturities of these financial instruments and because accounts receivable are reduced by an allowance for doubtful accounts. The fair value of our available-for-sale securities, contingent acquisition-related liabilities, self-insurance liability, derivative instruments, and convertible senior notes are disclosed in Note 8 – Fair Value Measurements.

Revenue Recognition

On January 1, 2018, we adopted Accounting Standards Codification (“ASC”) 606 Revenue from Contracts with Customers (“ASC 606”) using the modified retrospective method applied to contracts that were not completed as of January 1, 2018. ASC 606 supersedes the revenue recognition requirements in ASC 605, Revenue Recognition (“ASC 605”), and requires the recognition of revenue when promised goods or services are transferred to customers in an amount that reflects the considerations to which the entity expects to be entitled to in exchange for those goods or services. On January 1, 2018, we also adopted ASC 340-40, Other Assets and Deferred Costs – Contracts with Customers (“ASC 340-40”), using the modified retrospective method to all incomplete contracts as of the date of initial application.

Results for reporting periods beginning after January 1, 2018 are presented under ASC 606 and ASC 340-40, while prior period amounts are not adjusted and continue to be reported in accordance with our historic accounting under ASC 605. Additional discussion of these recently adopted pronouncements and their impact on our Consolidated Financial Statements

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

is included below under Significant Accounting Policies, in Note 4 – Revenue, and in Note 5 – Supplemental Financial Statement Information.

The nature of our products and services are as follows:

Hardware. Our hardware, such as Industrial Inkjet printers, Productivity Software devices, and Fiery DFEs, is generally sold with software that is integral to the functionality of the product. In these cases, the hardware and software license are accounted for as a single performance obligation. The contract consideration is generally in the form of a fixed fee at contract inception and revenue is recognized at the point in time when control is transferred to the customer. Consideration received from customers may include trade-in printers, which are valued at the lower of cost or net realizable value.

We offer shipping and handling services to customers related to the sale of hardware. We have elected the practical expedient to account for shipping and handling activities performed after transferring control of goods to our customer as a cost to fulfill the contract. The cost of shipping and handling is accrued at the point in which control transfers to the customer and revenue is recognized.

Ink. We typically enter into contracts with our existing customer base of installed printers to purchase ink that is not bundled with other deliverables within the contract. The ink is accounted for as a single performance obligation and revenue is recognized at the point in time when control of the ink is transferred to the customer.

Licenses. Our software license arrangements provide the customer with the right to install and use functional intellectual property (as it exists at the point in time at which the license is granted) for the duration of the contract term (perpetual or term license). Revenue from distinct software licenses is recognized at the point in time when the software is made available to the customer for download.

Maintenance. Our software license arrangements typically include an initial (bundled) post contract customer support (maintenance or “PCS”) term. Our promise to those customers who elect to purchase PCS represents a distinct, stand-alone performance obligation. Contract consideration is allocated to the PCS based on its relative SSP and revenue is recognized over the PCS term.

Professional Services. We provide various professional services to customers, primarily project management, software implementation, non-recurring engineering design, and training. Revenues from arrangements to provide professional services are generally distinct from the other promises in the contract(s). The majority of our professional services contracts are billed on a time and materials basis and revenue is recognized over time as the services are performed.

Software as a Service. Our SaaS-based arrangements provide customers with continuous access to our software solutions in the form of a service hosted in the cloud. These arrangements may include initial implementation and setup and/or on-going support that represent a single promise (i.e. each individual promised component is not distinct) to provide continuous access to the software solution. Any setup fees associated with our SaaS arrangements are recognized ratably over the contract term plus expected renewal periods. As the customer simultaneously receives and consumes the benefits as access is provided, our performance obligation under our SaaS-based arrangements is comprised of a series of distinct components delivered over time. Our SaaS-based arrangements consideration is typically fixed.

Extended Service Plans (“ESP”). For our hardware arrangements, we enter into contracts with certain customers to provide services to maintain and repair the hardware for an extended period. ESPs are classified as service-type warranties under ASC 606 as they are sold separately and provide services which are incremental to the assurance that the product will perform to the agreed upon standards. The ESPs are accounted for as a separate performance obligation. Revenue from ESPs are recognized ratably over the contract period as the service is provided.

Contracts With Multiple Performance Obligations. For customer arrangements that include multiple products or services, judgment is required to determine the standalone selling price (“SSP”) for each distinct performance obligation. Where an observable price is not available, we gather all reasonable available data points, consider adjustments based on market conditions, entity-specific factors, and the need to stratify selling prices into meaningful groups (e.g., geographic region) in determining SSP. We allocate the total contract consideration to each distinct performance obligation on a relative SSP basis.

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

Revenue is then recognized in accordance with the timing of the transfer of control to the customer for each performance obligation.

Assessing Collectibility. We apply judgment in determining the customer's ability and intention to pay. Judgments are made after considering a variety of factors including the customer's historical payment experience, current creditworthiness, current economic impacts on the customer, past due balances, and significant one-time events or, in the case of a new customer, published credit and financial information.

Contract Acquisition Costs. Management exercises judgment to determine the period of benefit to amortize contract acquisition costs by considering factors such as expected renewals of customer contracts, duration of customer relationships and our technology development life cycle. Although we believe that the historical assumptions and estimates we have made are reasonable and appropriate, different assumptions and estimates could materially impact our reported financial results. Amortization of deferred contract acquisition costs is included in sales and marketing expense in the Consolidated Statements of Operations. We periodically review these deferred costs to determine whether events or changes in circumstances have occurred that could impact the period of benefit of these deferred contract acquisition costs.

Shipping and Handling Costs. Amounts billed to customers for shipping and handling costs are included in revenue. Shipping and handling costs are charged to cost of revenue as incurred.

Significant Financing Component. Effective January 1, 2018 under ASC 606, for contracts with extended payment terms greater than 12 months, we determine whether the implicit financing component is significant or not. If significant, we defer the portion of the revenue represented by the significant financing component and recognize it as interest income over the term of the contract using the effective interest method.

Prior Period Revenue Recognition. For the years ended December 31, 2017 and 2016, prior to the adoption of ASC 606, we recognize revenue on the sale of DFEs, printers, and ink in accordance with the provisions of SAB 104, Revenue Recognition, and when applicable, ASC 605-25. As such, revenue was generally recognized when persuasive evidence of an arrangement exists, the product has been delivered or services have been rendered, the fee is fixed or determinable, and collection is reasonably assured.

Service sales, principally representing software license and printer maintenance agreements, customer support, training, and consulting were recognized over the contractual period or as services were rendered. Subscription arrangements where the customer pays a fixed fee and receives services over a period of time were recognized ratably over the service period. Any up front setup fees associated with our subscription arrangements were recognized ratably, generally over one year. Revenue from contracts with multiple element arrangements involving tangible products containing software and non-software components that function together to deliver the product's essential functionality by applying the relative sales price method of allocation were recognized in accordance with ASC 605-25. The sales price for each element was determined using vendor-specific objective evidence ("VSOE") when available (including post-contract customer support, professional services, hosting, and training). When VSOE was not available, then third party evidence ("TPE") was used. If VSOE or TPE are not available, then best estimated selling price was used when applying the relative sales price method for each unit of accounting. When the arrangement included software and non-software elements, revenue was first allocated to the non-software and software elements as a group based on their relative sales price. Thereafter, the relative sales price allocated to the software elements as a group was further allocated to each unit of accounting in accordance with ASC 985-605.

Leasing Arrangements. If the sales arrangement is classified as a sales-type lease, then revenue is recognized upon shipment. Leases that are not classified as sales-type leases are accounted for as operating leases with revenue recognized ratably over the lease term. A lease is classified as a sales-type lease with revenue recognized upon shipment if the lease is determined to be collectible and has no significant uncertainties and if any of the following criteria are satisfied:

- present value of all minimum lease payments is greater than or equal to 90% of the fair value of the equipment at lease inception,
- noncancellable lease term is greater than or equal to 75% of the economic life of the equipment,
- bargain purchase option that allows the lessee to purchase the equipment below fair value, or
- transfer of ownership to the lessee upon termination of the lease.

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

Deferred Revenue. Deferred revenue represents amounts received in advance for product support contracts, software customer support contracts, consulting and integration projects, or product sales. Product support contracts include stand-alone product support packages, routine maintenance service contracts, and upgrades or extensions to standard product warranties. We defer these amounts when we invoice the customer and then generally recognize revenue either ratably over the support contract life, upon performing the related services, under the percentage of completion method, or in accordance with our revenue recognition policy.

Allowance for Doubtful Accounts and Sales-related Allowances

We establish an allowance for doubtful accounts to ensure that trade receivables are not overstated due to uncollectibility. We record specific reserves for individual accounts when we become aware of specific customer circumstances, such as bankruptcy filings, deterioration in the customer's operating results or financial position, or potential unfavorable outcomes from disputes with customers or vendors.

We perform ongoing credit evaluations of the financial condition of our customers and require collateral, such as letters of credit and bank guarantees, in certain circumstances. The past due or delinquency status of a receivable is based on the contractual payment terms of the receivable. Balances are written off when we deem it probable that the receivable will not be recovered.

We make provisions for sales rebates and revenue adjustments based on analysis of current sales programs and revenue in accordance with our revenue recognition policy.

Concentration of Risk

We are exposed to credit risk in the event of default by any of our customers to the extent of amounts recorded on the Consolidated Balance Sheets. We perform ongoing evaluations of the collectibility of accounts receivable balances for our customers and maintain allowances for estimated credit losses. Actual losses have not historically been significant, but have increased over the past several years as our customer base has grown through acquisitions.

Our Fiery products, which constitute approximately 23% of revenue for the year ended December 31, 2018, are primarily sold to a limited number of leading printer manufacturers. We expect that we will continue to depend on a relatively small number of leading printer manufacturers for a significant portion of our revenue, although their significance is expected to decline in future periods as our revenue increases from Industrial Inkjet and Productivity Software products. We generally have experienced longer accounts receivable collection cycles in our Industrial Inkjet and Productivity Software operating segments compared to our Fiery operating segment as, historically, the leading printer manufacturers have paid on a more timely basis. Down payments are generally required from Industrial Inkjet and Productivity Software customers as a means to ensure payment.

Since Europe is composed of varied countries and regional economies, our European risk profile is somewhat more diversified due to the varying economic conditions among the countries. Approximately 37% of our receivables are with European customers as of December 31, 2018. Of this amount, 27% of our European receivables (10% of consolidated gross receivables) are in the higher risk southern European countries (mostly Italy, Spain, and Portugal), which our management believes to be adequately reserved.

Inventories

Inventories are generally stated at standard cost, which approximates the lower of actual cost, using the first-in, first-out (“FIFO”) cost flow assumption, or market. Reggiani inventories are stated at weighted average cost, which approximates the FIFO cost flow assumption, or market. We periodically review our inventories for potential excess or obsolete items and write down specific items to net realizable value as appropriate. Work-in-process inventories consist of our product at various levels of assembly and include materials, labor, and manufacturing overhead. Finished goods inventory represents completed products awaiting shipment.

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

We estimate potential inventory obsolescence and purchase commitments to evaluate the need for inventory reserves. Current economic trends, changes in customer demand, historical sales experience, product design changes, product life, demand, and the acceptance of our products are analyzed to evaluate the adequacy of such reserves.

Property and Equipment, Net

Property and equipment are recorded at cost. Depreciation is computed using the straight-line method over the estimated useful lives of the assets as follows: desktop, laptop computers, and computer server equipment (two to three years), software under perpetual licenses (three to five years), manufacturing equipment (seven years), testing and other equipment (three years), tooling (lesser of three years or the product life), research and development equipment with alternative future uses (three years), equipment leased to customers on operating leases (greater of three years or the lease term), furniture (five years), land improvements such as parking lots or sidewalks (seven years), leasehold improvements (the shorter of the useful life or lease term), building improvements (five to ten years), building and improvements under a build-to-suit lease (forty years), and purchased buildings (forty years).

When assets are retired or disposed, the asset and accumulated depreciation are removed from our Consolidated Balance Sheets, with any gain or loss recognized in our Statements of Operations. Repairs and maintenance expenditures are expensed as incurred, unless they are improvements that extend the useful life of the asset.

Goodwill

Goodwill is recorded when the consideration paid for an acquisition exceeds the fair value of net tangible and identified intangible assets acquired. We perform our annual goodwill impairment analysis in the fourth quarter of each year or more frequently if we believe indicators of potential impairment exist. Triggering events that may require an interim impairment analysis include indicators such as adverse industry or economic trends, restructuring actions, significant changes in the manner of our use of the acquired assets, significant changes in the strategy for our overall business, our assessment of growth and profitability in each reporting unit for future years, significant decline in our stock price for a sustained period, or a sustained decline in our market capitalization relative to net book value. In our goodwill impairment assessment, we compare the fair value of each reporting unit to its carrying value. If the fair value of a reporting unit exceeds the carrying amount of the net assets assigned to that reporting unit, goodwill is not impaired. If the fair value of the reporting unit is less than its carrying amount, goodwill is impaired and the excess of the reporting unit's carrying value over the fair value is recognized as an impairment loss.

Long-lived Assets, including Intangible Assets

Purchased intangible assets are amortized on a straight-line basis over their economic lives of two to six years for developed technology, three to nine years for customer contracts/relationships, four to five years for covenants not to compete, and three to sixteen years for trademarks and trade names as we believe this method most closely reflects the pattern in which the economic benefits of the assets will be consumed.

We review the carrying values of long-lived assets whenever events and circumstances, such as reductions in demand, lower projections of profitability, significant changes in the manner of our use of acquired assets, or significant negative industry or economic trends, indicate that the net book value of an asset may not be recovered through expected future cash flows from its use and eventual disposition. An asset is considered impaired if its carrying amount exceeds the undiscounted future cash flow the asset is expected to generate. If this review indicates that an

impairment has occurred, the impaired asset is written down to its fair value, which is typically calculated using quoted market prices and/or discounted expected future cash flows. Our estimates regarding future anticipated net revenue and cash flows, the remaining economic life of the products and technologies, or both, may differ from those used to assess the recoverability of assets. In that event, impairment charges or shortened useful lives of certain long-lived assets may be required, resulting in charges to our Consolidated Statements of Operations when such determinations are made.

An impairment loss is recorded for long-lived assets held-for-sale when the carrying amount of the asset exceeds its estimated fair value less cost to sell. A long-lived asset is not depreciated while it is classified as held-for-sale.

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

Warranty Reserves

Our Industrial Inkjet printers are generally accompanied by a 13-month limited warranty commencing on the installation date, which covers both parts and labor. Our Fiery DFE limited warranty is 12 to 15 months. Estimated future hardware and software warranty costs are recorded as a cost of product revenue when the related revenue is recognized based on historical and projected warranty claim rates, historical and projected cost-per-claim, and knowledge of specific product failures that are outside our typical experience. Factors that affect our warranty liability include the number of installed units subject to warranty protection, product failure rates, and estimated material, distribution, and labor costs. We have agreed to continue to provide warranty coverage for certain expired FFPS warranties for five years subsequent to the acquisition date of the FFPS business.

Restructuring Reserves

Restructuring liabilities are established when the costs have been incurred. Severance and other employee separation costs are incurred when management commits to a plan of termination identifying the number of employees impacted, their termination dates, and the terms of their severance arrangements. The liability is accrued at the employee notification date unless service is required beyond the greater of 60 days or the legal notification period, in which case the liability is recognized ratably over the service period. Facility downsizing and closure costs are accrued at the earlier of the lessor notification date, if the lease agreement allows for early termination, or the cease use date. Relocation costs are incurred when the related relocation services are performed. Costs related to contracts without future benefit are incurred at the earlier of the cease use date or the contract cancellation date.

Research and Development

Research and development costs include salaries and benefits of employees performing research and development activities, supplies, and other expenses incurred from research and development efforts, and are expensed as incurred. We expense research and development costs associated with new software products as incurred until technological feasibility is established. To date, we have not capitalized research and development costs associated with software development as products and enhancements have generally reached technological feasibility, as defined by U.S. GAAP, and have been released for sale at substantially the same time. We have capitalized research and development equipment that has been acquired or constructed for research and development activities and has alternative future uses (in research and development projects or otherwise). Such research and development equipment is depreciated on a straight-line basis over a three-year useful life.

Advertising

Advertising costs are expensed as incurred. Total advertising and promotional expenses were \$6.7, \$5.9, and \$4.6 million for the years ended December 31, 2018, 2017, and 2016, respectively.

Income Taxes

We account for income taxes in accordance with the provisions of ASC 740, which requires that deferred tax assets and liabilities be determined based on the differences between the financial statement and tax bases of assets and liabilities by using enacted tax rates in effect for the year in which the differences are expected to reverse. Accordingly, the tax bases of assets and liabilities reflect the impact of the tax reform legislation that was enacted on

December 22, 2017. We estimate our actual current tax expense including permanent charges and benefits and the temporary differences resulting from differing treatment of items for tax and financial accounting purposes. These temporary differences result in deferred tax assets and liabilities, which are included on our Consolidated Balance Sheets. In some cases, provisional amounts were recorded based on reasonable estimates. SAB 118 provides that the measurement period may not extend beyond one year from the enactment date. We recorded the provisional amounts of the tax effects of the 2017 Tax Act in 2017, and finalized the calculation of the tax effects in 2018.

We assess the likelihood that our deferred tax assets will be recovered from future taxable income by considering both positive and negative evidence relating to their recoverability. If we believe that recovery of these deferred tax assets is not

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

more likely than not, we establish a valuation allowance. Significant judgment is required in determining any valuation allowance recorded against deferred tax assets. We account for uncertainty in income taxes by recognizing a tax position only when it is more likely than not that the tax position, based on its technical merits, will be sustained upon ultimate settlement with the applicable tax authority. The tax benefit to be recognized is the largest amount of tax benefit that is greater than fifty percent likely of being realized upon ultimate settlement with the applicable tax authority that has full knowledge of all relevant information. Tax benefits that are deemed to be less than fifty percent likely of being realized are recorded in noncurrent income taxes payable until the uncertainty has been resolved through either examination by the relevant taxing authority or expiration of the pertinent statutes of limitations.

Business Combinations

We allocate the purchase price of acquired companies to the tangible and identifiable intangible assets acquired, including IPR&D, and liabilities assumed based on their estimated fair values. Such a valuation requires management to make significant estimates and assumptions, especially with respect to intangible assets. The results of operations for each acquisition are included in our financial statements from the date of acquisition.

Our acquisitions are accounted for as purchase business combinations using the acquisition method of accounting in accordance with ASC 805. Key provisions of the acquisition method of accounting include the following:

- one hundred percent of assets and liabilities of the acquired business, including goodwill, are recorded at fair value, regardless of the percentage of the business acquired;
- contingent assets and liabilities are recognized at fair value at the acquisition date;
- contingent consideration is recognized at fair value at the acquisition date with changes in fair value recognized in earnings as assumptions are updated or upon settlement;
- IPR&D is recognized at fair value at the acquisition date subject to amortization after product launch or otherwise assessed for impairment;
- acquisition-related transaction and restructuring costs are expensed as incurred;
- reversals of valuation allowances related to acquired deferred tax assets and liabilities and changes to acquired income tax uncertainties are recognized in earnings;
- when making adjustments to finalize preliminary accounting during the measurement period, which may be up to one year, we recognize measurement period adjustments in the reporting period in which the adjustment amounts are determined; and,
- upon final determination of the fair value of assets acquired and liabilities assumed during the measurement period, any subsequent adjustments are recorded in our Consolidated Statements of Operations.

Stock-Based Compensation

We account for stock-based compensation based on the fair value of such awards on the date of grant. We amortize stock-based compensation expense on a graded vesting basis over the vesting period after assessing the probability of achieving the requisite performance criteria with respect to performance-based awards. Stock-based compensation expense is recognized over the requisite service period for each separately vesting tranche as though the award were, in substance, multiple awards.

Our determination of the fair value of stock-based payment awards on the date of grant using an option pricing model is affected by volatility, expected term, and interest rate assumptions. Expected volatility is based on the historical

volatility of our stock over a preceding period commensurate with the expected term of the option. The expected term is based on management's consideration of the historical life of the options, the vesting period of the options granted, and the contractual period of the options granted. The risk-free interest rate for the expected term of the option is based on the U.S. Treasury yield curve in effect at the time of grant. Expected dividend yield was not considered in the option pricing formula since we do not pay dividends and have no current plans to do so in the future.

Foreign Currency Translation

In preparing our consolidated financial statements, for subsidiaries that operate in a U.S. dollar functional currency environment, we remeasure balance sheet monetary items into U.S. dollars. Foreign currency assets and liabilities are

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

remeasured from the transaction currency into the functional currency at current exchange rates, except for non-monetary assets, liabilities, and capital accounts, which are remeasured at historical exchange rates. Revenue and expenses are remeasured at monthly exchange rates, which approximate average exchange rates in effect during each period. Gains or losses from foreign currency remeasurement are included in interest income and other income (expense), net. Net losses resulting from foreign currency transactions, including hedging gains and losses, are reported in interest income and other income (expense), net, and were \$1.7, \$1.6, and \$3.8 million for the years ended December 31, 2018, 2017, and 2016, respectively.

For subsidiaries that operate in a local functional currency environment, all assets and liabilities are translated into U.S. dollars using current exchange rates, while revenue and expenses are translated using monthly exchange rates, which approximate the average exchange rates in effect during each period. Resulting translation adjustments are reported as a separate component of AOCI, adjusted for deferred income taxes. The cumulative translation adjustment balance, net of tax, was an unrealized loss of \$12.8 million at December 31, 2018, and an unrealized gain of \$8.8 million at December 31, 2017.

We determine the functional currency of each of our foreign subsidiaries based on our assessment of the salient economic indicators discussed in ASC 830-10-55-5, Foreign Currency Matters.

Diluted Net Income (Loss) per Share

Diluted net income (loss) per share is computed using the weighted average number of common shares and dilutive potential common shares outstanding during the period. Potential common shares result from the assumed exercise of outstanding common stock options having a dilutive effect using the treasury stock method, non-vested shares of restricted stock having a dilutive effect, non-vested restricted stock for which the performance criteria have been met, shares to be purchased under our ESPP having a dilutive effect, the assumed issuance at the beginning of 2017 of shares potentially released from escrow related to the acquisition of CTI, the assumed issuance at the beginning of 2016 of shares issued from escrow during 2016 related to the acquisition of Reggiani, the assumed conversion of our convertible notes having a dilutive effect using the treasury stock method when the stock price exceeds the conversion price of the convertible notes, as well as the dilutive effect of our warrants when the stock price exceeds the warrant strike price. Any potential shares that are anti-dilutive as defined in ASC 260, Earnings Per Share, are excluded from the effect of dilutive securities.

Performance-based and market-based restricted stock and stock options that would be issuable if the end of the reporting period were the end of the vesting period, if the result would be dilutive, are assumed to be outstanding for purposes of determining net income (loss) per diluted common share as of the later of the beginning of the period or the grant date.

Derivative Instruments and Risk Management

Our derivative instruments consist of foreign currency exchange contracts as described below:

Cash Flow Hedges. We utilize foreign currency exchange forward contracts to hedge foreign currency exchange exposures related to forecasted operating expenses denominated in Indian rupees. These derivative instruments are designated and qualify as cash flow hedges and in general, closely match the underlying forecasted transactions in duration. The changes in fair value of these contracts are reported as a component of AOCI and reclassified to operating expense in the periods of payment of the hedged operating expenses. We measure the effectiveness of

hedges of forecasted transactions by comparing the fair value of the designated foreign currency exchange forward purchase contracts with the fair values of the forecasted transactions. Any ineffective portion of the derivative hedging gain or loss, as well as changes in the derivative time value (which is excluded from the assessment of hedge effectiveness), are recognized as a component of interest income and other income (expense), net.

Balance Sheet Hedges. We utilize foreign currency exchange forward and option contracts to hedge against the short-term impact of foreign currency exchange rate fluctuations related to certain foreign-currency-denominated monetary assets and liabilities. These derivative instruments are not designated for hedge accounting treatment since there is a natural offset for the remeasurement of the underlying foreign currency denominated asset or liability. We recognize changes in the fair value of non-designated derivative instruments in earnings in the period of change. Gains and losses on foreign currency forward contracts used to hedge balance sheet exposures are recognized in interest income and other income (expense), net, in the same period as the remeasurement gain or loss of the related foreign currency denominated assets and liabilities.

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

Factors that could have an impact on the effectiveness of our balance sheet and cash flow hedging program include the accuracy of forecasts and the volatility of foreign currency markets. These programs reduce, but do not entirely eliminate, the impact of currency exchange movements. The maturities of these instruments are generally less than one year. Currently, we do not enter into any foreign exchange forward contracts to hedge exposures related to firm commitments or nonmarketable investments. We do not have any leveraged derivatives, nor do we use derivative contracts for speculative purposes. The cash flow impacts of our derivative contracts are reflected as cash flows from operating activities in the Consolidated Statements of Cash Flows.

Recently Adopted Accounting Pronouncements

Revenue Recognition. Effective January 1, 2018, we adopted ASC 606 using the modified retrospective method applied to all incomplete contracts as of the date of initial application. ASC 606 supersedes the revenue recognition requirements in ASC 605, and requires the recognition of revenue when promised goods or services are transferred to customers in an amount that reflects the considerations to which the entity expects to be entitled to in exchange for those goods or services. In addition, ASC 606 requires disclosure of the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers. Effective January 1, 2018, we also adopted ASC 340-40 using the modified retrospective method to all incomplete contracts as of the date of initial application. ASC 340-40 requires the deferral of incremental costs of obtaining a contract with a customer.

Results for reporting periods beginning after January 1, 2018 are presented under ASC 606 and ASC 340-40, while prior period amounts are not adjusted and continue to be reported in accordance with our historic accounting under ASC 605. Additional discussion of these recently adopted pronouncements is included above under Significant Accounting Policies, in Note 4 – Revenue, and in Note 5 – Supplemental Financial Statement Information.

Income Taxes. SAB 118 provides guidance for the application of ASC 740 in the reporting period that includes December 22, 2017, which is the date the Act to provide for reconciliation pursuant to titles II and V of the concurrent resolution on the budget for fiscal year 2018 (“2017 Tax Act”) was signed into law. SAB 118 requires that we recognize those income tax effects in our financial statements for which the accounting can be completed, as might be the case for the effect of rate changes on deferred tax assets and deferred tax liabilities. The measurement period is up to one year from the enactment date, which expired on December 22, 2018. We recorded the provisional amounts of the tax effects of the 2017 Tax Act in 2017, and finalized the calculation of the tax effects in 2018.

Restricted Cash. Accounting Standard Updates (“ASU”) 2016-18, Statement of Cash Flows: Restricted Cash, became effective in the first quarter of 2018 requiring the statement of cash flows to explain the change in cash, cash equivalents, and amounts generally described as restricted cash or restricted cash equivalents. Therefore, amounts generally described as restricted cash and restricted cash equivalents are included with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts in the statement of cash flows. We previously included the changes in restricted cash equivalents in operating or investing activities in the Consolidated Statements of Cash Flows. Upon the adoption of ASU 2016-18, changes in restricted cash equivalents related to the off-balance sheet financing arrangement described in Note 13 – Commitments and Contingencies are no longer presented as an investing cash outflow, but instead are presented as a component of the beginning and ending balance of cash, cash equivalents, and restricted cash equivalents in the Consolidated Statements of Cash Flows. Prior period amounts have been revised to conform to the current year presentation.

A reconciliation of cash, cash equivalents, and restricted cash equivalents is as follows (in thousands):

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	December 31,	
	2018	2017
Cash and cash equivalents	\$309,052	\$170,345
Restricted cash equivalents	39,809	32,531
Cash, cash equivalents, and restricted cash equivalents shown in the statement of cash flows	\$348,861	\$202,876

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

Settlement of Convertible Debt. ASU 2016-15, Statement of Cash Flows: Classification of Certain Cash Receipts and Cash Payments, issued in August 2016, requires that cash settlements of principal amounts of debt instruments with coupon interest rates that are insignificant in relation to the effective interest rate of the debt must classify the portion of the principal payment attributable to the accreted interest related to the debt discount as cash outflows from operating activities. This is consistent with the classification of the coupon interest payments. ASU 2016-15 became effective in the first quarter of 2018. Accordingly, the debt discount attributable to the difference between the coupon interest rate and the effective rate on our 2019 and 2023 Notes will be classified as an operating cash outflow in the Consolidated Statement of Cash Flows upon cash settlement.

Recent Accounting Pronouncements Not Yet Adopted

Lease Arrangements. In February 2016, the FASB issued ASU 2016- 02, Leases (Topic 842), to increase transparency and comparability among organizations by recognizing lease assets and lease liabilities on the balance sheet and disclosing key information about leasing transactions. The primary change that will impact us is the recognition of right-of-use ("ROU") assets and lease liabilities, as lessee, for those leases classified as operating leases and with a term of greater than 12 months. We will recognize a ROU asset and a lease liability, initially measured at the present value of the lease payments. There will continue to be a differentiation between finance leases and operating leases. We do not currently have finance leases as lessee. For operating leases, a lessee is required to recognize lease expense generally on a straight-line basis. All operating lease payments are classified as operating activities in the statement of cash flows. The current build-to-suit lease accounting guidance will be rescinded by the new guidance, although this guidance will be replaced with guidance restricting lessee control during the construction period. The accounting for build-to-suit leases will be the same as operating leases unless the lessee control provisions are applicable. The new standard requires lessors to account for leases using an approach that is substantially the same as existing guidance for sales-type leases, direct financing leases, and operating leases.

We will adopt this standard in the first quarter of 2019, using the optional transition method to initially apply the new lease standard at the adoption date, and will recognize a cumulative-effect adjustment to the opening balance of retained earnings. We expect to record total ROU Assets and Lease Liabilities on our opening Consolidated Balance Sheet of between \$35.0 and \$40.0 million. As stated above, the recognition, measurement, and presentation of expenses and cash flows by a lessee will not significantly change from previous guidance; accordingly, the impact on our results of operations as reflected in our Consolidated Statements of Operations is not expected to be material.

Hedge Accounting. In August 2017, the FASB issued ASU 2017-12, Targeted Improvements to Accounting for Hedging Activities, which amends the hedge accounting recognition and presentation requirements. The new guidance continues to require an initial prospective quantitative hedge effectiveness assessment unless the hedging relationship qualifies for the critical-terms-match method or facts and circumstances method, which permit an assumption of perfect hedge effectiveness. After the initial quantitative assessment, the new guidance permits a qualitative ongoing effectiveness assessment for certain hedges if we can reasonably support an expectation of high effectiveness throughout the term of the hedge. The ASU also requires additional disclosure related to the effect on the income statement of cash flow hedges.

Upon adoption, a cumulative-effect adjustment will be recorded to charge any ineffective portion of derivative contracts designated as cash flow hedges existing at the date of adoption to AOCI with a corresponding adjustment to retained earnings as of the beginning of the fiscal year of the adoption. ASU 2017-12 will be effective in the first quarter of 2019. We expect the implementation of this guidance will not have a material impact on our consolidated

financial statements.

Financial Instruments. ASU 2016-13, Measurement of Credit Losses on Financial Instruments, issued in June 2016, amends current guidance regarding other-than-temporary impairment of available-for-sale debt securities. The new guidance requires an estimate of expected credit loss when fair value is below the amortized cost of the asset without regard for the length of time that the fair value has been below the amortized cost or the historical or implied volatility of the asset. Credit losses on available-for-sale debt securities will be limited to the difference between the security's amortized cost basis and its fair value. The use of an allowance to record estimated credit losses (and subsequent recoveries) will also be required under the new guidance. ASU 2016-13 will be effective in the first quarter of 2020. We expect that the implementation of this guidance will not have a material impact to our consolidated financial statements.

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

Note 2. Earnings Per Share

Net income (loss) per basic common share is computed using the weighted average number of common shares outstanding during the period. Net income (loss) per diluted common share is computed using the weighted average number of common shares and potential dilutive common shares outstanding during the period. See Note 1 – The Company and Summary of Significant Accounting Policies for additional information.

PSUs and market-based RSUs and stock options that would be issuable if the end of the reporting period were the end of the vesting period, if the result would be dilutive, are assumed to be outstanding for purposes of determining net income (loss) per diluted common share as of the later of the beginning of the period or the grant date. Accordingly, PSUs, which vested on various dates during the years ended December 31, 2018, 2017, and 2016 based on achievement of specified performance criteria related to revenue, cash flows from operating activities, and non-GAAP operating income targets; and performance-based stock options, which vested during the year ended December 31, 2016 based on achievement of specified targets related to non-GAAP return on equity, are included in the determination of net income (loss) per diluted common share as of the beginning of each respective year.

Basic and diluted earnings per share are reconciled as follows (in thousands, except for per share amounts):

	Year Ended December 31,		
	2018	2017	2016
Basic net income (loss) per share:			
Net income (loss) available to common shareholders	\$(971)	\$(15,345)	\$44,949
Weighted average common shares outstanding	44,429	46,281	46,900
Basic net income (loss) per share	\$(0.02)	\$(0.33)	\$0.96
Diluted net income (loss) per share:			
Net income (loss) available to common shareholders	\$(971)	\$(15,345)	\$44,949
Weighted average common shares outstanding	44,429	46,281	46,900
Dilutive stock options, restricted stock, and ESPP purchase rights	—	—	897
Weighted average common shares outstanding for purposes of computing diluted net income (loss) per share	44,429	46,281	47,797
Diluted net income (loss) per share	\$(0.02)	\$(0.33)	\$0.94

Potential shares of common stock that were not included in the determination of diluted net income (loss) per share for the periods presented because the impact of including them would have been anti-dilutive or because their performance conditions have not been met, consisted of the following (in thousands):

	Year Ended		
	December 31,		
	2018	2017	2016
Options	63	138	—
RSUs & PSUs	1,110	692	183
ESPP purchase rights	203	160	10
Total potential shares of common stock excluded from the computation of diluted earnings per share	1,376	990	193

The weighted-average number of common shares outstanding does not include the effect of the potential common shares from conversion of our 2019 Notes and exercise of our Warrants because the effects would have been anti-dilutive since the conversion price of the Notes and the strike price of the Warrants exceeded the average market price of our common stock. We have the option to pay cash, issue shares of common stock, or any combination thereof for the aggregate amount due upon conversion of the 2019 Notes. Our intent is to settle the principal amount of the 2019 Notes in cash upon conversion. The weighted-average number of common shares outstanding also does

not include the effect of the potential common shares from conversion of our 2023 Notes because the effects would have been anti-dilutive since the conversion price of the 2023

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

Notes exceeded the average market price of our common stock. Only amounts payable in excess of the principal amount of the 2019 or 2023 Notes would be considered in diluted net income (loss) per share under the treasury stock method. We also entered into convertible note hedge transactions with respect to our common stock (“2019 Note Hedges”) in September 2014. The 2019 Note Hedges are also not included in the calculation of diluted net income (loss) per share because the effect of any exercise of the 2019 Note Hedges would also be anti-dilutive. Please refer to Note 12 – Debt of Notes to Consolidated Financial Statements for additional information.

Note 3. Segment, Geographic, and Major Customer Information

Operating Segments

Operating segment information is presented based on the internal reporting used by the chief operating decision making group (“CODM”) to allocate resources and evaluate operating segment performance. Our CODM is comprised of our Chief Executive Officer and Chief Financial Officer. Our three operating segments consist of Industrial Inkjet, Productivity Software, and Fiery.

Our operating segments are integrated through their reporting and operating structures, shared technology and practices, shared sales and marketing, shared back office support functions, and combined production facilities. Our enterprise management processes use financial information that is closely aligned with our three operating segments at the gross profit level. Relevant discrete financial information is prepared at the gross profit level for each of our three operating segments, which is used by the CODM group to allocate resources and assess the performance of each operating segment.

We classify our revenue, operating segment profit (i.e., gross profit), assets, and liabilities in accordance with our operating segments as follows:

Industrial Inkjet consists of our VUTEk super-wide and wide format display graphics, Nozomi corrugated packaging and display, Reggiani textile, and Cretaprint ceramic tile decoration and building material industrial inkjet printers; digital UV curable, LED curable, ceramic, water-based, and thermoforming and specialty ink, as well as a variety of textile ink including dye sublimation, pigmented, reactive dye, acid dye, pure disperse dye, water-based dispersed printing ink, and coatings; digital inkjet printer parts; and professional services.

Productivity Software consists of complete software suites that enable efficient and automated end-to-end business and production workflows for the print and packaging industries. These productivity suites also provide tools to enable revenue growth, efficient scheduling, and optimization of processes, equipment, and personnel. Customers are provided the financial and technical flexibility to deploy locally within their business or to be hosted in the cloud. The Productivity Suites address all segments of the print industry. We also market Optitex fashion CAD software, which facilitates fast fashion and increased efficiency in the textile and fashion industries, and Escada corrugator control systems for the corrugated packaging market.

Fiery consists of Fiery and FFPS DFEs, which transform digital copiers and printers into high performance networked printing devices for the office, commercial, and industrial printing markets. This operating segment is comprised of (i) stand-alone DFEs connected to digital printers, copiers, and other peripheral devices, (ii) embedded DFEs and design-licensed solutions used in digital copiers and multi-functional devices, (iii) optional software integrated into our DFE solutions such as Fiery Central and Graphics Arts Package, (iv) Fiery Self Serve, our self-service and

payment solution, and (v) stand-alone software-based solutions such as our proofing, textile, and scanning solutions.

Our CODM group evaluates the performance of our operating segments based on net sales and gross profit. Gross profit for each operating segment includes revenue from sales to third parties and related cost of revenue attributable to the operating segment. Cost of revenue for each operating segment excludes certain expenses managed outside the operating segments consisting primarily of stock-based compensation expense.

Operating income is not reported by operating segment because operating expenses include significant shared expenses and other costs that are managed outside of the operating segments. Such operating expenses include various corporate expenses such as stock-based compensation, corporate sales and marketing, research and development, amortization of identified intangibles, various non-recurring charges, and other separately managed general and administrative expenses.

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

Revenue and gross profit for each operating segment, excluding stock-based compensation expense, are summarized as follows (in thousands):

	Year Ended December 31,			
	2018	2017	2016	
Industrial Inkjet				
Revenue	\$607,559	\$570,688	\$562,583	
Gross profit	210,792	208,620	198,923	
Gross profit percentages	34.7 %	36.6 %	35.4 %	
Productivity Software				
Revenue	\$168,284	\$156,561	\$151,737	
Gross profit	119,470	114,460	114,179	
Gross profit percentages	71.0 %	73.1 %	75.2 %	
Fiery				
Revenue	\$239,178	\$266,011	\$277,745	
Gross profit	172,081	185,937	198,322	
Gross profit percentages	71.9 %	69.9 %	71.4 %	

Segment gross profit is reconciled to the Consolidated Statements of Operations as follows (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Segment gross profit	\$502,343	\$509,017	\$511,424
Stock-based compensation expense	(3,770)	(2,561)	(2,784)
Other items excluded from segment profit	—	—	(475)
Gross profit	\$498,573	\$506,456	\$508,165

The Fiery gross profit percentage was negatively impacted by \$1.4 million during the year ended December 31, 2017, charged to cost of revenue, which reflects the cost of manufacturing plus a portion of the expected profit margin related to the acquired FFPS inventories. Inventory acquired in the acquisition of FFPS is required to be recorded at fair value rather than historical cost.

Tangible and intangible assets, net of liabilities, are summarized as follows (in thousands):

	Industrial Inkjet	Productivity Software	Fiery	Corporate and Unallocated Net Assets	Total
December 31, 2018					
Goodwill	\$147,932	\$168,186	\$73,991	\$ —	\$390,109
Identified intangible assets, net	38,782	21,677	14,263	—	74,722
Tangible assets, net of liabilities	234,689	(12,747)	21,092	18,243	261,277
Net tangible and intangible assets	\$421,403	\$177,116	\$109,346	\$18,243	\$726,108
December 31, 2017					
Goodwill	\$154,373	\$174,644	\$74,261	\$ —	\$403,278
Identified intangible assets, net	66,547	36,379	20,082	—	123,008
Tangible assets, net of liabilities	221,933	(27,755)	11,286	49,561	255,025

Net tangible and intangible assets \$442,853 \$ 183,268 \$105,629 \$ 49,561 \$781,311

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

Corporate and unallocated assets and liabilities primarily consist of cash and cash equivalents, short-term investments, restricted investments and cash equivalents, corporate headquarters facility, convertible senior notes, net, imputed financing obligation related to build-to-suit lease, income taxes receivable, and income taxes payable.

Geographic Information

We report revenue by geographic region based on ship-to destination. Shipments to some of our significant printer manufacturer/distributor customers are made to centralized purchasing and manufacturing locations, which in turn sell through to other locations. As a result of these factors, we believe that sales to certain geographic locations might be higher or lower, as the ultimate destinations are difficult for us to ascertain.

Our revenue by ship-to destination is summarized as follows (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Americas	\$ 502,820	\$ 487,968	\$ 500,411
EMEA	364,908	369,610	360,305
APAC	147,293	135,682	131,349
Total Revenue	\$ 1,015,021	\$ 993,260	\$ 992,065

The net book value of our property and equipment are summary as follows by geographic region (in thousands):

	December 31,	
	2018	2017
Americas	\$ 60,612	\$ 77,683
EMEA	15,580	19,048
APAC	1,421	2,031
Total Property and Equipment, net	\$ 77,613	\$ 98,762

Major Customers

No individual customer accounted for more than 10% of our revenue for the years ended December 31, 2018 and 2016. One customer, Xerox, provided 11% of our consolidated revenue for the year ended December 31, 2017. No customer accounted for more than 10% of our net consolidated accounts receivables as of December 31, 2018 and 2017.

Note 4. Revenue

We derive our revenue primarily from product revenue, which includes industrial inkjet printers, ink, and parts; productivity software; and DFEs. We also receive service revenue from printer maintenance agreements, customer support, training, software development, and consulting.

Upon the adoption of ASC 606 and ASC 340-40, we recorded a net increase to our opening balance of retained earnings of \$4.7 million as of January 1, 2018, due to the cumulative effect of adoption. The adoption impact primarily related to capitalizing customer contract acquisition costs consisting of sales commissions, partially offset by an increase in deferred revenue to reflect the deferral of a significant financing component that will be recognized as interest income as payments are received over the contractual terms, and deferral of upfront setup fees that will be

recognized ratably over the expected contractual terms.

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Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

The cumulative effect of applying ASC 606 and ASC 340-40 to active contracts as of the adoption date resulted in the following adjustments to the Consolidated Balance Sheet as of January 1, 2018 (in thousands):

	Reported as of December 31, 2017	ASC 606 Adjustments	As Adjusted January 1, 2018
Assets			
Accounts receivable, net	\$244,416	\$ 102	\$244,518
Other current assets	41,799	(1,628)	40,171
Deferred tax assets	45,083	(1,466)	43,617
Other assets	15,504	8,062	23,566
Liabilities			
Deferred revenue	55,833	(95)	55,738
Noncurrent contingent and other liabilities	28,801	491	29,292
Stockholders' equity:			
Retained earnings	402,544	4,674	407,218

The impact of adopting ASC 606 and ASC 340-40 on our Consolidated Statement of Operations is summarized as follows (in thousands):

	Year Ended December 31, 2018		
	Amounts in Accordance with ASC 606	Amounts in Accordance with ASC 605	Effect of change higher (lower)
Revenue	\$1,015,021	\$ 1,009,906	\$ 5,115
Cost of revenue	516,448	515,718	730
Gross profit	498,573	494,188	4,385
Operating expenses	478,887	479,378	(491)
Income from operations	19,686	14,810	4,876
Interest income and other income, net	1,604	986	618
Income (loss) before income taxes	1,121	(4,373)	5,494
Provision for income taxes	2,092	1,304	788
Net loss	(971)	(5,677)	4,706

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

The impact of adopting ASC 606 and ASC 340-40 on our Consolidated Balance Sheet as of December 31, 2018 was as follows (in thousands):

	Amounts in Accordance with ASC 606	Amounts in Accordance with ASC 605	Effect of change higher (lower)
Assets			
Accounts receivable, net	\$ 241,841	\$ 236,438	\$ 5,403
Other current assets	44,623	46,981	(2,358)
Deferred tax assets	39,449	41,702	(2,253)
Other assets	37,393	28,840	8,553
Liabilities			
Deferred revenue	60,547	60,837	(290)
Noncurrent contingent and other liabilities	7,179	6,924	255
Stockholders' equity			
Retained earnings	406,247	396,867	9,380

The following table presents our disaggregated revenue by source (in thousands). Sales and usage-based taxes are excluded from revenue:

	Year Ended December 31,		
	2018	2017	2016
Major Products and Service Lines:			
Industrial Inkjet			
Printers and parts	\$380,672	\$349,372	\$356,043
Ink, supplies, and maintenance	226,887	221,316	206,540
Productivity Software			
Licenses	46,458	37,438	41,120
Professional services	30,339	29,748	27,566
Maintenance and subscriptions	91,487	89,375	83,051
Fiery			
Digital front ends and related products	221,009	251,369	263,366
Maintenance and subscriptions	18,169	14,642	14,379
Total	\$1,015,021	\$993,260	\$992,065

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

	Industrial Inkjet	Productivity Software	Fiery	Total
Year Ended December 31, 2018				
Timing of Revenue Recognition:				
Transferred at a Point in Time	\$ 586,079	\$ 46,458	\$ 221,009	\$ 853,546
Transferred Over Time	21,480	121,826	18,169	161,475
Recurring/Non-Recurring:				
Non-Recurring	\$ 380,672	\$ 76,797	\$ 221,009	\$ 678,478
Recurring	226,887	91,487	18,169	336,543
Year Ended December 31, 2017				
Timing of Revenue Recognition:				
Transferred at a Point in Time	\$ 548,021	\$ 37,438	\$ 251,369	\$ 836,828
Transferred Over Time	22,667	119,123	14,642	156,432
Recurring/Non-Recurring:				
Non-Recurring	\$ 349,372	\$ 67,186	\$ 251,369	\$ 667,927
Recurring	221,316	89,375	14,642	325,333
Year Ended December 31, 2016				
Timing of Revenue Recognition:				
Transferred at a Point in Time	\$ 541,084	\$ 41,120	\$ 263,366	\$ 845,570
Transferred Over Time	21,499	110,617	14,379	146,495
Recurring/Non-Recurring:				
Non-Recurring	\$ 356,043	\$ 68,686	\$ 263,366	\$ 688,095
Recurring	206,540	83,051	14,379	303,970

Remaining Performance Obligations

Revenue allocated to remaining performance obligations includes deferred revenue and amounts that will be invoiced and recognized as revenue in future periods (“backlog”). Remaining performance obligations were \$85.5 million as of December 31, 2018, of which we expect to recognize substantially all of the revenue over the next 12 months.

Contract Balances

Timing of revenue recognition may differ from timing of invoicing to customers. Payment terms and conditions vary by contract. Deferred revenue (contract liability) represents amounts received in advance, or invoiced in advance, for product support contracts, software customer support contracts, consulting and integration projects, SaaS arrangements, or product sales. We defer these amounts when we collect or invoice the customer and then generally recognize revenue either ratably over the support contract term, upon performing the related services, under the cost-to-cost method, or in accordance with our revenue recognition policy. Revenue recognized during the year ended December 31, 2018, which was included in deferred revenue as of December 31, 2017, was \$50.8 million.

Unbilled accounts receivable represents contract assets for revenue that has been recognized in advance of billing the customer, which is common for long-term contracts. Billing requirements vary by contract but are generally structured around the completion of certain development milestones. Unbilled accounts receivable as of December 31, 2017, that

were transferred to accounts receivable during the year ended December 31, 2018, were \$26.2 million.

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

The following table reflects the balances in unbilled accounts receivable and deferred revenue (in thousands):

	December 31, 2018	January 1, 2018
Unbilled accounts receivable – current	\$ 20,507	\$ 23,296
Unbilled accounts receivable – noncurrent	8,320	4,122
Deferred revenue – current	60,547	55,738
Deferred revenue – noncurrent	290	565

Note 5. Supplemental Financial Statement Information

Inventories

Inventories are as follows (in thousands):

	As of December 31,	
Inventories	2018	2017
Raw materials	\$55,794	\$57,061
Work in process	12,971	9,792
Finished goods	65,583	58,960
Total inventories	\$ 134,348	\$ 125,813

Deferred Contract Acquisition Costs

Some of our sales incentive programs meet the definition of an incremental cost of obtaining a customer contract; and therefore, are required to be capitalized under ASC 340-40. We recognize an asset for the incremental costs of obtaining a contract with a customer if we expect the benefit of those costs to be longer than one year.

Sales commissions for renewal of a contract may not be commensurate with the commissions paid for the acquisition of the initial contract because commissions are generally not paid on the renewal of a specifically anticipated contract. Sales commissions for initial contracts are deferred and then amortized generally on a straight-line basis over a period of benefit that we have determined to be three to four years. We determined the period of benefit by taking into consideration our customer contracts, our technology, and other factors.

Upon adoption of ASC 340-40 on January 1, 2018, we capitalized \$8.1 million in contract acquisition costs related to contracts that were not completed. For contracts that have durations of less than one year, we follow the practical expedient and expense these costs when incurred. During the year ended December 31, 2018, we amortized \$4.4 million of deferred contract acquisition costs, and we recognized no impairment losses in relation to costs capitalized. During the year ended December 31, 2018, an additional \$4.9 million of contract acquisition costs were capitalized. Deferred contract acquisition costs are included within other noncurrent assets on our Consolidated Balance Sheets.

Equipment Leased to Customers Under Operating Leases, Net

Equipment leased to customers under operating leases, which is included in property and equipment, net on the Consolidated Balance Sheets, was as follows (in thousands):

As of December
31,

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Equipment Leased to Customers	2018	2017
Equipment leased to customers under operating leases	\$7,376	\$5,432
Accumulated depreciation	(3,555)	(1,927)
Equipment leased to customers under operating leases, net	\$3,821	\$3,505

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

Supplemental Disclosure of Cash Flow Information

Supplemental disclosures about cash flow information are as follows (in thousands):

	For the Year Ended		
	December 31,		
	2018	2017	2016
Net cash paid for income taxes	\$16,342	\$23,279	\$6,812
Cash paid for interest expense	3,138	3,174	2,975
Acquisitions of businesses and technology:			
Cash paid for businesses and technology purchased, excluding contingent consideration	\$—	\$30,230	\$21,560
Cash acquired in business acquisitions	—	(671)	(1,628)
Net cash paid for business acquisitions	\$—	\$29,559	\$19,932
Common stock issued in connection with business acquisitions	\$123	\$—	\$73
Non-cash investing and financing activities:			
Non-cash settlement of employee-related liabilities by issuing RSUs	—	1,171	3,059
Property and equipment received, but not paid	1,185	681	1,257

Deferred Cost of Revenue

Deferred cost of revenue related to unrecognized revenue on shipments to customers was \$0.4 and \$3.5 million as of December 31, 2018 and December 31, 2017, respectively, and is included in other current assets on the Consolidated Balance Sheets.

Accrued and Other Liabilities

Accrued and other liabilities are as follows (in thousands):

Accrued and Other Liabilities	As of December	
	31,	
	2018	2017
Accrued compensation and benefits	\$31,917	\$29,113
Warranty provision – current	11,130	12,931
Contingent consideration – current	8,268	14,922
Debt assumed through business acquisitions	1,451	11,101
Accrued royalty payments	4,839	4,903
Accrued litigation and consulting	2,976	4,277
Technology transfer	3,374	3,593
Hedging liability	3,399	3,281
Deferred rent	1,868	2,846
Sales tax liabilities	2,547	2,574
Restructuring and other	1,971	2,452
Other accrued liabilities	5,583	6,097
Total accrued and other liabilities	\$79,323	\$98,090

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

Accumulated Other Comprehensive Income (Loss) (“AOCI”)

AOCI classified within stockholders’ equity in our Consolidated Balance Sheets as of December 31, 2018 and 2017 was as follows (in thousands):

Other Comprehensive Income (Loss)	As of December	
	31, 2018	2017
Net unrealized investment losses	\$—	\$(697)
Currency translation gains (losses)	(12,814)	8,794
Net unrealized gains on cash flow hedges	—	41
Total other comprehensive income (Loss)	\$(12,814)	\$8,138

There were less than \$0.1 and \$0.1 million, net of tax, reclassified out of AOCI for the years ended December 31, 2018 and 2017, respectively, consisting of unrealized gains and losses from investments in debt securities reported within interest income and other income, net, in our Consolidated Statements of Operations.

Note 6. Business Acquisitions

We did not complete any business acquisitions during 2018. We acquired FFPS and Generation Digital during 2017, which have been included in our Fiery operating segment, and two business process automation businesses, CRC and Escada, which have been included in our Productivity Software operating segment. Post-acquisition revenue was \$27.1 million in the year ended December 31, 2017 related to these four acquisitions. We acquired Optitex and Rialco during 2016, which have been included in our Productivity Software and Industrial Inkjet operating segments, respectively. Post-acquisition revenue was \$19.8 million in the year ended December 31, 2016 related to these two acquisitions. Acquisition-related transaction costs were \$1.2, \$2.1, and \$2.2 million during the years ended December 31, 2018, 2017, and 2016, respectively.

These acquisitions were accounted for as purchase business combinations. We allocated the purchase price to the tangible and identifiable intangible assets acquired and liabilities assumed on the basis of their estimated fair value on their respective acquisition dates. Excess purchase consideration was recorded as goodwill. Factors contributing to a purchase price that results in goodwill include, but are not limited to, the retention of research and development personnel with skills to develop future technology, manufacturing capacity in the Industrial Inkjet operating segment, support personnel to provide maintenance services related to the products, a trained sales force capable of selling current and future products, the positive reputation of each of these businesses in the market, the opportunity to integrate acquired technology into our products, the opportunity to sell Fiery DFEs to FFPS customers, and the opportunity to expand our presence in the DFE market through the synergy of FFPS technology with existing Fiery products, and the opportunity to sell our Productivity Software Suite to customers of the acquired businesses. Rialco’s technical and commercial capabilities benefit the Industrial Inkjet operating segment in the sourcing, specification, and purification of high quality dyes and expand our research, development, and innovation base to develop ink for the signage, ceramic, and packaging markets.

2017 Acquisitions

Fiery Segment

We acquired certain assets comprising the FFPS business from Xerox on January 31, 2017 for cash consideration of \$23.9 million consisting of \$5.9 million paid at closing, \$9.0 million paid in July 2017, and \$9.0 million paid in July 2018. These subsequent payments were discounted at our incremental borrowing rate of 4.98%, resulting in a purchase price of \$23.1 million. The FFPS business manufactures and markets the FFPS DFE, which is a DFE that previously competed with our Fiery DFEs and is included in our Fiery segment.

We acquired privately held Generation Digital on August 14, 2017 for cash consideration of \$3.2 million, net of cash acquired, plus an additional potential future cash earnout, which is contingent on achieving certain revenue and operating profit performance targets during a 6-month period followed sequentially by a 12-month period. Generation Digital provides

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

software to textile and fashion designers for the creation and design of prints and patterns, color matching, and color palette creation and management. Generation Digital has been integrated into the Fiery segment.

We made a contingent consideration payment for the initial 6-month period but the fair value of the remaining earnout related to the Generation Digital acquisition is currently estimated to be zero as of December 31, 2018, by applying the income approach. Key assumptions include probability-adjusted revenue and operating profit levels.

Probability-adjusted revenue and operating profit are significant inputs that are not observable in the market, which ASC 820-10-35 refers to as a Level 3 inputs. Changes in the fair value of contingent consideration subsequent to the acquisition date are recognized in general and administrative expenses.

Productivity Software Segment

During 2017 we acquired privately-held CRC and Escada, which have been included in our Productivity Software operating segment, for cash consideration of approximately \$19.5 million, net of cash acquired, plus an additional potential future cash earnout related to Escada, which is contingent on Escada achieving certain revenue and operating profit performance targets over two consecutive 12-month periods.

CRC, acquired from Reynolds on May 8, 2017, offers business process automation software for commercial, label, and packaging printers.

Escada, acquired on October 1, 2017, offers the corrugated packaging market corrugator control systems, which provide comprehensive control and traceability for the entire corrugated packaging process.

The fair value of the earnout related to the Escada acquisition is currently estimated to be \$4.2 million as of December 31, 2018 by applying the income approach in accordance with ASC 805-30-25-5, Business Combinations. Key assumptions include a risk-free discount rate of 2.97% and probability-adjusted revenue and operating profit levels. This contingent liability is reflected in our Consolidated Balance Sheet as of December 31, 2018, as a current and noncurrent liability of \$2.4 and \$1.9 million.

2016 Acquisitions

Industrial Inkjet Segment

Rialco was acquired on March 1, 2016 for cash consideration of \$8.4 million, net of cash acquired, plus an additional potential future cash earnout, which is contingent on achieving certain revenue and gross profit performance targets over three consecutive 12-month periods. Rialco is a leading European supplier of dye powders and color products for the textile, digital print, and other decorating industries. Rialco's pure disperse dyes are particularly important in the manufacture of high-quality dye sublimation inkjet ink for textile applications, which is a key growth area in the global migration from analog to digital print. Rialco has been included in the Industrial Inkjet segment.

The fair value of the earnout related to the remaining Rialco acquisition is estimated to be \$1.9 million as of December 31, 2018 by applying the income approach, adjusted for the impact of post-acquisition foreign currency translation changes. Key assumptions include a risk-free discount rate of 0.8% and probability-adjusted revenue and gross profit levels. This contingent liability is reflected on the Consolidated Balance Sheet as of December 31, 2018, as a current liability of \$1.9 million.

Productivity Software Segment

Optitex was acquired on June 16, 2016 for cash consideration of \$11.6 million, net of cash acquired, plus an additional potential future cash earnout, which is contingent on achieving certain revenue and operating profit performance targets over three consecutive 12-month periods. Optitex has developed and markets integrated 2D and 3D CAD software that is shortening the design cycle, reducing our customers' costs, and accelerating the adoption of fast fashion. Optitex has been integrated into the Productivity Software segment.

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

The fair value of the earnout related to the Optitex acquisition is estimated to be zero as of December 31, 2018, by applying the income approach, adjusted for the impact of post-acquisition foreign currency translation changes. Key assumptions include a risk-free discount rate of 3.39% and probability-adjusted revenue and operating profit levels. During the year ended December 31, 2018, we reduced the contingent consideration liability for Optitex by a total of \$20.9 million with a credit to general and administrative expenses.

Valuation Methodologies

Intangible assets acquired in 2017, and 2016 consist of customer relationships, the Master Purchasing Agreement (the “Purchasing Agreement”) with Xerox, “take-or-pay” contractual penalty with Xerox, trade names, existing technology, backlog, and IPR&D. The intangible asset valuation methodologies for each acquisition assumes discount rates between 14% and 30%.

Customer Relationships and Backlog were valued using the excess earnings method, which is an income approach. The value of customer relationships lies in the generation of a consistent and predictable revenue source and the avoidance of costs associated with developing the relationships. Customer relationships were valued by estimating the revenue and operating income attributable to existing customer relationships and probability-weighting each forecast year to reflect the uncertainty of maintaining existing relationships based on historical attrition rates. Backlog represents unfulfilled customer purchase orders at the acquisition date that will provide a relatively secure revenue stream, subject only to potential customer cancellation.

Trade Names were valued using the relief from royalty method, which is an income approach, with royalty rates based on various factors including an analysis of market data, comparable trade name agreements, and historical advertising dollars spent supporting the trade name.

Existing Technology was generally valued using the relief from royalty method based on royalty rates for similar technologies. The value of existing technology is derived from consistent and predictable revenue, including the opportunity to cross-sell to existing customers and the avoidance of the costs associated with developing the technology. Revenue related to existing technology was adjusted in each forecast year to reflect the evolution of the technology and the cost of sustaining research and development required to maintain the technology.

Rialco existing technology was valued using the cost approach. The value of existing technology was estimated based on the historical time and cost to develop the technology, the estimated man-years required to recreate the technology, historical employee compensation and benefits, and a reasonable mark-up based on profit for companies with similar operations.

Purchasing Agreement was valued using the excess earnings method, which is an income approach. The Purchasing Agreement entered into with Xerox states that we will be Xerox’s preferred supplier of DFEs provided that we meet quality, cost, delivery, and services requirements. The value of the Purchasing Agreement lies in the generation of a consistent and predictable revenue source without incurring the costs normally required to acquire the Purchasing Agreement. The Purchasing Agreement was valued by estimating the revenue and operating profit attributable to the Purchasing Agreement and probability-weighting each forecast year to reflect the uncertainty of maintaining the existing relationship with Xerox beyond the initial five-year term of the agreement.

Take-or-pay Contract was valued using the Monte Carlo method, which is an income approach. If Xerox's purchases of Fiery and FFPS DFEs during each of four consecutive 12-month periods is less than the minimum level defined for each purchase period, then Xerox shall make a one-time payment in an amount equal to a percentage of such shortfall compared to the minimum level, subject to the maximum payment amount agreed between the parties for each purchase period. Key assumptions include a risk-free discount rate of 4.98%, asset volatility of 27%, and probability-adjusted DFE revenue. If Xerox's purchases of Fiery and FFPS DFEs exceed the minimum purchase levels defined for each purchase period, then we will pay a percentage of such excess to Xerox.

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

The allocation of the purchase price to the assets acquired and liabilities assumed (in thousands) with respect to each of these acquisitions at their respective acquisition dates is summarized as follows:

	2017 Acquisitions					2016 Acquisitions				
	Fiery		Generation Digital		Productivity Software	CRC and Escada		Industrial Inkjet	Productivity Software	
	FFPS					Rialco		Optitex		
	Weighted average useful life	Purchase Price Allocation	Weighted average useful life	Purchase Price Allocation	Weighted average useful life	Purchase Price Allocation	Weighted average useful life	Purchase Price Allocation	Weighted average useful life	Purchase Price Allocation
Purchasing agreement	10 years	\$9,330	—	\$—	—	\$—	—	\$—	—	\$—
Take-or-pay contract	4 years	9,000	—	—	—	—	—	—	—	—
Customer relationships	—	—	8 years	3,030	7-9 years	5,240	6 years	2,512	3-4 years	8,890
Existing technology	2 years	2,570	5 years	890	4-6 years	5,870	5 years	846	5 years	7,760
Trade names	5 years	1,020	5 years	290	4-5 years	850	5 years	763	4 years	2,020
IPR&D	< one year	70	—	—	—	—	—	—	—	—
Backlog	—	—	—	—	one year	191	< one year	56	< one year	370
Goodwill	—	6,590	—	3,012	—	11,632	—	1,426	—	28,147
Total intangible assets		28,580		7,222		23,783		5,603		47,187
Net tangible assets (liabilities)		(5,537)		(298)		(3,738)		5,177		(11,924)
Total purchase price		\$23,043		\$6,924		\$20,045		\$10,780		\$35,263

The initial preliminary purchase price allocations were adjusted by \$0.7 and \$0.8 million during the years ended December 31, 2017, and 2016, respectively, primarily related to certain current assets and deferred tax liabilities. Proforma results of operations have not been presented because they are not material to our Consolidated Statements of Operations.

Goodwill represents the excess of the purchase price over the net tangible and intangible assets acquired. Goodwill that was generated by our acquisitions of Rialco, CRC and Escada is not deductible for tax purposes. Goodwill that was generated by our acquisitions of FFPS and Generation Digital is deductible for tax purposes. Goodwill that was generated by our acquisition of Optitex is deductible for U.S. tax purposes, but is not deductible for tax purposes in Israel.

Escada and Rialco generate revenue and incur operating expenses primarily in British pounds sterling. Upon consideration of the salient economic indicators, we consider British pounds sterling to be the functional currency for

Escada and Rialco. Optitex generates revenue and incurs operating expenses primarily in Israeli shekels. Upon consideration of the salient economic indicators, we consider the Israeli shekel to be the functional currency for Optitex.

Note 7. Accounts Receivable

The accounts receivable allowance consists of the following (in thousands):

Accounts Receivable Allowance	As of December	
	2018	2017
Allowance for doubtful accounts	\$21,354	\$20,278
Allowance for returns	4,417	3,690
Allowance for trade-ins	4,955	6,486
Allowance for sales rebates	1,540	1,782
Total accounts receivable allowance	\$32,266	\$32,236

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

Accounts Receivable Sales Arrangements

In accordance with ASC 860-20, Transfers and Servicing, trade receivables are derecognized from our Consolidated Balance Sheets when sold to third parties upon determining that such receivables are presumptively beyond the reach of creditors in a bankruptcy proceeding. Any servicing obligation is determined based on the fair value that a third party would charge to service these receivables. These liabilities were determined to not be material at December 31, 2018 and 2017. We have facilities in the U.S. that enable us to sell to third parties, on an ongoing basis, certain trade receivables without recourse. Trade receivables sold without recourse are generally short-term receivables with payment due dates of less than 10 days from the date of sale, which are subject to a servicing obligation. Trade receivables sold under these facilities were \$16.7 and \$21.4 million during the years ended December 31, 2018 and 2017, respectively, which approximates the cash received.

We have facilities in Europe that enable us to sell to third parties, on an ongoing basis, certain trade receivables without recourse. Trade receivables sold without recourse are generally short-term receivables secured by international letters of credit. Trade receivables sold under these facilities were \$10.3 and \$5.9 million during the years ended December 31, 2018 and 2017, respectively, which approximates the cash received.

We report collections from the sale of trade receivables to third parties as operating cash flows in the Consolidated Statements of Cash Flows.

Financing Receivables

Our financing receivables consist of sales-type lease and trade receivables that have an original contractual maturity in excess of one year. Sales-type lease receivables are included within other current assets and other assets, while trade receivables are included in accounts receivable, net and in other non-current assets. Our financing receivables are summarized as follows (in thousands):

	As of December	
	31,	
	2018	2017
Financing Receivables		
Sales-type lease receivables	\$31,201	\$16,558
Trade receivables	14,681	12,125
Total financing receivables	\$45,882	\$28,683
Scheduled to be received in excess of one year	\$29,470	\$15,191

Note 8. Fair Value Measurements

We invest our excess cash on deposit with major banks in money market, U.S. Treasury and government-sponsored entity, corporate, municipal government, asset-backed, and mortgage-backed residential securities. By policy, we invest primarily in high-grade marketable securities. We are exposed to credit risk in the event of default by the financial institutions or issuers of these investments to the extent of amounts recorded in our Consolidated Balance Sheets.

We consider all highly liquid investments with an original maturity of three months or less at the time of purchase to be cash equivalents. Typically, the cost of these investments has approximated fair value. Marketable investments

with a maturity greater than three months are classified as available-for-sale short-term investments. Available-for-sale securities are stated at fair value with unrealized gains and losses reported as a separate component of AOCI, adjusted for deferred income taxes. The credit portion of any other-than-temporary impairment is included in net income (loss). Realized gains and losses on sales of financial instruments are recognized upon sale of the investments using the specific identification method.

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

Our available-for-sale short-term investments are as follows (in thousands):

	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair value
As of December 31, 2018				
U.S. Government and sponsored entities	\$ 50,329	\$ —	\$ —	\$ 50,329
Corporate debt securities	47,434	—	—	47,434
Municipal securities	379	—	—	379
Asset-backed securities	4,091	—	—	4,091
Mortgage-backed securities – residential	116	—	—	116
Total short-term investments	\$ 102,349	\$ —	\$ —	\$ 102,349
As of December 31, 2017				
U.S. Government and sponsored entities	\$ 59,824	\$ —	\$ (660)	\$ 59,164
Corporate debt securities	79,356	—	(450)	78,906
Municipal securities	382	—	(2)	380
Asset-backed securities	9,808	44	(47)	9,805
Mortgage-backed securities – residential	445	—	(3)	442
Total short-term investments	\$ 149,815	\$ 44	\$ (1,162)	\$ 148,697

The fair value and duration of the available for sale short term investments that are in a gross unrealized loss position are as follows (in thousands):

	Less than 12 Months		More than 12 Months		Total	
	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses
As of December 31, 2017						
U.S. Government and sponsored entities	\$ 23,023	\$ (206)	\$ 35,989	\$ (454)	\$ 59,012	\$ (660)
Corporate debt securities	45,857	(207)	32,634	(243)	78,491	(450)
Municipal securities	378	(2)	—	—	378	(2)
Asset-backed securities	6,779	(31)	2,947	(16)	9,726	(47)
Mortgage-backed securities – residential	162	(2)	142	(1)	304	(3)
Total	\$ 76,199	\$ (448)	\$ 71,712	\$ (714)	\$ 147,911	\$ (1,162)

In the three months ended December 31, 2018 we determined that it was more likely than not we would sell a substantial portion of our available for sale securities in anticipation of satisfying our obligation on the 2019 Notes when they mature in September 2019. We recognized an unrealized loss of \$0.9 million which has been reported in interest income and other income, net in the Consolidated Statements of Operations. Accordingly, there are no unrecognized losses in this investment portfolio as of December 31, 2018.

Amortized cost and estimated fair value of investments are summarized by maturity date as follows (in thousands):

	Amortized cost	Fair value
As of December 31, 2018		
Mature in less than one year	\$ 70,811	\$ 70,811
Mature in one to three years	31,538	31,538

Total short-term investments \$102,349 \$102,349

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Notes to Consolidated Financial Statements – (Continued)

For the year ended December 31, 2018, our net and gross realized gain on sales of investments were less than \$0.1 million. For the years ended December 31, 2017 and 2016, our net realized gain on sales of investments were \$0.3 million and \$0.4 million, respectively, which were comprised of \$0.3 million and \$0.4 million in realized gains from sales of investments, respectively, partially offset by less than \$0.1 million in realized losses in both years. As of December 31 2017, net unrealized losses of \$1.1 million were included in AOCI on the accompanying Consolidated Balance Sheets. There were no net unrealized losses included in AOCI as of December 31, 2018.

Fair Value Measurements

Our fair value hierarchy is defined as follows:

Level 1: Inputs that are quoted prices in active markets for identical assets or liabilities that the reporting entity has the ability to access at the measurement date;

Level 2: Inputs that are other than quoted prices included within Level 1, that are either directly or indirectly observable for the asset or liability through correlation with market data at the measurement date for the duration of the instrument's anticipated life or by comparison to similar instruments; and

Level 3: Inputs that are unobservable or that reflect management's best estimate of what market participants would use in pricing the asset or liability at the measurement date. These include management's own judgments about market participant assumptions developed based on the best information available in the circumstances.

We utilize the market approach to measure the fair value of our fixed income securities. The market approach is a valuation technique that uses prices and other relevant information generated by market transactions involving identical or comparable assets or liabilities. The fair value of our fixed income securities is obtained using readily-available market prices from a variety of industry standard data providers, large financial institutions, and other third-party sources for the identical underlying securities. The fair value of our investments in certain money market funds is expected to maintain a Net Asset Value of \$1 per share and, as such, is priced at the expected market price.

We obtain the fair value of our Level 2 financial instruments from several third party asset managers, custodian banks, and accounting service providers. Independently, these service providers use professional pricing services to gather pricing data, which may include quoted market prices for identical or comparable instruments or inputs other than quoted prices that are observable either directly or indirectly. As part of this process, we utilized these pricing services to assist management in its pricing analysis and assessment of other-than-temporary impairment. All estimates, key assumptions, and forecasts were either provided by or reviewed by us. While we chose to utilize a third party pricing service, the impairment analysis and related valuations represent conclusions of management and not conclusions or statements of any third party.

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

Our investments and liabilities measured at fair value have been presented in accordance with the fair value hierarchy specified in ASC 820 in order of liquidity as follows (in thousands):

	As of December 31, 2018				As of December 31, 2017			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Assets:								
Money market funds	\$28,715	\$—	\$—	\$28,715	\$9,897	\$—	\$—	\$9,897
U.S. Government and sponsored entities	28,885	21,444	—	50,329	33,261	25,903	—	59,164
Corporate debt securities	—	47,434	—	47,434	—	78,906	—	78,906
Municipal securities	—	379	—	379	—	380	—	380
Asset-backed securities	—	4,036	55	4,091	—	9,754	51	9,805
Mortgage-backed securities—residential	—	116	—	116	—	442	—	442
Total Assets	\$57,600	\$73,409	\$55	\$131,064	\$43,158	\$115,385	\$51	\$158,594
Liabilities:								
Contingent consideration, current and noncurrent	\$—	\$—	\$10,501	\$10,501	\$—	\$—	\$35,702	\$35,702
Self-insurance	—	—	840	840	—	—	902	902
Total Liabilities	\$—	\$—	\$11,341	\$11,341	\$—	\$—	\$36,604	\$36,604

Money market funds have been classified as cash equivalents on the Consolidated Balance Sheets as of December 31, 2018 and 2017, respectively.

Investments are generally classified within Level 1 or Level 2 of the fair value hierarchy because they are valued using quoted market prices or alternative pricing sources with reasonable levels of price transparency. There have been no transfers between Level 1 and 2 during the years ended December 31, 2018 and 2017.

Government agency investments and corporate debt instruments, including investments in asset-backed and mortgage-backed securities, have generally been classified as Level 2 because markets for these securities are less active or valuations for such securities utilize significant inputs which are directly or indirectly observable. We hold asset-backed securities with income payments derived from and collateralized by a specified pool of underlying assets. Asset-backed securities in the portfolio are predominantly collateralized by credit cards and auto loans.

Liabilities for Contingent Consideration

Acquisition-related liabilities for contingent consideration (i.e., earnouts) are related to the purchase business combinations of Generation Digital and Escada, acquired in 2017; Optitex and Rialco in 2016; Shuttleworth, CDM, CTI, and Reggiani in 2015; and PrintLeader Software (“PrintLeader”) in 2013.

The fair value of these earnouts is estimated to be \$10.5 and \$35.7 million as of December 31, 2018 and 2017, respectively, by applying the income approach in accordance with ASC 805-30-25-5. Key assumptions include risk-free discount rates between 0.6% and 5.0% (Monte Carlo valuation method) and discount rates between 4.7% and 6.0% (probability-adjusted method), as well as probability-adjusted revenue and earnings levels. Probability-adjusted revenue, gross margin, and earnings are significant inputs that are not observable in the market, and are therefore classified as Level 3 inputs. These contingent liabilities have been reflected in the Consolidated Balance Sheet as of December 31, 2018 as current and noncurrent liabilities of \$8.3 and \$2.2 million, respectively.

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

Changes in the fair value of the contingent consideration liability are summarized as follows (in thousands):

Fair value of contingent consideration at December 31, 2016	\$56,463
Fair value of Generation Digital contingent consideration at August 14, 2017	3,600
Fair value of Escada contingent consideration at October 1, 2017	2,049
Escrow adjustment for Reggiani acquisition	(4,711)
Changes in valuation	6,472
Payments and settlements	(30,924)
Foreign currency adjustment	2,753
Fair value of contingent consideration at December 31, 2017	\$35,702
Escrow adjustment	(200)
Changes in valuation	(21,486)
Payments and settlements	(3,193)
Foreign currency adjustment	(322)
Fair value of contingent consideration at December 31, 2018	\$10,501

The fair value of contingent consideration decreased by \$25.2 million during the year ended December 31, 2018. The primary contributors to the decrease included a reduction in the fair value of the Optitex earnout of \$20.9 million, and earnout payments of \$1.3 and \$1.1 million to Rialco and Generation Digital, respectively. The fair value of contingent consideration decreased by \$20.8 million during the year ended December 31, 2017. The \$30.9 million of earnout payments consisted of payments of \$21.5 , \$6.8, \$1.3, and \$1.2 million to Reggiani, Optitex, Rialco, and Shuttleworth, respectively. The \$6.5 million of valuation changes pertain to \$1.7 million of interest accretion on the outstanding liability, an increase in earnout performance probability of \$2.9, \$2.1, and \$0.6 million for Optitex, Rialco, and CTI respectively, partially offset by a \$1.2 million decrease in the earnout performance probability for Shuttleworth.

Since the primary inputs to the fair value measurement of the contingent consideration liability are the probability-adjusted revenue and discount rate, we reviewed the sensitivity of the fair value measurement to changes in these inputs. We assessed the probability of achieving the revenue performance targets for the contingent consideration associated with each acquisition at percentage levels between 50% and 100% as of each respective acquisition date based on an assessment of the historical performance of each acquired entity, our current expectations of future performance, and other relevant factors. A change in probability-adjusted revenue of five percentage points from the level assumed in the current valuations would result in an increase in the fair value of contingent consideration of \$0.7 million or a decrease of \$0.5 million, resulting in a corresponding adjustment to general and administrative expense. A change in the discount rate of one percentage point would result in an increase or decrease in the fair value of contingent consideration of less than \$0.1 million. The potential undiscounted amount of future contingent consideration cash payments that we could be required to make related to our business acquisitions, beyond amounts currently accrued, is \$19.3 million as of December 31, 2018.

Fair Value of Derivative Instruments

We utilize the income approach to measure the fair value of our derivative assets and liabilities. The income approach uses pricing models that rely on market observable inputs such as yield curves, currency exchange rates, and forward prices, and are therefore classified as Level 2 measurements. The notional amount of our derivative assets and liabilities was \$191.8 and \$239.4 million as of December 31, 2018 and 2017, respectively. There were no derivatives that were designated as cash flow hedges as of December 31, 2018. The fair value of our derivative assets and liabilities designated for cash flow hedge with notional amount of \$3.9 million as of December 31, 2017 was not

material.

Fair Value of Convertible Senior Notes

In September 2014, we issued \$345 million aggregate principal amount of convertible senior notes. The 2019 Notes are carried at their original issuance value, net of unamortized debt discount, and are not marked to market each period. The fair value of the 2019 Notes as of December 31, 2018 was approximately \$335 million and was considered a Level 2 fair value

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Notes to Consolidated Financial Statements – (Continued)

measurement. Fair value was estimated based upon actual quotations obtained at the end of the reporting period or the most recent date available. A substantial contributing factor to the market value of our 2019 Notes is the conversion premium.

In November 2018, we issued \$150 million aggregate principal amount of convertible senior notes. The 2023 Notes are carried at their original issuance value, net of unamortized debt discount, and are not marked to market each period. The fair value of the 2023 Notes as of December 31, 2018 was approximately \$143 million and was considered a Level 2 fair value measurement. Fair value was estimated based upon actual quotations obtained at the end of the reporting period or the most recent date available. A substantial contributing factor to the market value of our 2023 Notes is the conversion premium.

Note 9. Property and Equipment, net

Property and equipment, net, is as follows (in thousands):

	As of December	
	31,	
	2018	2017
Property and Equipment, Net		
Land, buildings, and improvements	\$50,123	\$68,404
Equipment and purchased software	93,170	93,849
Furniture and leasehold improvements	18,338	20,270
Gross	161,631	182,523
Less accumulated depreciation and amortization	(84,018)	(83,761)
Property and equipment, net	\$77,613	\$98,762

Depreciation expense was \$18.6, \$16.8, and \$14.1 million for the years ended December 31, 2018, 2017, and 2016, respectively.

Fremont, California. We entered into a 15-year lease agreement pursuant commencing on September 1, 2013 to which we leased approximately 59,000 square feet of a building located in Fremont, California next to our corporate headquarters. Minimum lease payments were \$18.5 million, net of full abatement of rent for the first three years of the lease term. During the initial lease term, we also had certain rights of first refusal to (i) lease the remaining portion of the facility and/or (ii) purchase the facility. This location contained the engineering, marketing, and administrative operations for our Fiery operating segment.

On July 27, 2018, we executed an agreement (the “Termination Agreement”) to terminate the above lease agreement dated April 19, 2013. The Termination Agreement was effective July 31, 2018. The Company moved its Fiery segment operations and personnel from the formerly leased facility into our adjacent headquarters building in July 2018. Prior to executing the Termination Agreement, the underlying lease had a remaining term of ten years and minimum noncancellable lease payments of \$16.0 million. For accounting purposes, we were considered the owner of the building and had recorded the asset at a net book value of \$13.7 million in property and equipment, net, on our Consolidated Balance Sheet prior to the termination. As of July 31, 2018, we had derecognized the lease asset and removed the corresponding liability of \$14.5 million, which represented the present value of the lease obligation. The Termination Agreement required us to pay total penalties of \$0.8 million. The net loss from this lease termination of \$0.1 million was charged to restructuring expense during the year ended December 31, 2018.

Prior to the termination date, the monthly lease payments were allocated between the land element of the lease, which was accounted for as an operating lease, and the imputed financing obligation. The imputed financing obligation was being amortized in accordance with the effective interest method.

Eagan, Minnesota. In 2016, management approved a plan to sell approximately 5.6 acres and the office building located at 1340 Corporate Center Curve, Eagan, Minnesota, consisting of 43,682 square feet, and the related improvements were classified as assets held-for-sale. On April 13, 2017, we entered into an agreement under which we agreed to sell the office building, improvements, and related land, subject to completion of a 150-day due diligence period, which expired on September 7, 2017 without the transaction closing. Accordingly, assets previously recorded as assets held-for-sale of \$3.8 million, which consisted of \$2.9 million net book value of the facility and \$0.9 million of related land as of December 31,

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

2016, have been classified as assets held for use within property and equipment, net, in our Consolidated Balance Sheets as of December 31, 2018 and 2017.

Manchester, New Hampshire. On August 26, 2016, we entered into a lease agreement and have accounted for a lease term of 48.5 years, inclusive of two renewal options of 5.0 and 3.5 years, with the City of Manchester, NH to lease 16.9 acres adjacent to the Manchester Regional Airport. The land is subleased to MUFG during the term of the lease related to the manufacturing facility that was constructed on the site, which is described below. Minimum lease payments are \$13.3 million during the entire 48.5-year term of the land lease, excluding six months of the land lease that were financed into the manufacturing facility lease.

On August 26, 2016, we entered into a six-year lease with MUFG whereby a 225,000-square foot manufacturing and warehouse facility was constructed for our Industrial Inkjet operating segment at a cost of \$39.8 million. Construction was completed in April 2018. Minimum lease payments during the initial six-year term are \$1.8 million. Upon completion of the initial six-year term, we have the option to renew the lease, purchase the facility, or return the facility to MUFG subject to an 89% residual value guarantee under which we would recognize additional rent expense in the form of a variable rent payment. We have assessed our exposure in relation to the residual value guarantee and believe that there is no deficiency to the guaranteed value as of December 31, 2018. During the construction period, we were required to maintain restricted cash equivalents or restricted investments equal to the amount expended to date on the construction of the building as collateral. The funds were deposited with a third-party trustee and were restricted during the construction period. Upon completion of construction, \$39.8 million was deposited with MUFG and is restricted as collateral until the end of the underlying building lease period.

Meredith, New Hampshire. During the fourth quarter of 2017, our management approved a plan to sell approximately 31.5 acres of land and two manufacturing buildings located at One Vutek Place and 189 Waukegan Street, Meredith, New Hampshire, consisting of 163,000 total square feet. These assets, which were previously recorded within property and equipment, net at a net book value of \$5.1 million, were reclassified as assets held-for-sale upon the approval of the plan. We recognized an impairment charge of \$0.9 million in the fourth quarter of 2017, and reported the assets at \$4.2 million on our Consolidated Balance Sheet as of December 31, 2017. During the three months ended September 30, 2018, we sold the 189 Waukegan Street land and building for net proceeds of \$1.1 million and recognized a gain of \$0.1 million. During the fourth quarter of 2018, we recognized an additional impairment charge of \$0.3 million on the One Vutek Place property. The current carrying value of \$2.8 million is classified as assets held-for-sale on the Consolidated Balance Sheet as of December 31, 2018.

Note 10. Goodwill and Long-Lived Intangible Assets

Purchased Intangible Assets

Our purchased intangible assets are as follows (in thousands, except for weighted average useful life):

As of December 31, 2018			As of December 31, 2017			
Weighted average original useful (in years)	Gross carrying amount	Accumulated amortization	Weighted average remaining useful life (in (in years)	Net carrying amount	Gross carrying amount	Accumulated amortization carrying amount

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				years)				
Goodwill	—	\$390,109	\$—	—	\$390,109	\$403,278	\$—	\$403,278
Customer relationships and other	5.9	\$79,558	\$(47,224)	3.1	\$32,334	\$95,862	\$(45,862)	\$50,000
Existing technology	4.0	189,737	(164,814)	1.0	24,923	196,693	(149,300)	47,393
Trademarks and trade names	10.9	70,326	(53,250)	4.7	17,076	72,048	(46,822)	25,226
IPR&D	0	389	—	0	389	389	—	389
Amortizable intangible assets	5.9	\$340,010	\$(265,288)	2.8	\$74,722	\$364,992	\$(241,984)	\$123,008

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Notes to Consolidated Financial Statements – (Continued)

Acquired customer relationships, existing technology, and trademarks and trade names are amortized over their estimated useful lives of 1 to 16 years using the straight-line method, which approximates the pattern in which the economic benefits of the identified intangible assets are realized. There was no change in useful life of intangible assets during the year ended December 31, 2018. During the years ended December 31, 2017 and 2016, the remaining useful lives of certain amortizable intangible assets were reduced based on re-assessment, resulted in a \$0.2 million and \$1.6 million increase in amortization expense, respectively. Aggregate amortization expense was \$45.3, \$47.3, and \$39.6 million during the years ended December 31, 2018, 2017, and 2016, respectively.

IPR&D is subject to amortization after product completion over the estimated product life or otherwise assessed for impairment in accordance with acquisition accounting guidance. There were no impairments of IPR&D recognized during the years ended December 31, 2018, 2017, or 2016.

Future estimated amortization expense on identified intangible assets as of December 31, 2018 is as follows (in thousands):

Fiscal Year	Future amortization expense
2019	\$ 34,782
2020	15,948
2021	7,721
2022	5,756
2023	2,863
Thereafter	7,652
Total	\$ 74,722

Goodwill Rollforward

The goodwill rollforward for the years ended December 31, 2018 and 2017 is as follows (in thousands):

	Industrial Inkjet	Productivity Software	Fiery	Total
As of December 31, 2016	\$ 141,068	\$ 155,475	\$ 63,298	\$ 359,841
Additions (FFPS, Generation Digital, CRC, and Escada acquisitions)	—	11,632	9,602	21,234
Opening balance sheet adjustments	—	10	679	689
Foreign currency adjustments	13,305	7,527	682	21,514
As of December 31, 2017	154,373	174,644	74,261	403,278
Foreign currency adjustments	(6,441)	(6,458)	(270)	(13,169)
As of December 31, 2018	\$ 147,932	\$ 168,186	\$ 73,991	\$ 390,109
Accumulated impairment as of December 31, 2018, recognized in 2008	\$ 103,991	\$ —	\$ —	\$ 103,991

Goodwill Assessment

As further described in Note 1 – The Company and Summary of Significant Accounting Policies, ASU 2011-08, Intangibles – Goodwill and Other (ASC 350): Testing Goodwill for Impairment, requires that a good will impairment test be performed at least annually and whenever there are indications of potential impairment.

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Notes to Consolidated Financial Statements – (Continued)

Our goodwill valuation analysis is based on our respective goodwill reporting units (Industrial Inkjet, Productivity Software, and Fiery), which are consistent with our operating segments identified in Note 3 – Segment, Geographic, and Major Customer Information of Notes to Consolidated Financial Statements. We determined the fair value of our reporting units as of December 31, 2018 by equally weighting the market and income approaches. Under the market approach, we estimated fair value based on market multiples of revenue or earnings of comparable companies. Under the income approach, we estimated fair value based on a projected cash flow method using a discount rate determined by our management to be commensurate with the risk inherent in our current business model. Based on our valuation results, we have determined that the fair values of our Industrial Inkjet, Productivity Software, and Fiery reporting units exceed their carrying values as of December 31, 2018, by \$95.0, \$49.0 and \$362.0 million, respectively, or 22%, 28%, and 331%, respectively.

To identify suitable comparable companies under the market approach, consideration was given to the financial condition and operating performance of the reporting unit being evaluated relative to companies operating in the same or similar businesses, potentially subject to corresponding economic, environmental, and political factors and considered to be reasonable investment alternatives. Consideration was given to the investment characteristics of the subject companies relative to those of similar publicly traded companies (i.e., guideline companies), which are actively traded. In applying the Public Company Market Multiple Method, valuation multiples were derived from historical and projected operating data of guideline companies and applied to the appropriate operating data of our reporting units to arrive at an indication of fair value. Six suitable guideline companies were identified for the Industrial Inkjet, reporting unit. Seven suitable guideline companies were identified for the Productivity Software and Fiery reporting units, respectively.

As part of this process, we engaged a third party valuation firm to assist management in its analysis. All estimates, key assumptions, and forecasts were either provided by or reviewed by us. While we chose to utilize a third party valuation firm, the impairment analysis and related valuations represent the conclusions of management and not the conclusions or statements of any third party.

The income approach requires that we project future revenues, earnings, and cash flows and discount them to their present value. Such an approach involves numerous assumptions and predictions about future performance. Despite ongoing economic uncertainty, our reporting units' revenue is assumed to grow at historical normalized rates between 2019 and 2024 for the following primary reasons:

Our Industrial Inkjet segment is positioned to outpace the market with the successful introductions of several new products, including the Nozomi corrugated packaging printer platform, the VUTEk h3 and h5 & the BOLT textile printing platform expected to launch in 2019. Additional new product introductions are expected through the forecast horizon.

Our acquisition of Rialco in 2016 will contribute to the achievement of historical normalized Industrial Inkjet revenue growth rates through the forecast horizon.

Our acquisitions of Escada and CRC in 2017 and Optitex in 2016 will contribute to the achievement historical normalized Productivity Software revenue growth rates through the forecast horizon.

Other assumptions include:

Long-term industry growth rates.

Gross profit percentages will approximate historical average levels.

Our discounted cash flow projections are twelve-year financial forecasts, which were based on annual financial forecasts developed internally by management for use in managing our business and through discussions with the

valuation firm engaged by us. The significant assumptions utilized in these twelve-year financial forecasts included consolidated annual revenue growth rates ranging from 4% to 9% which equates to a consolidated compound annual growth rate of 8%. The upper end of the range exceeds our historical normalized growth rates due to the factors described above. Future cash flows were discounted to present value using a mid-year convention and a consolidated discount rate of 11.9%. Terminal values were calculated using the Gordon growth methodology with a consolidated long-term growth rate of 4% for Industrial Inkjet and Productivity Software and 2.5% for Fiery. The sum of the fair values of the Industrial Inkjet, Productivity Software, and Fiery reporting units was reconciled to our current market capitalization (based on our stock price) plus an estimated control premium. Percentages of revenue growth over the forecast horizon were compared to approximate percentages realized by the guideline companies. To assess the reasonableness of the estimated control premium we examined the most similar transactions in relevant industries and determined the average premium indicated by the transactions deemed to be most

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similar to a hypothetical transaction involving our reporting units. We examined the weighted average and median control premiums offered in relevant industries, industry specific control premiums, and specific transaction control premiums, as well as considering the historical and current price of our common stock, to conclude that our estimated control premium is reasonable.

We assess the impairment of identifiable intangibles and long-lived assets annually and whenever events or changes in circumstances indicate the carrying value may not be recoverable or the life of the asset may need to be revised. We recognized no impairments of identifiable intangibles during the three years ended December 31, 2018.

Given the uncertainty of the economic environment and the potential impact on our business, there can be no assurance that our estimates and assumptions used in the evaluation of goodwill and identified intangible assets for impairment as of December 31, 2018 will prove to be accurate predictions of the future. If our assumptions regarding forecasted revenue or gross profit rates are not achieved, we may be required to record additional goodwill impairment charges in future periods relating to any of our reporting units, whether in connection with the next annual impairment testing in the fourth quarter of 2019 or prior to that, if any such change constitutes an interim triggering event. It is not possible to determine if any such future impairment charge would result or, if it does, whether such charge would be material.

Long-Lived Assets

We evaluate potential impairment with respect to long-lived assets whenever events or changes in circumstances indicate their carrying amount may not be recoverable. An asset is considered impaired if its carrying amount exceeds the undiscounted future cash flows the asset is expected to generate. An impairment loss is recorded for long-lived assets held-for-sale when the carrying amount of the asset exceeds its fair value less cost to sell. A long-lived asset is not depreciated while it is classified as held-for-sale.

We recorded total impairment losses of \$0.5 million during the year ended December 31, 2018 related to the reassessment of the One Vutek Building in Meredith, NH, which is classified as held-for-sale on the Consolidated Balance Sheets, and other long-lived assets. We recognized an impairment loss of \$0.9 million during the year ended December 31, 2017 on the properties in Meredith, NH. Please refer to Note 9 – Property and Equipment, net, for additional information. There were no asset impairment charges recognized during the year ended December 31, 2016.

Note 11. Derivatives and Hedging

We are exposed to market risk and foreign currency exchange risk from changes in foreign currency exchange rates, which could affect operating results, financial position, and cash flows. We manage our exposure to these risks through our regular operating and financing activities and, when appropriate, through the use of derivative financial instruments. These derivative financial instruments are used to hedge monetary assets and liabilities, intercompany balances, and trade receivables, and to reduce earnings and cash flow volatility resulting from shifts in foreign currency exchange rates. Our objective is to offset gains and losses resulting from these exposures with losses and gains on the derivative contracts used to hedge them, thereby reducing volatility of earnings or protecting fair values of assets and liabilities. We do not have any leveraged derivatives, nor do we use derivative contracts for speculative purposes. ASC 815 requires the fair value of all derivative instruments, including those embedded in other contracts, be recorded as assets or liabilities in our Consolidated Balance Sheet. The related cash flow impacts of our derivative contracts are reflected as cash flows from operating activities.

Our exposures are primarily related to non-U.S. dollar-denominated revenue in Europe, the U.K., China, Israel, and Australia, and to non-U.S. dollar-denominated operating expenses in Europe, India, Japan, the U.K., China, Israel, and Australia. From time to time we have hedged our operating expense cash flow exposure in Indian rupees. We hedge balance sheet remeasurement exposure associated primarily with Australian dollar, British pound sterling, Israeli shekel, Japanese yen, Chinese renminbi, and Euro-denominated intercompany balances, trade receivables, and other net monetary assets.

By their nature, derivative instruments involve, to varying degrees, elements of market and credit risk. The market risk associated with these instruments resulting from currency exchange movement is expected to offset the market risk of the underlying transactions, assets, and liabilities being hedged. Under our master netting agreements with our foreign currency derivative counter parties, we are allowed to net transactions of the same currency with a single net amount payable by one

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party to the other. The derivatives held by us are not subject to any credit contingent features negotiated with these counter parties. We are not required to pledge cash collateral related to these foreign currency derivatives because, by policy, we deal with counter parties having a minimum investment grade or better credit rating. Credit risk is managed through the continuous monitoring of exposures to such counter parties.

Cash Flow Hedges

We did not have any foreign currency derivative contracts designated as cash flow hedges as of December 31, 2018. Our foreign currency derivative contracts with a notional amount of \$3.9 million and net asset or liability amounts that were immaterial had been designated as cash flow hedges of our Indian rupee operating expense exposure as of December 31, 2017. The changes in fair value of these contracts are reported as a component of AOCI and reclassified to operating expense in the periods of payment of the hedged operating expenses. Any ineffective portion of the derivative hedging gain or loss, as well as changes in the derivative time value (which is excluded from the assessment of hedge effectiveness), are recognized as a component of interest income and other income (expense), net.

Balance Sheet Hedges

Forward contracts not designated for hedge accounting treatment with notional amounts of \$191.8 and \$235.5 million as of December 31, 2018 and 2017, respectively, are used to hedge foreign currency balance sheet exposures. They are not designated for hedge accounting treatment since there is a natural offset for the remeasurement of the underlying foreign currency denominated asset or liability. We recognize changes in the fair value of non-designated derivative instruments in earnings in the period of change. Gains and losses on foreign currency forward contracts used to hedge balance sheet exposures are recognized in interest income and other income (expense), net, in the same period as the remeasurement gain or loss of the related foreign currency denominated assets and liabilities. Forward contracts not designated for hedge accounting treatment consist of hedges of British pound sterling, Israeli shekel, Japanese yen, Chinese renminbi, Australian dollar, and Euro-denominated intercompany balances with notional amounts of \$99.2 and \$144.5 million as of December 31, 2018 and 2017, respectively, hedges of British pound sterling, Australian dollar, Israeli shekel, and Euro-denominated trade receivables with notional amounts of \$52.2 and \$44.4 million as of December 31, 2018 and 2017, respectively, and hedges of British pounds sterling, Israeli shekel, and Euro-denominated other net monetary assets with notional amounts of \$40.4 and \$46.6 million as of December 31, 2018 and 2017, respectively.

Note 12. Debt

2.25% Convertible Senior Notes Due 2023

In November 2018, we issued \$150.0 million aggregate principal amount of 2.25% convertible senior notes due 2023 in a private placement pursuant to Rule 144A of the Securities Act of 1933, as amended. Of the \$145.4 million total net proceeds, we used \$40.0 million for concurrent stock repurchases. The 2023 Notes are senior unsecured obligations and were issued at par with interest payable semiannually in arrears on May 15 and November 15 of each year, commencing May 15, 2019. The 2023 Notes will mature on November 15, 2023. The initial conversion rate is 28.0128 shares of common stock per \$1,000 principal amount of the 2023 Notes, which is equivalent to an initial conversion price of approximately \$35.70 per share of common stock. Upon conversion of the 2023 Notes, holders will receive cash, shares of common stock or a combination thereof, at our election. Our intent is to settle the principal

amount of the 2023 Notes in cash upon conversion. If the conversion value exceeds the principal amount, we intend to deliver shares of our common stock for our conversion obligation in excess of the aggregate principal amount. As of December 31, 2018, none of the conditions allowing holders of the 2023 Notes to convert had been met.

The 2023 Notes are not redeemable prior to November 22, 2021. We may redeem for cash all or any portion of the notes, at our option, on or after November 22, 2021 if the last reported sale price of our common stock has been at least 130% of the conversion price then in effect for at least 20 trading days (whether or not consecutive) during any 30 consecutive trading day period (including the last trading day of such period) ending on, and including, the trading day immediately preceding the date on which we provide a redemption notice at a redemption price equal to 100% of the principal amount of the notes to be redeemed, plus accrued and unpaid interest to, but excluding, the redemption date.

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If we undergo a “fundamental change,” as defined in the indenture governing the 2023 Notes, subject to certain conditions, holders may require us to repurchase for cash all or any portion of their 2023 Notes. The fundamental change repurchase price will be 100% of the principal amount of the 2023 Notes to be repurchased, plus any accrued and unpaid interest up to, but excluding, the fundamental change repurchase date.

Throughout the term of the 2023 Notes, the conversion rate may be adjusted upon the occurrence of certain events. Holders of the 2023 Notes will not receive any cash payment representing accrued and unpaid interest upon conversion. Holders may convert their 2023 Notes only under the following circumstances:

if the last reported sale price of our common stock for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on the last trading day of the immediately preceding calendar quarter is greater than or equal to 130% of the conversion price on each applicable trading day;

during the five business day period after any five consecutive trading day period (“Notes Measurement Period”) in which the trading price per \$1,000 principal amount of notes for each trading day of the Note Measurement Period was less than 98% of the product of the last reported sale price of our common stock and the conversion rate on each such trading day;

if we call any or all of the notes for redemption at any time prior to the close of business on the scheduled trading day immediately preceding the redemption date;

upon the occurrence of specified corporate events;

on or after May 15, 2023 until the close of business on the second scheduled trading day immediately preceding the maturity date, holders may convert their notes at any time, regardless of the foregoing circumstances.

We separated the 2023 Notes into liability and equity components. The carrying amount of the liability component was calculated by measuring the estimated fair value of a similar liability that does not have an associated convertible feature. The carrying amount of the equity component representing the conversion option was determined by deducting the fair value of the liability component from the face value of the 2023 Notes as a whole. The excess of the principal amount of the liability component over its carrying amount (“debt discount”) is amortized as interest expense over the term of the 2023 Notes using the effective interest method with an effective interest rate of 6.75% per annum (7.36% inclusive of debt issuance costs). The equity component is not remeasured as long as it continues to meet the conditions for equity classification.

We allocated the total transaction costs incurred in the issuance of the 2023 Notes to the liability and equity components based on their relative values. Issuance costs of \$3.7 million attributable to the \$122.0 million liability component are being amortized to expense over the term of the Notes, and issuance costs of \$0.9 million attributable to the \$28.0 million equity component were offset against the equity component in stockholders’ equity. Additionally, we recorded a deferred tax liability of \$6.6 million on the debt discount, which is not deductible for tax purposes.

0.75% Convertible Senior Notes Due 2019

In September 2014, we completed a private placement of \$345.0 million principal amount of 0.75% convertible senior notes due 2019 in a private placement pursuant to Rule 144A under the Securities Act of 1933, as amended. The net proceeds from this offering were \$336.3 million, after deducting the initial purchasers’ commissions and the offering expenses. We used \$29.4 million of the net proceeds to purchase the Note Hedges and the Warrant transactions described below.

The 2019 Notes are senior unsecured obligations with interest payable semiannually in arrears on March 1 and September 1 of each year, commencing March 1, 2015. The Notes are not callable and will mature on September 1, 2019, unless previously purchased or converted in accordance with their terms prior to such date. Holders of the 2019 Notes who convert in connection with a “fundamental change,” as defined in the indenture governing the 2019 Notes (“2019 Indenture”), may require us to purchase for cash all or any portion of their Notes at a purchase price equal to 100 percent of the principal amount of the 2019 Notes to be repurchased, plus accrued and unpaid interest, if any.

The initial conversion rate is 18.9667 shares of common stock per \$1,000 principal amount of the 2019 Notes, which is equivalent to an initial conversion price of approximately \$52.72 per share of common stock. Upon conversion of the Notes, holders will receive cash, shares of common stock or a combination thereof, at our election. Our intent is to settle the principal amount of the 2019 Notes in cash upon conversion. If the conversion value exceeds the principal amount, we intend

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to deliver shares of our common stock for our conversion obligation in excess of the aggregate principal amount. As of December 31, 2018, none of the conditions allowing holders of the 2019 Notes to convert had been met.

Throughout the term of the 2019 Notes, the conversion rate may be adjusted upon the occurrence of certain events. Holders of the 2019 Notes will not receive any cash payment representing accrued and unpaid interest upon conversion. Holders may convert their 2019 Notes only under the following circumstances:

if the last reported sale price of our common stock for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on the last trading day of the immediately preceding calendar quarter is greater than or equal to 130% of the conversion price on each applicable trading day;
during the Notes Measurement Period in which the “trading price” (as the term is defined in the 2019 Indenture) per \$1,000 principal amount of notes for each trading day of such Notes Measurement Period was less than 98% of the product of the last reported stock price on such trading day and the conversion rate on each such trading day;
upon the occurrence of specified corporate events; or
at any time on or after March 1, 2019 until the close of business on the second scheduled trading day immediately preceding the maturity date.

We separated the 2019 Notes into liability and equity components. The carrying amount of the liability component was calculated by measuring the estimated fair value of a similar liability that does not have an associated convertible feature. The carrying amount of the equity component representing the conversion option was determined by deducting the fair value of the liability component from the face value of the 2019 Notes as a whole. The debt discount is amortized as interest expense over the term of the 2019 Notes using the effective interest method with an effective interest rate of 4.98% per annum (5.46% inclusive of debt issuance costs). The equity component is not remeasured as long as it continues to meet the conditions for equity classification.

We allocated the total transaction costs incurred in the issuance of the 2019 Notes to the liability and equity components based on their relative values. Issuance costs of \$7.0 million attributable to the \$281.4 million liability component are being amortized to expense over the term of the 2019 Notes, and issuance costs of \$1.6 million attributable to the \$63.6 million equity component were offset against the equity component in stockholders’ equity. Additionally, we recorded a deferred tax liability of \$23.7 million on the debt discount, which is not deductible for tax purposes.

Our Notes are summarized as follows (in thousands):

	As of December 31, 2018
2023 Notes	
Principal amount	\$ 150,000
Debt discount, net of amortization	(27,653)
Debt issuance costs, net of amortization	(3,659)
Liability component	\$ 118,688
Equity component	\$ 28,045
Less: debt issuance costs allocated to equity	(853)
Tax effects	(6,619)

Equity component, net	\$20,573
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Notes to Consolidated Financial Statements – (Continued)

	As of December 31,	
	2018	2017
2019 Notes		
Principal amount	\$345,000	\$345,000
Debt discount, net of amortization	(9,366)	(23,178)
Debt issuance costs, net of amortization	(1,360)	(2,865)
Liability component	\$334,274	\$318,957
Equity component	\$63,643	\$63,643
Less: debt issuance costs allocated to equity	(1,582)	(1,582)
Greenshoe option value	568	568
Tax effects	485	485
Equity component, net	\$63,114	\$63,114

Interest expense recognized related to the Notes was as follows (in thousands):

	Year Ended December 31,
2023 Notes	2018
2.25% Coupon	\$ 281
Amortization of debt issuance costs	52
Amortization of debt discount	392
Interest expense on 2023 Notes	\$ 725

	Year Ended December 31,		
	2018	2017	2016
2019 Notes			
0.75% coupon	\$2,595	\$2,580	\$2,588
Amortization of debt issuance costs	1,505	1,536	1,350
Amortization of debt discount	13,812	12,937	12,400
Interest expense on 2019 Notes	\$17,912	\$17,053	\$16,338

Note Hedges

We paid an aggregate of \$63.9 million for our 2019 Note Hedges in September 2014. The 2019 Note Hedges will expire upon maturity of the 2019 Notes. The 2019 Note Hedges are intended to offset the potential dilution upon conversion and/or offset any cash payments we are required to make in excess of the principal amount upon conversion of the Notes in the event that the market value per share of our common stock, as measured under the terms of the 2019 Note Hedges, is greater than the strike price of the 2019 Note Hedges. The strike price of the 2019 Note Hedges initially corresponds to the conversion price of the 2019 Notes and is subject to anti-dilution adjustments substantially similar to those applicable to the conversion price of the 2019 Notes. The Note 2019 Hedges are separate transactions and are not part of the 2019 Notes. Holders of the 2019 Notes will not have any rights with respect to the Note Hedges.

Warrants

Concurrently with entering into the 2019 Note Hedges, we separately entered into warrant transactions (“Warrants”), whereby we sold warrants to acquire shares of our common stock at a strike price of \$68.86 per share. We received aggregate proceeds of \$34.5 million from the sale of the Warrants. If the average market value per share of our common stock for the reporting period, as measured under the Warrants, exceeds the strike price of the Warrants, the Warrants will have a dilutive effect on our earnings per share. The Warrants will expire in December 2019 and are separate transactions that are not part of

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the 2019 Notes or the 2019 Note Hedges and are accounted for as a component of additional paid-in capital. Holders of the Notes and Note Hedges will not have any rights with respect to the Warrants.

Revolving Credit Agreement

On January 2, 2019, we entered into a 5-year \$150 million revolving credit agreement with an option for an additional \$50 million, subject to certain requirements. Interest is variable with a premium applied to an index rate. The amount of the premium varies based on our net leverage ratio. Interest is due monthly on any borrowings, and a commitment fee is assessed on the portion of the facility that is not utilized. This credit facility is secured by substantially all of our domestic assets and the pledge of 65% of the stock of our foreign subsidiaries. The agreement contains various affirmative and negative covenants, as well as three financial covenants based on leverage and interest coverage ratios.

The issuance cost of \$0.8 million incurred on this facility will be recorded in other long-term assets and will be amortized on a straight-line basis over the 5-year term of this agreement. There were no initial borrowings made under the facility at closing.

Note 13. Commitments and Contingencies

Contingent Consideration

We are required to make payments to the former stockholders of acquired companies based on the achievement of specified performance targets as more fully explained in Note 8 – Fair Value Measurements.

Purchase Commitments

We subcontract with other companies to manufacture certain of our products. During the normal course of business, our subcontractors procure components based on orders placed by us. If we cancel all or part of our orders, we may still be liable to the subcontractors for the cost of the components they purchased to manufacture our products. We periodically review the potential liability compared to the adequacy of the related allowance. The amount of potential liability was not material as of December 31, 2018 or 2017.

Lease Commitments

As of December 31, 2018, we lease certain of our current facilities and vehicles under noncancellable operating lease agreements. We are required to pay property taxes, insurance, and nominal maintenance costs for certain of these facilities and vehicles and any increases over the base year of these expenses on the remainder of our facilities and vehicle leases.

Future minimum lease payments under noncancellable operating leases, including build-to-suit leases, and future minimum sublease receipts, for each of the next five years and thereafter as of December 31, 2018 are as follows (in thousands):

Fiscal Year	Future Minimum Lease Payments	Future Minimum Sublease Receipts
2019	\$ 6,559	\$ 351
2020	6,216	60
2021	4,355	—

2022	2,582	—
2023	1,423	—
Thereafter	24,180	—
Total	\$ 45,315	\$ 411

Facilities rent expense was \$8.4, \$8.1, and \$8.8 million for the years ended December 31, 2018, 2017, and 2016, respectively. Vehicle rent expense was \$3.1, \$2.8, and \$2.8 million for the years ended December 31, 2018, 2017, and 2016, respectively.

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Notes to Consolidated Financial Statements – (Continued)

Guarantees and Product Warranties

Our Industrial Inkjet printers are generally accompanied by a 13-month limited warranty, commencing on the installation date, which covers both parts and labor. Our Fiery DFE products limited warranty is generally 12 to 15 months. In accordance with ASC 450-30, an accrual is established when the warranty liability is estimable and probable based on historical experience. A provision for the estimated warranty costs relating to products that have been sold is recorded in cost of revenue upon recognition of revenue and the resulting accrual is reviewed regularly and periodically adjusted to reflect changes in warranty estimates. We have agreed to continue to provide warranty coverage for certain expired FFPS warranties for five years subsequent to the acquisition of the FFPS business.

The changes in product warranty reserve were as follows (in thousands):

	Year Ended	
	December 31,	
	2018	2017
Balance at January 1,	\$16,335	\$10,319
Liability assumed upon acquiring FFPS	—	10,362
Provisions, net of releases	10,548	13,487
Settlements	(14,109)	(17,833)
Balance at December 31,	\$12,774	\$16,335

Indemnifications

In the normal course of business and in an effort to facilitate the sales of our products, we sometimes indemnify other parties, including customers, lessors, and others. When we indemnify these parties, typically those provisions protect other parties against losses arising from our infringement of third party intellectual property rights or other claims made by third parties arising from the use or distribution of our products. Those provisions often contain various limitations including limits on the amount of protection provided.

As permitted under Delaware law, pursuant to our bylaws, charter, and indemnification agreements with our current and former executive officers, directors, and general counsel, we are required, subject to certain limited qualifications, to indemnify our executive officers, directors, and general counsel for certain events or occurrences while the executive officer, director, or general counsel is or was serving at our request in such capacity. The indemnification period covers all pertinent events and occurrences during the executive officer's, director's, or general counsel's lifetime. The maximum potential future payments we may be obligated to make under these indemnification agreements is unlimited; however, we have director and officer insurance coverage that limits our exposure and may enable us to recover a portion of any future amounts paid.

Legal Proceedings

We may be involved, from time to time, in a variety of claims, lawsuits, investigations, or proceedings relating to contractual disputes, securities laws, intellectual property rights, employment, or other matters that may arise in the normal course of business. We assess our potential liability in each of these matters by using the information available to us. We develop our views on estimated losses in consultation with inside and outside counsel, which involves a subjective analysis of potential results and various combinations of appropriate litigation and settlement strategies. We accrue estimated losses from contingencies if a loss is deemed probable and can be reasonably estimated.

As of December 31, 2018, we are subject to the matters discussed below.

MDG Matter

EFI acquired Matan in 2015 from sellers (the “2015 Sellers”) that acquired MDG from other sellers in 2001 (the “2001 Sellers”). The 2001 Sellers have asserted a claim against the 2015 Sellers and Matan asserting that they are entitled to a portion of the 2015 Sellers’ proceeds from EFI’s acquisition. The 2015 Sellers dispute any such claim and have fully indemnified EFI against the 2001 Sellers’ claim.

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Although we are fully indemnified and we do not believe that it is probable that we will incur a loss, it is reasonably possible that we could incur a material loss in this matter. We estimate the range of loss to be between one dollar and \$10.1 million. If we incur a loss in this matter, it will be offset by a receivable of an equal amount representing a claim for indemnification against the escrow account established in connection with the Matan acquisition.

Purported Class Action Lawsuit

In August 2017, a putative class action was filed against the Company and its two named executive officers in the United States District Court for the District of New Jersey, captioned Pipitone v. Electronics For Imaging, Inc., No. 2:17-cv-05992 (D.N.J.) and a first amended complaint was filed in February 2018. The complaint alleged, among other things, that statements by the Company and its officers about the Company's financial reporting, revenue recognition, internal controls, and disclosure controls and procedures were false or misleading. The complaint sought an unspecified amount of damages, interest, attorneys' fees, and other costs, on behalf of a putative class of individuals and entities that purchased or otherwise acquired EFI securities from February 22, 2017 through August 3, 2017. On January 31, 2019, the district court dismissed the complaint without prejudice, giving the plaintiffs thirty days to file a second amended complaint that addresses the deficiencies identified in the court's order.

At this time, we do not believe it is probable that we will incur a material loss in this matter. However, it is reasonably possible that our financial statements could be materially affected by an unfavorable resolution of this matter. Because there is no operative complaint on file as of the date of this filing, we are not in a position to estimate the amount or range of reasonably possible loss that may be incurred.

Shareholder Derivative Lawsuit

In August 2017, a shareholder derivative complaint was filed in the Superior Court of the State of California for the County of Alameda captioned Schiffmiller v. Gecht, No. RG17873197. A First Amended Complaint was filed in April 2018. The complaint makes claims derivatively and on behalf of the Company as nominal defendant against the Company's named executive officers and directors for alleged breaches of fiduciary duties and unjust enrichment, and alleges, among other things, that statements by the Company and its officers about the Company's financial reporting, revenue recognition, internal controls, and disclosure controls and procedures were false or misleading. The complaint alleges the Company has suffered damage as a result of the individual defendants' alleged actions, and seeks an unspecified amount of damages, restitution, and declaratory and other relief. The derivative action has been stayed pending the resolution of the Pipitone class action described above.

At this time, we do not believe it is probable that we will incur a material loss in this matter. However, it is reasonably possible that our financial statements could be materially affected by an unfavorable resolution of this matter. Because this matter has been stayed pending resolution of the Pipitone class action described above, we are not yet in a position to estimate the amount or range of reasonably possible loss that may be incurred.

Other Matters

As of December 31, 2018, we were subject to various other claims, lawsuits, investigations, and proceedings in addition to the matters discussed above. There is at least a reasonable possibility that additional losses may be incurred in excess of the amounts that we have accrued. However, we believe that these claims are not material to our financial statements or the range of reasonably possible losses is not reasonably estimable. Litigation is inherently unpredictable, and while we believe that we have valid defenses with respect to legal matters pending against us, our financial statements could be materially affected in any particular period by the unfavorable resolution of one or more of these contingencies or because of the diversion of management's attention and the incurrence of significant

expenses.

Note 14. Stock Repurchase Program

In September 2017, the board of directors approved \$125.0 million for our share repurchase program in addition to the \$150.0 million previously authorized in November 2015. At that time, \$28.8 million remained available for repurchase under the 2015 authorization. The 2017 authorization thereby increased the remaining repurchase authorization to \$153.8 million. This authorization commenced on the date of approval and expired December 31, 2018. Under this publicly announced plan, we repurchased 3,726,042 and 2,363,988 shares for an aggregate purchase price of \$109.4 and \$91.4 million during the years

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Notes to Consolidated Financial Statements – (Continued)

ended December 31, 2018 and 2017, respectively. As of December 31, 2018, we have completed the \$275 million authorized stock repurchase program.

Our employees have the option to surrender shares of common stock to satisfy their tax withholding obligations that arise on the vesting of RSUs and the exercise of stock options. During the years ended December 31, 2018 and 2017, our employees surrendered 131,008 and 249,363 shares for an aggregate purchase price of \$4.1 and \$10.5 million, respectively.

Note 15. Stock-based Compensation and Other Employee Benefits

Equity Incentive Plans

As of December 31, 2018, we had outstanding equity awards under our 2017 Equity Incentive Plan and our 2009 Stock Plan. No awards may be granted under our 2009 Stock Plan after June 7, 2017. Our primary equity incentive plans are summarized as follows:

2017 Equity Incentive Plan

Our stockholders approved the 2017 Equity Incentive Plan (“2017 Plan”) on June 7, 2017, which includes:

• 1,200,000 shares of our common stock reserved for issuance pursuant to such plan;
• 1,593,660 common stock shares that were available for future grants under the 2009 Equity Incentive Award Plan (“Prior Plan”) immediately prior to termination of authority to grant new awards under the Prior Plan on June 7, 2017;
• shares subject to stock options granted under the Prior Plan and outstanding as of June 7, 2017, which expire, or for any reason are canceled or terminated, after that date without being exercised; and
• shares subject to restricted stock unit awards granted under the 2009 Plan that are outstanding and unvested as of June 7, 2017 which are forfeited, terminated, canceled, or otherwise reacquired after that date without having become vested.

The 2017 Plan provides for grants of stock options (both incentive and non-qualified stock options), restricted stock, stock units, stock bonuses, performance stock, stock appreciation rights, performance stock units, phantom stock, dividend equivalent rights or cash awards. Options and awards generally vest over a period of one to four years from the date of grant and generally expire seven to ten years from the date of the grant. The terms of the 2017 Plan provide that an option price shall not be less than 100% of fair value on the date of the grant. Our board of directors may grant a stock bonus or stock unit award under the 2017 Plan in lieu of all or a portion of any cash bonus that a participant would have otherwise received for the related performance period.

The shares of common stock covered by the 2017 Plan may be treasury shares, authorized but unissued shares, or shares purchased in the open market. If an award under the 2017 Plan is forfeited (including a reimbursement of a non-vested award upon a participant’s termination of employment at a price equal to the par value of the common stock subject to the award) or expired, any shares of common stock subject to the award may be used again for new grants under the 2017 Plan.

The 2017 Plan is administered by the Compensation Committee of the Board of Directors (“Committee”). The Committee has the exclusive authority to administer the 2017 Plan, including the power to (i) designate participants

under the 2017 Plan, (ii) determine the types of awards granted to participants under the 2017 Plan, the number of such awards, and the number of shares of our common stock that is subject to such awards, (iii) determine and interpret the terms and conditions of any awards under the 2017 Plan, including the vesting schedule, exercise price, whether to settle or accept the payment of any exercise price, in cash, common stock, other awards, or other property, and whether an award may be canceled, forfeited, or surrendered, (iv) prescribe the form of each award agreement, and (v) adopt rules for the administration, interpretation, and application of the 2017 Plan.

Persons eligible to participate in the 2017 Plan include all of our employees, directors, and consultants, as determined by the Committee. There were 2.5 million shares outstanding and 0.6 million shares available for grant under the 2017 Plan as of December 31, 2018.

2009 Stock Plan

With the adoption of the 2017 Plan, no additional awards may be granted under the 2009 Stock Plan ("2009 Plan"). The 2009 Plan provided for grants of stock options (both incentive and non-qualified stock options), restricted stock awards, stock appreciation rights, performance shares, performance stock units, dividend equivalents, stock payments, deferred stock, RSUs, and performance-based awards. Options and awards generally vest over a period of one to four years from the date of grant and generally expire seven to ten years from the date of the grant. The terms of the 2009 Plan provide that an option price shall not be less than 100% of fair value on the date of the grant. Our board of directors could grant a stock bonus or stock unit award under the 2009 Plan in lieu of all or a portion of any cash bonus that a participant would have otherwise received for the related performance period.

The shares of common stock covered by the 2009 Plan may be treasury shares, authorized but unissued shares, or shares purchased in the open market. If an award under the 2009 Plan is forfeited, terminated, canceled, or otherwise reacquired, any shares of common stock subject to the award may be used again for new grants under the 2017 Plan. There were 0.5, 1.3, and 2.4 million shares outstanding under the 2009 Plan as of December 31, 2018, 2017, and 2016, respectively.

Amended and Restated 2000 Employee Stock Purchase Plan

As most recently amended on June 4, 2013, our stockholders approved the Amended and Restated 2000 Employee Stock Purchase Plan that increased the number of shares authorized for issuance pursuant to such plan by 2 million shares. The share increase was intended to ensure that we continue to have a sufficient reserve of common stock available under the ESPP to provide our eligible employees with the opportunity to acquire our common stock through participation in a payroll deduction-based ESPP designed to operate in compliance with Section 423 of the Internal Revenue Code ("IRC"). The ESPP does not provide for an automatic increase in the number of shares reserved for issuance under the ESPP.

The ESPP is qualified under Section 423 of the IRC. Eligible employees may contribute from one to ten percent of their base compensation. Employees are not able to purchase more than the number of shares having a value greater than \$25,000 in any calendar year, as measured at the beginning of the offering period under the ESPP. The purchase price shall be the lesser of 85% of the fair value of the stock, either on the offering date or on the purchase date. The offering period shall not exceed 27 months beginning with the offering date. The ESPP provides for offerings of four consecutive, overlapping six-month offering periods, with a new offering period commencing on the first trading day on or after February 1 and August 1 of each year.

There were 0.4 million shares issued under the ESPP at an average purchase price of \$24.93 during the year ended December 31, 2018, and there were 0.3 million shares issued at an average price of \$35.18 and \$32.88 during each of the years ended December 31, 2017 and 2016, respectively. As of December 31, 2018, there was \$3.1 million of total unrecognized compensation cost related to stock-based compensation arrangements granted under the ESPP, which is expected to be recognized over a period of 1.80 years. At December 31, 2018, 2017, and 2016, there were 0.5, 0.9, and 1.2 million shares, respectively, of our common stock reserved for issuance under the ESPP.

Stock-based Compensation Expense

We measure and recognize compensation expense for all equity awards granted to our employees and directors, including employee stock options, RSUs, and ESPP purchase rights based on the fair value of such awards on the date of grant. We amortize stock-based compensation cost on a graded vesting basis over the vesting period reduced by actual forfeitures, after assessing the probability of achieving the requisite performance criteria with respect to performance-based awards. Stock-based compensation cost is recognized over the requisite service period for each separately vesting tranche of the award as though the award were, in substance, multiple awards. We use the BSM option pricing model to value stock-based compensation for stock options. We value market-based awards using a Monte Carlo valuation model. We value RSUs at the closing market price on the date of grant.

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

Stock-based compensation expense is summarized as follows (in thousands):

	For the Years Ended		
	December 31,		
Stock-Based Compensation	2018	2017	2016
RSUs	\$39,180	\$21,887	\$28,952
ESPP purchase rights	6,101	4,645	2,795
Employee stock options	—	—	79
Total stock-based compensation	45,281	26,532	31,826
Income tax benefit	(6,465)	(8,188)	(10,342)
Stock-based compensation expense, net of tax	\$38,816	\$18,344	\$21,484

Stock-based compensation is reported in our Consolidated Statements of Operations within the following line items:

	For the Years Ended		
	December 31,		
Stock-Based Compensation	2018	2017	2016
Cost of revenue	\$3,770	\$2,561	\$2,784
Research and development	13,037	9,177	8,968
Sales and marketing	8,960	6,583	7,690
General and administrative	19,514	8,211	12,384
Total stock-based compensation	\$45,281	\$26,532	\$31,826

Valuation Assumptions for Stock Options and ESPP Purchases

The BSM model determines the fair value of stock options based on the stock price on the date of grant and assumptions including volatility, expected term, and interest rates. Expected volatility is based on the historical volatility of our stock over a preceding period commensurate with the expected term of the stock option. The expected term is based on management's consideration of the historical life of the stock options, the vesting period of the stock options granted, and the contractual period of the stock options granted. The risk-free interest rate for the expected term of the stock options is based on the U.S. Treasury yield curve in effect at the time of grant. Expected dividend yield was not considered in the option pricing formula since we do not pay dividends and have no current plans to do so in the future.

Stock options were not granted during the years ended December 31, 2018, 2017, and 2016. The estimated weighted average fair value per share of ESPP purchase rights issued and the assumptions used to estimate fair value for the years ended December 31, 2018, 2017, and 2016 are as follows:

	For the Years Ended		
	December 31,		
Employee Stock Purchase Plan	2018	2017	2016
Weighted average fair value per share	\$9.28	\$ 12.09	\$ 10.69
Expected volatility	37% - 107%	24% - 28%	22% - 32%
Risk-free interest rate	1.6% -	0.7% - 1.3%	0.4% - 0.8%
Expected term (in years)	2.7%	0.5 - 2.0	0.5 - 2.0

0.5 -
2.0

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Notes to Consolidated Financial Statements – (Continued)

Stock Option Activity

Stock options outstanding and exercisable, including performance-based and market-based options, as of December 31, 2018, 2017, and 2016 and activity for each of the years then ended are summarized as follows (in thousands, except weighted average exercise price and remaining contractual term):

Stock Options	Shares	Weighted average exercise price	Weighted average remaining contractual term (years)	Aggregate intrinsic value
Options outstanding as of January 1, 2016	442	\$ 13.20		
Options forfeited and expired	(12)	10.77		
Options exercised	(115)	11.64		
Options outstanding as of December 31, 2016	315	\$ 13.86	1.46	\$ 9,480
Options exercised	(165)	12.45		
Options outstanding as of December 31, 2017	150	\$ 15.43	1.27	\$ 2,116
Options exercised	(75)	14.28		
Options outstanding as of December 31, 2018	75	\$ 16.57	0.68	\$ 617
Options vested and expected to vest as of December 31, 2018	75	\$ 16.57	0.68	\$ 617
Options exercisable as of December 31, 2018	75	\$ 16.57	0.68	\$ 617

Aggregate stock option intrinsic value represents the difference between the closing price per share of our common stock on the last trading day of the fiscal period and the exercise price of the underlying awards for the options that were in the money at that time. The total intrinsic value of options exercised, determined as of the date of option exercise, was \$1.4, \$5.3, and \$3.8 million for the years ended December 31, 2018, 2017, and 2016, respectively. There was no unrecognized compensation cost related to stock options expected to vest as of December 31, 2018. The weighted average exercise price is \$16.57. The weighted average remaining contractual term of outstanding options is 0.68 years as of December 31, 2018.

Non-vested RSUs

Non-vested RSUs were awarded to employees under our equity incentive plans. Non-vested RSUs do not have the voting rights of common stock and the shares underlying non-vested RSUs are not considered issued and outstanding. Non-vested RSUs generally vest over a service period of one to four years. The compensation expense incurred for these service-based awards is based on the closing market price of our stock on the date of grant and is amortized on a graded vesting basis over the requisite service period. The weighted average fair value of RSUs granted during the years ended December 31, 2018, 2017, and 2016 were \$30.93, \$35.89, and \$43.35, respectively.

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

Non-vested RSUs, including performance-based and market-based RSUs, as of December 31, 2018, 2017, and 2016, and activity for each of the years then ended, are summarized as follows (shares in thousands):

Restricted Stock Units	Shares	Weighted
		average grant date fair value
Non-vested at January 1, 2016	1,814	\$ 40.53
Restricted stock granted	1,359	43.35
Restricted stock vested	(787)	38.34
Restricted stock forfeited	(303)	39.54
Non-vested at December 31, 2016	2,083	\$ 43.34
Restricted stock granted	1,467	35.89
Restricted stock vested	(761)	42.74
Restricted stock forfeited	(510)	41.51
Non-vested at December 31, 2017	2,279	\$ 39.16
Restricted stock granted	2,048	30.93
Restricted stock vested	(639)	35.63
Restricted stock forfeited	(767)	42.63
Non-vested at December 31, 2018	2,921	\$ 33.25

Vested RSUs

Performance-based RSUs that vested based on annual financial results are expensed over the term of service and when the performance criteria are expected to be met. The grant date fair value of RSUs that vested during the years ended December 31, 2018, 2017, and 2016 were \$35.63, \$42.74, and \$38.34, respectively. Aggregate intrinsic value of RSUs vested and expected to vest as of December 31, 2018 was \$70.7 million calculated as the closing price per share of our common stock on the last trading day of the fiscal period multiplied by 2.9 million RSUs vested and expected to vest as of December 31, 2018. RSUs expected to vest represent time-based RSUs unvested and outstanding as of December 31, 2018, and performance-based RSUs for which the requisite service period has not been rendered, but are expected to vest based on the achievement of performance conditions. There was approximately \$35.4 million of unrecognized compensation costs related to RSUs expected to vest as of December 31, 2018. That cost is expected to be recognized over a weighted average period of 1.0 years.

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Notes to Consolidated Financial Statements – (Continued)

Performance-based and Market-based RSUs and Stock Options

Performance-based and market-based RSUs included in the tables above as of December 31, 2018, 2017, and 2016, and activity for each of the years then ended, are summarized below (in thousands):

	Performance-based		Market-based
	RSUs	Stock Options	RSUs
Non-vested at January 1, 2016	920	16	23
Granted	821	—	—
Vested	(226)	(4)	—
Forfeited	(250)	(12)	—
Non-vested at December 31, 2016	1,265	—	23
Granted	675	—	—
Vested	(284)	—	—
Forfeited	(447)	—	—
Non-vested at December 31, 2017	1,209	—	23
Granted	925	—	47
Vested	(20)	—	—
Forfeited	(648)	—	—
Non-vested at December 31, 2018	1,466	—	70

Approximately 21% of the non-vested performance-based RSUs at December 31, 2018 subsequently vested during the first quarter of 2019 based on achievement of specified performance criteria related to revenue and non-GAAP operating income targets.

We use the BSM option pricing model to value performance-based awards. We use a Monte Carlo option pricing model to value market-based awards. The estimated grant date fair value per share of performance-based and market-based RSUs granted and the assumptions used to estimate grant date fair value are as follows:

	Performance-Based		Market-Based	
	RSUs	RSUs	RSUs	
	Short-term	Long-term		
Year ended December 31, 2018 Grants				
Grant date fair value per share	\$ 28.41	\$ 33.99	\$ 22.52	
Service period (years)	1.0	3.0		
Derived service period (years)			1.0	
Implied volatility			45.0	%
Risk-free interest rate			3.1	%
Year ended December 31, 2017 Grants				
Grant date fair value per share	\$ 47.18	\$ 33.43		
Service period (years)	1.0	2.0 - 3.0		
Year ended December 31, 2016 Grants				
Grant date fair value per share	\$ 39.79	\$ 45.76		
Service period (years)	1.0	2.0 - 3.0		

Our performance-based RSUs generally vest when specified performance criteria are met based on bookings, revenue, cash provided by operating activities, non-GAAP operating income, non-GAAP earnings per share, revenue growth compared to

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

market comparables, non-GAAP earnings per share growth compared to cash flows from operating activities growth, or other targets during the service period; otherwise, they are forfeited. Non-GAAP operating income is defined as operating income determined in accordance with GAAP, adjusted to remove the impact of certain expenses as defined in Unaudited Non-GAAP Financial Information. Non-GAAP earnings per share is defined as net income (loss) determined in accordance with GAAP, adjusted to remove the impact of certain expenses, and the related tax effects, divided by the weighted average number of common shares and dilutive potential common shares outstanding during the period as more fully defined in Note 2 – Earnings Per Share of Notes to Consolidated Financial Statements.

The grant date fair value per share determined in accordance with the BSM valuation model is being amortized over the service period of the performance-based awards. The probability of achieving the awards was determined based on review of the actual results achieved thus far by each business unit compared with the operating plan during the pertinent service period as well as the overall strength of the business unit. Stock-based compensation expense was adjusted based on this probability assessment. As actual results are achieved during the service period, the probability assessment is updated and stock-based compensation expense adjusted accordingly. Our stock compensation expense could change significantly in future periods if our probability assessments change significantly.

Market-based awards that were granted in prior periods vest when our average closing stock price exceeds defined multiples of the closing stock price for 60-90 consecutive trading days. If these multiples were not achieved by the expiration date, the awards are forfeited. The grant date fair value is being amortized over the average derived service period of the awards. The average derived period and total fair value were determined using a Monte Carlo valuation model based on our assumptions, which include a risk-free interest rate and implied volatility.

Employee 401(k) Plan

We sponsor a 401(k) Savings Plan (“401(k) Plan”) that provides retirement and incidental benefits for our U.S. employees. Employees may contribute from 1% to 75% of their annual compensation to the 401(k) Plan, limited to a maximum annual amount as set periodically by the IRS. We match 50% of U.S. employee contributions, up to a maximum of the first 4% of the employee’s compensation contributed to the plan, subject to IRS limitations. All matching contributions vest over four years starting with the hire date of the individual employee. Our matching contributions to the 401(k) Plan totaled \$2.4, \$2.3, and \$2.2 million during the years ended December 31, 2018, 2017, and 2016, respectively. The employees’ contributions and our contributions are invested in mutual funds managed by a fund manager, or in self-directed retirement plans.

Note 16. Restructuring and Other

During the years ended December 31, 2018, 2017, and 2016, we continued to analyze and re-align our cost structure following our business acquisitions. These charges primarily relate to integrating recently acquired businesses, consolidating facilities, eliminating redundancies, and lowering our operating expense run rate. Restructuring and other consists primarily of restructuring, severance, short-term retention costs, facility downsizing and relocation, and acquisition integration expenses. Our restructuring and other plans are accounted for in accordance with ASC 420, ASC 712, and ASC 820.

Restructuring and other costs for the years ended December 31, 2018, 2017, and 2016 were \$13.6, \$7.6, and \$6.7 million, respectively. Restructuring and other costs included severance costs of \$7.5, \$4.7, and \$4.1 million related to head count reductions of 148, 144, and 128 for the years ended December 31, 2018, 2017, and 2016, respectively.

Severance costs include severance payments, related employee benefits, outplacement fees, recruiting, and employee relocation costs.

Facilities relocation and downsizing expenses for the years ended December 31, 2018, 2017, and 2016 were \$1.7, \$0.6, and \$0.5 million, respectively. Facilities restructuring and other expenses are primarily related to the relocation of certain manufacturing and administrative locations to consolidate, streamline, or improve operations. Integration expenses for the years ended December 31, 2018, 2017, and 2016 of \$4.3, \$2.3, and \$2.1 million, respectively, represented costs to integrate our business acquisitions.

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

Restructuring and other reserve activities are summarized as follows (in thousands):

	Year Ended	
	December 31,	
	2018	2017
Reserve balance at January 1	\$2,452	\$1,824
Restructuring charges	8,323	5,136
Other charges	5,259	2,424
Non-cash restructuring and other	(975)	(264)
Cash payments	(13,088)	(6,668)
Reserve balance at December 31	\$1,971	\$2,452

Note 17. Income Taxes

The components of income (loss) before income taxes are as follows (in thousands):

	Year Ended December 31,		
	2018	2017	2016
U.S.	\$(64,810)	\$(27,926)	\$8,254
Foreign	65,931	40,056	30,394
Total income before income taxes	\$1,121	\$12,130	\$38,648

The provision for (benefit from) income taxes is summarized as follows (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Current:			
U.S. Federal	\$(376)	\$6,897	\$(7,593)
State	(9)	(2,926)	662
Foreign	13,858	14,751	11,721
Total current	13,473	18,722	4,790
Deferred:			
U.S. Federal	(1,671)	15,304	(4,276)
State	(1,259)	732	(567)
Foreign	(8,451)	(7,283)	(6,248)
Total deferred	(11,381)	8,753	(11,091)
Provision for (benefit from) income taxes	\$2,092	\$27,475	\$(6,301)

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

The reconciliation of the income tax provision (benefit) computed at the federal statutory rate to the actual tax provision (benefit) is as follows (in thousands):

Rate Reconciliation	Year Ended December 31,					
	2018		2017		2016	
Tax provision at federal statutory rate	\$235	21.0 %	\$4,246	35.0 %	\$13,527	35.0 %
State income taxes, net of federal benefit	(1,002)	(89.4)%	(1,426)	(11.8)%	62	0.2 %
Research and development credits	(1,511)	(134.8)%	(1,508)	(12.4)%	(2,627)	(6.8)%
Effect of foreign operations	2,923	260.7 %	(1,344)	(11.1)%	(3,320)	(8.5)%
Deemed repatriation transition tax	(831)	(74.2)%	16,976	139.8 %	—	— %
Provision for remeasuring deferred tax balances	(343)	(30.6)%	10,450	86.1 %	—	— %
Reduction in accrual for estimated potential tax assessments	(2,047)	(182.5)%	(1,676)	(13.7)%	(15,404)	(39.9)%
Non-deductible stock-based compensation	3,940	351.5 %	1,249	10.3 %	1,288	3.3 %
Domestic manufacturing deduction	—	— %	—	— %	(831)	(2.2)%
Acquisition and integration costs	285	25.4 %	168	1.4 %	(103)	(0.2)%
Meals and entertainment	497	44.3 %	500	4.1 %	475	1.2 %
Other	(54)	(4.8)%	(160)	(1.3)%	632	1.6 %
Provision for (benefit from) income taxes	\$2,092	186.6 %	\$27,475	226.4 %	\$(6,301)	(16.3)%

On December 22, 2017, the 2017 Tax Act was enacted by the U.S. government. The 2017 Tax Act made broad and complex changes to the U.S. tax code that impacted the years ended December 31, 2018 and 2017, including, but not limited to the deemed repatriation transition tax and the remeasurement of U.S. deferred tax assets and liabilities as a result of the reduction of the U.S. corporate rate from 35% to 21%. The enactment of the 2017 Tax Act required companies, under ASC 740, to recognize the effects of changes in tax law and rates on deferred tax assets and liabilities and the retroactive effects of changes in tax laws in the period in which the new legislation is enacted. The effects of these changes in tax law were recorded as a component of our tax provision, regardless of the category of pre-tax income or loss to which the deferred taxes relate.

The SEC issued SAB 118, which allowed us to record a provisional estimate of the income tax effects of the 2017 Tax Act in the period in which we could make a reasonable estimate of its effects. We recorded a \$27.5 million tax charge in the year ended December 31, 2017 as a provisional estimate. This includes an estimated charge of \$17.0 million related to the deemed repatriation transition tax, which was comprised of a gross transition tax of \$27.0 million offset by foreign tax credits of \$10.0 million. In addition, we recorded a \$10.5 million charge related to the remeasurement of U.S. deferred tax assets and liabilities. We applied the guidance in SAB 118 when accounting for the enactment-date effects of the Act in 2017 and throughout 2018. As of December 31, 2017, we had not completed our accounting for all of the enactment-date income tax effects of the Act under ASC 740, Income Taxes. In 2018, we recorded a cumulative adjustment of \$1.2 million benefit to the \$27.5 million recorded in 2017 as a result of the filing of our 2017 US federal and state tax returns. As of December 31, 2018, we have now completed our accounting for all of the enactment-date income tax effects of the Act.

The 2017 Tax Act also created a minimum tax on certain foreign earnings, also known as the GILTI provision, commencing in the year ending December 31, 2018. In 2018, we recorded a net charge of \$4.7 million (GILTI inclusion less GILTI foreign tax credits) for the full year impact. In addition, we have made an accounting policy election to record GILTI as a period expense and not record deferred tax assets associated with GILTI.

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

The tax effects of temporary differences that give rise to deferred tax assets (liabilities) are as follows (in thousands):

	As of December	
	31,	
	2018	2017
Deferred Taxes		
Tax credit carryforwards	\$67,346	\$62,096
Net operating loss carryforwards	10,823	9,066
Reserves and accruals not currently deductible for tax purposes	8,957	8,785
Stock-based compensation	6,004	3,432
Other	2,519	6,472
Gross deferred tax assets	95,649	89,851
Depreciation and amortization	(5,493)	(11,075)
Convertible Debt	(7,375)	161
Gross deferred tax liabilities	(12,868)	(10,914)
Deferred tax valuation allowance	(47,102)	(45,506)
Net deferred tax assets	\$35,679	\$33,431

We have \$11.4 million federal (\$47.6 million for state tax purposes) and \$37.7 million federal (\$39.6 million for state tax purposes) of loss and credit carryforwards as of December 31, 2018. A majority of these federal and state losses and credits will expire between 2022 and 2027. A significant portion of these net operating loss and credit carryforwards relate to recent acquisitions. Utilization of these loss and credit carryforwards will be subject to an annual limitation under the IRC. During the year ended December 31, 2018, we recorded \$6.6 million of net deferred tax liabilities upon the issuance of the 2023 Notes.

In accordance with ASU 2016-09, which was adopted in the second quarter of 2016, we recorded \$2.2 million of deferred tax assets related to excess tax benefits for federal research and development income tax credits not previously benefited and \$0.6 million of deferred tax assets for the tax benefit on the cumulative effect adjustment associated with the change in accounting for RSU forfeitures.

We assess the likelihood that our deferred tax assets will be recovered from future taxable income by considering both positive and negative evidence relating to their recoverability. If we believe that recovery of these deferred tax assets is not more likely than not, we establish a valuation allowance. Significant judgment is required in determining any valuation allowance recorded against deferred tax assets. In assessing the need for a valuation allowance, we considered all available evidence, including recent operating results, projections of future taxable income, our ability to utilize loss and credit carryforwards, and the feasibility of tax planning strategies. Other than valuation allowances on deferred tax assets related to California, Luxembourg, Israel, Netherlands, Turkey and the Optitex business unit that are not likely to be realized based on the size of the net operating loss and research and development credits being generated, we have determined that it is more likely than not that we will realize the benefit related to all other deferred tax assets. To the extent we increase a valuation allowance, we will include an expense within the tax benefit in the Consolidated Statement of Operations in the period in which such determination is made.

Electronics For Imaging, Inc.
Notes to Consolidated Financial Statements – (Continued)

A reconciliation of the change in the gross unrecognized tax benefits is as follows (in thousands):

Reconciliation of Unrecognized Tax Benefits	Federal, State, and Foreign Tax	Accrued Interest and Penalties	Gross Unrecognized Income Tax Benefits
Balance as of December 31, 2015	\$ 46,090	\$ 532	\$ 46,622
Additions for tax positions of prior years	1,826	234	2,060
Additions for tax positions related to 2016	3,925	—	3,925
Reductions due to lapse of applicable statute of limitations	(16,483)	(230)	(16,713)
Balance as of December 31, 2016	\$ 35,358	\$ 536	\$ 35,894
Additions for tax positions of prior years	1,720	327	2,047
Additions for tax positions related to 2017	4,492	—	4,492
Reductions due to lapse of applicable statute of limitations	(4,065)	(177)	(4,242)
Balance as of December 31, 2017	\$ 37,505	\$ 686	\$ 38,191
Reductions for tax positions of prior years	(1,027)	390	(637)
Additions for tax positions related to 2018	3,579	—	3,579
Reductions due to lapse of applicable statute of limitations	(4,454)	(213)	(4,667)
Balance as of December 31, 2018	\$ 35,603	\$ 863	\$ 36,466

As of December 31, 2018, 2017, and 2016, gross unrecognized benefits that would affect the effective tax rate if recognized were \$31.7, \$33.9, and \$32.0 million, respectively, offset by deferred tax benefits of \$0.4, \$0.4, and \$1.1 million related to the federal tax effect of state income taxes for the same periods. Over the next twelve months, our existing tax positions will continue to generate increased liabilities for unrecognized tax benefits. It is reasonably possible that our gross unrecognized tax benefits will decrease up to \$6.5 million in the next twelve months. These adjustments, if recognized, would positively impact our effective tax rate, and would be recognized as additional tax benefits in our Consolidated Statements of Operations.

In accordance with ASU 2013-11, we recorded \$16.5 million of gross unrecognized tax benefits as an offset to deferred tax assets as of December 31, 2018, and the remaining \$15.2 million has been recorded as noncurrent income taxes payable.

We recognize potential accrued interest and penalties related to unrecognized tax benefits in income tax expense. As of December 31, 2018, 2017, and 2016, we have accrued \$0.9, \$0.7, and \$0.5 million, respectively, for potential payments of interest and penalties.

We are subject to examination by the Internal Revenue Service (“IRS”) for the 2015-2017 tax years, state tax jurisdictions for the 2014-2017 tax years, the Netherlands tax authority for the 2014-2017 tax years, the Spanish tax authority for the 2014-2017 tax years, the Israel tax authority for the 2015-2017 tax years, and the Italian tax authority for the 2014-2017 tax years.

SUPPLEMENTARY DATA

Unaudited Quarterly Consolidated Financial Information

The following table presents our operating results for each of the quarters in the years ended December 31, 2018 and 2017. The information for each of these quarters is unaudited, but has been prepared on the same basis as our audited consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K. In the opinion of management, all necessary adjustments have been included that are required to state fairly our unaudited quarterly results when read in conjunction with our audited consolidated financial statements and the notes thereto. These operating results are not necessarily indicative of the results for any future period.

	Year Ended December 31, 2018			
(in thousands except per share data)	Q1	Q2	Q3	Q4
Revenue	\$239,866	\$261,072	\$257,134	\$256,949
Gross profit	119,107	128,588	125,519	125,359
Income from operations	(2,065)	13,644	2,115	5,992
Net income (loss)	(3,595)	3,768	1,920	(3,064)
Net income (loss) per basic common share	\$(0.08)	\$0.08	\$0.04	\$(0.07)
Net income (loss) per diluted common share	\$(0.08)	\$0.08	\$0.04	\$(0.07)
	Year Ended December 31, 2017			
(in thousands except per share data)	Q1	Q2	Q3	Q4
Revenue	\$228,691	\$247,047	\$248,359	\$269,163
Gross profit	123,530	127,252	127,458	128,216
Income from operations	8,143	7,991	7,397	4,016
Net income (loss)	4,787	2,759	3,454	(26,345)
Net income (loss) per basic common share	\$0.10	\$0.06	\$0.07	\$(0.58)
Net income (loss) per diluted common share	\$0.10	\$0.06	\$0.07	\$(0.58)

Item 9: Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A: Controls and Procedures

(a) Evaluation of Disclosure Controls and Procedures

We maintain “disclosure controls and procedures,” as this term is defined in Rule 13a-15(e) and 15d-15(e) under the Exchange Act, that are designed to provide reasonable assurance that information required to be disclosed by us in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in SEC rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure.

Under the supervision and with the participation of our Chief Executive Officer and Chief Financial Officer, our management has evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2018. Our internal control over financial reporting is the process designed by and under the supervision of our Chief Executive Officer and Chief Financial Officer to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of our financial statements for external reporting in accordance with accounting principles

generally accepted in the United States of America. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives are met. Additionally, in designing disclosure controls and procedures, our management necessarily was required to apply its judgment in evaluating the cost-benefit relationship of possible disclosure controls and

procedures. The design of any disclosure controls and procedures is also based in part on certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions.

Based on their evaluation as of the end of the period covered by this Annual Report on Form 10-K, our Chief Executive Officer and Chief Financial Officer have concluded that our disclosure controls and procedures were effective as of December 31, 2018 at a reasonable assurance level.

(b) Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rule 13a-15(f) of the Exchange Act. 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. Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2018. In making this assessment, we used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") in Internal Control – Integrated Framework (2013). Based on our assessment using those criteria, we have concluded that our internal control over financial reporting was effective as of December 31, 2018.

(c) Changes in Internal Control Over Financial Reporting

As of December 31, 2018, our testing of both the design and operating effectiveness of new and redesigned controls was completed, and we have concluded that the following material weaknesses existing as of December 31, 2017 have been remediated:

1. Our internal controls were not designed effectively to ensure that operational changes, which may impact revenue recognition, were appropriately and timely evaluated to determine the accounting impact.

We did not sufficiently staff, with appropriate levels of experience and training, to allow for the adequate monitoring and timely communication of operational changes, including those which may impact revenue recognition on an ongoing basis.

Our internal control over excess and obsolete finished goods printer inventory reserves at our Italian manufacturing subsidiary was not designed effectively to conduct a sufficiently precise evaluation of the classification, condition, and salability of each printer and the cost accounting department was not staffed sufficiently to mitigate limitations relating to these reserves in the ERP system used solely at this subsidiary.

Except for the changes described above, there were no changes in our internal control over financial reporting identified in our evaluation pursuant to Rules 13a-15(d) or 15d-15(d) of the Exchange Act during the three months ended December 31, 2018 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

(d) Important Considerations

The effectiveness of our disclosure controls and procedures and our internal control over financial reporting is subject to various inherent limitations, including cost limitations, judgments used in decision making, assumptions about the likelihood of future events, the soundness of our systems, the possibility of human error, and the risk of fraud. Moreover, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions and the risk that the degree of compliance with policies or

procedures may deteriorate over time. Because of these limitations, there can be no assurance that any system of disclosure controls and procedures or internal control over financial reporting will be successful in preventing all errors or fraud or in making all material information known in a timely manner to the appropriate levels of management.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the stockholders and the Board of Directors of Electronics For Imaging, Inc.

Opinion on Internal Control over Financial Reporting

We have audited the internal control over financial reporting of Electronics For Imaging, 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 February 27, 2019, expressed an unqualified opinion on those consolidated financial statements and included an explanatory paragraph related to the Company's change in method of accounting for revenue in fiscal year 2018 due to the adoption of the new revenue standard.

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 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
San Jose, California
February 27, 2019

Item 9B: Other Information

None.

PART III

Item 10: Directors, Executive Officers and Corporate Governance

Information regarding our directors is incorporated by reference from the information contained under the caption “Election of Directors” in our Proxy Statement for our 2019 Annual Meeting of Stockholders (the “2019 Proxy Statement”).

Information regarding our current executive officers is incorporated by reference from information contained under the caption “Executive Officers” in our 2019 Proxy Statement. Information regarding Section 16 reporting compliance is incorporated by reference from information contained under the caption “Section 16(a) Beneficial Ownership Reporting Compliance” in our 2019 Proxy Statement. Information regarding the Audit Committee of our Board of Directors and information regarding an Audit Committee financial expert is incorporated by reference from information contained under the caption “Meetings and Committees of the Board of Directors” in our 2019 Proxy Statement.

Information regarding our code of ethics is incorporated by reference from information contained under the caption “Meetings and Committees of the Board of Directors” in our 2019 Proxy Statement. Information regarding our implementation of procedures for stockholder nominations to our Board of Directors is incorporated by reference from information contained under the caption “Meetings and Committees of the Board of Directors” in our 2019 Proxy Statement.

We intend to disclose any amendment to our code of ethics, or waiver from, certain provisions of our code of ethics as applicable for our directors and executive officers, including our principal executive officer, principal financial and accounting officer, chief accounting officer and controller, or persons performing similar functions, by posting such information on our website at www.efi.com.

Item 11: Executive Compensation

The information required by this item is incorporated by reference from the information contained under the captions “Compensation Discussion and Analysis” and “Executive Compensation” in our 2019 Proxy Statement.

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

Other than information regarding securities authorized for issuance under equity compensation plans, which is set forth below, the information required by this item is incorporated by reference from the information contained under the caption “Security Ownership” in our 2019 Proxy Statement.

Securities Authorized for Issuance Under Equity Compensation Plans

The following table sets forth information as of December 31, 2018 concerning securities that are authorized under equity compensation plans:

Plan category	Number of securities to be issued upon exercise of outstanding options, warrants and rights	Weighted-average exercise price of outstanding options, warrants and rights	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column 1)
Equity compensation plans approved by stockholders	2,996,224	\$ 16.57	(1) 1,145,016 (2)
Equity compensation plans not approved by stockholders	—	—	—
Total	2,996,224	\$ 16.57	1,145,016

(1) Calculated without taking into account 2,921,224 RSUs that will become issuable as those units vest, without any cash consideration or other payment required for such shares.

(2) Includes 522,698 shares available under the ESPP.

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

The information required by this item is incorporated by reference from the information contained under the caption “Certain Relationships and Related Transactions, and Director Independence” in our 2019 Proxy Statement.

Item 14: Principal Accountant Fees and Services

The information required by this item is incorporated by reference from the information contained under the caption “Principal Accountant Fees and Services” in our 2019 Proxy Statement.

PART IV

Item 15: Exhibits and Financial Statement Schedules

(a) Documents Filed as Part of this Report

(1) Index to Financial Statements

The Financial Statements required by this item are submitted in Item 8 of this Annual Report on Form 10-K as follows:

	Page
<u>Report of Independent Registered Public Accounting Firm</u>	<u>70</u>
<u>Consolidated Balance Sheets as of December 31, 2018 and 2017</u>	<u>71</u>
<u>Consolidated Statements of Operations for the Years Ended December 31, 2018, 2017, and 2016</u>	<u>72</u>
<u>Consolidated Statements of Comprehensive Income (Loss) for the Years Ended December 31, 2018, 2017, and 2016</u>	<u>73</u>
<u>Consolidated Statements of Stockholders' Equity for the Years Ended December 31, 2018, 2017, and 2016</u>	<u>74</u>
<u>Consolidated Statements of Cash Flows for the Years Ended December 31, 2018, 2017, and 2016</u>	<u>75</u>
<u>Notes to Consolidated Financial Statements</u>	<u>76</u>
<u>Unaudited Quarterly Consolidated Financial Information</u>	<u>127</u>

(2) Financial Statement Schedule

Schedule II – Valuation and Qualifying Accounts 135

(All other schedules are omitted because of the absence of conditions under which they are required or because the necessary information is provided in the consolidated financial statements or notes thereto in Item 8 of this Annual Report on Form 10-K.)

(3) Exhibits

Exhibit No.	Description
3.1	<u>Amended and Restated Certificate of Incorporation</u> ⁽¹⁾
3.2	<u>Amended and Restated By-Laws of Electronics For Imaging, Inc., (as amended August 12, 2009)</u> ⁽²⁾
4.1	Specimen Common Stock Certificate of the Company ^{(3) (P)}
4.2	<u>Indenture (including Form of Notes) with respect to the Company's 0.75% Convertible Senior Notes due 2019, dated as of September 9, 2014, between the Company and U.S. Bank National Association, as trustee</u> ⁽⁴⁾
4.3	<u>First Supplemental Indenture Dated as of November 5, 2018 to Indenture Dated as of September 9, 2014 by and between Electronics For Imaging, Inc., as Issuer, and U.S. National Bank Association, as Trustee</u> ⁽⁵⁾
4.4	<u>Indenture (including Form of Notes) with respect to the Company's 2.25% Convertible Senior Notes due 2023, dated as of November 30, 2018, between Electronics For Imaging, Inc., as Issuer, and U.S. Bank National Association, as Trustee</u> ⁽⁶⁾
10.1	<u>Agreement dated December 6, 2000, by and between Adobe Systems Incorporated and the Company</u> ⁽⁷⁾
10.2*	<u>Electronics For Imaging, Inc. 2017 Equity Incentive Plan</u> ⁽⁸⁾

- 10.3* Electronics For Imaging, Inc. 2017 Equity Incentive Plan Restricted Stock Unit Award Agreement and Performance Stock Unit Award Agreement ⁽⁹⁾
- 10.4* Form of Indemnification Agreement ⁽¹⁰⁾ (P)
- 10.5* Form of Indemnity Agreement ⁽¹¹⁾
- 10.6+ OEM Distribution and License Agreement dated September 19, 2005 by and among Adobe Systems Incorporated, Adobe Systems Software Ireland Limited and the Company, as amended by Amendment No. 1 dated as of October 1, 2005 ⁽¹²⁾
- 10.7+ Amendment No. 2 to OEM Distribution and License Agreement by and among Adobe Systems Incorporated, Adobe Systems Software Ireland Limited and the Company, effective as of October 1, 2005 ⁽¹³⁾

- 10.8+ Amendment No. 4 to OEM Distribution and License Agreement by and among Adobe Systems Incorporated, Adobe Systems Software Ireland Limited and the Company, effective as of January 1, 2006 ⁽¹⁴⁾
- 10.9 Purchase and Sale Agreement between Electronics for Imaging, Inc. and John Arrillaga Survivor's Trust, represented by John Arrillaga, Trustee, and Richard T. Peery Separate Property Trust, represented by Richard T. Peery, Trustee, dated April 19, 2013 ⁽¹⁵⁾
- 10.10 Lease Agreement between Electronics for Imaging, Inc. and John Arrillaga Survivor's Trust, represented by John Arrillaga, Trustee, and Richard T. Peery Separate Property Trust, represented by Richard T. Peery, Trustee, dated April 19, 2013 ⁽¹⁶⁾
- 10.11* EFI Section 16 2018 Bonus Program ⁽¹⁷⁾
- 10.12* Employment Agreement Effective January 27, 2014 by and between the Company and Guy Gecht ⁽¹⁸⁾
- 10.13* Employment Agreement Effective April 22, 2015 by and between the Company and Marc Olin ⁽¹⁹⁾
- 10.14 Form of Call Option Confirmation relating to the Company's 0.75% Convertible Senior Notes due 2019 ⁽²⁰⁾
- 10.15 Form of Warrant Confirmation relating to the Company's 0.75% Convertible Senior Notes due 2019 ⁽²¹⁾
- 10.16 Amendment No. 12 to OEM Distribution and License Agreement by and among Adobe Systems Incorporated, Adobe Systems Software Ireland Limited and the Company, effective as of January 19, 2018 ⁽²²⁾
- 10.17 Termination Agreement dated July 27, 2018 by and between Electronics for Imaging, Inc. and between John Arrillaga Survivor's Trust, represented by John Arrillaga, Trustee, and Richard T. Peery Separate Property Trust, represented by Richard T. Peery, Trustee ⁽²³⁾
- 10.18* Executive Employment Agreement Dated as of October 4, 2018 by and between Electronics For Imaging, Inc. and William D. Muir, Jr. ⁽²⁴⁾
- 10.19* Amendment Dated October 15, 2018 to Employment Agreement Dated as of April 22, 2015 by and between Electronics For Imaging, Inc. and Marc Olin ⁽²⁵⁾
- 10.20* Transition Agreement Dated October 15, 2018 by and between Electronics For Imaging, Inc. and Guy Gecht ⁽²⁶⁾
- 10.21* Amendment Dated November 5, 2018 to Transition Agreement Dated October 12, 2018 by and between Electronics for Imaging, Inc. and Guy Gecht ⁽²⁷⁾
- 10.22 Credit Agreement Dated as of January 2, 2019 among Electronics For Imaging, Inc. and Citibank, N.A., as Administrative Agent, Citibank, N.A., as Sole Lead Arranger and Sole Bookrunner, and Bank Of The West, as Syndication Agent
- 21 List of Subsidiaries

- 23.1 [Consent of Deloitte & Touche LLP, Independent Registered Public Accounting Firm](#)
 - 24.1 [Power of Attorney \(see signature page of this Annual Report on Form 10-K\)](#)
 - 31.1 [Certification of Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002](#)
 - 31.2 [Certification of Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002](#)
 - 32.1 [Chief Executive Officer Certification pursuant to 18 U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 and Chief Financial Officer Certification pursuant to 18 U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002](#)
 - 101.INS XBRL Instance Document
 - 101.SCH XBRL Taxonomy Extension Schema Document
 - 101.CAL XBRL Taxonomy Calculation Linkbase Document
 - 101.DEF XBRL Taxonomy Extension Definition Linkbase Document
 - 101.LAB XBRL Taxonomy Label Linkbase Document
 - 101.PRE XBRL Taxonomy Extension Presentation Linkbase Document
-

- (P) Paper exhibit
- * Management contracts or compensatory plan or arrangement
- + The Company has received confidential treatment with respect to portions of these documents
- (1) Filed as an exhibit to the Company's Annual Report on Form 10-K for the year ended December 31, 2016 (File No. 18805) and incorporated herein by reference.
- (2) Filed as an exhibit to the Company's Current report on Form 8-K filed on August 17, 2009 (File No. 18805) and incorporated herein by reference.
- (3) (P) Filed as an exhibit to the Company's Registration Statement on Form S-1 (No. 33-50966) and incorporated herein by reference.
- (4) Filed as an exhibit to the Company's Current Report on Form 8-K filed on September 9, 2014 (File No. 18805) and incorporated herein by reference.
- (5) Filed as an exhibit to the Company's Quarterly Report on Form 10-Q filed on November 6, 2018 (File No. 18805) and incorporated herein by reference.
- (6) Filed as an exhibit to the Company's Current Report on Form 8-K filed on December 3, 2018 (File No. 18805) and incorporated herein by reference.
- (7) Filed as an exhibit to the Company's Annual Report on Form 10-K for the year ended December 31, 2000 (File No. 18805) and incorporated herein by reference.
- (8) Filed as an exhibit to the Company's Current Report on Form 8-K filed on June 13, 2017 (File No. 18805) and incorporated herein by reference.
- (9) Filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2017. (File No. 18805) and incorporated herein by reference.
- (10) Filed as an exhibit to the Company's Registration Statement on Form S-1 (No. 33-50966) and incorporated (P) herein by reference.
- (11) Filed as an exhibit to the Company's Current Report on Form 8-K filed on August 17, 2009 (File No. 18805) and incorporated herein by reference.
- (12) Filed as an exhibit to the Company's Annual Report on Form 10-K for the year ended December 31, 2005. (File No. 18805) and incorporated herein by reference.
- (13) Filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2005. (File No. 18805) and incorporated herein by reference.
- (14) Filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2006. (File No. 18805) and incorporated herein by reference.
- (15) Filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2013. (File No. 18805) and incorporated herein by reference.
- (16) Filed as an exhibit to the Company's Quarterly Report on Form 10-Q filed on June 30, 2013 (File No. 000-18805) and incorporated herein by reference.
- (17) Filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2018. (File No. 18805) and incorporated herein by reference.
- (18) Filed as an exhibit to the Company's Current Report on Form 8-K filed on January 28, 2014 (File No. 000-18805) and incorporated herein by reference.
- (19) Filed as an exhibit to the Company's Annual Report on Form 10-K filed for the year ended December 31, 2015 (File No. 000-18805) and incorporated herein by reference.
- (20) Filed as an exhibit to the Company's Current Report on Form 8-K filed on September 9, 2014 (File No. 000-18805) and incorporated herein by reference.
- (21) Filed as an exhibit to the Company's Current Report on Form 8-K filed on September 9, 2014 (File No. 000-18805) and incorporated herein by reference.
- (22) Filed as an exhibit to the Company's Annual Report on Form 10-K for the year ended December 31, 2017 (File No. 18805) and incorporated herein by reference.
- (23)

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- Filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the year ended September 30, 2018 (File No. 18805) and incorporated herein by reference.
- (24) Filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the year ended September 30, 2018 (File No. 18805) and incorporated herein by reference.
- (25) Filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the year ended September 30, 2018 (File No. 18805) and incorporated herein by reference.
- (26) Filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the year ended September 30, 2018 (File No. 18805) and incorporated herein by reference.
- (27) Filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the year ended September 30, 2018 (File No. 18805) and incorporated herein by reference.

(b) List of Exhibits

See Item 15(a).

(c) Consolidated Financial Statement Schedule II for the years ended December 31, 2018, 2017, and 2016.

Item 16: Form 10-K Summary

None.

ELECTRONICS FOR IMAGING, INC.

Schedule II

Valuation and Qualifying Accounts (in thousands)

	Balance at Beginning of Period	Charged to Revenue and Expenses	Charged to (from) Other Accounts	Deductions	Balance at End of Period
As of December 31, 2018					
Allowance for bad debts and sales-related allowances	\$ 32,236	\$ 7,034	\$	—\$ (7,005)	\$ 32,265
As of December 31, 2017					
Allowance for bad debts and sales-related allowances	23,330	12,416	—	(3,510)	32,236
As of December 31, 2016					
Allowance for bad debts and sales-related allowances	21,993	10,678	—	(9,341)	23,330

SIGNATURES

Pursuant to the requirements of Sections 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.

ELECTRONICS FOR IMAGING, INC.

Date: February 27, 2019 /s/ William Muir, Jr.
William Muir, Jr.
Chief Executive Officer
(Principal Executive Officer)

Date: February 27, 2019 /s/ Marc Olin
Marc Olin
Chief Financial Officer
(Principal Financial and Accounting Officer)

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENT, that each person whose signature appears below constitutes and appoints William Muir and Marc Olin jointly and severally, his attorneys-in-fact, each with the power of substitution, for him in any and all capacities, to sign any amendments to the Form 10-K Annual Report and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that each of said attorneys-in-fact, or his substitute or substitutes, may do or cause to be done by virtue thereof.

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/ WILLIAM MUIR, JR. William Muir, Jr.	Chief Executive Officer, Director (Principal Executive Officer)	2/27/2019
/s/ MARC OLIN Marc Olin	Chief Financial Officer (Principal Financial and Accounting Officer)	2/27/2019
/s/ GUY GECHT Guy Gecht	Director	2/27/2019
/s/ ERIC BROWN Eric Brown	Director	2/27/2019
/s/ GILL COGAN Gill Cogan	Director	2/27/2019
/s/ THOMAS GEORGENS Thomas Georgens	Director	2/27/2019
/s/ RICHARD A. KASHNOW Richard A. Kashnow	Director	2/27/2019
/s/ DAN MAYDAN Dan Maydan	Director	2/27/2019
/s/ JANICE DURBIN CHAFFIN Janice Durbin Chaffin	Director	2/27/2019