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	25-1701361
(State or other jurisdiction of Incorporation or organization)	(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	Name of Each Exchange on Which Registered
Common Stock, $0.00015 par value	The NASDAQ Stock Market LLC

Securities registered pursuant to Section 12(g) of the Act:
None

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

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 R

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 R 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 R 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. o

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 R 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 R

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.

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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-Yieldtm, dataPOWER® VSF™, dP-bitMAPtm, dP-Defecttm, dP-Miningtm, dP-SSAtm, dP-Variability Analysis™, dP-WorkFlow™, exensio™, pdBRIXtm, pdCVtm, Template™, exensi 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.

- pdBRIXtm Physical IP Solutions: pdBRIXtm 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.

- pdCVtm 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-Defecttm), memory analysis (dP-bitMAPtm), spatial signature analysis (dP-SSAtm) and data-mining (dP-Miningtm).

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 becasue 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.

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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. 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;
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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 Trancom 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;

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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-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-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-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					