

PDF SOLUTIONS INC  
Form 10-K  
March 15, 2012

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

Form 10-K

(Mark One)

R ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE  
SECURITIES EXCHANGE ACT OF 1934  
For the fiscal year ended December 31, 2011

£ or  
TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE  
SECURITIES EXCHANGE ACT OF 1934  
For the transition period from to

000-31311  
(Commission file number)

PDF SOLUTIONS, INC.  
(Exact name of registrant as specified in its charter)

Delaware  
(State or other jurisdiction of  
Incorporation or organization)

25-1701361  
(I.R.S. Employer  
Identification No.)

333 West San Carlos Street, Suite 700  
San Jose, California  
(Address of Registrant's principal executive offices)

95110  
(Zip Code)

(408) 280-7900  
(Registrant's telephone number, including area code)

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

Title of Class  
Common Stock, \$0.00015 par value

Name of Each Exchange on Which Registered  
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

Edgar Filing: PDF SOLUTIONS INC - Form 10-K

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 Act of 1934 during the preceding 12 months (or for such shorter period that the Registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes  No

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

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of 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, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

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

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

The aggregate market value of the voting stock held by non-affiliates of the Registrant was approximately \$121.9 million as of the last business day of the Registrant's most recently completed second quarter, based upon the closing sale price on the NASDAQ Global Market reported for such date. Shares of Common Stock held by each officer and director and by each person who owns 10% or more of the outstanding Common Stock have been excluded in that such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

There were 28,464,040 shares of the Registrant's Common Stock outstanding as of March 5, 2012.

#### DOCUMENTS INCORPORATED BY REFERENCE

Part III incorporates certain information by reference from the definitive Proxy Statement to be filed within 120 days from December 31, 2011.

## TABLE OF CONTENTS

	Page
<b>PART I</b>	
Item 1.	3
Item 1A.	10
Item 1B.	16
Item 2.	16
Item 3.	16
Item 4.	17
<b>PART II</b>	
Item 5.	17
Item 6.	20
Item 7.	21
Item 7A.	31
Item 8.	32
Item 9.	33
Item 9A.	33
Item 9B.	34
<b>PART III</b>	
Item 10.	34
Item 11.	34
Item 12.	34
Item 13.	35
Item 14.	35
<b>PART IV</b>	
Item 15.	35
Signatures	
Index to Exhibits	

## PART I

This Annual Report on Form 10-K, particularly in Item 1 “Business” and Item 7 “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” includes forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 (the “Securities Act”) and Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). These statements include, but are not limited to, statements concerning: expectations about the effectiveness of our business and technology strategies; expectations regarding stock market and global economic trends; expectations regarding previous and future acquisitions; current semiconductor industry trends; expectations of the success and market acceptance of our intellectual property and our solutions; expectations that our cash, cash equivalents and cash generated from operations will satisfy our business requirements for the next twelve months; expectations of our future liquidity requirements; and our ability to obtain additional financing when needed. Our actual results could differ materially from those projected in the forward-looking statements as a result of a number of factors, risks and uncertainties discussed in this Form 10-K, especially those contained in Item 1A of this Form 10-K. The words “may,” “anticipate,” “plan,” “continue,” “could,” “projected,” “expect,” “believe,” “intend,” and “negative of these terms and similar expressions are used to identify forward-looking statements. All forward-looking statements and information included herein is given as of the filing date of this Form 10-K with the Securities and Exchange Commission (“SEC”) and based on information available to us at the time of this report and future events or circumstances could differ significantly from these forward-looking statements. Unless required by law, we undertake no obligation to update publicly any such forward-looking statements.

The following information should be read in conjunction with the Consolidated Financial Statements and notes thereto included in this Annual Report on Form 10-K. All references to fiscal year apply to our fiscal year that ends on December 31.

### Item 1. Business

#### Business Overview

PDF Solutions is a leading provider of infrastructure technologies and services to lower the cost of integrated circuit (“IC”) design and manufacturing, enhance time to market, and improve profitability by addressing design and manufacturing interactions from technology development and product design to initial process ramps to mature manufacturing operations. Our technologies and services target the entire “process life cycle,” which is the term we have coined for the time from technology development and the design of an IC through volume manufacturing of that IC. Our solutions combine proprietary software, physical intellectual property in the form of cell libraries for IC designs, test chips, an electrical wafer test system, proven methodologies, and professional services. We analyze yield loss mechanisms to identify, quantify, and correct the issues that cause yield loss. Our analysis drives IC design and manufacturing improvements to enable our customers to optimize the technology development process, to increase initial yield when an IC design first enters a manufacturing line, to increase the rate at which yield improves, and to minimize excursions and process variability that cause yield loss throughout mass production. The result of successfully implementing our solutions is the creation of value that can be measured based on improvements to our customers’ actual yield. Through our gainshare performance incentives component, we have aligned our financial interests with the yield and performance improvements realized by our customers, and we receive revenue based on this value. Our technologies and services have been sold to leading integrated device manufacturers, fabless semiconductor companies, and foundries.

The key benefits of our solutions to our customers are:

**Faster Time to Market.** Our solutions are designed to accelerate our customers' time-to-market and increase product profitability. Our solutions, which can predict and improve product yield even before IC product design is complete, transform the traditional design-to-silicon sequence into a primarily concurrent process, thereby shortening our customers' time-to-market. Systematically incorporating knowledge of the integration of the design and manufacturing processes into our software modules and physical IP enables our customers to introduce products with higher initial yields faster. Our solutions are designed to decrease design and process iterations and reduce our customers' up-front costs, and thus provide our customers with early-mover advantages such as increased market share and higher selling prices.

**Faster Time to Volume.** After achieving higher initial yields and faster time-to-market, our solutions are designed to enable our customers to isolate and eliminate remaining yield issues to achieve cost efficient volume manufacturing. Once a manufacturing process has been modeled using our solutions, our customers are able to diagnose problems and simulate potential corrections more quickly than using traditional methods. In addition, if process changes are required, improvements can be verified more quickly using our technology than using traditional methods. Our solutions thus enable our customers to quickly reach cost efficient volume, so that they are able to increase margins, improve their competitive position, and capture higher market share.

**Increased Manufacturing Efficiencies.** Our solutions for product design, product introduction, yield ramp, and process control are designed to allow our customers to achieve a higher yield at mass production and therefore a lower cost of goods sold. In addition, our solutions, which also include fault detection and classification (“FDC”) software, are designed to provide our customers with the ability to proactively monitor process health to avoid potential yield problems.

Our long-term business objective is to maximize IC yield by providing the industry standard in technologies and services for the Process Life Cycle. To achieve this objective, we intend to:

**Extend Our Technology Leadership Position.** We intend to extend our technology leadership position by leveraging our experienced engineering staff and codifying the knowledge that we acquire in our solution implementations. For example, we continue to expand and develop new technology that leverages our Characterization Vehicle® (CV®) methodology to embed test structures on product wafers. This provides valuable insight regarding product yield loss during mass production with minimal or no increase in test time and non-product wafers. In addition, we selectively acquire complementary businesses and technologies to increase the scope of our solutions.

**Leverage Our Gainshare Performance Incentives Business Model.** We intend to continue expanding the gainshare performance incentives component of our customer contracts. We believe this approach allows us to form collaborative and longer-term relationships with our customers by aligning our financial success with that of our customers. Working closely with our customers on their core technologies that implement our solutions, with a common focus on their business results, provides direct and real-time feedback for continual improvement of our solutions. We believe that we will generate expanded relationships with customers that engage us on terms that include a significant gainshare performance incentive component.

**Focus on Key IC Product Segments and High-Growth Adjacent Markets.** We intend to focus our solutions on high-volume, high-growth IC product segments such as system-on-a-chip, memory, CMOS image sensor, and high-performance central processing units. As a result, we will continue to expand our solutions for technology drivers such as low-k dielectrics, high-k metal gates, immersion lithography, double patterning, SOI, Finfets, copper, and 300mm wafer fabs, which are all still somewhat new or are relatively complex manufacturing technologies. We believe that these product segments are particularly attractive because they include complex IC design and manufacturing processes where processed silicon is costly and yield is critical. In addition, we have expanded our efforts to penetrate relatively new and potentially high-growth adjacent markets, such as photovoltaic and LED manufacturing, and we are leveraging our yield management system and FDC technology to create products that meet the needs of these markets.

**Expand Strategic Relationships.** We intend to continue to extend and enhance our relationships with companies at various stages of the design-to-silicon process, such as process licensors, manufacturing and test equipment vendors, electronic design automation vendors, silicon IP providers, semiconductor foundries, and contract test and assembly houses.

PDF Solutions was incorporated in Pennsylvania in November 1992. We reincorporated in California in November 1995 and reincorporated in Delaware in July 2000. In July 2001, the company completed an initial public offering and our shares of common stock are currently traded on the NASDAQ. Headquartered in San Jose, California, PDF Solutions operates worldwide with additional offices in China, Europe, Japan, Korea, Singapore, and Taiwan.

## Industry Background

Rapid technological innovation, with increasingly shorter product life cycles, now fuels the economic growth of the semiconductor industry. IC companies historically ramped production slowly, produced at high volume once products

gained market acceptance, and slowly reduced production volume when price and demand started to decrease near the end of the products' life cycles. Now, companies often need to be the first to market and the first to sell the most volume when a product is first introduced so that they have performance and pricing advantages over their competition, or else they lose market opportunity and revenue. Increased IC complexity and compressed product lifecycles create significant challenges to achieve competitive initial yields and optimized performance. For example, it is not uncommon for an initial manufacturing run to yield only 20%, which means that 80% of the ICs produced are wasted. Yield improvement and performance optimization are critical drivers of IC companies' financial results because they typically lead to cost reduction and revenue generation concurrently, causing a leveraged effect on profitability.

#### Technology and Intellectual Property Protection

We have developed proprietary technologies for yield simulation, analysis, loss detection, and improvement. The foundation for many of our solutions is our CV infrastructure ("CVi") that enables our customers to characterize the manufacturing process, and establish fail-rate information needed to calibrate manufacturing yield models, prioritize yield improvement activities and speed-up process learning-cycles. Our CVi includes proprietary Characterization Vehicle® test chips, including designs of experiments and layout designs, and a proprietary and patented highly parallel electrical functional and parametric-test system, comprised of hardware and software designed to provide an order-of-magnitude reduction in the time required to test our Characterization Vehicle® test chips. In addition, our technology embodies many algorithms, which we have developed over the course of many years, and which are implemented in our products including dataPOWER®, pdCVtm, mæstria®, and pdBRIXtm, among others. Further, our IP includes methodologies that our implementation teams use as guidelines to drive our customers' use of our CV® test chips and technologies, quantify the yield-loss associated with each process module and design block, simulate the impact of changes to the design and/or to the manufacturing process, and analyze the outcome of executing such changes. We continually enhance our core technologies through the codification of knowledge that we gain in our solution implementations.

Our future success and competitive position rely to some extent upon our ability to protect these proprietary technologies and IP, and to prevent competitors from using our systems, methods, and technologies in their products. To accomplish this, we rely primarily on a combination of contractual provisions, confidentiality procedures, trade secrets, and patent, copyright, mask work, and trademark laws. We license our products and technologies pursuant to non-exclusive license agreements that impose restrictions on customers' use. In addition, we seek to avoid disclosure of our trade secrets, including requiring employees, customers, and others with access to our proprietary information to execute confidentiality agreements with us and restricting access to our source code. We also seek to protect our software, documentation, and other written materials under trade secret and copyright laws. As of December 31, 2011, we held 60 U.S. patents. We intend to prepare additional patent applications when we feel it is beneficial. Characterization Vehicle®, Circuit Surfer®, CV®, dataPOWER®, mæstria®, ModelWare®, pdFasTest®, PDF Solutions®, the PDF Solutions logo, Yield Ramp Simulator®, and YRS® are registered trademarks of PDF Solutions, Inc. or its subsidiaries, and Design-to-Silicon-Yield™, dataPOWER® VSF™, dP-bitMAP™, dP-Defect™, dP-Mining™, dP-SSA™, dP-Variability Analysis™, dP-WorkFlow™, exensio™, pdBRIX™, pdCV™, Template™, exensio™ and YA-FDC™ are our common law trademarks.

### Products and Services

Our solutions consist of integration engineering services, proprietary software, and other technologies designed to address our customers' specific manufacturing and design issues.

### Services and Solutions

Manufacturing Process Solutions ("MPS"). The IC manufacturing process typically involves four sequential phases: research and development to establish unit manufacturing processes, such as units for the metal CMP or lithography processes; integration of these unit processes into functional modules, such as metal or contact modules; a yield ramp of lead products through the entire manufacturing line; and volume manufacturing of all products through the life of the process. We offer solutions targeted to each of these phases designed to accelerate the efficiency of yield learning by shortening the learning cycle, learning more per cycle, and reducing the number of silicon wafers required. Our targeted offerings include:

- **Process R&D:** Our process R&D solutions are designed to help customers increase the robustness of their manufacturing processes by characterizing and reducing the variability of unit processes and device performance with respect to layout characteristics within anticipated process design rules.
- **Process Integration and Yield Ramp:** Our process integration and yield ramp solutions are designed to enable our customers to more quickly ramp the yield of new products early in the manufacturing process by characterizing the process-design interactions within each key process module, simulating product yield loss by process module, and prioritizing quantitative yield improvement by design block in real products.

Volume Manufacturing Solutions ("VMS"). Our volume manufacturing solutions are designed to enable our customers to extend our yield ramp services through the life of the process by continuing to collect test data and equipment signals during production and improving yield while reducing the overhead of manufacturing separate test wafers. Our dataPOWER® VSF™ software allows customers to perform rapid yield signature detection, characterization, and diagnosis. Our mæstria® and YA-FDC™ process control software offerings enable our customers to monitor and control process signals to detect and diagnose yield loss related to equipment performance. Our exensio™ software suite, which comprises our dataPOWER® VSF™, mæstria® and YA-FDC™ tools, enables customers to collect and combine product test data and equipment signals during production to improve yield while simultaneously reducing the overhead of manufacturing.

Design-for-Manufacturability (“DFM”) Solutions. Our DFM solutions are designed to enable our customers to optimize yields, improve parametric performance, and reduce product ramp time by integrating manufacturability considerations into the design cycle before a design is sent to the mask shop to more quickly and cost-effectively manufacture IC products. We target these solutions to customers’ requirements by providing the following:

- **Logic DFM Solutions:** Logic DFM solutions include software, IP, CV® infrastructure, and services designed to validate customers’ process design kit (PDK) and to maximize functional and parametric yield improvements while achieving requirements for density or performance, for example, in the logic portions of an IC design. A CV® optimized to the design style of an IC design provides any necessary design-specific parametric and functional yield models for the design style. Our software helps designers optimize the yield of the logic portion by using process-specific and design style-specific yield models and technology files that enable identification & implementation of IP design building block improvements that result in enhanced yield.

- **Circuit Level DFM Solutions:** Circuit level DFM solutions include software and services designed to anticipate the effects of process variability during analog/mixed signal/RF circuit design to optimize the manufacturability of each block given a pre-characterized manufacturing process.
- **Memory DFM Solutions:** Memory DFM solutions include software and services designed to optimize the memory redundancy and bit cell usage given a pre-characterized manufacturing process.
- **pdBRIX™ Physical IP Solutions:** pdBRIX™ physical IP solutions include software, IP, CV® infrastructure and services for identifying and developing a set of layout patterns that are optimized to a given manufacturing process and target product application. A complete characterization of all transistor and layout patterns used in these Template™ layouts can be performed with the CV® infrastructure. These Template™ layouts serve as the building blocks for design organizations to construct standard cell libraries and larger physical IP blocks, which we refer to as Bricks. This solution includes mapping software for inserting these Bricks into a design flow.

## Products

Our Manufacturing Process, Volume Manufacturing, and DFM solutions incorporate the use of various elements of our software products and other technologies, depending on the customers' needs. Our software products and other technologies include the following:

**Characterization Vehicle® Infrastructure.** Our test chip design engineers develop a design of experiments (“DOEs”) to determine how IC design building blocks interact with the manufacturing process. Our CV® software utilizes the DOE, as well as a library of building blocks that we know has potential yield and performance impact, to generate CV® test chip layouts. Our CV® infrastructure includes:

- **CV® Test Chips.** Our family of proprietary test chip products is run through the manufacturing process with intentional process modifications to explore the effects of potential process improvements given natural manufacturing variations. Our custom-designed CV test chips are optimized for our test hardware and analysis software and include DOEs tuned to each customer's process. Our full-reticle short-flow CV® test chips provide a fast learning cycle for specific process modules and are fully integrated with third-party failure analysis and inspection tools for complete diagnosis to root cause. Our Scribe CV® products are inserted directly on customers' product wafers and collect data from product wafers about critical layers.
- **pdCV™ Analysis Software.** Our proprietary software accumulates data from our CV® test chips, enabling models of the performance effects of process variations on these design building blocks to be generated for use with our Yield Ramp Simulator software.
- **pdFasTest® Electrical Wafer Test System.** Our proprietary system enables fast defect and parametric characterization of manufacturing processes. This automated system provides parallel functional testing, thus minimizing the time required to perform millions of electrical measurements to test our CV® test chips.

**Yield Ramp Simulator® (YRS®) Software.** Our YRS software analyzes an IC design to compute its systematic and random yield loss. YRS software allows design attribute extraction and feature-based yield modeling. YRS® software takes as input a layout that is typically in industry standard format and proprietary yield models generated by running and testing our CV® test chips. YRS® software is designed to estimate the yield loss due to optical proximity effects,

etch micro-loading, dishing in CMP, and other basic process issues.

Circuit Surfer® Software. Our Circuit Surfer software estimates the parametric performance yield and manufacturability of analog/mixed-signal/RF blocks in a design, such as RF transmission, PLLs/DLLs and logic critical paths. Using our Circuit Surfer software, a design engineer is able to estimate how manufacturing process variations will impact circuit performance and yield and then optimizes the circuit to reduce or eliminate the impact of those variations.

pdBRIX™ Platform. Our pdBRIX™ platform includes software for identifying and developing a set of physical IP building blocks that are tailored to a given manufacturing process and target product application. This platform also includes mapper software for inserting these physical IP building blocks into a traditional design flow.

dataPOWER® YMS Platform. Our dataPOWER® YMS platform collects yield data, loads and stores it in an integrated database and allows product engineers to identify and analyze production yield issues. Our YMS platform is designed to handle very large data sets, to efficiently improve productivity, yield and time-to-market at our customers' sites. dataPOWER® VSF™ software contains powerful visualization and reporting tools, which provide flexibility to address customers' requirements such as web-based access through the dP-Monitor™ module. dataPOWER® VSF™ Expert software additionally includes extra proprietary yield analysis software tools that aid in the diagnosis of more complex yield issues, and can be further extended through optional modules to enable defect analysis (dP-Defect™), memory analysis (dP-bitMAP™), spatial signature analysis (dP-SSA™) and data-mining (dP-Mining™).

FDC Software. Our mæstria® product provides FDC capabilities including summary indicators to rapidly identify sources of process variations and manufacturing excursions by monitoring equipment parameters through proprietary data collection and analysis features. Our ModelWare® product is a real-time FDC system for monitoring and alarming of equipment variation and manufacturing excursions.

YA-FDC™ Tools. Our YA-FDC™ software tools allow online modeling to create real-time virtual measurements of final product attributes during processing. These models enable optimization decisions for process control, process adjustments, PM scheduling, tool corrective actions, and wafer dispatching. The real-time decision-making based on the models is designed to reduce product variability and cost simultaneously. YA-FDC™ tools also enable more rapid diagnosis of yield loss mechanisms identified at the end of wafer processing through application of the developed models.

With the exception of dataPOWER® and mæstria®, the primary distribution method for our software and technologies is through our manufacturing process solutions although, we have in the past and may in the future separately license these and other technologies. Though dataPOWER® and mæstria® are primarily licensed separately, they may also be distributed within our Design-to-Silicon-Yield solutions.

## Customers

Our current customers are foundries, integrated device manufacturers ("IDMs"), and fabless semiconductor design companies. Our customers' targeted product segments vary significantly, including microprocessors, memory, graphics, image sensor solutions, and communications. We believe that the adoption of our solutions by such companies for usage in a wide range of products validates the application of our Design-to-Silicon-Yield solutions to the broader semiconductor market.

Global Foundries Inc. ("Global Foundries"), International Business Machines Corporation ("IBM") and Samsung Electronics ("Samsung") represented 24%, 19%, and 15%, respectively, of our revenues for the year ended December 31, 2011. Global Foundries, Toshiba Corporation ("Toshiba"), Samsung and IBM, represented 19%, 18%, 12% and 11%, respectively, of our revenues for the year ended December 31, 2010. IBM, Toshiba, and Global Foundries represented 19%, 17%, and 11%, respectively, of our revenues for the year ended December 31, 2009. No other customer accounted for 10% or more of our revenues in 2011, 2010, and 2009.

For the year ended December 31, 2011, we derived 41% of our revenues from customers based in Asia compared to 65% for the year ended December 31, 2010 and 66% for the year ended December 31, 2009. We base these calculations on the geographic location of where the work is performed. Additional discussion regarding the risks

associated with international operations can be found under Item 1A, “Risk Factors”.

See our “Notes to Consolidated Financial Statements”, included under Part II, Item 8. “Financial Statements and Supplementary Data” for additional geographic information.

#### Sales and Marketing

Our sales strategy is to pursue targeted accounts through a combination of our direct sales force, our solution implementation teams, and strategic alliances. After we are engaged by a customer and early in the solution implementation, our engineers seek to establish relationships in the organization and gain an understanding of our customers’ business issues. Our direct sales and solution implementation teams combine their efforts to deepen our customer relationships by expanding our penetration across the customer’s products, processes and technologies. This close working relationship with the customer has the added benefit of helping us identify new product areas and technologies in which we should next focus our research and development efforts. We expect to continue to establish strategic alliances with process licensors, vendors in the electronic design automation software, capital equipment for IC production, silicon IP and mask-making software segments to create and take advantage of sales channel and co-marketing opportunities.

## Research and Development

Our research and development focuses on developing and introducing new proprietary technologies, software products and enhancements to our existing solutions. We use a rapid-prototyping paradigm in the context of the customer engagement to achieve these goals. We have made, and expect to continue to make, substantial investments in research and development. The complexity of our Design-to-Silicon-Yield technologies requires expertise in physical IC design and layout, transistor design and semiconductor physics, semiconductor process integration, numerical algorithms, statistics and software development. We believe that our team of engineers will continue to advance our market and technological leadership. We conduct in-house training for our engineers in the technical areas, as well as focusing on ways to enhance client service skills. Although it fluctuates, we can have up to one quarter of our research and development engineers operating in the field, partnered with solution implementation engineers in a deliberate strategy to provide direct feedback between technology development and customer needs. Our research and development expenses were \$14.0 million, \$15.0 million and \$17.9 million in 2011, 2010 and 2009, respectively.

## Competition

The semiconductor industry is highly competitive and driven by rapidly changing design and process technologies, evolving standards, short product life cycles, and decreasing prices. We expect market competition to continue to develop and increase as the market for process-design integration technologies and services continues to evolve. We believe the solution to address the needs of IC companies requires a unified system of yield models, design analysis software, CV test chips, physical IP creation, process control software, and yield management software. Currently, we are the only provider of comprehensive commercial solutions for integrating design and manufacturing processes. We face indirect competition from internal groups at IC companies that use an incomplete set of components not optimized to accelerate process-design integration. Some providers of yield management software, inspection equipment, electronic design automation, or design IP may seek to broaden their product offerings and compete with us.

We face competition for some of the point applications of our solutions including some of those used by the internal groups at IC companies. Specifically there are several suppliers of yield management and/or prediction systems, such as KLA-Tencor, Mentor Graphics (through its acquisition of Ponte Solutions), Rudolph Technologies Inc. (“Rudolph”) (through its acquisition of the Yield Dynamics group), Synopsys, Inc. (“Synopsys”), and process control software, such as Applied Materials, Inc. (through its acquisition of the software division of Brooks Automation, Inc.), BISTel Inc., Rudolph, and Trancom Technology, Inc., and MKS Instruments, Inc. ARM Ltd. and Synopsys (through its acquisition of Virage Logic Corporation) provide standard cells in the physical IP space and Tela provides software for standard cell synthesis, each of which could compete with our pdBRIX™ solution. In addition, Synopsys now appears to offer directly competing DFM solutions, while other EDA suppliers provide alternative DFM solutions that may compete for the same budgetary funds.

We believe that our solutions compare favorably with respect to competition because we have demonstrated results and reputation, strong core technology, ability to create innovative technology, and ability to implement solutions for new technology and product generations.

## Employees

As of December 31, 2011, we had 319 employees worldwide, including 203 on client service teams, 56 in research and development, 26 in sales and marketing, and 34 in general and administrative functions. Of these employees, 146 are located in the US, 126 in Asia, and 47 in Europe. Worldwide, we had 292 employees as of December 31, 2010 and 306 as of December 31, 2009.



None of our employees are represented by a labor union. Our employees in France and Italy are subject to collective bargaining agreements in those countries. We believe our relationship with our employees is good.

#### Executive Officers

The following table and notes set forth information about our current executive officers as of March 13, 2012.

Name	Age	Position
John K. Kibarian, Ph.D.	48	President, Chief Executive Officer, and Director
Gregory Walker	58	Vice President, Finance and Chief Financial Officer
Michael Shahbazian	65	Vice President
Cees Hartgring, Ph.D.	58	Vice President, Client Services and Sales
Kimon Michaels, Ph.D.	45	Vice President, Products and Solutions

John K. Kibarian, Ph.D., one of our founders, has served as President since November 1991 and has served as our Chief Executive Officer since July 2000. Dr. Kibarian has served as a director since December 1992. Dr. Kibarian received a B.S. in Electrical Engineering, an M.S. E.C.E. and a Ph.D. E.C.E. from Carnegie Mellon University.

Gregory Walker has served as a Chief Financial Officer and Vice President, Finance since November 2011. Prior to joining the Company, Mr. Walker served as Sr. Vice President and Chief Financial Officer at InnoPath Software since 2007. Prior to that, Mr. Walker served as Sr. Vice President & Chief Financial Officer of Magma Design Automation, Inc. from 2002 through 2007. Earlier in his career, he held various financial roles at technology companies, including Synopsys, Inc., Integrated Device Technology, Inc., International Business Machines Corporation and Xerox Corporation. Mr. Walker received an M.B.A. from the University of Rochester in Rochester, New York and a B.A. in economics and history from Union College in Schenectady, New York.

Michael Shahbazian has served as Vice President since March 2012. Prior to this appointment, Mr. Shahbazian previously served as the Company's Interim CFO, Vice President, Finance from June 2011 through December 2011. Prior to that, Mr. Shahbazian served as chief financial officer and either senior vice president or vice president at various companies, including Guidewire Software, Inc. from November 2007 to July 2009, Embarcadero Technologies from October 2005 through July 2007, Niku Corporation (acquired by Computer Associates) from January 2003 to August 2005, ANDA Networks, Inc. from November 2000 to November 2002, Inventa Technologies, Inc. from January 2000 to November 2000, and Walker Interactive Systems, Inc. from April 1999 to January 2000. Prior to these roles, Mr. Shahbazian spent nearly 20 years with Amdahl Corporation in a variety of senior financial positions. Mr. Shahbazian holds a B.S. in Business from California State University, Fresno, and an MBA from the University of Southern California, Los Angeles, California.

Cees Hartgring, Ph.D., has served as Vice President, Client Services and Sales since June 2007. Dr. Hartgring served as Vice President and General Manager, Manufacturing Process Solutions from January 2004 through May 2007, as Vice President, Worldwide Sales and Strategic Business Development from April 2003 through December 2003 and as Vice President of Sales from September 2002 through March 2003. Prior to joining PDF, Dr. Hartgring served as President and Chief Executive Officer of Trimedia Technologies, a Philips Semiconductor spinout. Dr. Hartgring also held various executive positions at Philips Semiconductor, most recently as Vice President and General Manager of the Trimedia business unit. Dr. Hartgring received an undergraduate degree from the Technical University Delft and an M.S.E.E. and a Ph.D. in Electrical Engineering and Computer Science from the University of California at Berkeley.

Kimon Michaels, Ph.D., one of our founders, has served as Vice President, Products and Solutions since July 2010. Mr. Michaels served as Vice President, Design for Manufacturability from June 2007 through June 2010. Prior to that,

Dr. Michaels served as Vice President, Field Operations for Manufacturing Process Solutions from January 2006 through May 2007, and has been a Director since November 1995. From March 1993 through December 2005, he served in various vice presidential capacities. He also served as Chief Financial Officer from November 1995 to July 1998. Dr. Michaels received a B.S. in Electrical Engineering, an M.S. E.C.E. and a Ph.D. E.C.E. from Carnegie Mellon University.

#### Available Information

We file or furnish various reports, such as registration statements, periodic and current reports, proxy statements and other materials with the SEC. Our Internet website address is [www.pdf.com](http://www.pdf.com). You may obtain, free of charge on our website, copies of our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act, as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. The Company's website address provided is not intended to function as a hyperlink, and the information on the Company's website is not, and should not be considered, part of this Annual Report on Form 10-K and is not incorporated by reference herein.

In addition to the materials that are posted on our website, you may read and copy any materials we file with the SEC at the SEC's Public Reference Room at 100 F Street, NE, Washington, DC 20549-0120. You may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC also maintains a Web site (<http://www.sec.gov>) that contains reports, proxy and information statements and other information regarding issuers, such as us, that file electronically with the SEC.

Item 1A. Risk Factors.

It typically takes us a long time to sell our unique solutions to new customers and into new markets, and that can result in uncertainty and delays in generating revenues.

Our gainshare performance incentives business model is unique and our Design-to-Silicon-Yield solutions are often unfamiliar to new customers. This results in a long sales cycle and requires a significant amount of our senior management's time and effort. Furthermore, we need to target those individuals within a customer's organization who have overall responsibility for the profitability of an integrated circuit ("IC"). These individuals tend to be senior management or executive officers. We may face difficulty identifying and establishing contact with such individuals. Even after initial acceptance, due to the complexity of structuring the gainshare performance incentives component, the negotiation and documentation processes can be lengthy. It can take nine months or more to reach a signed contract with a customer. Unexpected delays in our sales cycle could cause our revenues to fall short of expectations. Our efforts to leverage our FDC technology in the relatively new market of the solar panel industry may not be successful. Further, ongoing negotiations and evaluation projects with photovoltaic manufacturers may not result in significant revenues for us if we are unable to close new engagements in these markets on terms favorable to us, in a timely manner, or at all, or if we are unable to successfully deliver our products and services to such markets.

We generate a large percentage of our revenues from a limited number of customers, so decreased volumes at any one of these customers, or the loss of any one of these customers could significantly reduce our revenue and results of operations below expectations.

Historically, we have had a small number of large customers for our core Design-to-Silicon-Yield solutions and we expect this to continue in the near term. In the year ended December 31, 2011, three customers accounted for 58% of our revenues, with Global Foundries representing 24%, IBM representing 19% and Samsung representing 15%. In the year ended December 31, 2010, four customers accounted for 60% of our revenues, with Global Foundries representing 19%, Toshiba representing 18%, Samsung representing 12% and IBM representing 11%. In the year ended December 31, 2009, three customers accounted for 47% of our revenues, with IBM representing 19%, Toshiba representing 17% and Global Foundries representing 11%. We could lose a customer due to its decision not to engage us on future process nodes, its decision not to develop its own future process node, or as a result of industry factors, including consolidation. The loss of any of these customers or a decrease in the manufacturing or sales volumes of their products could significantly reduce our total revenue below expectations. In particular, such a loss could cause significant fluctuations in results of operations because our expenses are fixed in the short term and it takes us a long time to replace customers.

If semiconductor designers and manufacturers do not continue to adopt, or they significantly delay adoption of, our Design-to-Silicon-Yield solutions, our revenues will suffer.

If semiconductor designers and manufacturers do not continue to adopt our Design-to-Silicon-Yield solutions, both as currently comprised and as we may offer them in the future, our revenues will decline. We may not be successful if we do not continue to enter into agreements with existing customers and new customers that cover a larger number of IC products and processes. If we do not develop new customer relationships with companies that are integrated device manufacturers ("IDMs"), fabless semiconductor companies, and foundries, as well as system manufacturers, the market acceptance of our solutions will suffer. Factors that may limit adoption of our Design-to-Silicon-Yield solutions by semiconductor companies include:

- our existing and potential customers' delay in their adoption of the next process technology;
-

IDMs of logic ICs discontinuing or significantly cutting back their investment in the development of new process technology as a result of a shift to a model of outsourcing a larger proportion, or all, of the mass production of their ICs;

- our inability to keep pace with the rapidly evolving technologies and equipment used in the semiconductor design and manufacturing processes;
- our customers' failure to achieve satisfactory yield improvements using our Design-to-Silicon-Yield solutions;

- fewer processes being developed at our customers and, therefore, a reduction in the potential impact our solutions can add at any single customer; and
- our inability to develop, market, or sell effective solutions that are outside of our traditional logic focus of manufacturing process solutions.

Revenues from our gainshare performance incentives is dependent on factors outside of our control, including the volume of ICs that our customers are able to sell to their customers.

Our gainshare performance incentives fee component ties the profits of our customers to our own. Through this component, revenues for a particular product are largely determined by the volume of that product that our customer is able to sell to its customers, which is outside of our control. Decreased demand for semiconductor products decreases the volume of products our customers are able to sell, which directly decreases our gainshare performance incentives revenues. Also, our customers may unilaterally decide to implement changes to their manufacturing processes during the period that is covered by gainshare performance incentives, which could negatively affect yield results. Since we currently work on a small number of large projects, if a product does not achieve commercial viability or a significant increase in yield, or sustain significant volume manufacturing during the time we receive gainshare performance incentives, revenues associated with such products would be negatively impacted, which could significantly reduce our revenue and results of operations below expectations. In addition, if we work with two directly competitive products, volume in one may offset volume, and thus any of our related gainshare performance incentives, in the other product.

The semiconductor market is volatile and unpredictable, which limits our ability to forecast our business and could negatively impact our results of operations.

The semiconductor industry historically has been volatile with up cycles and down cycles, due to sudden changes in customers' manufacturing capacity requirements and spending, which depend in part on capacity utilization, demand for customers' IC products by consumers, inventory levels relative to demand, and access to affordable capital. For example, in 2008 and 2009, the semiconductor industry experienced significant challenges as a result of the severe tightening of the credit markets, turmoil in the financial markets, and weakened global economy. As a result of the various factors that affect this volatility, the timing and length of any cycles can be difficult to predict. Economic uncertainty exacerbates negative trends in consumer spending and may again cause some of our customers to delay or refrain altogether from entering into new engagements, licensing new or additional software products, or renewing maintenance and support for existing licensed software. This will negatively affect our revenues. Difficulties in obtaining capital and deteriorating market conditions may also lead to the inability of some customers to obtain affordable financing for other purchases, which could tie up funds otherwise budgeted for purchases of our solutions and technologies. Customers with liquidity issues may also lead to additional bad debt expense. Further, uncertainty about future global economic conditions and any affect on the semiconductor industry could make it challenging for us to forecast our operating results, make business decisions, and identify the risks that may affect our business, financial condition and results of operations. If we are not able to timely and appropriately adapt to changes resulting from the difficult macroeconomic environment, our business, financial condition, and results of operations may be significantly negatively affected.

Our solution implementations may take longer than budgeted, which could cause us to lose customers and may result in adjustments to our operating results.

Our solution implementations require a team of engineers to collaborate with our customers to address complex yield loss issues by using our software and other technologies. We must estimate the amount of time needed to complete an existing solution implementation in order to estimate when the engineers will be able to commence a new solution

implementation. In addition, our accounting for solution implementation contracts, which generate fixed fees, sometimes require adjustments to profit and loss based on revised estimates during the performance of the contract. These adjustments may have a material effect on our results of operations in the period in which they are made. The estimates giving rise to these risks, which are inherent in fixed-price contracts, include the forecasting of costs and schedules, and contract revenues related to contract performance.

If we are not able to attract, retain, motivate, and strategically locate talented employees, including some key executives, our business may suffer.

Our success and competitiveness depend on our ability to attract, retain, motivate, and strategically locate in our offices around the globe, talented employees, including some of our key executives. Achieving this objective may be difficult due to many factors, including fluctuations in global economic and industry conditions, changes in our management or leadership, the hiring practices at our competitors or customers, cost reduction activities, and the effectiveness of our compensation programs, including equity-based programs. Further, we have had, and expect to continue to have, difficulty in obtaining visas permitting entry for some of our employees that are foreign nationals into the United States, and delays in obtaining visas permitting entry into other key countries, for several of our key personnel, which disrupts our ability to strategically locate our personnel. If we lose the services of any of our key executives or a significant number of our engineers, it could disrupt our ability to implement our business strategy. If we do not successfully attract, retain, and motivate key employees, including key executives, we may be unable to realize our business objectives and our operating results may suffer.

If we do not effectively manage, support, and safeguard our worldwide information systems, and integrate recent and planned growth, our business strategy may fail.

We have experienced in the past, and may experience in the future, interruptions in our information systems on which our global operations depend. Further, we may face attempts by others to gain unauthorized access through the Internet to our information technology systems, to intentionally hack, interfere with, or cause physical or digital damage to or failure of such systems (such as significant viruses or worms), which attempts we may be unable to prevent. We could be unaware of an incident or its magnitude and effects until after it is too late to prevent it and the damage it may cause. The theft, unauthorized use, or a cybersecurity attack that results in the publication of our trade secrets and other confidential business information as a result of such an incident could negatively affect our competitive position, the value of our investment in product or research and development, and third parties might assert against us or our customers claims related to resulting losses of confidential or proprietary information or end-user data and/or system reliability. In any such event, our business could be subject to significant disruption, and we could suffer monetary and other losses, including reputational harm. In addition, we must frequently expand our internal information system to meet increasing demand in storage, computing and communication. Our internal information system is expensive to expand and must be highly secure due to the sensitive nature of our customers' information that we transmit. Building and managing the support necessary for our growth places significant demands on our management and resources. These demands may divert these resources from the continued growth of our business and implementation of our business strategy. Further, we must adequately train our new personnel, especially our client service and technical support personnel, to effectively and accurately, respond to and support our customers. If we fail to do this, it could lead to dissatisfaction among our customers, which could slow our growth.

Our stock price has been volatile in the past, and our earnings per share and other operating results may be unusually high in a given quarter, thereby raising investors' expectations, and then unusually low in the next quarter, thereby disappointing investors, which could cause our stock price to drop again and increase potential dilution to our stockholders.

Our stock price has fluctuated widely during the last few years, from a low closing price of \$0.97 per share during March 2009 to a high closing price of \$9.01 per share during January 2008. A factor in the volatility may be that our historical quarterly operating results have fluctuated. Our future quarterly operating results will likely fluctuate from time to time and may not meet the expectations of securities analysts and investors in some future period, which could cause our stock price to decrease again. A significant reduction in our stock price negatively impacts our ability to raise equity capital in the public markets and increases the cost to us, as measured by dilution to our existing shareholders, of equity financing. In addition, the reduced stock price also increases the cost to us, in terms of dilution,

of using our equity for employee compensation or for acquisitions of other businesses. A greatly reduced stock price could also have other negative results, including the potential loss of confidence by employees, the loss of institutional investor interest, and fewer business development opportunities. Also, significant volatility in the stock price could be followed by a securities class action lawsuit, which could result in substantial costs and a diversion of our management's attention and resources.

If we fail to protect our intellectual property rights, customers or potential competitors may be able to use our technologies to develop their own solutions which could weaken our competitive position, reduce our revenue, or increase our costs.

Our success depends largely on the proprietary nature of our technologies. Our contractual, patent, copyright, trademark, and trade secret protection may not be effective against any particular threat or in any particular location. Our pending patent applications may not result in issued patents, and even if issued, they may not be sufficiently broad to protect our proprietary technologies. Litigation may be necessary from time to time to enforce our IP rights or to determine the validity and scope of the proprietary rights of others. As a result of any such litigation, we could lose our proprietary rights and incur substantial unexpected operating costs. Litigation could also divert our resources, including our managerial and engineering resources.

Competition in the market for yield improvement solutions and increased integration between IC design and manufacturing may intensify in the future, which could impede our ability to grow or execute our strategy.

Competition in our market may intensify in the future, which could slow our ability to grow or execute our strategy and could lead to increased pricing pressure, negatively impacting our revenues. Our current and potential customers may choose to develop their own solutions internally, particularly if we are slow in deploying our solutions or improving them to meet market needs. These and other competitors may be able to operate with a lower cost structure than our engineering organization, which would give any such competitor's products a competitive advantage over our solutions. We currently face indirect competition from the internal groups at IC companies and some direct competition from providers of yield management or prediction software such as KLA-Tencor, Mentor Graphics (through its acquisition of Ponte Solutions), Rudolph Technologies, Inc. ("Rudolph") (through its acquisition of Yield Dynamics), and Synopsys, Inc., and process control software, such as Applied Materials, Inc. (through its acquisition of the software division of Brooks Automation), BISTel Inc., MKS Instruments, Inc., Rudolph and Tracom Technology, Inc. Further, ARM Ltd. and Synopsys (through its acquisition of Virage Logic Corporation) provide standard cells in the physical IP space and Tela provides software for standard cell synthesis, each of which could compete with our pdBRIX™ solution. In addition, electronic design automation suppliers provide alternative DFM solutions that may compete for the same budgetary funds. There may be other providers of commercial solutions for systematic IC yield and performance enhancement of which we are not aware. Further, some providers of yield management software or inspection equipment may seek to broaden their product offerings and compete with us. In addition, we believe that the demand for solutions that address the need for better integration between the silicon design and manufacturing processes may encourage direct competitors to enter into our market. For example, large integrated organizations, such as IDMs, electronic design automation software providers, IC design service companies or semiconductor equipment vendors, may decide to spin-off a business unit that competes with us. Other potential competitors include fabrication facilities that may decide to offer solutions competitive with ours as part of their value proposition to their customers. If these potential competitors change the pricing environment or are able to attract industry partners or customers faster than we can, we may not be able to grow and execute our strategy as quickly or at all.

We face operational and financial risks associated with international operations that could negatively impact our revenue.

We have in the past expanded and reorganized, at different times, our non-U.S. operations and may in the future continue such expansion or reorganization by establishing or restructuring overseas subsidiaries, offices, or contractor relationships in locations, if and when, deemed appropriate by our management. Thus, the success of our business is subject to risks inherent in doing business internationally, including in particular:

- some of our key engineers and other personnel are foreign nationals and they may have difficulty gaining access to the United States and other countries in which our customers or our offices may be located and it may be difficult for us to recruit and retain qualified technical and managerial employees in foreign offices;
- greater difficulty in collecting account receivables resulting in longer collection periods;
- language and other cultural differences may inhibit our sales and marketing efforts and create internal communication problems among our U.S. and foreign research and development teams, increasing the difficulty of managing multiple, remote locations performing various development, quality assurance, and yield ramp analysis projects;
-

compliance with, inconsistencies among, and unexpected changes in, a wide variety of foreign laws and regulatory environments with which we are not familiar, including, among other issues, with respect to employees, protection of our IP, and a wide variety of operational regulations and trade and export controls under domestic, foreign, and international law;

- currency risk due to the fact that certain of our payables for our international offices are denominated in the local currency, including the Euro, Yen, and RMB, while virtually all of our revenues is denominated in U.S. dollars;
- quarantine, private travel limitation, or business disruption in regions affecting our operations, stemming from actual, imminent or perceived outbreak of human pandemic or contagious disease;
- in the event a larger portion of our revenues becomes denominated in foreign currencies, we would be subject to a potentially significant exchange rate risk; and
- economic or political instability, including but not limited to armed conflict, terrorism, interference with information or communication of networks or systems, and the resulting disruption to economic activity and business operations.

Revenues generated from customers in Asia accounted for 41%, 65% and 66% of our revenues in the years ended December 31, 2011, 2010 and 2009, respectively. Thus, in Asia, in particular, we face the following additional risks:

- a downturn in Asian economies which could limit our ability to retain existing customers and attract new ones in Asia; and
- if the U.S. dollar increases in value relative to local currencies, including for example, the Japanese Yen, the cost of our solutions will be more expensive to existing and potential local customers and therefore less competitive.

We use professionals located in Ramallah, Palestine, who provide various software-related development, quality assurance, maintenance, and other technical support services for certain of our software products. The political uncertainty surrounding the region could disrupt these service providers and thus negatively affect the range of services we are able to provide or our cost for such services.

Measurement of our gainshare performance incentives requires data collection and is subject to customer agreement, which can result in uncertainty and cause quarterly results to fluctuate.

We can only recognize revenue based on gainshare performance incentives once we have reached agreement with our customers on their level of yield performance improvements. Because measuring the amount of yield improvement is inherently complicated and dependent on our customers' internal information systems, there may be uncertainty as to some components of measurement. This could result in our recognition of less revenue than expected. In addition, any delay in measuring revenue attributable to our gainshare performance incentives could cause all of the associated revenue to be delayed until the next quarter. Since we currently have only a few large customers and we are relying on gainshare performance incentives as a significant component of our total revenues, any delay could significantly harm our quarterly results.

Changes in the structure of our customer contracts, including the mix between fixed and variable revenue and the mix of elements, including perpetual and term-based licenses, can adversely affect the amount and timing of our total revenues.

Our long-term success is largely dependent upon our ability to structure our future customer contracts to include a larger gainshare performance incentives component relative to the fixed fee component. We typically recognize the fixed fee component earlier than the gainshare performance incentives component so if we are successful in increasing the gainshare performance incentives component of our customer contracts, we will experience an adverse impact on our operating results in the short term as we reduce the fixed fee component. Due to acquisitions and expanded business strategies, the mix of elements in some of our contracts has changed recently and the relative importance of the software component in some of our contracts has increased. We have experienced, and may in the future experience, delays in the expected recognition of revenue associated with generally accepted accounting principles regarding the timing of revenue recognition in multi-element software arrangements, including the effect of acceptance criteria as a result of the change in our contracts. If we fail to meet contractual acceptance criteria on time or at all, the total revenues we receive under a contract could be delayed or decline. Further, if we mix term-based licenses with perpetual licenses, it will impact the timing of the recognition of revenue from that customer. In addition, by increasing the gainshare performance incentives or the software component, we may increase the variability or timing of recognition of our revenue, and therefore increase the risk that our total future revenues will be lower than expected and fluctuate significantly from period to period.

We have a history of losses, we may incur losses in the future and we may be unable to reach, or thereafter maintain, profitability.

We have experienced losses in the fiscal years ended December 31, 2009 and in the past. We may not maintain profitability if our costs increase more quickly than we expect or if revenues decrease. In addition, virtually all of our operating expenses are fixed in the short term, so any shortfall in anticipated revenue in a given period could significantly reduce our operating results below expectations. Our accumulated deficit was \$129 million as of December 31, 2011. We expect to continue to incur significant expenses in connection with:

- funding for research and development;
- expansion of our solution implementation teams;
- expansion of our sales and marketing efforts; and
- additional non-cash charges relating to amortization and stock-based compensation.

As a result, if we do not significantly increase revenues to maintain profitability on a quarterly or annual basis, our stock price could decline. We may be subject to additional impairment of our long-lived assets, which could negatively affect our reported results.

Inadvertent disclosure of our customers' confidential information could result in costly litigation and cause us to lose existing and potential customers.

Our customers consider their product yield information and other confidential information, which we must gather in the course of our engagement with the customer, to be extremely competitively sensitive. If we inadvertently disclosed or were required to disclose this information, we would likely lose existing and potential customers and could be subject to costly litigation. In addition, to avoid potential disclosure of confidential information to competitors, some of our customers may, in the future, ask us not to work with key competitive products, which could limit our revenue opportunities.

Our technologies could infringe the intellectual property rights of others, causing costly litigation and the loss of significant rights.

Significant litigation regarding intellectual property rights exists in the semiconductor industry. It is possible that a third party may claim that our technologies infringe their intellectual property rights or misappropriate their trade secrets. Any claim, even if without merit, could be time consuming to defend, result in costly litigation, or require us to enter into royalty or licensing agreements, which may not be available to us on acceptable terms, or at all. A successful claim of infringement against us in connection with the use of our technologies could adversely affect our business.

Our ability to sell our products may depend on the quality of our support and services offerings, and our failure to offer high-quality support and services could negatively affect our sales and results of operations.

Once our software products are integrated within our customers' hardware and software systems, our customers may depend on our support organization to resolve any issues relating to our products. A high level of support is critical for the successful marketing and sale of our products. If we do not effectively assist our customers in deploying our products, succeed in helping our customers quickly resolve post-deployment issues, and provide effective ongoing support, our ability to sell our software products to existing customers may be negatively affected, and our reputation with potential customers could be harmed. If our software customers have a poor perception of our support and services offerings, they may choose not to renew software support and maintenance when the current period expires. In addition, due to our international operations, our support organization faces challenges associated with delivering support, training, and documentation where the user's native language may not be English. If we fail to maintain high-quality support and services, our customers may choose our competitors' products instead of ours in the future.

Defects in our proprietary technologies, hardware and software tools, and the cost of support to remedy any such defects could decrease our revenue and our competitive market share.

If the software, hardware, or proprietary technologies we provide to a customer contain defects that increase our customer's cost of goods sold and time-to-market or damage our customer's property, these defects could significantly decrease the market acceptance of our solutions. Further, the cost of support resources required to remedy any defects in our technologies, hardware, or software tools could exceed our expectations. Any actual or perceived defects with our software, hardware, or proprietary technologies may also hinder our ability to attract or retain industry partners or customers, leading to a decrease in our revenue. These defects are frequently found during the period following introduction of new software, hardware, or proprietary technologies or enhancements to existing software, hardware, or proprietary technologies. Our software, hardware, and proprietary technologies may contain errors not discovered

until after customer implementation of the silicon design and manufacturing process recommended by us. If our software, hardware, or proprietary technologies contain errors or defects, it could require us to expend significant resources to remedy these problems, which could reduce margins and result in the diversion of technical and other resources from our other development efforts.

Failing to maintain the effectiveness of our internal controls over financial reporting could impede our ability to provide accurate and timely financial information, which could cause our investors to lose confidence in the accuracy and completeness of our financial reports and could cause our stock price to decline.

As of December 31, 2009 and 2010, we identified material weaknesses in connection with the evaluation of the effectiveness of our internal control over financial reporting pursuant to Section 404 of the Sarbanes-Oxley Act (“Section 404”). These control deficiencies resulted in adjustments during the 2009 audit to our consolidated financial statements for the year ended December 31, 2009, and during the 2010 audit to our consolidated financial statements for the year ended December 31, 2010. In the future, our management may identify additional deficiencies regarding the design and operating effectiveness of our system of internal control. We may not be able to remediate such deficiencies in time to meet the continuing reporting deadlines imposed by Section 404 and the costs of remediation may be substantial. A material weakness in our internal controls could result in a material misstatement not being prevented or detected, which could result in the need for a restatement of past periods. Moreover, our independent registered public accounting firm may deem that we did not maintain, in all material respects, effective internal control over financial reporting if we are unable to remediate deficiencies on a timely basis. If we fail to remediate material weaknesses, fail to implement required new or improved controls, encounter difficulties in their implementation, or are unable at any time to assert that we maintain effective internal controls, it could harm our operating results, cause us to fail to meet our SEC reporting obligations on a timely basis, result in material misstatements, and our investors could lose confidence in the accuracy and completeness of our financial reports and our stock price could decline.

Changes in effective tax rates could negatively affect our operating results.

We conduct our business globally and, as a result, are subject to taxation in the United States and foreign countries. Our future tax rates could be affected by numerous factors, including changes in tax laws or the interpretation of such tax laws and changes in accounting policies. Our filings are subject to reviews or audit by the Internal Revenue Service and state, local and foreign taxing authorities. We cannot be sure that any final determination in an audit would not be materially different than the treatment reflected in our historical income tax provisions and accruals. If additional taxes are assessed as a result of an audit, there could be a significant negative effect on our income tax provision and our operating results in the period or periods for which that determination is made.

The uncertainty in the credit markets might impact the value of certain auction-rate securities we have and we might have to record impairment charges or realized losses on our portfolio in the future.

Credit concerns in the capital markets have significantly reduced our ability to liquidate auction-rate securities that we classify as non-current investment securities on our balance sheet. The liquidity of the securities has been reduced by the uncertainty in the credit markets and the exposure of these securities to the financial condition of bond insurance companies. All auction-rate securities we hold have been failing to sell at auction since February 2008 due to an insufficient number of bidders. We reviewed the value of these securities for impairment and concluded that these securities were temporarily impaired. Therefore, during the year ended December 31, 2008, we recorded an unrealized loss of \$282,000 as a component of accumulated other comprehensive income (loss). We have concluded that there was no additional impairment as of December 31, 2009 and 2010. During the year ended December 31, 2011, we recorded an unrealized gain of \$66,000 related to the increase in fair value of our auction-rate securities as a component of accumulated other comprehensive income (loss). In future periods, should the estimated fair value of our auction-rate securities decline further based on market conditions, it could result in additional impairment and could result in the need to classify such impairment as other-than-temporary, which will result in a charge to operations. Further, future events may occur, or additional information may become available, which may cause us to identify credit losses where we do not expect to receive cash flows sufficient to recover the entire amortized cost basis of a security and which may necessitate the recording of future realized losses on securities in our portfolio. Significant losses in the estimated fair values of our investments could have a material adverse effect on our earnings in future periods.

#### Item 1B. Unresolved Staff Comments

None.

#### Item 2. Properties

Our principal executive offices are located in San Jose, California where we lease approximately 39,300 square feet under a lease that expires in September 2013. In addition, we lease laboratory space in San Jose, California under a lease that expires in November 2014. We lease other office space in Pennsylvania and Texas in the United States. In addition, we have offices in France, Germany, Italy, China, Japan, Korea, and Taiwan with an aggregate of approximately 34,600 square feet under various leases that expire at different times through 2016. We believe our existing facilities and those in negotiation are adequate to meet our current needs and are being utilized consistently with our past practice.

#### Item 3. Legal Proceedings

From time to time, we are subject to various claims and legal proceedings that arise in the ordinary course of business. Although we currently believe that the ultimate outcome of any of these claims and proceedings, individually and in

the aggregate, will not have a material adverse effect on our financial position or overall trends in results of operations, litigation is subject to inherent uncertainty. If an unfavorable ruling occurs in any of the legal proceedings described below, our financial position and results of operations and cash flows could be negatively affected. We accrue for losses related to litigation when a potential loss is probable and the loss can be reasonably estimated in accordance with FASB requirements. A reasonably possible loss in excess of amounts accrued is not significant to the financial statements. With respect to each of the matters below, we have determined a potential loss is not probable at this time and, accordingly, no amount has been accrued at December 31, 2011. As we continue to monitor these matters, however, our determination could change and we may decide a different reserve is appropriate in the future.

Philip Steven Melman filed a complaint against us and our Chief Executive Officer on December 7, 2009 in the Superior Court for Santa Clara County. In the complaint, Mr. Melman alleges wrongful discharge based on discrimination, fraud, breach of contract and similar theories, in connection with the termination of Mr. Melman's employment with us. The complaint seeks compensatory and punitive damages, any other available remedies, as well as attorney's fees and costs. Summary judgment in the favor of both the Company and Dr. Kibarian was entered by the court on October 27, 2011 and November 15, 2011, respectively. Mr. Melman is appealing both orders. We believe the complaint is without merit and intend to continue to vigorously oppose it.

Global Software Services, Inc., a Palestinian corporation ("GSSI"), filed a complaint against us on February 16, 2010 in the Superior Court for Santa Clara County. In the complaint, GSSI alleged that we failed to pay GSSI amounts owed under a Professional Services Agreement pursuant to which GSSI was providing software-related development and support services to us. In addition, GSSI alleged that we interfered with GSSI's business relationships and employee relationships and that we engaged in unfair business practices in violation of Business & Professions Code Section 17200. The complaint sought compensatory and punitive damages, disgorgement and restitution, injunctive relief and any other available equitable remedies, as well as attorney's fees and costs. On December 2, 2010, the court dismissed GSSI's action with prejudice. On April 14, 2011, Global Software Systems, LLC ("GSS LLC") filed a Notice of Motion to Intervene in the same matter. On May 4, 2011, Andre Hawit, chief executive officer of GSSI and president of GSS LLC, filed a complaint (as a cross-complainant) against both the Company and our Chief Executive Officer in the same matter before the Superior Court for Santa Clara County. Both Mr. Hawit and GSS LLC are continuing to pursue claims arising in connection with the subject matter of the lawsuit originally filed by GSSI. Specifically, Mr. Hawit's cross-complaint alleges that we interfered with his economic relationship with GSSI and that we engaged in unfair business practices in violation of Business and Professions Code Section 17200. He is seeking compensatory damages, punitive damages, restitution and attorney fees and costs. GSS LLC is alleging that it was an assignee of the rights of GSSI and that the court should grant it relief from the dismissal entered against GSSI and permit it to pursue those claims as an assignee. In August 2011, the court denied all previously filed motions to set aside the dismissal and for GSS LLC to intervene in the action. On September 2, 2011, GSS LLC filed a notice of appeal of the dismissal of the action, the denial of its motions to intervene and several other related rulings, and Mr. Hawit filed a notice of appeal of sanctions awarded to us against him. We believe the cross-complaint and the appeal are without merit and intend to continue to vigorously oppose them.

#### Item 4. Mine Safety Disclosures

None.

## PART II

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

Our common stock trades on the NASDAQ Global Market under the symbol "PDFS". As of March 5, 2012, we had approximately 89 stockholders of record. The number of stockholders of record does not include individuals whose stock is in nominee or "street name" accounts through brokers.

The following table sets forth for the periods indicated the high and low closing sale prices for our common stock as reported by the NASDAQ Global Market:

2011	High	Low
First Quarter	\$7.09	\$4.78
Second Quarter	\$7.02	\$5.55

Third Quarter	\$6.43	\$3.86
Fourth Quarter	\$7.13	\$3.66
2010	High	Low
First Quarter	\$4.82	\$3.85
Second Quarter	\$5.11	\$4.19
Third Quarter	\$4.88	\$3.46
Fourth Quarter	\$5.00	\$3.56

#### Dividend Policy

No cash dividends were declared or paid in 2011 or 2010. We currently intend to retain all available funds to finance future internal growth and product development and therefore do not anticipate paying any cash dividends on our common stock for the foreseeable future.

### Stock Performance Graph

The following graph compares the cumulative total stockholder return data for our stock since December 31, 2006 to the cumulative return over such period of (i) The NASDAQ Composite Index and (ii) the RDG Technology Composite Index. The graph assumes that \$100 was invested on December 31, 2006. The graph further assumes that such amount was initially invested in the Common Stock of the Company at a per share price of \$14.45 (closing price on December 31, 2006) and that of any dividends were reinvested. This performance graph is not “soliciting material,” is not deemed filed with the SEC and is not to be incorporated by reference in any filing by us under the Securities Act or the Exchange Act whether made before or after the date hereof and irrespective of any general incorporation language in any such filing. The stock price performance on the following graph is not necessarily indicative of future stock price performance.

## Purchases of Equity Securities by the Issuer and Affiliated Purchasers

The table below sets forth the information with respect to purchases made by or on behalf of the Company or any “affiliated purchaser” (as the term is defined in Rule 10b-18(a)(3) under the Exchange Act) of our common stock during the fourth quarter ended December 31, 2011 (in thousands except per share amounts).

## ISSUER PURCHASES OF EQUITY SECURITIES

Period	Total Number of Shares Purchased(2)	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs (1)
Month #1 (October 1, 2011 through October 31, 2011)	—	\$—	—	\$ 6,909
Month #2 (November 1, 2011 through November 30, 2011)	61	5.98	61	6,544
Month #3 (December 1, 2011 through December 31, 2011)	31	6.16	31	6,354
Total	92	\$6.03	92	

(1) On October 29, 2007, the Board of Directors approved a three-year program to repurchase up to \$10.0 million of the Company’s common stock on the open market. An amendment to this repurchase program was approved by the Board of Directors on October 19, 2010 that extended the program’s term for two more years to October 29, 2012 and reset the aggregate amount available for repurchase under the program to \$10.0 million. As of December 31, 2011, 3.3 million shares were repurchased at the average price of \$3.86 per share under this program and \$6.4 million remained available for repurchases.

(2) Included in the shares indicated in the table above are shares that the Company withheld through net share settlements to cover tax withholding obligations upon the vesting of restricted stock unit awards under the Company’s equity compensation plans.

## Item 6. Selected Financial Data.

The following selected consolidated financial information has been derived from the audited consolidated financial statements. Fiscal year 2010 and 2009 were revised for errors identified relating to prior periods. See Note 2 of the Notes to Consolidated Financial Statements for further discussion on the revisions, and the impact of those revisions on fiscal 2010 and 2009 results. The information set forth below is not necessarily indicative of results of future operations and should be read in conjunction with Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the consolidated financial statements and notes to those statements included therein and in Part IV of this Form 10-K.

	Year Ended December 31,				
	2011	2010(2)	2009(2)	2008(1)	2007
	(In thousands, except per share amounts)				
Consolidated Statements of Operations Data:					
Revenues:					
Design-to-silicon-yield solutions	\$51,633	\$43,080	\$32,662	\$55,113	\$70,376
Gainshare performance incentives	15,079	18,570	15,776	18,924	24,087
Total revenues	66,712	61,650	48,438	74,037	94,463
Cost of design-to-silicon-yield solutions:					
Direct costs of design-to-silicon-yield solutions	29,416	26,900	25,087	29,111	32,470
Amortization and impairment of acquired technology	626	1,285	1,439	6,012	5,148
Total cost of design-to-silicon-yield solutions	30,042	28,185	26,526	35,123	37,618
Gross profit	36,670	33,465	21,912	38,914	56,845
Operating expenses:					
Research and development	13,972	14,955	17,906	33,994	36,074
Selling, general and administrative	18,358	16,002	16,551	21,778	24,891
Amortization of other acquired intangible assets	204	295	349	893	3,422
Restructuring charges	(110 )	885	4,512	3,401	—
Impairment on goodwill and other acquired intangible assets	—	—	—	66,830	—
Total operating expenses	32,424	32,137	39,318	126,896	64,387
Income (loss) from operations	4,246	1,328	(17,406 )	(87,982 )	(7,542 )
Interest and other income, net	73	20	237	353	1,891
Income (loss) before taxes	4,319	1,348	(17,169 )	(87,629 )	(5,651 )
Income tax provision (benefit)	2,439	1,326	903	8,099	(2,724 )
Net income (loss)	\$1,880	\$22	\$(18,072 )	\$(95,728 )	\$(2,927 )
Net income (loss) per share:					
Basic	\$0.07	\$0.00	\$(0.69 )	\$(3.48 )	\$(0.10 )
Diluted	\$0.07	\$0.00	\$(0.69 )	\$(3.48 )	\$(0.10 )
Weighted average common shares:					
Basic	28,086	27,257	26,377	27,514	28,066
Diluted	28,431	27,471	26,377	27,514	28,066

December 31,  
2011      2010(2)      2009(2)      2008(1)      2007(1)

(In thousands)

## Consolidated Balance Sheets Data:

Cash and cash equivalents	\$46,041	\$38,154	\$34,899	\$31,686	\$35,315
Short-term investments	—	—	—	9,051	9,949
Working capital	57,236	50,849	44,887	56,331	72,456
Total assets	74,384	68,392	63,432	79,627	179,351
Total stockholders' equity	56,843	50,832	45,689	59,770	156,470

(1) In the fourth fiscal quarter of 2008, the Company recorded an impairment charge related to goodwill and intangible assets of \$70.3 million, of which \$3.4 million was recorded within “cost of design-to-silicon-yield solutions”.

(2) Includes revisions to correct previously reported amounts. See Note 2 of the Notes to Consolidated Financial Statements for further discussion on the revisions.

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

### Overview

We analyze our customers' IC design and manufacturing processes to identify, quantify, and correct the issues that cause yield loss to improve our customers' profitability by improving time-to-market, increasing yield and reducing total design and manufacturing costs. We package our solutions in various ways to meet our customers' specific business and budgetary needs, each of which provides us various revenue streams. We receive a mix of fixed fees and variable, performance-based fees for the vast majority of our yield improvement solutions. The fixed fees are typically reflective of the length of time and the resources needed to characterize a customer's manufacturing process and receive preliminary results of proposed yield improvement suggestions. The variable fee, or what we call gainshare, usually depends on our achieving certain yield targets by a deadline. Variable fees are currently typically tied to wafer volume on the node size of the manufacturing facility where we performed the yield improvement solutions. We receive license fees and service fees for related installation, integration, training, and maintenance and support services for our software that we license on a stand-alone basis.

### History

From our incorporation in 1992 through late 1995, we were primarily focused on research and development of our proprietary manufacturing process simulation and yield and performance modeling software. From late 1995 through late 1998, we continued to refine and sell our software, while expanding our offering to include yield and performance improvement consulting services. In late 1998, we began to sell our software and consulting services, together with our newly developed proprietary technologies, under the term Design-to-Silicon-Yield solutions, reflecting our current business model. In April 2000, we expanded our research and development team and gained additional technology by acquiring AISS. AISS now operates as PDF Solutions, GmbH, a German company, which continues to develop software and provide development services to the semiconductor industry. In July 2001, we completed the initial public offering of our common stock. In 2003, we enhanced our product and service offerings, including increased software applications, through the acquisitions of IDS and WaferYield. In 2006, we further complemented our technology offering by acquiring SiA and adding its FDC software capabilities to our integrated solution. In 2007, we increased our IP solutions portfolio, particularly in logic design technology, through the acquisition of Fabbrix. In 2008, we solidified our market leading position in the FDC software market, particularly in Korea, and now provide complementary technology to our mæstria® product through the acquisition of certain assets of Triant. From 2009 to the present, we have primarily focused on the pervasive application of our technology to leading edge logic manufacturing and achieving yield targets with our clients to maximize gainshare performance incentive revenues.

### Industry Trend

We believe that logic foundries were running at or near capacity at times during 2010, and a supply constraint at advanced nodes developed. Further, we believe that logic foundries invested in leading edge nodes and capacity in 2010 and 2011, even though utilization rates fluctuated in 2011. This investment trend resulted in an increase in our business and improved results of operations in 2010 and 2011.

Generally, the demand for consumer electronics and communications devices continues to drive technological innovation in the semiconductor industry as the need for products with greater performance, lower power consumption, reduced costs and smaller size continues to grow with each new product generation. In addition, advances in computing systems and mobile devices have fueled demand for higher capacity memory chips. To meet these demands, IC manufacturers and designers are constantly challenged to improve the overall performance of their ICs by designing and manufacturing ICs with more embedded applications to create greater functionality while lowering cost per transistor. As a result, both logic and memory manufacturers have migrated to more and more

advanced manufacturing nodes, capable of integrating more devices with higher performance, higher density, and lower power. As this trend continues, companies will continually be challenged to improve process capabilities to optimally produce ICs with minimal random and systematic yield loss, which is driven by the lack of compatibility between the design and its respective manufacturing process. We believe that as volume production of deep submicron ICs continues to grow, the difficulties of integrating IC designs with their respective processes and ramping new manufacturing processes will create a greater need for products and services that address the yield loss and escalating cost issues the semiconductor industry is facing today and will face in the future.

## Financial Highlights

The following were our financial highlights for the year ended December 31, 2011:

- Total revenues were \$66.7 million, which was an increase of \$5.1 million, or 8%, compared to the year ended December 31, 2010. Design-to-Silicon-Yield solutions revenues were \$51.6 million, which was an increase of \$8.6 million, or 20%, from the year ended December 31, 2010. The increase in Design-to-Silicon-Yield solutions revenues was primarily the result of higher bookings, as customers have begun to increase investment in leading-edge technology. Gainshare performance incentives revenues were \$15.1 million, which was a decrease of \$3.5 million, or 19%, from the year ended December 31, 2010. The decrease in revenues from gainshare performance incentives was primarily the result of decrease in wafer volumes at our customers' manufacturing facilities.
- Net income was \$1.9 million, compared to \$22,000 for the year ended December 31, 2010. The increase in net income was primarily attributable to a significant increase in revenues.
- Net income per basic and diluted share was \$0.07 compared to \$0.00 for the year ended December 31, 2010.
- Cash, cash equivalents and investments increased \$7.8 million to \$46.0 million at December 31, 2011 from \$38.2 million at December 31, 2010, primarily due to cash from operating activities during the period.

## Critical Accounting Policies

The preparation of financial statements and related disclosures in conformity with accounting principles generally accepted in the United States requires us to make judgments, assumptions, and estimates that affect the amounts reported in the Consolidated Financial Statements and accompanying notes. Note 1 of Notes to Consolidated Financial Statements describes the significant accounting policies and methods used in the preparation of the Consolidated Financial Statements. We consider the accounting policies described below to be our critical accounting policies. These critical accounting policies are impacted significantly by judgments, assumptions, and estimates used in the preparation of the Consolidated Financial Statements and actual results could differ materially from the amounts reported based on these policies.

## Revenue Recognition

We derive revenues from two sources: Design-to-Silicon-Yield Solutions and Gainshare Performance Incentives.

**Design-to-Silicon-Yield Solutions** — Revenues that are derived from Design-to-Silicon-Yield solutions comes from services and software licenses. We recognize revenue for each element of Design-to-Silicon-Yield solutions as follows:

**Services** — We generate a significant portion of our Design-to-Silicon-Yield solutions revenues from fixed-price solution implementation service contracts delivered over a specific period of time. These contracts require reliable estimation of costs to perform obligations and the overall scope of each engagement. Revenues under project-based contracts for solution implementation services are recognized as services are performed using the cost-to-cost percentage of completion method of contract accounting. Revenues under certain time-based contracts for solution implementation services are recognized under the proportional performance method. Losses on solution implementation contracts are recognized in the period when they become evident. Revisions in profit estimates are

reflected in the period in which the conditions that require the revisions become known and can be estimated. If we do not accurately estimate the resources required or the scope of work to be performed, or do not manage the projects properly within the planned period of time or satisfy our obligations under contracts, resulting contract margins could be materially different than those anticipated when the contracts were executed. Any such reductions in contract margin could have a material negative impact on our operating results.

On occasion, we license our software products as a component of our fixed price service contracts. In such instances, the software products are licensed to customers over a specified term of the agreement with support and maintenance to be provided at each customer's option over the license term.

In October 2009, the Financial Accounting Standards Board (“FASB”) amended the accounting standards for multiple-deliverable revenue arrangements to:

- provide updated guidance on whether multiple deliverables exist, how the deliverables in an arrangement should be separated, and how the consideration should be allocated;
- require an entity to allocate revenue in an arrangement using best estimated selling prices (“BESP”) of deliverables if a vendor does not have vendor-specific objective evidence of selling price (“VSOE”) or third-party evidence of selling price (“TPE”); and
- eliminate the use of the residual method and require an entity to allocate revenue using the relative selling price method.

We elected to early adopt this accounting standard on April 1, 2010 on a prospective basis for applicable transactions originating or materially modified after January 1, 2010. This guidance does not generally change the accounting for the Company’s software transactions. It only affects certain revenue arrangements that include both solution implementation services and software products that are not essential to the provision of these services. The amount of product and service revenue recognized in a given period is affected by our judgment as to whether an arrangement includes multiple deliverables and, if so, our determination of the fair value of each deliverable. In general, VSOE does not exist for our solution implementation services and software products. Because our services and products include our unique technology, we are not able to determine TPE. Therefore, we will use BESP in our allocation of arrangement consideration. In determining BESP, we apply significant judgment as we weigh a variety of factors, based on the facts and circumstances of the arrangement. We typically arrive at an BESP for a product or service that is not sold separately by considering company-specific factors such as geographies, internal costs, gross margin objectives, pricing practices used to establish bundled pricing, and existing portfolio pricing and discounting. After fair value is established for each deliverable, the total transaction amount is allocated to each deliverable based upon its relative fair value. Fees allocated to solution implementation services are recognized using the cost-to-cost percentage of completion method of contract accounting. Fees allocated to software and related support and maintenance are recognized under software revenue recognition guidance. Prior to the adoption of this new accounting standard, under these arrangements, where VSOE existed for the support and maintenance element, the support and maintenance revenue was recognized separately over the term of the supporting period and the remaining fee was recognized as services are performed using the cost-to-cost percentage of completion method of contract accounting. The impact on total revenues from the adoption of this new accounting standard is shown in the following table (in thousands).

	Year Ended December 31, 2010	
	As reported	Pro Forma Basis as if the Previous Accounting Guidance were in Effect
Total revenues	\$ 61,650	\$ 57,625

Software Licenses — We also license our software products separately from our solution implementation services. For software license arrangements that do not require significant modification or customization of the underlying

software, software license revenue is recognized under the residual method when (1) persuasive evidence of an arrangement exists, (2) delivery has occurred, (3) the fee is fixed or determinable, (4) collectability is probable, and (5) the arrangement does not require services that are essential to the functionality of the software. When arrangements include multiple elements such as support and maintenance, consulting (other than for our fixed price solution implementations), installation, and training, revenue is allocated to each element of a transaction based upon its fair value as determined by our VSOE and such services are recorded as services revenues. VSOE for maintenance is generally established based upon negotiated renewal rates while VSOE for consulting, installation, and training services is established based upon our customary pricing for such services when sold separately. Revenues for software licenses with extended payment terms are not recognized in excess of amounts due. For software license arrangements that require significant modification or customization of the underlying software, the software license revenues are recognized as services are performed using the cost-to-cost percentage of completion method of contract accounting, and such revenues are recorded as services revenue.

**Gainshare Performance Incentives** — When we enter into a contract to provide yield improvement services, the contract usually includes two components: (1) a fixed fee for performance by us of services delivered over a specific period of time; and (2) a gainshare performance incentives component where the customer may pay a variable fee, usually after the fixed fee period has ended. Revenues derived from gainshare performance incentives represent profit sharing and performance incentives earned based upon our customers reaching certain defined operational levels established in related solution implementation service contracts. Gainshare performance incentives periods are usually subsequent to the delivery of all contractual services and therefore have virtually no cost to us. Due to the uncertainties surrounding attainment of such operational levels, we recognize gainshare performance incentives revenues (to the extent of completion of the related solution implementation services) upon receipt of performance reports or other related information from our customers supporting the determination of amounts and probability of collection. Gainshare performance incentives revenues are dependent on many factors which are outside our control, including among others, continued production of the related ICs by our customers, sustained yield improvements by our customers, and our ability to enter into new Design-to-Silicon-Yield solutions contracts containing provisions for gainshare performance incentives.

#### Income Taxes

We must assess the likelihood that our deferred tax assets will be recovered from future taxable income and, to the extent we believe that recovery is not likely, we must establish a valuation allowance. Changes in the net deferred tax assets, less offsetting valuation allowance, in a period are recorded through the income tax provision in the consolidated statements of operations. For the year ended December 31, 2008, we concluded that a valuation allowance was required based on our evaluation and weighting of the positive and negative evidence. We continued to carry a valuation allowance against our U.S. and certain foreign deferred tax assets as of December 31, 2011 and 2010. See Note 10 to the consolidated financial statements for further discussion. If, in the future, we determine that these deferred tax assets are more likely than not to be realized, a release of all or part, of the related valuation allowance could result in a material income tax benefit in the period such determination is made.

Our income tax calculations are based on application of the respective U.S. federal, state or foreign tax law. Our tax filings, however, are subject to audit by the respective tax authorities. Accordingly, we recognize tax liabilities based upon our estimate of whether, and the extent to which, additional taxes will be due when such estimates are more-likely-than-not to be sustained. An uncertain income tax position will not be recognized if it has less than a 50% likelihood of being sustained. To the extent the final tax liabilities are different than the amounts originally accrued, the increases or decreases are recorded as income tax expense or benefit in the consolidated statements of operations.

#### Stock-Based Compensation

Stock-based compensation is estimated at the grant date based on the award's fair value and is recognized on a straight-line basis over the vesting periods of the applicable stock purchase rights and stock options, generally four years. As stock-based compensation expense recognized is based on awards ultimately expected to vest, it has been reduced for estimated forfeitures. Forfeitures are estimated at the time of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates.

We have elected to use the Black-Scholes-Merton option-pricing model, which incorporates various assumptions including volatility, expected life and interest rates. The expected volatility is based on the historical volatility of our common stock over the most recent period commensurate with the estimated expected life of stock options. The expected life of an award is based on historical experience and on the terms and conditions of the stock awards granted to employees. The interest rate assumption is based upon observed Treasury yield curve rates appropriate for the expected life of stock options.



## Recent Accounting Pronouncements and Accounting Changes

See our Note 1, “Business and Significant Accounting Policies” of “Notes to Consolidated Financial Statements” included under Part IV, Item 15 of this Form 10-K for a description of recent accounting pronouncements and accounting changes, including the expected dates of adoption and estimated effects, if any, on our consolidated financial statements.

## Results of Operations

The following table sets forth, for the years indicated, the percentage of total revenues represented by the line items reflected in our consolidated statements of operations:

	Years Ended December 31,					
	2011		2010		2009	
<b>Revenues:</b>						
Design-to-silicon-yield solutions	77	%	70	%	67	%
Gainshare performance incentives	23		30		33	
Total revenues	100		100		100	
<b>Cost of design-to-silicon-yield solutions:</b>						
Direct costs of design-to-silicon-yield solutions	44		44		52	
Amortization and impairment of acquired technology	1		2		3	
Total cost of design-to silicon-yield solutions	45		46		55	
Gross profit	55		54		45	
<b>Operating expenses:</b>						
Research and development	21		24		37	
Selling, general and administrative	27		26		34	
Amortization of other acquired intangible assets	—		1		1	
Restructuring charges	—		1		9	
Total operating expenses	48		52		81	
Income (loss) from operations	7		2		(36	)
Interest and other income, net	—		—		1	
Income (loss) before taxes	7		2		(35	)
Income tax provision (benefit)	4		2		2	
Net income (loss)	3	%	0	%	(37	)%

## Years Ended December 31, 2011 and 2010

Revenues (In thousands, except for percentages)	2011	2010	\$		%	
			Change		Change	
Design-to-silicon-yield solutions	\$51,633	\$43,080	\$8,553		20	%
Gainshare performance incentives	15,079	18,570	(3,491	)	(19	)
Total	\$66,712	\$61,650	\$5,062		8	%

**Design-to-Silicon-Yield Solutions.** Design-to-Silicon-Yield solutions revenues are derived from services (including solution implementations, software support and maintenance, consulting, and training) and software licenses, provided during our customer yield improvement engagements and solution product sales. Design-to-Silicon-Yield solutions revenues increased \$8.6 million for the year ended December 31, 2011 compared to the year ended December 31,

2010, primarily due to an increase of \$6.7 million in fixed fee integrated solutions and an increase of \$1.5 million in software and software related services. The increases were primarily the result of higher bookings, as customers continued their investment in leading edge technology due to continued improvement in the global economic environment and in the semiconductor industry. We booked ten new fixed-price solution implementation service contracts and five extensions to existing service contracts during the year ended December 31, 2011, as compared to eight new service contracts and five extensions to existing service contracts during the year ended December 31, 2010. Our Design-to-Silicon-Yield revenues may fluctuate in the future and are dependent on a number of factors, including the semiconductor industry's acceptance of our products, the timing of purchases by existing customers, and our ability to attract new customers and penetrate new markets including photovoltaic and LED, and further penetration of our current customer base.

**Gainshare Performance Incentives.** Gainshare performance incentives revenues represent profit sharing and performance incentives earned based upon our customers reaching certain defined operational levels. Revenues derived from gainshare performance incentives decreased \$3.5 million for the year ended December 31, 2011 compared to the year ended December 31, 2010, primarily due to decreases in wafer volumes at our customers' sites. Revenues from gainshare performance incentives were generated from five customers and eight engagements for the year ended December 31, 2011 and seven customers and eight engagements for the year ended December 31, 2010.

	2011	2010	\$ Change	% Change	
Cost of Design-to-Silicon-Yield Solutions (In thousands, except for percentages)					
Direct costs of design-to-silicon-yield solutions	\$29,416	\$26,900	\$2,516	9	%
Amortization and impairment of acquired technology	626	1,285	(659)	(51)	)
Total	\$30,042	\$28,185	\$1,857	7	%

**Costs of Design-to-Silicon-Yield Solutions.** Costs of Design-to-Silicon-Yield solutions consist of costs incurred to provide and support our services, costs recognized in connection with licensing our software, and amortization and impairment of acquired technology.

**Direct Costs of Design-to-Silicon-Yield Solutions.** Direct costs of Design-to-Silicon-Yield solutions consist of services costs and software licenses costs. Services costs consist of material, labor, overhead costs, and stock-based compensation charges associated with solution implementations. Costs include purchased materials, employee compensation and related benefits, travel and facilities-related costs. Software license costs consist of costs associated with licensing third-party software sold in conjunction with our software products and expenses incurred to produce and distribute our product documentation. Direct costs of Design-to-Silicon-Yield Solutions increased \$2.5 million for the year ended December 31, 2011 compared to the year ended December 31, 2010. The increase was primarily due to an increase of \$2.3 million in personnel expense as a result of additional headcount to support the growth in revenue-generating engagements and an increase of \$0.2 million in travel expense related to increased project activity.

**Amortization and Impairment of Acquired Technology.** Amortization of acquired technology consists of amortization of intangibles acquired as a result of certain business combinations. Amortization of acquired technology decreased \$659,000 for the year ended December 31, 2011 compared to the year ended December 31, 2010, primarily due to certain intangible assets becoming fully amortized. Assuming we acquire no other intangible assets, we anticipate amortization of acquired technology to be \$261,000 in 2012.

	2011	2010	\$ Change	% Change	
Research and Development (In thousands, except for percentages)					
Research and Development	\$13,972	\$14,955	(983)	(7)	)%

**Research and Development.** Research and development expenses consist primarily of personnel-related costs to support product development activities, including compensation and benefits, outside development services, travel, facilities cost allocations, and stock-based compensation charges. Research and development expenses decreased \$1.0 million for the year ended December 31, 2011 compared to the year ended December 31, 2010, primarily due to a decrease of \$0.6 million in personnel expense due to utilizing research and development personnel on revenue-generating activities, a decrease of \$0.5 million in stock-based compensation expense as certain stock awards became fully vested, offset by an increase of \$0.3 million in outside services to support software-related research and development activities. We anticipate our expenses in research and development will fluctuate in absolute dollars

from period to period as a result of cost control initiatives and the timing of when we hire new personnel based on the scope and timing of product development projects.

	2011	2010	\$ Change	% Change	
Selling, General and Administrative (In thousands, except for percentages)					
Selling, general and administrative	\$18,358	\$16,002	2,356	15	%

Selling, General and Administrative. Selling, general and administrative expenses consist primarily of compensation and benefits for sales, marketing and general and administrative personnel in addition to outside sales commissions, legal and accounting services, marketing communications, travel and facilities cost allocations, and stock-based compensation charges. Selling, general and administrative expenses increased \$2.4 million for the year ended December 31, 2011 compared to the year ended December 31, 2010 primarily due to an increase of \$1.2 million in personnel expense due to additional headcount to support the increased level of business activities and one-time cost related to the separation of the Chief Administration Officer, an increase of \$0.6 million in accounting fees, an increase of \$0.4 million in sales commissions, an increase of \$0.3 million in recruiting expenses related to the search of the Chief Financial Officer and an increase of \$0.1 million in outside services, partially offset by a decrease of \$0.4 million in legal expense due to a decrease in legal activities. We anticipate our selling, general and administrative expenses will fluctuate in absolute dollars from period to period as a result of changes in litigation, cost control initiatives and the need to support sales efforts in the future.

	2011	2010	\$ Change	% Change	
Amortization of Other Acquired Intangible Assets (In thousands, except for percentages)					
Amortization of other acquired intangible assets	\$204	\$295	(91)	(31)	%

Amortization of Other Acquired Intangible Assets. Amortization of other acquired intangible assets consists of the amortization of intangibles acquired as a result of certain business combinations. Amortization of other acquired intangible assets for the year ended December 31, 2011 decreased \$91,000 compared to the year ended December 31, 2010, primarily the result of certain intangible assets becoming fully amortized. Assuming we acquire no other intangible assets, we anticipate amortization of other acquired intangible assets to be \$174,000 in 2012, \$74,000 in 2013 and \$30,000 in 2014.

	2011	2010	\$ Change	% Change	
Restructuring Charges (In thousands, except for percentages)					
Restructuring charges	\$(110)	\$885	(995)	(112)	%

Restructuring Charges. Restructuring charges for the year ended December 31, 2011 decreased \$1.0 million compared to the year ended December 31, 2010. Restructuring charges for the year ended December 31, 2010 consisted primarily of facilities and severance costs incurred in connection with our cost control efforts. Restructuring credits for the year ended December 31, 2011 is primarily due to the sublease of certain previously restructured facilities that occurred earlier than previously estimated.

	2011	2010	\$ Change	% Change	
Interest and Other Income, Net (In thousands, except for percentages)					
Interest and other income, net	\$73	\$20	53	265	%

Interest and Other Income, Net. Interest and other income, net, primarily consist of interest income (expense) and foreign currency exchange gain (loss). Interest and other income, net, during the year ended December 31, 2011 increased \$53,000 compared to the year ended December 31, 2010.

Edgar Filing: PDF SOLUTIONS INC - Form 10-K

Income Tax Provision (In thousands, except for percentages)	2011	2010	\$ Change	% Change	
Income tax provision	\$2,439	\$1,326	1,113	84	%

Income Tax Provision. Income tax provision increased \$1.1 million for the year ended December 31, 2011 compared to the year ended December 31, 2010, primarily due to an increase in foreign withholding taxes of \$0.8 million. Income tax provision for the years ended December 31, 2011 and 2010 primarily consisted of foreign withholding taxes, statutory taxes associated with our foreign subsidiaries, and changes in unrecognized tax benefits.

Years Ended December 31, 2010 and 2009

	2010	2009	\$ Change	% Change	
Revenues (In thousands, except for percentages)					
Design-to-silicon-yield solutions	\$43,080	\$32,662	\$10,418	32	%
Gainshare performance incentives	18,570	15,776	2,794	18	
Total	\$61,650	\$48,438	\$13,212	27	%

**Design-to-Silicon-Yield Solutions.** Design-to-Silicon-Yield solutions revenues increased \$10.4 million for the year ended December 31, 2010 compared to the year ended December 31, 2009, primarily due to an increase of \$9.5 million in fixed fee integrated solutions and an increase of \$0.6 million in software and software related services. The increases were primarily the result of higher bookings, as customers began to invest in leading edge technology as the semiconductor industry began to rebound. We booked eight new fixed-price solution implementation service contracts and five extensions to existing service contracts during the year ended December 31, 2010, as compared to five new service contracts and two extensions to existing service contracts during the year ended December 31, 2009. The rebound in the semiconductor industry had been the primary contributor to this increase.

**Gainshare Performance Incentives.** Revenues derived from gainshare performance incentives increased \$2.8 million for the year ended December 31, 2010 compared to the year ended December 31, 2009, primarily due to increases in wafer volumes at our customers' sites. Revenues from gainshare performance incentives were generated from seven customers and eight engagements for the year ended December 31, 2010 and seven customers and nine engagements for the year ended December 31, 2009.

	2010	2009	\$ Change	% Change	
Cost of Design-to-Silicon-Yield Solutions (In thousands, except for percentages)					
Direct costs of design-to-silicon-yield solutions	\$26,900	\$25,087	\$1,813	7	%
Amortization and impairment of acquired technology	1,285	1,439	(154 )	(11 )	
Total	\$28,185	\$26,526	\$1,659	6	%

**Direct Costs of Design-to-Silicon-Yield Solutions.** Direct costs of Design-to-Silicon-Yield Solutions increased \$1.8 million for the year ended December 31, 2010 compared to the year ended December 31, 2009. The increase was primarily due to an increase of \$0.6 million in travel expense related to increased project activity, \$0.5 million in equipment expense related to deployments to new engagements in 2010 and an increase of \$0.3 million in stock-based compensation charges.

**Amortization and Impairment of Acquired Technology.** Amortization of acquired technology decreased \$154,000 for the year ended December 31, 2010 compared to the year ended December 31, 2009, primarily due to certain intangible assets becoming fully amortized.

	2010	2009	\$ Change	% Change	
Research and Development (In thousands, except for percentages)					
Research and Development	\$14,955	\$17,906	(2,951 )	(16 )	%

**Research and Development.** Research and development expenses decreased \$3.0 million for the year ended December 31, 2010 compared to the year ended December 31, 2009, primarily due to a decrease of \$2.2 million in personnel and facilities expenses and a \$0.7 million decrease in subcontractor expense primarily as the result of our

cost control efforts.

Selling, General and Administrative (In thousands, except for percentages)	2010	2009	\$ Change	% Change
Selling, general and administrative	\$16,002	\$16,551	(549 )	(3 )%

28

---

**Selling, General and Administrative.** Selling, general and administrative expenses decreased \$0.5 million for the year ended December 31, 2010 compared to the year ended December 31, 2009 primarily due to a decrease of \$1.7 million in personnel, commissions and facilities expenses as a result of our cost control efforts, partially offset by an increase of \$0.7 million in legal fees related to ongoing litigation and an increase of \$0.4 million in accounting fees.

	2010	2009	\$ Change	% Change
Amortization of Other Acquired Intangible Assets (In thousands, except for percentages)				
Amortization of other acquired intangible assets	\$295	\$349	(54 )	(15 )%

**Amortization of Other Acquired Intangible Assets.** Amortization of other acquired intangible assets for the year ended December 31, 2010 decreased \$54,000 compared to the year ended December 31, 2009, primarily the result of certain intangible assets becoming fully amortized.

	2010	2009	\$ Change	% Change
Restructuring Charges (In thousands, except for percentages)				
Restructuring charges	\$885	\$4,512	(3,627 )	(80 )%

**Restructuring Charges.** Restructuring charges for the year ended December 31, 2010 decreased \$3.6 million compared to the year ended December 31, 2009. Restructuring charges for the years ended December 31, 2010 and 2009 consisted primarily of facilities and severance costs incurred in connection with our cost control efforts.

	2010	2009	\$ Change	% Change
Interest and Other Income, Net (In thousands, except for percentages)				
Interest and other income, net	\$20	\$237	(217 )	(92 )%

**Interest and Other Income, Net.** Interest and other income, net, decreased \$0.2 million for the year ended December 31, 2010 compared to the year ended December 31, 2009, primarily due to a decrease in other income due to a gain of \$0.4 million recorded in 2009 related to debt extinguishment associated with the forgiveness of a loan we assumed at the time of acquisition of Si Automation S.A. and a decrease in interest income of \$0.2 million from lower interest rates during the year, partially offset by a decrease of \$0.2 million in loss on foreign exchange.

	2010	2009	\$ Change	% Change
Income Tax Provision (In thousands, except for percentages)				
Income tax provision	\$1,326	\$903	423	47 %

**Income Tax Provision.** Income tax provision increased \$0.4 million for the year ended December 31, 2010 compared to the year ended December 31, 2009, primarily due to an increase in foreign withholding taxes of \$0.8 million, partially offset by a decrease in foreign income tax provision of \$0.4 million. Income tax provision for the years ended December 31, 2010 and 2009 primarily consisted of foreign withholding taxes, statutory taxes associated with our foreign subsidiaries, and changes in unrecognized tax benefits.

## Liquidity and Capital Resources

### Operating Activities

Cash flows from operating activities of \$8.2 million for the twelve months ended December 31, 2011 consisted primarily of net income of \$1.9 million, \$5.4 million of non-cash charges and \$0.9 million of cash flow increases reflected in the net change of operating assets and liabilities. Non-cash charges consisted primarily of stock-based compensation of \$4.8 million, amortization of acquired intangible assets of \$0.8 million and depreciation of \$0.5 million, partially offset by purchases of treasury stock of \$0.7 million for employee income tax withholdings due upon vesting of restricted stock units. Cash flow increases resulting from the net change in operating assets and liabilities primarily consisted of \$1.3 million decrease in accounts receivable, a \$1.1 million increase in accrued compensation and a \$0.3 million increase in billings in excess of recognized revenue, partially offset by a \$1.1 million decrease in accrued and other current liabilities, a \$0.4 decrease in accounts payable and a \$0.2 million increase in prepaid expenses and other assets. The \$1.6 million combined cash flow increase resulted from the decrease in accounts receivable and increase in billings in excess of recognized revenues was primarily due to the timing of billing milestones and payments received. The increase of \$1.1 million in accrued compensation and related benefits was primarily due to increase in accrued bonuses and accrued vacation.

Cash flows from operating activities of \$2.7 million for the twelve months ended December 31, 2010 consisted primarily of net income of \$22,000 and \$6.5 million of non-cash charges, partially offset by \$3.8 million of cash flow decreases reflected in the net change of operating assets and liabilities. Non-cash charges consisted primarily of stock-based compensation of \$5.3 million, amortization of acquired intangible assets of \$1.6 million and depreciation of \$0.8 million, partially offset by purchases of treasury stock of \$0.6 million for employee income tax withholdings due upon vesting of restricted stock units and a change in deferred taxes of \$0.6 million. Cash flow decreases resulting from the net change in operating assets and liabilities primarily consisted of a \$3.6 million increase in accounts receivable, a \$1.2 million decrease in accrued and other liabilities, a \$0.4 million decrease in accrued compensation and related benefits, a \$0.2 million decrease in billings in excess of recognized revenue, partially offset by a \$1.4 million increase in deferred revenue and \$0.2 million decrease in prepaid expenses and other assets. The \$3.8 million of cash flow decrease from the increase in accounts receivable and decrease in billings in excess of recognized revenues was primarily due to the timing of billing milestones and payments received. The decrease in accrued and other liabilities of \$1.2 million was primarily due to decrease in accrued restructuring, accrued outside sales commissions and accrued legal expenses.

#### Investing Activities

Cash flows used in investing activities of \$0.4 million and \$0.1 million for the twelve months ended December 31, 2011 and 2010, respectively, consisted of payments for capital expenditures.

#### Financing Activities

Cash flows provided by financing activities of \$0.1 million for the year ended December 31, 2011 consisted primarily of \$2.3 million of proceeds from the exercise of stock options and \$0.9 million of proceeds from our Employee Stock Purchase Plan, offset by repurchases of 544,000 shares of our common stock for \$2.9 million on the open market during the period and \$0.1 million of principal payments on long-term debt.

Cash flows provided by financing activities of \$0.7 million for the year ended December 31, 2010 consisted primarily of \$0.8 million proceeds from our Employee Stock Purchase Plan, offset by \$0.1 million of principal payments on long-term obligations.

#### Liquidity

As of December 31, 2011, our working capital, defined as total current assets less total current liabilities, was \$57.2 million, compared to \$50.8 million as of December 31, 2010. Cash and cash equivalents were \$46.0 million as of December 31, 2011, compared to \$38.2 million as of December 31, 2010. We anticipate that our overall expenses, as well as planned capital expenditures, may constitute a material use of our cash resources. In addition, we may use cash resources to repurchase common stock or fund potential investments in, or acquisitions of complementary products, technologies or businesses or acquire new office space for our headquarters. We believe that our existing cash resources and anticipated funds from operations will satisfy our cash requirements to fund our operating activities, capital expenditures and other obligations for at least the next twelve months. However, in the event that during such period, or thereafter, we are not successful in generating sufficient cash flows from operations we may need to raise additional capital through private or public financings, strategic relationships or other arrangements, which may not be available to us on acceptable terms or at all.

As of December 31, 2011, our non-current investments included auction-rate securities with a fair value of \$784,000. The auction-rate securities are measured at fair value using significant unobservable inputs (Level 3 inputs) and accounted for approximately 3% of total assets that are measured at fair value on a recurring basis. See Note 13 to "Notes to Consolidated Financial Statements" in Part IV, and Item 7A. "Quantitative and Qualitative Disclosures About

Market Risk” in Part II and Note 3 to “Notes to Consolidated Financial Statements” in Part IV in this Annual Report on Form 10-K for further discussion.

## Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements, investments in special purpose entities or undisclosed borrowings or debt, other than operating leases on our facilities.

## Contractual Obligations

The following table summarizes our known contractual obligations (in thousands):

Contractual Obligations	Payments Due by Period					Total
	2012	2013	2014	2015	Thereafter	
Operating lease obligations	2,984	2,269	459	207	185	6,104
Purchase obligations(1)	2,191	—	—	—	—	2,191
<b>Total(2)</b>	<b>\$5,175</b>	<b>\$2,269</b>	<b>\$459</b>	<b>\$207</b>	<b>\$185</b>	<b>\$8,295</b>

(1) Purchase obligations consist of agreements to purchase goods and services entered in the ordinary course of business.

(2) The contractual obligation table above excludes liabilities for uncertain tax positions of \$3.5 million, which are not practicable to assign to any particular years, due to the inherent uncertainty of the tax positions. See Note 10 of “Notes to Consolidated Financial Statements” for further discussion.

Operating lease amounts include minimum rental payments under our operating leases for our office facilities, as well as computers, office equipment, and vehicles that we utilize under lease agreements. These minimum rental payments include payments on those facilities abandoned as part of the restructuring activities. These agreements expire at various dates through 2016.

We indemnify certain customers from third-party claims of intellectual property infringement relating to the use of our products. Historically, costs related to these guarantees of indemnification have not been significant. We are unable to estimate the maximum potential impact of these guarantees on our future results of operations.

## Item 7A. Quantitative and Qualitative Disclosures About Market Risk

The following discusses our exposure to market risk related to changes in interest rates and foreign currency exchange rates. We do not currently own any equity investments, nor do we expect to own any in the foreseeable future. This discussion contains forward-looking statements that are subject to risks and uncertainties. Actual results could vary materially as a result of a number of factors.

**Interest Rate Risk.** As of December 31, 2011, we had cash and cash equivalents of \$46.0 million. Cash and cash equivalents consisted of cash and highly liquid money market instruments. We would not expect our operating results or cash flows to be affected to any significant degree by the effect of a sudden change in market interest on our portfolio. A hypothetical increase in market interest rates of 100 basis points from the market rates in effect at December 31, 2011 would cause the fair value of these investments to decrease by an immaterial amount which would not have significantly impacted our financial position or results of operations. Declines in interest rates over time will result in lower interest income and interest expense.

As of December 31, 2011 we held auction-rate securities with a par value of \$1.0 million. Auction-rate securities are variable rate debt instruments whose interest rates are reset through a “Dutch” auction process at regular intervals,

typically every 28 days. A portion of these securities are insured by third party bond insurers and are collateralized by student loans guaranteed by governmental agencies and private entities. The liquidity of the securities has been negatively impacted by the uncertainty in the credit markets and the exposure of these securities to the financial condition of bond insurance companies. All auction-rate securities we hold have been failing to sell at auction since February 2008 due to an insufficient number of bidders. Therefore we reviewed the value of these securities for impairment. The cumulative impairment for these securities as of December 31, 2011 was \$216,000, which is included in other comprehensive income (loss). In future periods, the estimated fair value of our auction-rate securities could decline further based on market conditions, which could result in additional impairment and could result in the need to classify such impairment as other-than-temporary, which will result in a charge to operations. Further, future events may occur, or additional information may become available which may cause us to identify credit losses where we do not expect to receive cash flows sufficient to recover the entire amortized cost basis of a security and which may necessitate the recording of future realized losses on securities in our portfolio. Significant losses in the estimated fair values of our investments could have a material adverse effect on our earnings in future periods.

**Foreign Currency and Exchange Risk.** Certain of our payables for our international offices are denominated in the local currency, including the Euro, Yen and RMB. Therefore, a portion of our operating expenditures is subject to foreign currency risks. The effect of an immediate 10% adverse change in exchange rates on foreign denominated payables as of December 31, 2011 would result in a loss of approximately \$0.6 million. As of December 31, 2011, we did not have outstanding hedging contracts, although we may enter into such contracts in the future. We intend to monitor our foreign currency exposure. Future exchange rate fluctuations may have a material negative impact on our business.

Item 8. Financial Statements and Supplementary Data

The consolidated financial statements and supplementary data required by this Item 8 are listed in Item 15(a)(1) of this Form 10-K.

32

---

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

None.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our principal executive officer and principal financial and accounting officer, evaluated the effectiveness of our "disclosure controls and procedures" as defined in Exchange Act Rules 13a-15(e) and 15d-15(e) as of December 31, 2011 in connection with the filing of this Annual Report on Form 10-K. Based on that evaluation as of December 31, 2011, our principal executive officer and principal financial and accounting officer concluded that our disclosure controls and procedures were effective to ensure that information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in rules and forms of the SEC and accumulated and communicated to our management as appropriate to allow timely decisions regarding required disclosure.

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 Rules 13a-15(f) and 15d-15(f) under the Exchange Act, for the Company. Our management, with the participation of our principal executive officer and principal financial and accounting officer, assessed the effectiveness of our internal control over financial reporting as of December 31, 2011. This evaluation was based on the framework established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). Based on our assessment under the COSO framework, our management concluded that our internal control over financial reporting was effective as of December 31, 2011.

Our management's assessment of the effectiveness of our internal control over financial reporting as of December 31, 2011 has been audited by PricewaterhouseCoopers LLP, the Company's independent registered public accounting firm, as stated in their report which appears in this Annual Report on Form 10-K.

Changes in Internal Control over Financial Reporting

During the fourth quarter ended December 31, 2011, we appointed a Chief Financial Officer to replace the departing interim Chief Financial Officer. This was a change in internal control over financial reporting during the fourth quarter ended December 31, 2011, which has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Material Weakness Previously Identified

As previously reported in our annual report on Form 10-K for the year ended December 31, 2010 (filed on March 23, 2011), management identified material weaknesses in our internal control over financial reporting related to lack of resources or expertise to provide reasonable assurance for the accurate application of GAAP in non-routine or complex transactions, controls to provide reasonable assurance for the accuracy of accounting for revenue transactions and controls to provide reasonable assurance for the accuracy of stock-based compensation transactions.

Remediation of Material Weaknesses

During the year ended December 31, 2011, we implemented the following changes in our internal control over financial reporting that contributed to the remediation of the material weaknesses described above:

We hired personnel with requisite experience for non-routine or complex transactions, including with respect to the application of generally accepted accounting principles for percentage of completion contracts, certain multi-element revenue arrangements, and stock-based compensation transactions;

We expanded our controls to include identification of non-routine or complex transactions for increased periodic and on-going review by personnel with the requisite expertise;

We implemented procedures to ensure that our revenue controls are enhanced to include specific consideration of the accounting for contract costs and the cost estimation process for the Company's design-to-silicon yield services contracts;

We implemented procedures to ensure that our controls surrounding stock-based compensation transactions are enhanced to include specific consideration of the accounting for non-routine modifications and other complex transactions; and,

We provided on-going training of our employees on generally accepted accounting principles in general, and existing and new policies and procedures around revenue and stock-based compensation in particular.

Our principal executive officer and principal financial and accounting officer have evaluated and tested the effectiveness of these controls as of December 31, 2011 and determined that our previously reported material weaknesses have been remediated.

Item 9B. Other Information.

None.

### PART III

Pursuant to Paragraph (3) of the General Instructions to Form 10-K, certain of the information required by Part III of this Form 10-K is incorporated by reference from our Proxy Statement as set forth below. The Proxy Statement is expected to be filed within 120 days of December 31, 2011.

Item 10. Directors and Executive Officers of the Registrant.

Information with respect to our directors appears in our Proxy Statement under "Proposal No. 1 — Election of Directors — Nominees for the Board of Directors" and is incorporated herein by reference. Information with respect to our executive officers appears in Part I, Item 1 — "Executive Officers" of this Form 10-K.

Information with respect to compliance with Section 16(a) of the Exchange Act, appears in our Proxy Statement under "Section 16 Beneficial Ownership Reporting Compliance" and is incorporated herein by reference.

Our Board of Directors has adopted a Code of Ethics ("Code of Ethics") which is applicable to our principal executive officer, our principal financial officer and employees of the Company. Our Code of Ethics is available on our website at [www.pdf.com](http://www.pdf.com), on the investor relations page. The Company's website address provided is not intended to function as a hyperlink, and the information on the Company's website is not, and should not be considered, part of this Annual Report on Form 10-K and is not incorporated by reference herein. You may also request a copy of our Code of Ethics in writing by sending your request to PDF Solutions, Inc., Attention: Investor Relations, 333 West San Carlos Street, Suite 700, San Jose, California 95110. If we make any substantive amendments to the Code of Ethics or grant any waiver, including any implicit waiver, from a provision of the Code of Ethics to our Chief Executive Officer or Chief Financial Officer, we will disclose the nature of such amendment or waiver on our website or in a current report on Form 8-K.

Item 11. Executive Compensation.

The information required by this item is incorporated herein by reference to the section entitled "Compensation of Executive Officers and Other Matters — Executive Compensation" in our Proxy Statement.

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

The information required by this item is incorporated herein by reference to the section entitled “Security Ownership of Certain Beneficial Owners and Management” in our Proxy Statement.

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

The information required by this item is incorporated herein by reference to the section entitled “Certain Relationships and Related Transactions and Directors Independence” in our Proxy Statement.

Item 14. Principal Accountant Fees and Services.

Information with respect to Principal Accountant Fees and Services is incorporated by reference from our Proxy Statement.

PART IV

Item 15. Exhibits and Financial Statement Schedules.

(a) The following documents are filed as part of this report:

(1) Consolidated Financial Statements and Reports of Independent Registered Public Accounting Firms

See Index to Consolidated Financial Statements.

See the Reports of Independent Registered Public Accounting Firms.

PDF SOLUTIONS, INC.  
INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

	Page
PDF SOLUTIONS, INC	
Report of Independent Registered Public Accounting Firm	37
Consolidated Balance Sheets as of December 31, 2011 and 2010	38
Consolidated Statements of Operations for the Years Ended December 31, 2011, 2010 and 2009	39
Consolidated Statements of Stockholders' Equity and Comprehensive Income (Loss) for the Years Ended December 31, 2011, 2010 and 2009	40
Consolidated Statements of Cash Flows for the Years Ended December 31, 2011, 2010 and 2009	41
Notes to Consolidated Financial Statements	42

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of PDF Solutions, Inc.

In our opinion, the accompanying consolidated balance sheets and the related consolidated statements of operations, stockholders' equity and comprehensive income (loss), and cash flows present fairly, in all material respects, the financial position of PDF Solutions, Inc. and its subsidiaries at December 31, 2011 and 2010, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2011 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2011, based on criteria established in Internal Control - Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The Company's management is responsible for these financial statements, for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on these financial statements and on the Company's internal control over financial reporting based on our integrated audits. We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement and whether effective internal control over financial reporting was maintained in all material respects. Our audits of the financial statements included examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

As discussed in Note 1 to the consolidated financial statements, the Company changed the manner in which it recognizes revenue for multiple element arrangements in the year ended December 31, 2010.

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 (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) 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 (iii) 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/ PricewaterhouseCoopers LLP

San Jose, California  
March 15, 2012

37

---

PDF SOLUTIONS, INC.  
CONSOLIDATED BALANCE SHEETS

	December 31, 2011            2010(*) (In thousands, except par values)	
<b>ASSETS</b>		
<b>Current assets:</b>		
Cash and cash equivalents	\$46,041	\$38,154
Accounts receivable, net of allowances of \$254 in both 2011 and 2010	20,863	22,121
Prepaid expenses and other current assets	3,717	3,185
<b>Total current assets</b>	<b>70,621</b>	<b>63,460</b>
Property and equipment, net	777	797
Non-current investments	784	718
Intangible assets, net	539	1,369
Other non-current assets	1,663	2,048
<b>Total assets</b>	<b>\$74,384</b>	<b>\$68,392</b>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
<b>Current liabilities:</b>		
Current portion of long-term debt	\$—	\$108
Accounts payable	974	1,080
Accrued compensation and related benefits	5,026	3,964
Accrued and other current liabilities	2,335	2,636
Deferred revenues	2,961	3,021
Billings in excess of recognized revenues	2,089	1,802
<b>Total current liabilities</b>	<b>13,385</b>	<b>12,611</b>
Long-term income taxes payable	3,489	3,690
Other non-current liabilities	667	1,259
<b>Total liabilities</b>	<b>17,541</b>	<b>17,560</b>
<b>Commitments and contingencies (Note 7)</b>		
<b>Stockholders' equity:</b>		
Preferred stock, \$0.00015 par value, 5,000 shares authorized, no shares issued and outstanding	—	—
Common stock, \$0.00015 par value, 70,000 shares authorized; shares issued 32,635 and 31,276, respectively; shares outstanding 28,304 and 27,603, respectively	4	4
Additional paid-in capital	208,826	200,866
Treasury stock, at cost, 4,331 and 3,673 shares, respectively	(22,899 )	(19,298 )
Accumulated deficit	(128,789 )	(130,669 )
Accumulated other comprehensive loss	(299 )	(71 )
<b>Total stockholders' equity</b>	<b>56,843</b>	<b>50,832</b>
<b>Total liabilities and stockholders' equity</b>	<b>\$74,384</b>	<b>\$68,392</b>

(\*) Includes revisions to correct previously reported amounts (see Note 2)

See accompanying notes to consolidated financial statements.



PDF SOLUTIONS, INC.  
CONSOLIDATED STATEMENTS OF OPERATIONS

	Year Ended December 31,		
	2011	2010(*)	2009(*)
	(In thousands, except per share amounts)		
<b>Revenues:</b>			
Design-to-silicon-yield solutions	\$ 51,633	\$ 43,080	\$ 32,662
Gainshare performance incentives	15,079	18,570	15,776
Total revenues	66,712	61,650	48,438
<b>Cost of design-to-silicon-yield solutions:</b>			
Direct costs of design-to-silicon-yield solutions	29,416	26,900	25,087
Amortization of acquired technology	626	1,285	1,439
Total cost of design-to-silicon-yield solutions	30,042	28,185	26,526
Gross profit	36,670	33,465	21,912
<b>Operating expenses:</b>			
Research and development	13,972	14,955	17,906
Selling, general and administrative	18,358	16,002	16,551
Amortization of other acquired intangible assets	204	295	349
Restructuring charges (credits)	(110 )	885	4,512
Total operating expenses	32,424	32,137	39,318
Income (loss) from operations	4,246	1,328	(17,406 )
Interest and other income, net	73	20	237
Income (loss) before taxes	4,319	1,348	(17,169 )
Income tax provision	2,439	1,326	903
Net income (loss)	\$ 1,880	\$ 22	\$ (18,072 )
<b>Net income (loss) per share</b>			
Basic	\$ 0.07	\$ 0.00	\$ (0.69 )
Diluted	\$ 0.07	\$ 0.00	\$ (0.69 )
<b>Weighted average common shares</b>			
Basic	28,086	27,257	26,377
Diluted	28,431	27,471	26,377

(\*) Includes revisions to correct previously reported amounts (see Note 2)

See accompanying notes to consolidated financial statements.

PDF SOLUTIONS, INC.  
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY AND COMPREHENSIVE INCOME (LOSS)

	Common Stock			Treasury Stock		Accumulated Deficit(*)	Accumulated Other Comprehensive Income (Loss)(*)	Total
	Shares	Amount	Additional Paid-In Capital(*)	Shares	Amount			
Balances, January 1, 2009	25,923	4	189,132	3,416	(18,402 )	(112,620 )	1,656	59,770
Issuance of common stock in connection with employee stock purchase plan	450	-	570	-	-	-	-	570
Vesting of restricted stock units	405	-	-	-	-	-	-	-
Purchases of treasury stock in connection with tax withholdings on restricted stock grants	(127 )	-	-	127	(313 )	-	-	(313 )
Stock-based compensation expense	-	-	4,908	-	-	-	-	4,908
Tax benefit from employee stock plans	-	-	110	-	-	-	-	110
Components of comprehensive loss:								
Net loss	-	-	-	-	-	(18,072 )	-	-
Cumulative translation adjustment	-	-	-	-	-	-	(1,220 )	-
Change in unrealized loss on investments	-	-	-	-	-	-	(64 )	-
Total comprehensive loss	-	-	-	-	-	-	-	(19,356 )
Balances, December 31, 2009	26,651	4	194,720	3,543	(18,715 )	(130,692 )	372	45,689
Issuance of common stock in connection with employee stock purchase plan	588	-	782	-	-	-	-	782
Issuance of common stock in connection with exercise of	24	-	51	-	-	-	-	51

options								
Vesting of restricted stock units	470	-	-	-	-	-	-	-
Purchases of treasury stock in connection with tax withholdings on restricted stock grants	(130 )	-	-	130	(583 )	-	-	(583 )
Stock-based compensation expense	-	-	5,313	-	-	-	-	5,313
Components of comprehensive loss:								
Net income	-	-	-	-	-	23	-	-
Cumulative translation adjustment	-	-	-	-	-	-	(443 )	-
Total comprehensive loss	-	-	-	-	-	-	-	(420 )
Balances, December 31, 2010	27,603	\$4	\$ 200,866	3,673	\$(19,298 )	\$ (130,669 )	\$ (71 )	\$50,832
Issuance of common stock in connection with employee stock purchase plan	414	-	865	-	-	-	-	865
Issuance of common stock in connection with exercise of options	531	-	2,304	-	-	-	-	2,304
Vesting of restricted stock units	414	-	-	-	-	-	-	-
Purchases of treasury stock in connection with tax withholdings on restricted stock grants	(114 )	-	-	114	(652 )	-	-	(652 )
Purchases of treasury stock	(544 )	-	-	544	(2,949 )	-	-	(2,949 )
Stock-based compensation expense	-	-	4,791	-	-	-	-	4,791
Tax benefit from employee stock plans	-	-	-	-	-	-	-	-
Components of comprehensive income:								
Net income	-	-	-	-	-	1,880	-	-
	-	-	-	-	-	-	(294 )	-

Cumulative translation adjustment									
Change in unrealized gain on investments	-	-	-	-	-	-	66	-	
Total comprehensive income	-	-	-	-	-	-	-	1,652	
Balances, December 31, 2011	28,304	\$4	\$ 208,826	4,331	\$(22,899)	\$( 128,789 )	\$( 299 )	\$56,843	

---

(\*) Includes revisions to correct previously reported amounts (see Note 2)

See accompanying notes to consolidated financial statements.

PDF SOLUTIONS, INC.  
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended December 31,		
	2011	2010(*)	2009(*)
	(In thousands)		
<b>Operating activities:</b>			
Net income (loss)	\$ 1,880	\$ 22	\$(18,072 )
Adjustments to reconcile net income (loss) to net cash provided by (used in) operating activities:			
Depreciation and amortization	459	834	1,421
Stock-based compensation expense	4,791	5,313	4,908
Loss on sale of property and equipment	—	—	152
Amortization of acquired intangible assets	830	1,580	1,788
Deferred taxes	21	(594 )	165
Purchases of treasury stock in connection with tax withholdings on restricted stock grants	(652 )	(583 )	(313 )
Gain on debt extinguishment	—	—	(393 )
Changes in operating assets and liabilities:			
Accounts receivable, net of allowances	1,268	(3,633 )	5,180
Prepaid expenses and other assets	(210 )	161	1,778
Accounts payable	(367 )	20	(392 )
Accrued compensation and related benefits	1,074	(404 )	(2,096 )
Accrued and other liabilities	(1,136 )	(1,240 )	107
Deferred revenues	(32 )	1,400	(42 )
Billings in excess of recognized revenues	287	(151 )	1,206
Net cash provided by (used in) operating activities	8,213	2,725	(4,603 )
<b>Investing activities:</b>			
Maturities and sales of available-for-sale securities	—	—	9,054
Purchases of property and equipment	(405 )	(121 )	(569 )
Net cash provided by (used in) investing activities	(405 )	(121 )	8,485
<b>Financing activities:</b>			
Exercise of stock options	2,304	51	—
Proceeds from employee stock purchase plan	865	782	570
Purchases of treasury stock	(2,949 )	—	—
Principal payments on long-term obligations	(112 )	(107 )	(267 )
Net cash provided by financing activities	108	726	303
Effect of exchange rate changes on cash and cash equivalents	(29 )	(75 )	(972 )
Net increase in cash and cash equivalents	7,887	3,255	3,213
Cash and cash equivalents, beginning of year	38,154	34,899	31,686
Cash and cash equivalents, end of year	\$46,041	\$38,154	\$34,899
<b>Supplemental disclosure of cash flow information:</b>			
<b>Cash paid during the year for:</b>			
Taxes	\$2,065	\$2,107	\$1,604
Interest	\$7	\$9	\$19

(\*) Includes revisions to correct previously reported amounts (see Note 2)

See accompanying notes to consolidated financial statements.

PDF SOLUTIONS, INC.  
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Business and Significant Accounting Policies

PDF Solutions, Inc. (the “Company” or “PDF”), provides infrastructure technologies and services to improve yield and optimize performance of integrated circuits. The Company’s approach includes manufacturing simulation and analysis, combined with yield improvement methodologies to increase product yield and performance.

**Basis of Presentation** — The consolidated financial statements include the accounts of the Company and its wholly-owned subsidiaries after the elimination of all significant intercompany balances and transactions.

**Use of Estimates** — The preparation of financial statements in conformity with generally accepted accounting principles in the United States (“U.S. GAAP”) requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Significant estimates in these financial statements include stock-based compensation expense, allowances for doubtful accounts receivable, estimates for useful lives associated with long-lived assets, restructuring charges, fair value of investment and income taxes and tax valuation allowances. Actual results could differ from those estimates.

**Concentration of Credit Risk** — Financial instruments that potentially expose the Company to concentrations of credit risk consist primarily of cash and cash equivalents, investments, and accounts receivable. The Company maintains its cash and cash equivalents and investments with what it considers high credit quality financial institutions.

The Company primarily sells its technologies and services to companies in Asia, Europe and North America within the semiconductor industry. As of December 31, 2011, three customers accounted for 67% of the Company’s gross accounts receivable and three customers accounted for 58% of the Company’s revenues for 2011. As of December 31, 2010, six customers accounted for 75% of the Company’s gross accounts receivable and four customers accounted for 60% of the Company’s revenues for 2010. See Note 12 for further details. The Company does not require collateral or other security to support accounts receivable. To reduce credit risk, management performs ongoing credit evaluations of its customers’ financial condition. The Company maintains allowances for potential credit losses. The allowance for doubtful accounts, which was based on management’s best estimates, could be adjusted in the near term from current estimates depending on actual experience. Such adjustments could be material to the consolidated financial statements.

**Cash, Cash Equivalents and Short-term Investments** — The Company considers all highly liquid investments with an original maturity of 90 days or less or investments with a remaining maturity of 90 days or less at the time of purchase to be cash equivalents. Investments with maturities greater than three months and less than one year are classified as short-term investments.

**Property and Equipment** — Property and equipment are stated at cost and are depreciated using the straight-line method over the estimated useful lives of the related asset as follows:

Computer equipment	3 years
Software	3 years
Furniture, fixtures, and equipment	5-7 years
Leasehold improvements	Shorter of estimated useful life or term of lease
Assets acquired under capital lease	Shorter of estimated useful life or term of lease

Long-lived Assets — The Company's long-lived assets, excluding goodwill, consist of property and equipment and other acquired intangibles. The Company periodically reviews its long-lived assets for impairment. For assets to be held and used, the Company initiates its review whenever events or changes in circumstances indicate that the carrying amount of a long-lived asset group may not be recoverable. Recoverability of an asset group is measured by comparison of its carrying amount to the expected future undiscounted cash flows that the asset group is expected to generate. If it is determined that an asset group is not recoverable, an impairment loss is recorded in the amount by which the carrying amount of the asset group exceeds its fair value.

As discussed in Note 12, the Company considers itself to be in one operating segment. In addition, the Company has determined that its operating segment is also its reporting unit as the operating segment comprises only a single component. To determine the reporting unit's fair value, the Company used the income valuation approach. In determining its overall conclusion of reporting unit's fair value, the Company also considers the estimated value derived from the market valuation approach as compared to the valuation under the income approach as one measure that the estimated fair value is reasonable.

The income approach provides an estimate of fair value based on discounted expected future cash flows. Estimates and assumptions with respect to the determination of the fair value of the Company's reporting unit using the income approach include the Company's operating forecasts, revenue growth rates, and risk-commensurate discount rates and costs of capital. The Company's estimates of revenues and costs are based on historical data, various internal estimates and a variety of external sources, and are developed as part of the Company's routine long-range planning process.

The market approach provides an estimate of the fair value of the Company's reporting unit using various prices or market multiples applied to the reporting unit's operating results and then applying an appropriate control premium, which is determined by considering control premiums offered as part of acquisitions in both the Company's market segment and comparable market segments.

**Revenue Recognition** — The Company derives revenue from two sources: Design-to-Silicon-Yield Solutions and gainshare performance incentives.

**Design-to-Silicon-Yield Solutions** — Revenues that are derived from Design-to-Silicon-Yield solutions come from services and software licenses. The Company recognizes revenue for each element of Design-to-Silicon-Yield solutions as follows:

**Services** — The Company generates a significant portion of its Design-to-Silicon-Yield solutions revenues from fixed-price solution implementation service contracts delivered over a specific period of time. These contracts require reliable estimation of costs to perform obligations and the overall scope of each engagement. Revenues under project-based contracts for solution implementation services are recognized as services are performed using the cost-to-cost percentage of completion method of contract accounting. Revenues under time-based contracts for solution implementation services are recognized under the proportional performance method. Losses on solution implementation contracts are recognized in the period when they become probable. Revisions in profit estimates are reflected in the period in which the conditions that require the revisions become known and can be estimated.

On occasion, the Company licenses its software products that are not essential to the provision of these services as a component of its fixed-price service contract. In such instances, the software products are licensed to customers over a specified term of the agreement with support and maintenance to be provided over the license term.

In October 2009, the Financial Accounting Standards Board ("FASB") amended the accounting standards for multiple-deliverable revenue arrangements to:

- provide updated guidance on whether multiple deliverables exist, how the deliverables in an arrangement should be separated, and how the consideration should be allocated;
- require an entity to allocate revenue in an arrangement using best estimated selling prices ("BESP") of deliverables if a vendor does not have vendor-specific objective evidence of selling price ("VSOE") or third-party evidence of selling price ("TPE"); and
- eliminate the use of the residual method and require an entity to allocate revenue using the relative selling price method.

The Company elected to early adopt this accounting standard on April 1, 2010 on a prospective basis for applicable transactions originating or materially modified after January 1, 2010. The Company's adoption of this guidance does not generally change the accounting for the Company's software transactions. It only affects certain revenue arrangements that include both solution implementation services and software products that are not essential to the provision of these services. The amount of product and service revenue recognized in a given period is affected by the Company's judgment as to whether an arrangement includes multiple deliverables and, if so, its determination of the fair value of each deliverable. In general, VSOE does not exist for the Company's solution implementation services and software products. Because its services and products include its unique technology, the Company is not able to determine TPE. Therefore, the Company will use BEBP in its allocation of arrangement consideration. In determining BEBP, the Company applies significant judgment as it weighs a variety of factors, based on the facts and circumstances of the arrangement. The Company typically arrives at an BEBP for a product or service that is not sold separately by considering company-specific factors such as geographies, internal costs, gross margin objectives, pricing practices used to establish bundled pricing, and existing portfolio pricing and discounting. After fair value is established for each deliverable, the total transaction amount is allocated to each deliverable based upon its relative fair value. Fees allocated to solution implementation services are recognized using the cost-to-cost percentage of completion method of contract accounting. Fees allocated to software and related support and maintenance are recognized under software revenue recognition guidance. Prior to the adoption of this new accounting standard, under these arrangements, where VSOE existed for the support and maintenance element, the support and maintenance revenue was recognized separately over the term of the supporting period and the remaining fee was recognized as services are performed using the cost-to-cost percentage of completion method of contract accounting or the proportional performance method, as applicable. The impact on total revenues from the adoption of this new accounting standard is shown in the following table (in thousands).

	Year Ended December 31, 2010	
	As reported	Pro Forma Basis as if the Previous Accounting Guidance were in Effect
Total revenues	\$ 61,650	\$ 57,625

**Software Licenses** — The Company also licenses its software products separately from its solution implementations. For software license arrangements that do not require significant modification or customization of the underlying software, software license revenue is recognized under the residual method when (1) persuasive evidence of an arrangement exists, (2) delivery has occurred, (3) the fee is fixed or determinable, (4) collectability is probable, and (5) the arrangement does not require services that are essential to the functionality of the software. When arrangements include multiple elements such as support and maintenance, consulting (other than for its fixed price solution implementations), installation, and training, revenue is allocated to each element of a transaction based upon its fair value as determined by the Company's VSOE and such services are recorded as services revenue. VSOE for maintenance is generally established based upon negotiated renewal rates while VSOE for consulting, installation, and training services is established based upon the Company's customary pricing for such services when sold separately. Revenue for software licenses with extended payment terms is not recognized in excess of amounts due. For software license arrangements that require significant modification or customization of the underlying software, the software license revenue is recognized as services are performed using the cost-to-cost percentage of completion method of contract accounting, and such revenue is recorded as services revenue.

**Gainshare Performance Incentives** — When the Company enters into a contract to provide yield improvement services, the contract usually includes two components: (1) a fixed fee for performance by the Company of services delivered over a specific period of time; and (2) a gainshare performance incentives component where the customer may pay a variable fee, usually after the fixed fee period has ended. Revenue derived from gainshare performance incentives represents profit sharing and performance incentives earned based upon the Company's customers reaching certain defined operational levels established in related solution implementation service contracts. Gainshare performance incentives periods are usually subsequent to the delivery of all contractual services and therefore have no cost to the Company. Due to the uncertainties surrounding attainment of such operational levels, the Company recognizes gainshare performance incentives revenue (to the extent of completion of the related solution implementation contract) upon receipt of performance reports or other related information from the customer supporting the determination of amounts and probability of collection.

**Accounts Receivable** — Accounts receivable includes amounts that are unbilled at the end of the period. Unbilled accounts receivable are determined on an individual contract basis and were approximately \$11.0 million and \$6.0 million at December 31, 2011 and 2010, respectively. The Company performs ongoing credit evaluations of its customers' financial condition. An allowance for doubtful accounts is maintained for probable credit losses based upon the Company's assessment of the expected collectability of the accounts receivable. The allowance for doubtful accounts is reviewed on a quarterly basis to assess the adequacy of the allowance. The allowance for doubtful accounts balance was \$254,000 as of December 31, 2011 and 2010. There were no charges to costs and expenses nor deductions or write-offs of accounts during the fiscal year of 2011, 2010 and 2009.

**Software Development Costs** — Costs for the development of new software products and substantial enhancements to existing software products are expensed as incurred until technological feasibility has been established, at which time any additional costs would be capitalized. Because the Company believes its current process for developing software is essentially completed concurrently with the establishment of technological feasibility, no costs have been capitalized to date.

**Research and Development** — Research and development expenses are charged to operations as incurred.

**Stock-Based Compensation** — Stock-based compensation is estimated at the grant date based on the award's fair value and is recognized on a straight-line basis over the vesting periods of the applicable stock purchase rights and stock options, generally four years. As stock-based compensation expense recognized is based on awards ultimately expected to vest, it has been reduced for estimated forfeitures. Forfeitures are estimated at the time of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates. The Company has elected to use the Black-Scholes-Merton option-pricing model, which incorporates various assumptions including volatility, expected life and interest rates. The expected volatility is based on the historical volatility of the Company's common stock over the most recent period commensurate with the estimated expected life of the Company's stock options. The expected life of an award is based on historical experience and on the terms and conditions of the stock awards granted to employees. The interest rate assumption is based upon observed Treasury yield curve rates appropriate for the expected life of the Company's stock options.

**Income Taxes** – The Company's provision for income tax comprises its current tax liability and change in deferred tax assets and liabilities. Deferred tax assets and liabilities are recognized for the expected tax consequences of temporary differences between the tax bases of assets and liabilities. The measurement of current and deferred tax assets and liabilities is based on provisions of enacted tax laws; the effect of future changes in tax laws or rates are not anticipated. Valuation allowances are provided to reduce deferred tax assets to an amount that in management's judgment is more likely than not to be recoverable against future taxable income. No U.S. taxes are provided on earnings of non-U.S. subsidiaries, to the extent such earnings are deemed to be permanently invested. The Company's income tax calculations are based on application of the respective U.S. federal, state or foreign tax laws. The Company's tax filings, however, are subject to audit by the respective tax authorities. Accordingly, the Company recognizes tax liabilities based upon its estimate of whether, and the extent to which, additional taxes will be due when such estimates are more-likely-than-not to be sustained. An uncertain income tax position will not be recognized if it has less than a 50% likelihood of being sustained. To the extent the final tax liabilities are different than the amounts originally accrued, the increases or decreases are recorded as income tax expense or benefit in the consolidated statements of operations.

**Net Income (Loss) Per Share** – Basic net income (loss) per share is computed by dividing net income (loss) by weighted average number of common shares outstanding for the period (excluding outstanding stock options and shares subject to repurchase). Diluted net income (loss) per share is computed using the weighted-average number of common shares outstanding for the period plus the potential effect of dilutive securities which are convertible into common shares (using the treasury stock method), except in cases in which the effect would be anti-dilutive. Dilutive potential common shares consist of incremental common shares issuable upon exercise of stock options, upon vesting of restricted stock units, contingently issuable shares for all periods and assumed issuance of shares under employee stock purchase plan. No dilutive potential common shares are included in the computation of any diluted per share amount when a loss from continuing operations was reported by the Company.

**Foreign Currency Translation** — The functional currency of the Company's foreign subsidiaries is the local currency for the respective subsidiary. The assets and liabilities are translated at the period-end exchange rate, and statements of operations are translated at the average exchange rate during the year. Gains and losses resulting from foreign currency translations are included as a component of other comprehensive income (loss). Gains and losses resulting from foreign currency transactions are included in the consolidated statement of operations.

**Comprehensive Income (Loss)** — The Company reports, by major components and as a single total, the change in its net assets during the period from non-owner sources. Comprehensive income (loss) is presented within the consolidated statements of stockholders' equity and comprehensive income (loss). Accumulated other comprehensive income as of December 31, 2011 and 2010 is comprised of the following components (in thousands):

December 31,

	2011		2010
Unrealized loss on investments	\$(216	)	\$(282 )
Foreign currency translation adjustments	(83	)	211
Accumulated other comprehensive income	\$(299	)	\$(71 )

Litigation — The Company is involved in certain legal proceedings. Based upon consultation with outside counsel handling its defense in these matters and an analysis of potential results, if the Company believes that a loss arising from such matters is probable and can be reasonably estimated, the Company records the estimated liability in its consolidated financial statements. If only a range of estimated losses can be determined, the Company records an amount within the range that, in its judgment, reflects the most likely outcome; if none of the estimates within that range is a better estimate than any other amount, the Company records the low end of the range. Any such accrual would be charged to expense in the appropriate period. The Company recognizes litigation expenses in the period in which the litigation services were provided.

## Recent Accounting Pronouncements —

In June 2011, the Financial Accounting Standards Board (“FASB”) amended its guidance related to the presentation of comprehensive income to increase comparability between U.S. GAAP and International Financial Reporting Standards (“IFRS”). This amended guidance eliminates the current option to report other comprehensive income and its components in the statement of changes in equity and instead requires presenting in one continuous statement or two separate but consecutive statements. Additionally, the amendment requires entities to present reclassification adjustments to show the effect of reclassifications on both the components of other comprehensive income and the components of net income in interim and annual financial statements. The amendments are effective for fiscal years, and interim periods within those years, beginning after December 15, 2011 with early adoption permitted. The guidance is effective for the Company’s fiscal year beginning January 1, 2012. In October 2011, the FASB decided that the specific requirement to present items that are reclassified from other comprehensive income to net income alongside their respective components of net income and other comprehensive income will be deferred. Therefore, those requirements will not be effective for public entities for fiscal years and interim periods within those years beginning after December 15, 2011. The adoption of this guidance is not expected to have a material impact on our consolidated financial statements, as it only requires a change in the format of presentation.

In May 2011, the FASB issued a new standard amending U.S. generally accepted accounting principles (“GAAP”) fair value measurements and disclosures for the purpose of ensuring that fair value measurement and disclosure requirements are the same across both U.S. GAAP and IFRS. The standard contains amendments changing the wording used to describe many of the requirements in U.S. GAAP for measuring fair value and for disclosing information about fair value measurements, clarifying the application of existing fair value measurement requirements and changing a particular principle for measuring fair value or for disclosing information about fair value measurements. This guidance is effective for the Company’s fiscal year beginning January 1, 2012. Additionally, the standard expands certain disclosure requirements, including qualitative disclosures selected to level 3 fair value measurements. Early adoption is not permitted. The adoption of this new standard is not expected to have significantly material impact the Company’s consolidated financial statements.

In April 2010, the FASB amended its guidance on share-based payment awards with an exercise price denominated in the currency of a market in which the underlying equity security trades. The amendment clarifies that an employee share-based payment award with an exercise price denominated in the currency of a market in which a substantial portion of the entity’s equity securities trades shall not be considered to contain a condition that is not a market performance, or service condition. Therefore, an entity would not classify such an award as a liability if it is otherwise qualifies as equity. This amendment is effective for fiscal years and interim periods within those fiscal years beginning on or after December 15, 2010. The guidance is effective for the Company’s interim period ended March 31, 2011. The adoption of this guidance did not have a material impact on the Company’s financial statements.

In January 2010, the FASB amended its guidance on fair value measurements. This guidance requires a reporting entity to disclose separately the amounts of significant transfers in and out of Level 1 and Level 2 fair value measurements and describe the reasons for the transfers. This guidance also requires disclosure of activity in Level 3 fair value measurements. The new disclosures and clarifications of the existing disclosures are effective for interim and annual reporting periods beginning after December 15, 2009, except for the disclosures about purchases, sales, issuances and settlements in the roll forward activity in Level 3 fair value measurements. Those disclosures are effective for fiscal year beginning after December 15, 2010, and the interim periods within those fiscal years. The Company adopted the guidance related to Level 1 and Level 2 fair value measurements on January 1, 2010. The guidance for Level 3 fair value measurements and disclosures is effective for the Company’s interim period ended March 31, 2011. The adoption of this standard did not have a material impact on the Company’s consolidated financial statement disclosures.

## 2. Revisions to Financial Statements

As previously disclosed in the Company's quarterly report on Form 10-Q for the period ended June 30, 2011 and September 30, 2011, the Company identified errors that affected prior periods, primarily relating to its accounting for stock compensation under its employee stock purchase plan. The Company assessed the impact of those errors, including the impact of previously disclosed out-of-period adjustments, on its prior period financial statements and concluded that those errors were not material, individually or in the aggregate, to any of those financial statements. Although the effect of those errors was not material to any previously issued financial statements, the cumulative effect of correcting the identified errors in the current year would have been material for the fiscal year 2011 financial statements. Consequently, the Company concluded that it needed to revise its prior period financial statements. As part of that revision, the Company also concluded it would reverse other previously disclosed out-of period adjustments, which were immaterial, and record them instead in the periods in which the errors originated.

These revisions have no net impact on the Company's net cash amounts provided by (used in) operating, financing or investing activities for the any of the periods previously reported.

The following tables show the financial statement effect of the revisions for the Company's Consolidated Statements of Operations for the year ended December 31, 2010 and 2009 and Consolidated Balance Sheets as of December 31, 2010:

	As of and For the Year ended December 31, 2010		As of and For the Year ended December 31, 2010		For the Year ended December 31, 2009	
	As Reported	Revisions	As Revised	As Reported	Revisions	As Revised
Consolidated Statements of Operations:						
Revenues:						
Design-to-silicon-yield solutions	\$43,080		\$43,080	\$32,662		\$32,662
Gainshare performance incentives	18,570		18,570	15,776		15,776
Total revenues	61,650		61,650	48,438		48,438
Cost of design-to-silicon-yield solutions:						
Direct costs of design-to-silicon-yield solutions (1)(2)(6)	\$24,389	\$2,511	\$26,900	\$22,779	\$2,308	\$25,087
Amortization of acquired technology	1,285		1,285	1,439		1,439
Total cost of design-to-silicon-yield solutions	25,674		28,185	24,218		26,526
Gross profit	35,976		33,465	24,220		21,912
Operating expenses:						
Research and development (1)(6)	17,187	(2,232 )	14,955	19,773	(1,867 )	17,906
Selling, general and administrative (1)(3)(6)	15,989	13	16,002	16,561	(10 )	16,551
Amortization of other acquired intangible assets	295		295	349		349
Restructuring charges	885		885	4,512		4,512
Total operating expenses	34,356		32,137	41,195		39,318
Income (loss) from operations	1,620		1,328	(16,975 )		(17,406 )
Interest and other income (expense), net (4)						
	-	20	20	237		237
Income (loss) before taxes	1,620		1,348	(16,738 )		(17,169 )
	1,393	(67 )	1,326	753	150	903

Income tax provision (benefit) (5)(8)				
Net income (loss) (1)(2)(3)(4)(5)(8)	\$ 227	\$ 22	\$(17,491 )	\$(18,072 )
Net income (loss) per share:				
Basic	\$0.01	\$0.00	\$(0.66 )	\$(0.69 )
Diluted	\$0.01	\$0.00	\$(0.66 )	\$(0.69 )
Weighted average common shares:				
Basic	27,257	27,257	26,377	26,377
Diluted	27,471	27,471	26,377	26,377
Consolidated Balance Sheets:				
Prepaid expenses and other current assets (2)(5)(8)	\$ 3,246	\$(61 )	\$ 3,185	
Accounts receivable, net of allowance (9)	23,442	(1,321 )	22,121	
Other non-current assets (9)	727	1,321	2,048	
Accrued and other current liabilities (7)	2,400	236	2,636	
Other non-current liabilities (7)	1,495	(236 )	1,259	
Long-term income tax payable (8)	3,668	22	3,690	
Additional paid-in-capital (1)	200,144	722	200,866	
Accumulated deficit (1)(2)(3)(4)(5)(8)	(129,884 )	(785 )	(130,669 )	
Accumulated other comprehensive income (loss) (4)	(51 )	(20 )	(71 )	

(1) In 2011, the Company identified an error related to prior period expense for stock-based compensation for the Employee Stock Purchase Plan. The effect of the error is to increase stock-based compensation expense by \$189,000 for fiscal year of 2010 and \$639,000 for fiscal year of 2009. In fiscal year of 2011, the Company recorded an out-of-period adjustment to reduce stock-compensation expense of \$106,000 that should have been recorded as a decrease in compensation expense in the fiscal year of 2010.

	Year Ended December 31, 2010	Year Ended December 31, 2009
Cost of design-to-silicon-yield solutions	\$65	\$187
Research and development	57	201
Selling, general and administrative	(39 )	251
Total	\$83	\$639

- (2) In the fiscal year of 2009, the Company over-expensed \$83,000 of its prepaid software license. Therefore, the Company decreased the expense in fiscal year of 2009 and expensed the amount instead in fiscal year of 2010.
- (3) In the fiscal year of 2010, the Company recorded additional sabbatical accrual, of which \$30,000 should have been recorded as an increase of expense in fiscal year of 2009. In addition, in fiscal year of 2010, the Company reversed an accrual for fringe benefits of \$155,000 which should have been reversed in the prior year.
- (4) In the fiscal year of 2011, the Company reduced foreign currency loss of \$20,000 which should have been reduced in the fiscal year of 2010.
- (5) In the fiscal year of 2010, the Company recorded an increase to income tax provision of \$67,000 to correct a prepaid expenses and other current assets balance that was related to the fiscal year of 2009. There are no adjustments to income tax relating to the pre-tax adjustments described in (1) to (4) above.
- (6) In the fiscal year of 2011, the Company identified a misclassification of certain amounts in the prior periods related to cost of design-to-silicon-yield solutions, research and development and selling, general and administrative. The reclassification has no impact to the net income (loss) in any of the periods previously reported. The effect of correcting the misclassification is as follows:

	Year Ended December 31, 2010	Year Ended December 31, 2009
Cost of design-to-silicon-yield solutions	\$ 2,362	\$ 2,204
Research and development	(2,289 )	(2,068 )
Selling, general and administrative	(73 )	(136 )

- (7) The Company reclassified the short-term portion of the deferred rent balance that was previously presented as other non-current liabilities to accrued and other current liabilities. The reclassification has no impact to the Consolidated Statement of Operations in any of the periods previously reported.
- (8) In the fiscal year of 2011, the Company identified an error related to an overstatement of research and development tax credits to its French subsidiary that affected income tax provision in fiscal year of 2009. The effect of correcting these errors was an increase to the income tax provision of \$83,000 for the fiscal year of 2009, a decrease to prepaid expense and other current assets of \$61,000 as of December 31, 2010 and 2009 and an increase to long-term income tax payable of \$22,000 as of December 31, 2010 and 2009.
- (9) The Company reclassified the long-term portion of unbilled accounts receivable balance that was previously presented as accounts receivable, net to other non-current assets. The reclassification has no impact to the Consolidated Statement of Operations in any of the periods previously reported.

### 3. Investments

The following table summarizes the Company's investments at (in thousands):

	Amortized Cost	December 31, 2011		Fair Value
		Unrealized Holding Gains	Unrealized Holding Losses	
Auction-rate securities	\$1,000	\$—	\$(216 )	\$784

	Amortized Cost	December 31, 2010		Fair Value
		Unrealized Holding Gains	Unrealized Holding Losses	
Auction-rate securities	\$1,000	\$—	\$(282 )	\$718

As of December 31, 2011 and 2010, the Company's investments consisted entirely of auction-rate securities. Refer to Note 13 "Fair Value" for further discussion on the Company's investments.

#### 4. Property and Equipment

Property and equipment consist of (in thousands):

	December 31,	
	2011	2010
Computer equipment	\$12,642	\$12,360
Software	3,543	3,359
Furniture, fixtures, and equipment	1,060	980
Leasehold improvements	926	905
	18,171	17,604
Accumulated depreciation and amortization	(17,394 )	(16,807 )
	\$777	\$797

Depreciation and amortization expense for years ended December 31, 2011, 2010 and 2009 was \$0.5 million, \$0.8 million and \$1.4 million, respectively.

#### 5. Intangible Assets

The following tables provide information relating to the intangible assets contained within the Company's consolidated balance sheet as of December 31, 2011 and 2010 (in thousands):

	December 31, 2011			
	Amortization Period (Years)	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
<b>Acquired identifiable intangibles:</b>				
Acquired technology	4-5	\$11,800	\$ (11,539 )	\$261
Brand name	4	510	(510 )	—
Customer relationships and backlog	1-6	3,420	(3,320 )	100
Patents and applications	7	1,400	(1,222 )	178
Other acquired intangibles	4	255	(255 )	—
<b>Total</b>		<b>\$17,385</b>	<b>\$ (16,846 )</b>	<b>\$539</b>

	December 31, 2010			
	Amortization Period (Years)	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
<b>Acquired identifiable intangibles:</b>				
Acquired technology	4-5	\$11,800	\$ (10,915 )	\$885
Brand name	4	510	(510 )	—
Customer relationships and backlog	1-6	3,420	(3,188 )	232
Patents and applications	7	1,400	(1,148 )	252
Other acquired intangibles	4	255	(255 )	—
<b>Total</b>		<b>\$17,385</b>	<b>\$ (16,016 )</b>	<b>\$1,369</b>

Intangible asset amortization expense for the years ended December 31, 2011, 2010 and 2009 was \$0.8 million, \$1.6 million and \$1.8 million, respectively.

The Company expects that annual amortization of acquired identifiable intangible assets to be as follows (in thousands):

Year Ending December 31,	Amount
2012	435
2013	74
2014	30
Total	\$539

Intangible assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset or asset group may not be recoverable. During the years ended December 31, 2011, 2010 and 2009, there were no indicators of impairment related to the Company's intangible assets.

#### 6. Accrued and Other Current Liabilities

Accrued and other current liabilities consist of (in thousands):

	December 31,	
	2011	2010
Current portion of accrued restructuring	482	753
Other current liabilities	1,853	1,883
Total accrued and other current liabilities	\$2,335	\$2,636

#### 7. Commitments and Contingencies

Leases — The Company leases administrative and sales offices and certain equipment under noncancelable operating leases, which contain various renewal options and, in some cases, require payment of common area costs, taxes and utilities. These operating leases expire at various times through 2016. Rent expense was \$2.4 million, \$2.4 million and \$2.5 million in 2011, 2010 and 2009, respectively.

Future minimum lease payments under noncancelable operating leases at December 31, 2011 are as follows (in thousands):

Year Ending December 31,	
2012	\$2,984
2013	2,269
2014	459
2015	207
2016	185
Total future minimum lease payments	\$6,104

Debt —As part of the acquisition of Si Automation S.A. (“SiA”) on October 31, 2006, at the time of the acquisition, the Company assumed two separate debt agreements with a government-backed agency in France. In 2004, SiA obtained a €550,000 loan to cover research and development expenses. The loan did not carry interest and its repayment was conditioned on meeting certain revenue targets. During the three months ended September 30, 2009, an amendment to the agreement was executed to forgive €275,000 of the loan due to the partial success of the research project. The loan was fully repaid in 2009. The release of the debt was included in the “Interest and other income”. SiA also entered into a long-term debt agreement in 2005 for a total amount of €400,000. The debt carried a variable interest rate based on the three month average EURIBOR plus 160 basis points. The debt was reimbursable in 20 equal principal quarterly

installments from January 2007 through October 2011. The debt agreement did not carry any financial covenant. The loan was fully repaid as of December 31, 2011.

**Indemnifications** — The Company generally provides a warranty to its customers that its software will perform substantially in accordance with documented specifications typically for a period of 90 days following delivery of its products. The Company also indemnifies certain customers from third-party claims of intellectual property infringement relating to the use of its products. Historically, costs related to these guarantees have not been significant. The Company is unable to estimate the maximum potential impact of these guarantees on its future results of operations.

**Purchase obligations** — The Company has purchase obligations with certain suppliers for the purchase of goods and services entered in the ordinary course of business. As of December 31, 2011, total outstanding purchase obligations were \$2.2 million which are primarily due within the next 12 months.

**Indemnification of Officers and Directors** — As permitted by the Delaware general corporation law, the Company has included a provision in its certificate of incorporation to eliminate the personal liability of its officers and directors for monetary damages for breach or alleged breach of their fiduciary duties as officers or directors, other than in cases of fraud or other willful misconduct.

In addition, the Bylaws of the Company provide that the Company is required to indemnify its officers and directors even when indemnification would otherwise be discretionary, and the Company is required to advance expenses to its officers and directors as incurred in connection with proceedings against them for which they may be indemnified. The Company has entered into indemnification agreements with its officers and directors containing provisions that are in some respects broader than the specific indemnification provisions contained in the Delaware general corporation law. The indemnification agreements require the Company to indemnify its officers and directors against liabilities that may arise by reason of their status or service as officers and directors other than for liabilities arising from willful misconduct of a culpable nature, to advance their expenses incurred as a result of any proceeding against them as to which they could be indemnified, and to obtain directors' and officers' insurance if available on reasonable terms. The Company has obtained directors' and officers' liability insurance in amounts comparable to other companies of the Company's size and in the Company's industry. Since a maximum obligation of the Company is not explicitly stated in the Company's Bylaws or in its indemnification agreements and will depend on the facts and circumstances that arise out of any future claims, the overall maximum amount of the obligations cannot be reasonably estimated.

**Litigation** — From time to time, the Company is subject to various claims and legal proceedings that arise in the ordinary course of business. The Company accrues for losses related to litigation when a potential loss is probable and the loss can be reasonably estimated in accordance with FASB requirements. A reasonably possible loss in excess of amounts accrued is not significant to the financial statements. With respect to each of the matters below, the Company has determined a potential loss is not probable at this time and, accordingly, no amount has been accrued at December 31, 2011. Although the Company currently believes that the ultimate outcome of any of these claims and proceedings, individually and in the aggregate, will not have a material adverse effect on the Company's financial position or overall trends in results of operations, litigation is subject to inherent uncertainty. If an unfavorable ruling occurs in any of the legal proceedings described below, the Company's financial position and results of operations and cash flows could be negatively affected. As the Company continues to monitor these matters, however, the Company's determination could change and the Company may decide a different reserve is appropriate in the future.

Philip Steven Melman filed a complaint against us and our Chief Executive Officer on December 7, 2009 in the Superior Court for Santa Clara County. In the complaint, Mr. Melman alleges wrongful discharge based on discrimination, fraud, breach of contract and similar theories, in connection with the termination of Mr. Melman's employment with the Company. The complaint seeks compensatory and punitive damages, any other available remedies, as well as attorney's fees and costs. Summary judgment in the favor of both the Company and Dr. Kibarian was entered by the court on October 27, 2011 and November 15, 2011, respectively. Mr. Melman is appealing both orders. The Company believes the complaint is without merit and intend to continue to vigorously oppose it.

Global Software Services, Inc., a Palestinian corporation ("GSSI"), filed a complaint against the Company on February 16, 2010 in the Superior Court for Santa Clara County. In the complaint, GSSI alleged that the Company failed to pay GSSI amounts owed under a Professional Services Agreement pursuant to which GSSI was providing software-related development and support services to us. In addition, GSSI alleged that the Company interfered with GSSI's business relationships and employee relationships and that the Company engaged in unfair business practices in violation of Business & Professions Code Section 17200. The complaint sought compensatory and punitive damages,

disgorgement and restitution, injunctive relief and any other available equitable remedies, as well as attorney's fees and costs. On December 2, 2010, the court dismissed GSSI's action with prejudice. On April 14, 2011, Global Software Systems, LLC ("GSS LLC") filed a Notice of Motion to Intervene in the same matter. On May 4, 2011, Andre Hawit, chief executive officer of GSSI and president of GSS LLC, filed a complaint (as a cross-cross complainant) against both the Company and the Company's Chief Executive Officer in the same matter before the Superior Court for Santa Clara County. Both Mr. Hawit and GSS LLC are continuing to pursue claims arising in connection with the subject matter of the lawsuit originally filed by GSSI. Specifically, Mr. Hawit's cross-cross complaint alleges that the Company interfered with his economic relationship with GSSI and that the Company engaged in unfair business practices in violation of Business and Professions Code Section 17200. He is seeking compensatory damages, punitive damages, restitution and attorney fees and costs. GSS LLC is alleging that it was an assignee of the rights of GSSI and that the court should grant it relief from the dismissal entered against GSSI and permit it to pursue those claims as an assignee. In August 2011, the court denied all previously filed motions to set aside the dismissal and for GSS LLC to intervene in the action. On September 2, 2011, GSS LLC filed a notice of appeal of the dismissal of the action, the denial of its motions to intervene and several other related rulings, and Mr. Hawit filed a notice of appeal of sanctions awarded to us against him. The Company believes the cross-cross-complaint and the appeal are without merit and intend to continue to vigorously oppose them.

## 8. Stockholders' Equity

Stock-based compensation expenses related to the Company's employee stock purchase plan and stock plans were allocated as follows (in thousands):

	Years Ended December 31,		
	2011	2010	2009
Cost of design-to-silicon-yield solutions	\$ 1,923	\$ 1,874	\$ 1,560
Research and development	1,197	1,655	1,491
Selling, general and administrative	1,671	1,784	1,857
Stock-based compensation expense	\$ 4,791	\$ 5,313	\$ 4,908

Stock-based compensation is estimated at the grant date based on the award's fair value and is recognized on a straight-line basis over the vesting periods of the applicable stock purchase rights and stock options, generally four years. As the Company maintains a full valuation allowance against its U.S. deferred tax assets, there are no income tax benefits recognized related to stock-based compensation expense. As stock-based compensation expense recognized is based on awards ultimately expected to vest, it has been reduced for estimated forfeitures. Forfeitures are estimated at the time of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates.

The Company has elected to use the Black-Scholes-Merton option-pricing model, which incorporates various assumptions including volatility, expected life and interest rates. The expected volatility is based on the historical volatility of the Company's common stock over the most recent period commensurate with the estimated expected life of the Company's stock options. The expected life of an award is based on historical experience and on the terms and conditions of the stock awards granted to employees. The interest rate assumption is based upon observed Treasury yield curve rates appropriate for the expected life of the Company's stock options.

The fair value of equity awards granted was estimated on the date of grant with the following weighted average assumptions:

	Stock Plans			Employee Stock Purchase Plan		
	2011	2010	2009	2011	2010	2009
Expected life (in years)	4.9	5.2	5.2	1.25	1.25	1.25
Volatility	61.1 %	62.3 %	63.3 %	57.7 %	62.0 %	79.4 %
Risk-free interest rate	1.52 %	2.07 %	2.29 %	0.46 %	0.47 %	0.92 %
Expected dividend	—	—	—	—	—	—

On December 31, 2011, the Company had in effect the following stock-based compensation plans:

**Stock Plans** — At the annual meeting of stockholders on November 16, 2011, the Company's stockholders approved the 2011 Stock Incentive Plan (the "2011 Plan"). Under the 2011 Plan, the Company may award stock options, stock appreciation rights, stock grants or stock units covering shares of the Company's common stock to employees, directors, non-employee directors and contractors. The aggregate number of shares reserved for awards under this plan is 3,200,000 shares, plus up to 3,500,000 shares previously issued under the 2001 Plan that are forfeited or repurchased by the Company or shares subject to awards previously issued under the 2001 Plan that expire or that terminate without having been exercised or settled in full. In case of awards other than options or stock appreciation rights, the aggregate number of shares reserved under the plan will be decreased at a rate of 1.33 shares issued

pursuant to such awards. The exercise price for stock options must generally be at prices no less than the fair market value at the date of grant for incentive stock options. Stock options generally expire ten years from the date of grant and become vested and exercisable over a four-year period.

In 2001, the Company adopted its 2001 Stock Plan (the “2001 Plan”). In 2003, in connection with its acquisition of IDS Systems Inc., the Company assumed IDS’ 2001 Stock Option / Stock Issuance Plan (the “IDS Plan”). Both of the 2001 and the IDS Plans expired in 2011. Stock options granted under the 2001 and IDS Plans generally expire ten years from the date of grant and become vested and exercisable over a four-year period. No new awards may be granted under the 2001 or IDS Plans after the expiration dates, although awards made under the 2001 and IDS Plans will remain subject to the terms of each such plan.

As of December 31, 2011, the Company has authorized 6.7 million shares of common stock for issuance and exercise of options, of which 6.5 million shares are available for grant. As of December 31, 2011, there were no outstanding options that had been granted outside of the Plans.

Additional information with respect to options under the Plans is as follows:

	Outstanding Options		Weighted	
	Number of	Weighted	Average	Aggregate
	Options	Exercise	Remaining	Intrinsic
	(in	Price	Contractual	Value
	thousands)	per Share	Term	(in
			(years)	thousands)
Outstanding, January 1, 2009	4,412	8.91		
Granted (weighted average fair value of \$2.13 per share)	1,873	3.82		
Exercised	(1 )	0.53		
Canceled	(2,017 )	8.78		
Expired	(783 )	9.77		
Outstanding, December 31, 2009	3,484	5.70		
Granted (weighted average fair value of \$2.33 per share)	313	4.39		
Exercised	(24 )	2.14		
Canceled	(231 )	4.38		
Expired	(89 )	9.62		
Outstanding, December 31, 2010	3,453	5.60		
Granted (weighted average fair value of \$3.15 per share)	1,165	6.09		
Exercised	(531 )	4.33		
Canceled	(162 )	4.59		
Expired	(53 )	9.02		
Outstanding, December 31, 2011	3,872	5.91	7.08	\$6,650
Vested and expected to vest	3,596	5.95	6.94	\$6,218

Options exercisable at:

December 31, 2010	1,757	\$6.91	5.97	\$648
December 31, 2011	2,016	\$6.64	5.59	\$3,211

The aggregate intrinsic value in the table above represents the total intrinsic value based on the Company's closing stock price of \$6.97 as of December 31, 2011, which would have been received by the option holders had all option holders exercised their options as of that date. The total intrinsic value of options exercised during the year ended December 31, 2011, 2010 and 2009 was \$574,000, \$64,000 and \$1,200.

As of December 31, 2011, there was \$4.2 million of total unrecognized compensation cost net of forfeitures related to nonvested stock options. That cost is expected to be recognized over a weighted average period of 2.80 years. The total fair value of options vested during the year ended December 31, 2011 was \$2.2 million.

On November 17, 2009, the Company filed a tender offer on Form SC TO-I (the "2009 Offer") with the SEC under which holders of options with exercise prices equal to or greater than \$4.75 per share could tender their options in exchange for restricted stock rights granted under the 2001 Stock Plan. The exchange ratio of option shares to

restricted stock rights ranged from 2 to 1 to 4 to 1 depending on the exercise price of the eligible option. Restricted stock rights received in exchange for eligible options are subject to new vesting schedules equal to  $\frac{1}{4}$  of the total number of restricted stock rights received on March 15 and September 15 in each of 2010 and 2011, subject to the holder's continued service through each applicable vesting date. On December 15, 2009, the Company completed the 2009 Offer. As a result, the Company accepted for exchange stock options to purchase an aggregate of 1.9 million shares of the Company's common stock from 131 eligible participants, representing approximately 60% of the shares subject to options that were eligible to be exchanged in the offer. Upon the terms and subject to the conditions set forth in the 2009 Offer the Company issued restricted stock rights covering an aggregate of 625,000 shares of the Company's common stock in exchange for the options surrendered pursuant to the 2009 Offer. The 2009 Offer was accounted for as a modification of the affected stock options but resulted in no significant incremental charge for the year ended December 31, 2009.

Nonvested shares (restricted stock units) were as follows:

	Shares (in thousands)	Weighted-Average Grant-Date Fair Value
Nonvested, January 1, 2009	852	8.64
Granted	625	4.37
Vested	(405 )	3.96
Forfeited	(93 )	8.22
Nonvested, December 31, 2009	979	6.84
Granted	30	3.98
Vested	(470 )	6.43
Forfeited	(86 )	7.14
Nonvested, December 31, 2010	453	7.29
Granted	292	6.18
Vested	(414 )	6.12
Forfeited	(28 )	6.89
Nonvested, December 31, 2011	303	7.82

As of December 31, 2011, there was \$1.9 million of total unrecognized compensation cost related to restricted stock rights. That cost is expected to be recognized over a weighted average period of 2.48 years. Restricted stock units do not have rights to dividends prior to vesting.

**Employee Stock Purchase Plan** — In July 2001, the Company adopted a ten-year Employee Stock Purchase Plan (“Purchase Plan”) under which eligible employees can contribute up to 10% of their compensation, as defined in the Purchase Plan, towards the purchase of shares of PDF common stock at a price of 85% of the lower of the fair market value at the beginning of the offering period or the end of the purchase period. The Purchase Plan consists of twenty-four-month offering periods with four six-month purchase periods in each offering period. Under the Purchase Plan, on January 1 of each year, starting with 2002, the number of shares reserved for issuance will automatically increase by the lesser of (1) 675,000 shares, (2) 2% of the Company’s outstanding common stock on the last day of the immediately preceding year, or (3) the number of shares determined by the board of directors. At the annual meeting of stockholders on May 18, 2010, the Company's stockholders approved an amendment to the Purchase Plan to extend it through May 17, 2020. As of December 31, 2010, 3.9 million shares of the Company’s common stock have been reserved for issuance under the Purchase Plan. During 2011, 2010 and 2009, the number of shares issued were 414,000, 588,000 and 450,000, respectively, at a weighted average price of \$2.09, \$1.33 and \$1.27 per share, respectively. As of December 31, 2011, 1.1 million shares were available for future issuance under the Purchase Plan. The weighted average estimated fair value of shares granted under the Purchase Plan during 2011, 2010 and 2009 was \$1.64, \$1.55 and \$0.97 per share, respectively. For the year ended December 31, 2011, 2010 and 2009, the Purchase Plan compensation expense was \$0.4 million, \$0.6 million and \$0.9 million, respectively.

**Stock Repurchase Program** — On October 29, 2007, the Board of Directors approved a three-year program to repurchase up to \$10.0 million of the Company’s common stock on the open market. On October 19, 2010, the Board of Directors authorized an extension of, and an increase in, the stock repurchase program. Pursuant to such action taken by the Board of Directors, the stock repurchase program was extended for two more years to October 29, 2012

and the aggregate amount available to repurchase was reset to \$10.0 million of the Company's common stock.

As of December 31, 2011, 3.3 million shares had been repurchased at the average price of \$3.86 per share under this program and \$6.4 million remained available for future repurchases.

#### 9. Restructuring

On October 28, 2008, the Company announced a restructuring plan to better allocate its resources to improve its operational results in light of the market conditions.

Under this plan, the Company recorded restructuring charges of \$7.5 million, primarily consisting of employee severance costs of \$4.8 million and facility exit costs of \$2.5 million. The facility exit cost consists primarily of the cost of future obligations related to the locations. Discounted liabilities for future lease costs and the fair value of the related subleases of closed locations that are recorded is subject to adjustments as liabilities are settled. In assessing the discounted liabilities for future costs of obligations related to the locations, the Company made assumptions regarding the amounts of future subleases. If these assumptions or their related estimates change in the future, the Company may be required to record additional exit costs or reduce exit costs previously recorded. Exit costs recorded for each period presented include the effect of such changes in estimates. The following table summarizes the activities of these restructuring liabilities (in thousands):

	Severance	Facility Exit	Professional and Other Fees	Total
Balances, January 1, 2009	\$860	\$1,108	\$31	\$1,999
Restructuring charges	3,515	783	214	4,512
Payments	(4,151 )	(558 )	(183 )	(4,892 )
Balances, December 31, 2009	224	1,333	62	1,619
Restructuring charges	374	565	(54 )	885
Payments	(488 )	(634 )	(3 )	(1,125 )
Balances, December 31, 2010	\$110	\$1,264	\$5	\$1,379
Restructuring credits	—	(105 )	(5 )	(110 )
Adjustments	—	32	—	32
Payments	(7 )	(566 )	—	(573 )
Balances, December 31, 2011	\$103	\$625	\$—	\$728

As of December 31, 2011, of the remaining accrual of \$0.7 million, \$0.5 million was included in accrued and other current liabilities and \$0.2 million was included in other non-current liabilities. As of December 31, 2010, of the remaining accrual of \$1.4 million, \$0.8 million was included in accrued and other current liabilities and \$0.6 million was included in other non-current liabilities. Accrued facility exit costs will be paid in accordance with the lease payment schedule through 2013.

#### 10. Income Taxes

	Year Ended December 31,		
	2011	2010	2009
	(In thousands)		
U.S.			
Current	\$(237 )	\$(70 )	\$(127 )
Deferred	—	—	—
Foreign			
Current	207	437	81
Withholding	2,448	1,553	784
Deferred	21	(594 )	165
Total provision	\$2,439	\$1,326	\$903

During the years ended December 31, 2011, 2010 and 2009, income (loss) before taxes from U.S. operations was \$2.9 million, \$0.5 million and \$(19.6) million, respectively, and income before taxes from foreign operations was \$1.4

million, \$0.8 million and \$2.4 million, respectively.

The income tax provision (benefit) differs from the amount estimated by applying the statutory federal income tax rate (35%) for the following reasons (in thousands):

	Year Ended December 31,		
	2011	2010	2009
Federal statutory tax provision (benefit)	\$ 1,511	\$ 567	\$(5,727 )
State tax provision (benefit)	19	71	(963 )
Stock compensation expense (benefit)	186	678	345
Impairment on goodwill and intangible assets	—	—	—
Tax credits	(3,297 )	(2,236 )	(861 )
Foreign tax, net	2,171	1,220	(47 )
Valuation allowance	1,794	876	8,591
Other	55	150	(435 )
Tax provision (benefit)	\$ 2,439	\$ 1,326	\$ 903

As of December 31, 2011, the Company had California net operating loss carry-forwards (“NOLs”) of approximately \$9.2 million. The California losses can be carried forward 20 years for tax years beginning on or after January 1, 2008 and will begin expiring after 2031.

In addition, as of December 31, 2011, the Company had federal and state research and experimental and other tax credit (“R&D credits”) carry-forwards of approximately \$9.4 million and \$10.1 million, respectively. The federal credits begin to expire after 2022, while the California credits have no expiration. The extent to which the federal and state credit carry forwards can be used to offset future tax liabilities, respectively, may be limited, depending on the extent of ownership changes within any three-year period as provided in the Tax Reform Act of 1986 and the California Conformity Act of 1987. In addition, the Company claimed foreign R&D credits of \$0.1 million for the year ended December 31, 2011, which are refundable in the future if they are not used to offset future tax liabilities.

Based on the available objective evidence, both positive and negative, including the recent history of losses, forecasted U.S. pre tax income (loss), and the net operating losses that can be carried back to prior taxable years, management concluded as of December 31, 2008, that it is more likely than not that the Company’s deferred tax assets would not be fully realizable. Net deferred tax assets balance as of December 31, 2011 and 2010 was \$1,000 and \$911,000, respectively.

The components of the net deferred tax assets are comprised of (in thousands):

	December 31,	
	2011	2010
Net operating loss carry forward	\$597	\$842
Research and development and other credit carry forward	10,660	10,024
Foreign tax credit carry forward	7,247	6,059
Accruals deductible in different periods	2,676	3,622
Intangible assets	7,380	8,071
Stock-based compensation	6,271	6,199
Valuation allowance	(34,830 )	(33,906 )
Total	\$1	\$911

In accordance with the provisions of the accounting standard relating to accounting for uncertain tax positions, the Company classifies its liabilities for income tax exposures as long-term. The Company includes interest and penalties related to unrecognized tax benefits within the Company’s income tax provision. As of December 31, 2011 and 2010, the Company had accrued interest and penalties related to unrecognized tax benefits of \$442,000 and \$461,000, respectively. In the years ended December 31, 2011, 2010 and 2009, the Company recognized credits for interest and penalties related to unrecognized tax benefits in the consolidated statements of operations of \$(19,000), \$(78,000) and \$(23,000), respectively.

The Company’s total amount of unrecognized tax benefits as of December 31, 2011 was \$9.6 million, of which \$3.0 million, if recognized, would affect the Company’s effective tax rate. The Company’s total amount of unrecognized tax benefits as of December 31, 2010 was \$9.4 million, of which \$3.2 million, if recognized, would affect the Company’s effective tax rate. As of December 31, 2011, the Company has recognized a net amount of \$3.5 million as long-term income taxes payable for unrecognized tax benefits in its consolidated balance sheet. The remaining \$6.1 million has been recorded net of our deferred tax assets that are subject to a full valuation allowance. The Company does not expect the change in unrecognized tax benefits over the next twelve months to materially impact its results of operations and financial position.

The Company conducts business globally and, as a result, files numerous consolidated and separate income tax returns in the U.S. federal, various state and foreign jurisdictions. Because the Company used some of the tax attributes carried forward from previous years to tax years that are still open, statutes of limitation remain open for all tax years to the extent of the attributes carried forward into tax year 2002 for federal and California tax purposes. The Company is currently subject to income tax examinations in France for 2009. The Company is not subject to income tax examinations in any other of its major foreign subsidiaries' jurisdictions.

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows (in thousands):

	Amount
Gross unrecognized tax benefits, January 1, 2009	\$8,215
Increases in tax positions for current year	906
Lapse in statute of limitations	(857 )
Gross unrecognized tax benefits, December 31, 2009	8,264
Increases in tax positions for current year	1,188
Increases in tax positions for prior years	540
Lapse in statute of limitations	(585 )
Gross unrecognized tax benefits, December 31, 2010	9,407
Increases in tax positions for current year	777
Increases in tax positions for prior years	38
Lapse in statute of limitations	(578 )
Gross unrecognized tax benefits, December 31, 2011	\$9,644

Undistributed earnings of the Company's foreign subsidiaries of \$2.8 million are considered to be indefinitely reinvested and accordingly, no provision for federal and state income taxes has been provided thereon.

Valuation allowance for deferred tax assets is summarized below:

	Balance at Beginning of Period	Charged to Costs and Expenses	Deductions/ Write-offs of Accounts	Balance at End of Period
Valuation allowance for deferred tax assets				
2011	\$33,906	\$924	\$—	\$34,830
2010	\$29,536	\$4,370	\$—	\$33,906
2009	\$24,428	\$5,108	\$—	\$29,536

#### 11. Net Income (Loss) Per Share

Basic net income (loss) per share is computed by dividing net income (loss) by weighted average number of common shares outstanding for the period (excluding outstanding stock options and shares subject to repurchase). Diluted net income (loss) per share is computed using the weighted-average number of common shares outstanding for the period plus the potential effect of dilutive securities which are convertible into common shares (using the treasury stock method), except in cases in which the effect would be anti-dilutive. There are no dilutive shares included during the

Edgar Filing: PDF SOLUTIONS INC - Form 10-K

year ended December 31, 2009 due to the net loss for the period. Under the treasury stock method, the amount that the employee must pay for exercising stock options, the amount of compensation cost for future service that the Company has not yet recognized, and the amount of the tax benefits that would be recorded in additional paid-in capital when the award becomes deductible are assumed to be used to repurchase shares. The following is a reconciliation of the numerators and denominators used in computing basic and diluted net income (loss) per share (in thousands except per share amount):

	Year Ended December 31,		
	2011	2010	2009
<b>Numerator:</b>			
Net income (loss)	\$1,880	\$22	\$(18,072 )
<b>Numerator:</b>			
Basic weighted-average shares outstanding	28,086	27,257	26,377
Effect of dilutive options and restricted stock	345	214	—
Diluted weighted-average shares outstanding	28,431	27,471	26,377
<b>Denominator:</b>			
Net income (loss) per share - Basic	\$0.07	\$0.00	\$(0.69 )
Net income (loss) per share - Diluted	\$0.07	\$0.00	\$(0.69 )

The following table sets forth potential shares of common stock that are not included in the diluted net loss per share calculation above because to do so would be anti-dilutive for the periods indicated (in thousands):

	December 31,	
	2011	2010
Outstanding options	2,218	3,213
Nonvested shares of restricted stock units	247	220
Employee Stock Purchase Plan	35	—
Total	2,500	3,433

## 12. Customer and Geographic Information

Operating segments are defined as components of an enterprise about which separate financial information is available that is evaluated regularly by the chief operating decision maker, or group, in deciding how to allocate resources and in assessing performance.

The Company's chief operating decision maker, the chief executive officer, reviews discrete financial information presented on a consolidated basis for purposes of regularly making operating decisions and assessing financial performance. Accordingly the Company considers itself to be in one operating segment, specifically the licensing and implementation of yield improvement solutions for integrated circuit manufacturers.

The Company had revenues from individual customers in excess of 10% of total revenues as follows:

Customer	Year Ended December 31,					
	2011		2010		2009	
A	24	%	19	%	11	%
B	19	%	11	%	19	%
C	15	%	12	%	*	%
D	*	%	18	%	17	%

\* represents less than 10%

The Company had accounts receivable balances from individual customers in excess of 10% of the gross accounts receivable balance as follows:

Customer	December 31,			
	2011		2010	
A	34	%	16	%
B	23	%	13	%
C	10	%	10	%
D	*	%	14	%
E	*	%	11	%
F	*	%	11	%

\* represents less than 10%

Edgar Filing: PDF SOLUTIONS INC - Form 10-K

Revenues from customers by geographic area based on the location of the customers' work sites are as follows (in thousands):

	Year Ended December 31,		2009		Percentage of Revenues	
	2011	2010	2009	2009		
	Revenues	Percentage of Revenues	Revenues	Percentage of Revenues	Revenues	
Asia	\$ 27,514	41 %	\$ 40,371	65 %	\$ 31,948	66 %
United States	21,498	32	12,903	21	12,939	27
Europe	17,700	27	8,376	14	3,551	7
Total revenue	\$ 66,712	100 %	\$ 61,650	100 %	\$ 48,438	100 %

Long-lived assets, net by geographic area is as follows (in thousands):

	December 31,	
	2011	2010
United States	\$595	\$566
Asia	100	110
Europe	82	121
Total long-lived assets, net	\$777	\$797

### 13. Fair Value

Fair value is the exit price, or the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants as of the measurement date. The multiple assumptions used to value financial instruments are referred to as inputs, and a hierarchy for inputs used in measuring fair value is established, that maximizes the use of observable inputs and minimizes the use of unobservable inputs by requiring that the most observable inputs be used when available. Observable inputs reflect assumptions market participants would use in pricing an asset or liability based on market data obtained from independent sources while unobservable inputs reflect a reporting entity's pricing based upon its own market assumptions. These inputs are ranked according to a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value into three broad levels.

Level 1 - Inputs are quoted prices in active markets for identical assets or liabilities.

Level 2 - Inputs are quoted prices for similar assets or liabilities in an active market, quoted prices for identical or similar assets or liabilities in markets that are not active, inputs other than quoted prices that are observable and market-corroborated inputs which are derived principally from or corroborated by observable market data.

Level 3 - Inputs are derived from valuation techniques in which one or more significant inputs or value drivers are unobservable.

The following table represents the Company's assets measured at fair value on a recurring basis as of December 31, 2011 and the basis for that measurement (in thousands):

Assets	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Money market mutual funds	\$25,339	\$25,339	\$—	\$ —
Auction-rate securities	784	—	—	784
Total	\$26,123	\$25,339	\$—	\$ 784

The following table represents the Company's assets measured at fair value on a recurring basis as of December 31, 2010 and the basis for that measurement (in thousands):

Assets	Total	Quoted Prices in	Significant Other	Significant Unobservable Inputs
--------	-------	---------------------	----------------------	---------------------------------------

		Active Markets for Identical Assets (Level 1)	Observable Inputs (Level 2)	(Level 3)
Money market mutual funds	\$25,304	\$25,304	\$—	\$ —
Auction-rate securities	718	—	—	718
<b>Total</b>	<b>\$26,022</b>	<b>\$25,304</b>	<b>\$—</b>	<b>\$ 718</b>

The Company holds investments in auction-rate securities (“ARS”), which are variable rate debt instruments whose interest rates are reset through a “Dutch” auction process at regular intervals, typically every 28 days. All ARS are backed by pools of student loans guaranteed by governmental agencies and private entities, and were rated AAA/Aaa at the date of acquisition. Rating of MBIA (bond insurer on one of the Company’s ARS) was downgraded from Aaa to A2, by Moody’s Investor Services on June 19, 2008, due to uncertainty in the credit markets and the exposure of these securities to the financial condition of bond insurance companies. All ARS have failed to sell at auction since February 2008, and as a result, their interest rates were reset to the maximum LIBOR + 150 basis points. As a result of these auction failures, there was limited active market with observable prices for these securities. Therefore, the Company computed the fair value of these securities based on a discounted cash flow model, using significant level 3 inputs, to take into account the lack of liquidity. The Company’s valuation analysis considers, among other items, assumptions that market participants would use in their estimates of fair value, such as the collateral underlying the security, the creditworthiness of the issuer and any associated guarantees, credit ratings of the security by the major securities rating agencies, the ability or inability to sell the investment in an active market or to the issuer, the timing of expected future cash flows, and the expectation of the next time the security will have a successful auction or when call features may be exercised by the issuer. In addition, for these ARS with unrealized losses, management performs an analysis to assess whether the Company intends to sell or whether it would more likely than not be required to sell the security before the expected recovery of the amortized cost basis. In the event that the Company intends to sell a security, or may be required to do so, the decline in fair value of the security would be deemed to be other-than-temporary and the full amount of the unrealized loss would be recorded in the Company’s consolidated statement of operations as an impairment loss. Regardless of the Company’s intent to sell a security, the Company performs additional analyses on these ARS with unrealized losses to evaluate whether there could be a credit loss associated with the security. Based on the methodology and the analysis above, the Company has estimated the fair value of its ARS to be \$784,000 and \$718,000 as of December 31, 2011 and 2010. The cumulative impairment for these securities as of December 31, 2011 and 2010 was \$216,000 and \$282,000, respectively, which is included in other comprehensive loss. During the year ended December 31, 2011, the Company recorded an unrealized gain of \$66,000 related to the increase in fair value of the Company’s auction rate securities as a component of accumulated other comprehensive loss. The valuation may be revised in future periods as market conditions evolve.

Due to the Company's belief that the market for ARS will likely take in excess of twelve months to fully recover, the Company has classified its portfolio of ARS as long-term investments in its consolidated balance sheet as of December 31, 2011. The Company believes that the impairment related to its ARS is primarily attributable to the lack of liquidity of these investments, coupled with the ongoing uncertainty in the credit and capital markets, and the Company has no reason to believe that any of the underlying issuers of its ARS are presently at risk of default. For its entire ARS, the underlying maturity date is in excess of one year, and the majority have final maturity dates which occur approximately 26 to 30 years in the future. The Company believes it will ultimately be able to liquidate its investments in ARS without significant loss prior to their maturity dates primarily due to the collateral securing most of its ARS. However, it could take until final maturity of the ARS to realize the par value of the Company's remaining ARS investments. As a result, the Company believes the decline in value of its ARS is a temporary impairment and similarly, any future fluctuation in fair value related to its ARS that the Company deems to be temporary, would be recorded to accumulated other comprehensive income (loss). If the Company determines that any future unrealized loss is other-than-temporary, the Company will record a charge to its consolidated statement of operations. In the event that the Company needs to access its investments in these securities, the Company will not be able to do so until a future auction is successful, the issuer calls the security pursuant to a mandatory tender or redemption prior to maturity, a buyer is found outside the auction process, or the securities mature. In addition, as part of the Company's determination of the fair value of its ARS, the Company considers credit ratings provided by independent investment rating agencies as of the valuation date. These ratings are subject to change, and the Company may be required to adjust its future valuation of these ARS which may adversely affect the value of these investments. Based upon the various analyses described above, the Company did not recognize any other-than-temporary impairment losses in its consolidated statements of operations related to its ARS during either of the three years ended December 31, 2011.

The following table provides a reconciliation of the beginning and ending balances for the assets measured at fair value using significant unobservable inputs (Level 3) (in thousands):

Auction-Rate Securities	Amount
Beginning balance at January 1, 2010	\$718
Unrealized gain (loss)	—
Ending balance at December 31, 2010	718
Unrealized gain (loss)	66
Ending balance at December 31, 2011	\$784

#### 14. Employee Benefit Plan

During 1999, the Company established a 401(k) tax-deferred savings plan, whereby eligible employees may contribute up to 15% of their eligible compensation with a maximum amount subject to IRS guidelines in any calendar year. Company contributions to this plan are discretionary; no such Company contributions have been made since the inception of this plan.

SIGNATURES

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

PDF SOLUTIONS, INC.

By: /s/ John K. Kibarian  
 John K. Kibarian  
 President and Chief Executive Officer  
 (principal executive officer)

By: /s/ Michael Shahbazian  
 Michael Shahbazian  
 Vice President  
 (principal financial and accounting officer)

Date: March 15, 2012

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints John K. Kibarian and Michael Shahbazian, jointly and severally, his or her attorneys-in-fact, each with the power of substitution, for him or her in any and all capacities, to sign any amendments to this Report on Form 10-K, 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 or her substitute or substitutes may do or cause to be done by virtue hereof.

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.

Date	Signature	Title
March 15, 2012	/s/ JOHN K. KIBARIAN  John K. Kibarian	Director, President and Chief Executive Officer (principal executive officer)
March 14, 2012	/s/ MICHAEL SHAHBAZIAN  Michael Shahbazian	Vice President (principal financial and accounting officer)
March 13, 2012	s/ KIMON MICHAELS  /Kimon Michaels	Director, Vice President, Products and Solutions
March 14, 2012	/s/ LUCIO L. LANZA  Lucio L. Lanza	Chairman of the Board of Directors

Edgar Filing: PDF SOLUTIONS INC - Form 10-K

March 13,  
2012

/s/ R. STEPHEN HEINRICHS

Director

R. Stephen Heinrichs

March 14,  
2012

/s/ TOM CAULFIELD

Director

Tom Caulfield

March 13,  
2012

/s/ ALBERT Y. C. YU

Director

Albert Y. C. Yu

62

---

## Selected Quarterly Financial Data (Unaudited)

During the fiscal year of 2011, the Company revised previously issued financial statements to correct certain errors that affected prior periods, including primarily relating to its accounting for stock-based compensation under its employee stock purchase plan. See Note 2 for further discussion of these revisions.

As originally reported:	Year Ended December 31, 2011			
	Q1(*)	Q2(*)	Q3	Q4
	(In thousands, except for per share amounts)			
Total revenues	\$15,017	\$17,160	\$16,939	\$17,596
Gross profit	\$9,068	\$9,741	\$9,133	\$9,372
Total operating expenses	\$9,134	\$8,888	\$7,579	\$7,249
Net income (loss)	\$(577)	\$(57)	\$626	\$2,113
Net income (loss) per share:				
Basic	\$(0.02)	\$(0.00)	\$0.02	\$0.07
Diluted	\$(0.02)	\$(0.00)	\$0.02	\$0.07

As revised:	Year Ended December 31, 2011			
	Q1	Q2	Q3	Q4
	(In thousands, except for per share amounts)			
Total revenues	\$15,017	\$17,160	\$16,939	\$17,596
Gross profit (1)	\$8,423	\$9,741	\$9,133	\$9,372
Total operating expenses (2)	\$8,706	\$8,888	\$7,579	\$7,249
Net income (loss) (3)	\$(758)	\$(101)	\$626	\$2,113
Net income (loss) per share:				
Basic (4)	\$(0.03)	\$(0.00)	\$0.02	\$0.07
Diluted (4)	\$(0.03)	\$(0.00)	\$0.02	\$0.07

As originally reported:	Year Ended December 31, 2010			
	Q1(*)	Q2(*)	Q3(*)	Q4(*)
	(In thousands, except for per share amounts)			
Total revenues	\$15,252	\$15,352	\$14,828	\$16,218
Gross profit	\$8,571	\$9,064	\$8,678	\$9,663
Total operating expenses	\$8,628	\$8,876	\$7,964	\$8,888
Net income (loss)	\$(296)	\$317	\$50	\$156
Net income (loss) per share:				
Basic	\$(0.01)	\$0.01	\$0.00	\$0.01
Diluted	\$(0.01)	\$0.01	\$0.00	\$0.01

As revised:	Year Ended December 31, 2010			
	Q1	Q2	Q3	Q4
	(In thousands, except for per share amounts)			
Total revenues	\$15,252	\$15,352	\$14,828	\$16,218
Gross profit (1)	\$7,913	\$8,505	\$8,041	\$9,007
Total operating expenses (2)	\$8,232	\$8,295	\$7,461	\$8,149
Net income (loss) (3)	\$(558)	\$339	\$(84)	\$326
Net income (loss) per share:				

Basic (4)	\$ (0.02	)	\$ 0.01	\$ 0.00	\$ 0.01
Diluted (4)	\$ (0.02	)	\$ 0.01	\$ 0.00	\$ 0.01

---

(\*) During the fiscal year of 2011, the Company revised previously issued financial statements to correct certain errors that affected prior periods, including primarily relating to its accounting for stock-based compensation under its employee stock purchase plan. See Note 2 for further discussion of these revisions. Items (1) – (4) describe the impact on the quarterly results of these revisions.

- (1) Gross profit decreased \$645,000 for the first quarter of 2011. No change in gross profit for the second quarter of 2011. Gross profit decreased \$658,000, \$559,000, \$637,000 and \$656,000 for the first, second, third and fourth quarter of 2010, respectively.
- (2) Total operating expense decreased \$428,000 for the first quarter of 2011. No change in operating expense for the second quarter of 2011. Total operating expense decreased \$396,000, \$581,000, \$503,000 and \$739,000 for the first, second, third and fourth quarter of 2010, respectively.
- (3) Net loss increased \$181,000 and \$44,000 for the first and second quarter of 2011, respectively. Net loss increase \$262,000 for the first quarter of 2010. Net income increased \$22,000 and \$170,000 for the second and fourth quarter of 2010. Net income decreased \$134,000 for the third quarter of 2010, resulting in a net loss position.
- (4) Basic and diluted loss per share increased \$0.01 for the first quarter of 2011. Basic and diluted loss per share increased \$0.01 for the first quarter of 2010. No change in basic and diluted income (loss) per share for the second quarter of 2011, second quarter of 2010, third quarter of 2010 and fourth quarter of 2010.

INDEX TO EXHIBITS

Exhibit Number	Description
3.01	Third Amended and Restated Certificate of Incorporation of PDF Solutions, Inc. (incorporated herein by reference to registrant's Registration Statement on Form S-1/A filed July 9, 2001.)
3.02	Amended and Restated Bylaws of PDF Solutions, Inc. (incorporated herein by reference to registrant's Quarterly Report on Form 10-Q filed August 9, 2005.)
4.01	Specimen Stock Certificate (incorporated herein by reference to registrant's Quarterly Report on Form 10-Q filed September 6, 2001.)
10.01	Form of Indemnification Agreement between PDF Solutions, Inc. and certain of its executive officers and directors (incorporated herein by reference to registrant's Registration Statement on Form S-1 filed August 7, 2000.)
10.02	PDF Solutions, Inc. 1996 Stock Option Plan and related agreements (incorporated herein by reference to registrant's Registration Statement on Form S-1 filed August 7, 2000.)*
10.03	PDF Solutions, Inc. 1997 Stock Plan and related agreements (incorporated herein by reference to registrant's Registration Statement on Form S-1 filed August 7, 2000.)*
10.04	PDF Solutions, Inc. 2001 Stock Plan (incorporated herein by reference to registrant's Quarterly Report on Form 10-Q filed May 10, 2007) and related agreements (incorporated herein by reference to registrant's Quarterly Report on Form 10-Q filed August 9, 2011.) *
10.05	PDF Solutions, Inc. 2001 Employee Stock Purchase Plan (incorporated herein by reference to registrant's proxy statement dated April 6, 2010.)
10.06	IDS Software, Inc. 2001 Stock Option/Stock Issuance Plan and related agreements (incorporated herein by reference to registrant's Registration Statement on Form S-8 filed October 17, 2003.)*
10.07	Offer letter to Cornelius D. Hartgring from PDF Solutions, Inc. dated August 29, 2002 (incorporated herein by reference to registrant's Annual Report on Form 10-K filed March 26, 2003.)*
10.08	Fourth Amendment to Office Lease and Second Amendment to Lease between PDF Solutions, Inc. and Metropolitan Life Insurance Company dated as of March 19, 2003 (incorporated herein by reference to registrant's Quarterly Report on Form 10-Q filed May 14, 2003.)
10.09	Carmel Corporate Plaza Office Lease between PDF Solutions, Inc. and 15015 Avenue of Science Associates LLC dated as of April 1, 2003 (incorporated by reference to registrant's Quarterly Report on Form 10-Q filed May 14, 2003.)
10.10	Riverpark Tower Office Lease between PDF Solutions, Inc. and Legacy Partners I Riverpark I, LLC, dated June 29, 2007 (incorporated herein by reference to registrant's Annual Report on Form 10-K filed March 17, 2008.)
10.11	Offer letter to Joy Leo from PDF Solutions, Inc. dated July 14, 2008 (incorporated herein by reference to registrant's Quarterly Report on Form 10-Q filed August 11, 2008.) *
10.12	Form of Indemnification Agreement between PDF Solutions, Inc. and certain of its senior executive officers and directors (incorporated herein by reference to the registrant's Annual Report on Form 10-K filed March 16, 2009.)*
10.13	Employment confirmation to John Kibarian from PDF Solutions, Inc. dated October 13, 2009*

Edgar Filing: PDF SOLUTIONS INC - Form 10-K

10.14	Employment confirmation to Kimon Michaels from PDF Solutions, Inc. dated October 13, 2009*
10.15	Offer Letter to Gregory Walker from PDF Solutions, Inc. dated November 1, 2011 (incorporated herein by reference to registrar's Quarterly Report on Form 10-Q filed November 9, 2011.) *
10.16	Offer letter to Michael Shahbazian from PDF Solutions, Inc. dated March 12, 2012*
10.17	PDF Solutions, Inc. 2011 Stock Incentive Plan (incorporated herein by reference to registrant's proxy statement dated October 7, 2011.)
10.18	Form of Stock Option Agreement (Non-statutory) under PDF Solutions, Inc. 2011 Stock Incentive Plan*
10.19	Form of Stock Unit Agreement under PDF Solutions, Inc. 2011 Stock Incentive Plan*
21.01	Subsidiaries of Registrant.
23.01	Consent of Independent Registered Public Accounting Firm.
24.01	Power of Attorney (see Signature Page).
31.01	Certifications of the principal executive officer and principal financial and accounting officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.02	Certifications of the principal executive officer and principal financial and accounting officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.01	Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. †
32.02	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 Extension Calculation Linkbase Document**
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document**
101.LAB	XBRL Taxonomy Extension Labels Linkbase Document**
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document**

---

\* Indicates management contract or compensatory plan or arrangement.

† Furnished herewith.

\*\* Pursuant to applicable securities laws and regulations, the Registrant is deemed to have complied with the reporting obligation relating to the submission of interactive data files in such exhibits and is not subject to liability under any anti-fraud provisions of the federal securities laws as long as the Registrant has made a good faith attempt to comply with the submission requirements and promptly amends the interactive data files after becoming aware that the interactive data files fail to comply with the submission requirements. These interactive data files are deemed not filed or part of a registration statement or prospectus for purposes of sections 11 or 12 of the Securities Act of 1933, as amended, are deemed not filed for purposes of section 18 of the Securities Exchange Act of 1934, as amended, and otherwise are not subject to liability under these sections.