



MARY TRIPSAS

Adobe Systems Incorporated

“Are we a dot-com company? No. Do we buy super bowl ads? No. Are we...getting incredible valuations to spend lots of money on advertising? No. Are we using the Internet in almost every aspect of our business? Yes...”

—John Warnock, Chairman of the Board and CEO, Adobe Systems Incorporated

As he sat in his office in the Adobe Systems Incorporated towers in downtown San Jose, John Warnock, chairman and CEO, pondered the wealth of opportunities facing the company he and his colleague, Chuck Geschke, had founded almost 20 years ago. With annual revenues of about \$1 billion, Adobe was the leading supplier of software to the graphic arts and publishing industries. Although the print world had been Adobe’s traditional customer base, the firm had successfully transitioned to meet the exploding demand for web authoring tools. Adobe’s image editing software, Photoshop®¹ was used by 91% of web sites, and its illustration software, Illustrator®, by 74%. In addition, Adobe had made acquisitions in the web animation and web design spaces and was poised to take advantage of growth in that arena. Revenue linked to the web had grown from 50% in 1999 to 61% in the second quarter of 2000 and was expected to continue on a steep trajectory. Adobe’s share price had gone from a low of \$12.15² in August 1998, to \$157.56 in September 2000, providing evidence that Wall Street was finally beginning to recognize what Warnock had known for some time—Adobe was well positioned to take advantage of the growth of the Internet. The question was which opportunities to pursue and how.

Warnock was particularly intrigued by the recent explosion of interest in the eBook (electronic book) market. On March 15, 2000, best-selling novelist Stephen King had been the first major author to release a title exclusively on the Internet as an eBook. Accompanied by much fanfare, his novella *Riding the Bullet*, was available for electronic download from 150 different web sites, including Amazon.com and BarnesandNoble.com. Over 400,000 copies of the book had been downloaded

¹ Adobe, the Adobe logo, Acrobat, Acrobat Reader, PDF Merchant, Acrobat Capture, Distiller, Acrobat Messenger, Illustrator, InDesign, Framemaker, PageMaker, PressReady, Acrobat InProduction, After Effects, GoLive, LiveMotion, Adobe Premiere, Photoshop, Adobe PhotoDeluxe, ActiveShare, ePaper, Acrobat Exchange, and PostScript are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries.

² Adjusted for stock splits.

Professor Mary Tripsas prepared this case. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management. Research assistance was provided by Hagar Doitel and Jennifer Zide.

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within 48 hours, demonstrating to the publishing and book-selling industries a surprisingly high level of consumer interest in this emerging technology.

Warnock's interest in eBooks stemmed from Adobe's historical position as a leading provider of technology and standards to the publishing industry. He felt that Adobe could leverage its strong reputation and existing relationships with professional publishers as this new space evolved. In particular, he felt that Adobe was in a strong position to have its electronic document technology become the de facto standard format for eBooks.

Adobe had been a first mover on the Internet in the more broadly defined electronic document or "eDoc" space with its Acrobat® product which first shipped in 1993. Acrobat enabled the creation of documents that could be viewed on a wide variety of computing platforms while retaining their original formatting. These documents were saved in Adobe PDF (portable document format). With the rise of the web, the need for a universal document format had grown significantly, and PDF had taken off, becoming the de facto standard for formatted content on the web. Everything from IRS forms to Harvard Business School cases were posted on the web in PDF format.

Individuals wanting to view or print PDF documents simply needed to download the free Acrobat® Reader™ from the Adobe web site. Almost 200 million copies of the free Acrobat Reader had been downloaded as of July 2000 (see **Exhibit 1**). While the Acrobat Reader was given away for free, Adobe made money on the sale of the full Acrobat product (list price of \$249), which individuals needed to buy in order to create PDF documents (see **Exhibit 2**).

Despite Adobe's early lead, Microsoft was moving aggressively into the eBook space, attempting to establish an alternative standard to PDF. Microsoft was pushing its own format for use with its Microsoft Reader. Microsoft had so far targeted the mainstream consumer market, enlisting over 50 leading publishers to create eBook content in the Microsoft Reader format. Microsoft had also spent significant amounts of money to obtain preferred status for Microsoft's format on the leading online bookstore, Amazon.com.

Given Microsoft's vast resources, Warnock wondered how best to compete. Should Adobe focus on a more narrow, segmented set of eBook users, or should it fight Microsoft head on in the consumer space? What alliances should Adobe be forging in order to drive critical mass around PDF? Should Adobe fight the battle over eBooks or focus on the broader eDocs market? And assuming Adobe won the standards war and established PDF as the de facto eBook standard, how could it leverage that position in order to make money?

Adobe History: the PostScript era

Adobe Systems Incorporated was founded in 1982 by two Xerox PARC scientists—John Warnock and Charles Geschke. Both PhDs, Warnock and Geschke had developed leading edge software at Xerox to facilitate the printing of integrated text and graphics. Frustrated by Xerox desire to keep the technology proprietary, they decided to form their own company to commercialize it. Warnock's thesis advisor was on the board of Hambrecht & Quist and introduced the pair to Bill Hambrecht who helped to get the venture funded. They named the firm *Adobe* after a local creek.

What Is PostScript?

Adobe's first product, PostScript®, was a driving force behind the desktop publishing revolution of the mid-1980s. PostScript provided an interface between a computer program and an output

device, such as a printer. It comprised three parts: (1) a page description language which was open, documented, and free, (2) an interpreter, which was licensed to output device manufacturers, and (3) fonts, which were sold to end customers, such as graphic artists.

PostScript page description language Software developers used the PostScript page description language to tell an output device what a printed page should look like. The computer application sent instructions written in the PostScript language to the output device. An application that produced PostScript would work with any PostScript printer. In contrast, software developers who did not use Postscript had to write separate software for each printer their application supported. For instance, WordPerfect 4.1 asked the user to choose from 209 different printer models. PostScript also supported multiple resolutions, meaning the same software application could print on a 300 dpi laser printer or a high-end 5000 dpi imagesetter. This feature was particularly important to the graphic arts community since it meant material created with a PostScript application could be proofed on inexpensive laser printers before high-quality printing.

In order to encourage software developers to use the PostScript language, Adobe made it open to anyone for free. The language was meticulously documented in what programmers fondly called “The Red Book,” and strong technical support was provided to third-party developers working with the language. As a result, the number of applications supporting PostScript increased from 180 in 1986 to over 5,000 by 1991.

Co-founder Geschke reflected on the initial choice to make PostScript an open standard:

We made a decision early on that the standard itself—the documentation for how you describe the page—would be open, freely available, and we would publish it. We would retain the copyright and the trademark, but we would make the interface open to anyone, recognizing that over time, that would invite competition. In order to be successful and set a standard, we had to do that, and instinctively we felt that, if we were the best implementers of it, we should continue to make good revenue off it even though eventually competitors would emerge.

PostScript interpreter PostScript output devices, such as a laser printer or high-end imagesetter, had an embedded, microprocessor-driven PostScript interpreter that translated a PostScript program from an application into dots to be placed on a page. Adobe licensed PostScript interpreter technology to printer and imagesetter manufacturers on a royalty basis: Adobe collected a percentage fee for each PostScript printer or imagesetter sold.

To accelerate the diffusion of PostScript output devices, Adobe developed a boilerplate controller design based on the Motorola 68000 chip. Printer manufacturers interested in licensing PostScript had free access to this design, thus accelerating the development time for PostScript products. In addition, Adobe engineers often worked on joint product development teams with customers in order to help with the design of customized PostScript interpreters. The number of PostScript licensees increased from just one, Apple, in 1985 to 60 by 1994.

PostScript fonts PostScript also provided a way for describing high-quality professional fonts in a standard format. Historically a font could be used only on the specific output device for which it was designed. In contrast, a PostScript font could be used on any PostScript output device. PostScript also significantly increased the ability to manipulate fonts, allowing for scaling and rotating.

Adobe invested a large amount in creating its own library of PostScript fonts. In 1986 Adobe invested 16% of sales in font development, and dollar investments continued to increase from 1985

through 1992. The number of PostScript fonts in the Adobe collection increased from 35 in 1985 to 2,000 in 1994. These fonts were valued most highly by graphic artists designing pages for professional publishing.

Making Money from PostScript

The first PostScript products were introduced in 1985 through a strategic alliance among four firms: Adobe, Apple, Aldus, and Linotype. The combination of products from these firms sparked the desktop publishing revolution, or democratization of typesetting. For the first time, individual desktop users could create newsletters and other documents that had a professional look and feel; documents could integrate graphics and text, using professional quality fonts.

This result was accomplished through a system of products: Aldus PageMaker® software, which ran on the Apple Macintosh, enabled the creation of documents that integrated text and graphics. PageMaker required a PostScript device for printing. The Apple LaserWriter was the first PostScript printer and incorporated a PostScript interpreter licensed from Adobe. Finally, professional-looking documents also required high-quality fonts such as Times Roman or Palatino, which typically were only available to professional publishers. Linotype, a firm with over 100 years of experience in the typesetter industry, licensed a set of its most popular fonts to Adobe so that Adobe could offer them in PostScript format. The LaserWriter came with 35 PostScript fonts built in. Linotype also introduced a high-end PostScript imagesetter, so that PageMaker documents could be used in professional publishing.

By 1989 PostScript had become the defacto standard for printing in the graphic arts and publishing industries. Almost 100% of high-end imagesetters on the market incorporated PostScript. While penetration in the general laser printer market reached only about 25%, penetration of PostScript in laser printers used by graphic artists was closer to 100%.

Adobe also leveraged the underlying graphics technology of PostScript in applications software for the graphic arts community. (See **Exhibit 3** for descriptions of Adobe's software product portfolio.) The first end-user application, Adobe Illustrator, was introduced in March 1987 and gained wide acceptance among graphic artists. Illustrator created PostScript output and helped to create demand for PostScript printers. Adobe also acquired a number of software products, including Photoshop, for digital image editing in 1989, and Aldus PageMaker in 1993. These products were extremely successful, with Photoshop capturing over 90% of the market for photo-editing software.

Ownership and leveraging of the PostScript standard had reaped huge rewards for Adobe; between 1984 and 1995, revenue had grown from \$2.2 million to \$762 million—a compound annual growth rate of 70%. Adobe's share price growth had been equally impressive, increasing at an average annual rate of 29% between 1986, when the firm went public, and 1995.

Establishing PDF

Adobe shipped the first version of Acrobat on June 15, 1993. Acrobat enabled users to convert any electronic document into a universal document format called PDF (Portable Document Format). Once in PDF format, a document could be transferred to other users and would display and print exactly as it had in its original application—the receiving user simply needed to have an Acrobat Reader installed on his or her computer. The PDF format could handle not only text but also graphics and images. Given the variety of computer platforms and software used in corporations, Adobe felt that Acrobat provided a compelling value proposition. Anyone in a corporation could share documents as

long as the Acrobat Reader was widely distributed. Adobe initially charged \$50 for each Acrobat Reader. In order to create PDF documents, users had to purchase either Acrobat® Exchange® for \$195, or a more sophisticated product, Acrobat® Distiller®, for \$695.

As with the PostScript standard, the specification for PDF was open. By using documentation from Adobe, other firms could create files in PDF format.

Sales of Acrobat, however, were originally quite disappointing and reached only about \$2.5 million in 1993. As John Warnock commented,

It's a funny technology. In 1992 I said, "Gee, there's a way to build a universal document and a way to, without asking permission from anyone, get this done." We implemented it, and I thought people would instantly appreciate the value proposition there. It's actually taken many years and the explosion of the Internet for people to figure it out.

Given the advent of the Internet, Adobe modified its Acrobat strategy. Instead of focusing exclusively on document exchange among workers within a corporation, Adobe also targeted Internet users. The goal was to make PDF the de facto standard for posting and exchanging documents on the Internet.

Adobe encouraged adoption of the Acrobat Reader by changing its previous policy of charging \$50. The Acrobat Reader became widely available for free. In 1994, an alliance with AOL made the Acrobat Reader available to all AOL users. Adobe also established relationships with a number of computer vendors such as Compaq, Dell, and Sony to preload the Acrobat Reader on PCs they sold. And in 1995 free downloads of the Acrobat Reader were made available from the Adobe web site. When users visited a site with PDF content, they were instructed to click on a link to Adobe.com to get the free Acrobat Reader (see **Exhibit 4** for the download page). Downloads of the Acrobat Reader exploded starting in 1997, and by July 2000 over 197 million Acrobat Readers had been downloaded, with ongoing downloads of about 6 million more each month (see **Exhibit 1**). Traffic to the Adobe site was also significant, with about 11 million unique visitors a month, according to Media Metrix.

Downloads also drove sales of the full Acrobat product, needed for PDF creation. (The features of Acrobat Exchange and Acrobat Distiller had been combined into one product: Adobe Acrobat priced at \$249.) Adobe market research indicated that 88% of full Acrobat purchasers had used the Acrobat Reader prior to buying the full product.

In order to encourage the posting of PDF documents on the web, Adobe targeted high-profile customers. In 1997, the IRS made tax forms available electronically for the first time. The forms were posted on the IRS web site in PDF format. Since PDF files could not be edited after they were downloaded with the Reader, they were ideal for applications that required integrity of the original document. Adobe also incorporated functionality targeted at Web users. For instance Acrobat 2.0 released in 1994 supported hyperlinks to HTML documents. Acrobat 4.0, which shipped in April 1999, added features for forms creation and digital signatures. When Adobe commissioned a "spider" of the Web, it had found that by mid-1999 over 2.6 million unique URLs contained PDF documents.

In June 2000 Adobe decided to try to take advantage of the large number of visitors to the Adobe.com site for Reader downloads. Adobe began to offer PDF creation through its web site on a subscription basis. For \$9.99 a month, or \$99.99 a year, customers could create an unlimited number of PDF documents. The users simply uploaded a document to Adobe, and a PDF document would be e-mailed back to them. Other than by purchasing the full Acrobat product, this was the only way for individual users to create PDF documents.

In October 1999, Adobe further unbundled the full Acrobat product, introducing Acrobat® Business Tools software, targeted at the office user of Acrobat. While many individuals within an organization share documents, Adobe market research had shown that the majority of office workers do not need to create documents. Acrobat Business Tools was meant for users who simply needed to interact with documents. It enabled users to mark up PDF documents electronically, digitally authorize and sign documents, and reuse information from tables in PDF documents. It did not enable creation of PDF documents. (See **Exhibit 2** for a comparison of full Acrobat, Acrobat Business Tools, the Acrobat Reader, and Adobe.com.)

Acrobat Business Tools was just one way of adding value around PDF. Adobe saw ongoing growth opportunities in areas such as managing B2B processes. The Business Forms Management Association estimated that 4 out of every 10 business documents were forms that needed to be acted upon. In many cases, these forms required signatures. With digital signatures gaining legal acceptance, PDF's digital forms and digital signature capabilities provided an ideal solution for electronically managing a number of B2B interactions.

In addition to its success on the web, PDF also began to penetrate Adobe's traditional print publishing customers as a substitute for PostScript. Print publishers had a need for a document format that would smooth out their print workflow—the process of integrating all the pieces that went into a publication. PDF made it easier for text, graphics, and images from multiple sources to come together. In order to address this market, Adobe had a number of high-end products with increased functionality (see **Exhibit 3**). The most recent of these was the Acrobat Distiller Server, announced in June 2000, which enabled the high-volume conversion of PostScript files to Adobe PDF documents.

Finally, Adobe had entered the Digital Rights Management area, announcing PDF Merchant™ software and Acrobat Reader with Web Buy in August 1999. PDF Merchant was a server-based technology that enabled web sites to sell documents without fear of illegal copying. It encrypted PDF files which were then unlocked with Web Buy. PDF Merchant was designed to be integrated with a firm's eCommerce and transaction systems. PDF Merchant sold for \$5,000, plus a per-transaction royalty in an amount equal to 2% of the transaction revenue, or \$.05—whichever was greater.

Over 15 firms had signed up with Adobe to begin testing and integration of PDF Merchant and Web Buy in order to distribute and sell titles over the Internet. Industry players evaluating and/or using PDF Merchant included companies such as Barnes & Noble, Fatbrain.com, RR Donnelley & Sons, Simon & Schuster, Inc., Salon.com, Seybold Publications, and Xerox Corporation. Amazon.com had used Adobe PDF Merchant in order to sell downloads of the well-publicized Stephen King novella, *Riding the Bullet*. By the fall of 2000, almost 100 million copies of the Acrobat Reader with Web Buy had been downloaded.

Given the success of PDF, demand for Acrobat had taken off, with sales of Acrobat products increasing over 100% between 1998 and 1999. By the third quarter of 2000, Acrobat family sales accounted for almost 20% of total Adobe revenues, with Wall Street Analysts projecting significant growth (see **Exhibits 5** and **Exhibit 6**).

The eBook Market

"You could have printed that [Stephen King] novella on a banana and people would have taken the time to read it."

—Jeff Bezos, Founder, Amazon.com

Experimental ventures with electronic books began in the early 1980s with products such as IBM's BookMaster and Electronic Book Technologies' Dynatext. These products primarily targeted the reference manual market. Computer manufacturers such as Silicon Graphics and Novell created electronic reference manuals, since they were more convenient for customers to access and utilize and they saved the manufacturer printing and shipping costs.

The value proposition for consumers of eBooks in 2000 was similarly driven by convenience. Early adopters of eBooks were typically professionals wanting to access reference information. One of the best-selling eBooks on PDAs (Personal Digital Assistants) was the Physicians Reference Manual. eBooks were also becoming popular in the textbook sector, where the ability to customize content and provide keyword searches was particularly valued. Analysts felt that the consumer market for fiction got the least value from eBooks (see **Exhibit 7**).

Overall projections for the eBook market were quite uncertain, with a wide variety of estimates. IDG predicted that by 2004 annual eBook sales would be approximately \$500 million with 2.8 million dedicated eBook reading devices.³ Forrester projected that 13% of online book sales would be done via digital download by 2004, resulting in eBook sales of \$426 million.⁴ Andersen Consulting, in a study for the American Association of Publishers, was the most sanguine, projecting eBook sales of \$2.3 billion—almost 10% of the \$21.9 billion consumer book market—by 2005. Andersen also projected that by 2005 about 28 million eBook reading devices would have been adopted.⁵

Uncertainty about the market hinged on a number of factors. One of the major impediments to adoption of eBooks was on-screen readability. Anti-aliasing technology had been developed by both Adobe (CoolType) and Microsoft (ClearType), improving text resolution by up to 300%. eBook resolution, however, was still not close to matching the quality of paper. So far the price of eBooks was similar to or higher than that of print books, constraining demand. In addition, dedicated eBook reading devices had been relatively expensive, costing a minimum of \$250. Finally, the selection of eBooks was still quite limited, and eBooks formatted for one device could generally not be used on another. Depending upon their assumptions about pricing and standards, analysts had different perspectives on the potential of the market. The Andersen Consulting estimates, for instance, were clearly predicated on adoption of a single open eBook standard.

The eBook Value System

The process of creating and distributing an eBook involved both traditional publishing industry players as well as start-up organizations. The roles of these players were continuing to evolve (see **Exhibit 8**).

Authors Authors in the eBook space so far were performing much the same role they had traditionally performed. They created content. The web, however, provided authors with an ability to bypass publishers and traditional bookstores and distribute their creative content directly through a web site. After distributing *Riding the Bullet* through his publisher, Stephen King had established his own web site for distribution of a serial novel—*The Plant*—and posted the comment, “My friends, we have a chance to become Big Publishing's worst nightmare.” In addition, some self-publishing sites such as Xlibris and iUniverse had emerged, where unknown authors could publish work online

³ “E-Book's Brass Band,” *Business Week*, April 3, 2000.

⁴ C. Johnson, “Digital Downloads Accelerate,” Forrester Report, January 2000.

⁵ Andersen Consulting Report, AAP web site.

without screening. While this venue for distributing work had yet to take off, some authors had achieved a modicum of notoriety. In fact, an online work, *The Angels of Russia*, had been nominated for Britain's prestigious Booker prize.

Publishers Since the release of the King novella, publishers had become much more sanguine about the eBook market. Kate Tentler, publisher of Simon & Schuster Online, commented that the success of the King novella had "galvanized Simon & Schuster's electronic book creating efforts."⁶ With printing, warehousing, and distribution accounting for more than half of a publisher's revenue (see **Exhibit 9**), eBooks had the potential to significantly cut publisher's costs. Publishers had yet to realize significant savings, however. Random House's digital division was spending \$15 million on a digital infrastructure, with the division head commenting, "We don't have any savings to pass along."⁷ The royalty structure was also under pressure, since authors expected to benefit from the publisher's eventual cost savings. In contrast to the typical 10% royalty, some eBook publishers, such as Mighty Words, were giving authors up to 50% of list price.

eBooks potentially gave publishers the opportunity to bypass booksellers and go directly to consumers. Time Warner had announced its own online publishing site, iPublish, and had made direct investments in other sites such as bookface.com. Similarly, Random House had taken a 49% stake in Xlibris, an online publisher. A Simon & Schuster executive commented, "Digital publishing provides an opportunity for publishers to have a much closer connection to consumers. I don't believe we will not have retailers, but certainly the middleman component will be a smaller one."⁸

Online bookstores Books were available in electronic format from a wide variety of web sites ranging from popular online booksellers such as Amazon.com and Barnesandnoble.com (bn.com) to sites that carried only eBooks, such as ibooks.com and books24x7.com. The number of eBooks available varied, although bn.com with over 2,700 popular titles available as eBooks had one of the largest inventories. The business models for these sites also varied and were continuing to evolve. Some sites such as eBookMall.com simply charged customers a fee to download the eBook. Others such as books24x7.com operated using a subscription model: for a monthly fee, customers could access a library of eBooks. Finally others such as bookface.com and Bartleby.com operated using an advertising model: users could access eBooks for free, but were required to view ads. Overall sales of eBooks had been extremely slow, with the average eBook selling only a few hundred copies.

Device manufacturers eBooks could be read on three general types of devices: (1) PCs with reader software, (2) personal electronic devices such as a Palm Pilot PDA with reader software, and (3) dedicated eBook devices.

PC-based reader software aimed to enhance the on-line reading experience. These readers provided users with a number of value-added features such as full-text search, on-line dictionary access, highlighting, and bookmarking. PC-based readers were offered by both Adobe and Microsoft.

PDAs such as the Palm Pilot had also gained traction in the emerging eBook market. A start-up, Peanut Press, specialized in eBooks for the Palm with over 500 eBook titles available on its web site. It was also developing software to support Win CE devices. Finally, Microsoft had bundled its Reader software with the Pocket PC operating system, enabling Pocket PC devices by firms such as HP to read eBooks.

⁶ "New Technologies Transform Publishing Industry," Information Week Online, March 27, 2000.

⁷ P. Kafka, "Horror Story," *Forbes*, August 21, 2000.

⁸ "The Struggles Over E-Books Abound," *The New York Times*, November 27, 2000.

As of September 2000 there were only two dedicated eBook reading devices on the market—the Rocket eBook and the SoftBook, both offered by Gemstar. (See **Exhibit 10** for pictures and descriptions of the devices). The Rocket eBook had been available since June 1998 and with a price of about \$250 was targeted at consumers. The Softbook cost \$600 and was targeted at the business and education fields. Magazines, textbooks, and documents were available on the SoftBook. It was estimated that about 10,000 of each of these devices had been sold as of January 2000.⁹ Other dedicated eBook devices had been announced, but not shipped.

eBook Standards

After the well-publicized battle between the VHS and Beta formats in the VCR industry, both producers and consumers were wary of a standards war. No consumer wanted to be stuck with the equivalent of a Betamax VCR—an orphan product with no tapes to play on it. Likewise, producers did not want to be on the losing end of a standards war. It was unclear how standards in the eBook market would evolve.

Most of the players in the eBook market were publicly advocating a single, open eBook standard. In the interest of establishing open standards, NIST (National Institute for Standards and Technology), an Agency of the U.S. Commerce Department, had formed an Open eBook (OEB) working group in 1998. The group comprised leading publishers as well as major eBook players, including Microsoft, Gemstar, and Adobe. The group had released the final version of its Open eBook Publication Structure 1.0 in September, 1999. The OEB specification was based on XML (Extensible Markup Language), an HTML-based language for describing data. It described what format content should take.

While Adobe employees had been involved in the approval of the OEB specification, Adobe did not adopt it. They felt that OEB was technically inferior to PDF, particularly in the area of graphics. The OEB specification also did not allow for printing—a function that Adobe believed was still important, even in the eBook world. Microsoft, in contrast, adopted the OEB specification as part of its Microsoft Reader format.

Since the OEB specification covered only content, however, it did not ensure compatibility among its users. In other words, OEB eBooks formatted for one vendor's eBook reader did not work on another vendor's reader. This difficulty arose because of the lack of agreement on a standard for the packaging of the content. Each eBook vendor had used its own proprietary packaging to implement the standard. As a result, even though eBooks in Microsoft Reader format complied with the OEB specification, the format was proprietary in that only Microsoft or Microsoft partners could create and read eBooks in Microsoft Reader format. In contrast, the PDF format had publicly described both the eBook content and its packaging. (**Exhibit 11** provides a detailed comparison of PDF and Microsoft Reader format.)

An individual at Adobe described the situation as follows:

To use a grocer analogy, we've agreed on an open standard for vegetables [OEB] but everybody is making their own cans, so you need a different can opener for each. In theory it's all "open vegetables," but being stuck on a desert island without the right kind of proprietary can opener can be pretty frustrating.

⁹ Business and Industry Online Reporter, January 24, 2000.

To further complicate matters, there was also confusion about digital rights management. Forewarned by the experience of the music industry with Napster and MP3, the publishing industry was extremely concerned about the ability to control the illegal distribution of content. Their fears seemed justified: eBookNet.com, a site devoted to tracking the eBook industry, reported that illegal copies of Stephen King's novella were circulating just three days after its release, despite encryption. A number of firms were continuing to work on solutions to the digital rights management problem, many of which were incompatible.

Adobe vs. Microsoft in the eBook space

Adobe had an early lead over Microsoft in terms of both content available in PDF format as well as readers capable of displaying or printing PDF content. A Barnes & Noble executive had commented at a NIST conference in September 2000, "With Adobe PDF there are over 100,000 eBooks available; with any others there are only dozens." The 200 million Acrobat Readers that had been downloaded also dwarfed the number of Microsoft Readers. Microsoft, however, was moving aggressively into the eBook space. (See **Exhibit 12** for a timeline of Adobe and Microsoft eBook announcements, and **Exhibit 13** for a summary of eBook format adoption.)

Content: Publishers Publishers were for the most part agnostic about format. Ideally, they wanted a single, open eBook standard, but not wanting to be left behind, most publishers were jumping ahead despite the lack of a ubiquitous standard. Since it was expensive to convert titles to digital form, both Adobe and Microsoft were pursuing relationships with publishers, hoping to preempt alternative formats. So far, publishers had been willing to accommodate both PDF and Microsoft Reader formats. Lightning Source, a unit of Ingram Industries with over 9,000 titles in its library, announced an agreement with Adobe to publish content in PDF format using PDF Merchant in late May 2000. Just a few weeks earlier the firm had announced a similar agreement with Microsoft. Simon & Schuster had also agreed to make titles available in both PDF and Microsoft Reader format.

Microsoft had, however, secured some exclusive deals. Microsoft had obtained the exclusive rights from Random House to publish Michael Crichton's newest novel, *Timeline*, as an eBook in Microsoft Reader format. Another exclusive deal was struck with Simon & Schuster for a series of 15 popular Star Wars books. For a limited period of time, these eBooks would not be available in any other format.

Despite Microsoft's aggressiveness, Adobe still felt that it had a significant advantage over Microsoft. Adobe had strong historical relationships with publishers and continued to provide them with authoring tools for both print and web publishing (see **Exhibit 3**). Given that publishers used Adobe software, an estimated 70% of publishers' digital archives of print titles were already saved in PDF format.¹⁰ In addition, in September 1999, Adobe had launched a new product for professional desktop publishing called Adobe InDesign®. InDesign competed directly with QuarkXPress, which had dominated the high-end professional segment. So far, InDesign had made significant inroads, capturing about a 30% share of shipments since its introduction.¹¹

Content: Online bookstores Online bookstores varied in their approach to format standards. In January 2000, Microsoft and Barnesandnoble.com had agreed to establish a Microsoft-

¹⁰ B. Darrow, "Adobe, Microsoft Square Off in eBook Arena," *TechWeb News*, May 31, 2000.

¹¹ Prudential Securities Adobe Systems analyst report, February 23, 2000 (citing PC Data).

branded part of the BarnesandNoble.com eBook store. In August 2000, Adobe and BarnesandNoble.com had announced plans for a similar Adobe-branded eBook store with PDF content to be established on the BarnesandNoble.com site. Adobe and Microsoft were to be given equal placement, with a third format, Rocket eBook, also offered. In contrast, Amazon.com had extracted an undisclosed sum from Microsoft in August 2000, in return for giving the Microsoft Reader format a dominant, although not exclusive, position in Amazon's eBook store. Adobe had no ongoing formal relationship with Amazon despite Amazon's previous use of Adobe PDF Merchant for the sale of Stephen King's *Riding the Bullet*. While Amazon had been a late mover in eBooks, relative to BarnesandNoble.com, 75% of the downloads of Stephen King's *Riding the Bullet* had been through Amazon.¹² In addition, Amazon commanded a dominant overall position, with over 75% share of the online book market.¹³ The majority of smaller online eBook stores offered content in PDF format, given the ubiquity of the Acrobat Reader. For instance, when Stephen King offered his serial novel, *The Plant*, through his own web site, it was offered in PDF format.

Desktop readers With almost 200 million copies downloaded, the Acrobat Reader was by far the most dominant desktop reader. While not designed as an eBook reader specifically, the Acrobat Reader could be used to read books in PDF format on a Windows or Macintosh computer. In addition Adobe had acquired Glassbook, Inc., a maker of PDF eBook-reading software, in September 2000. The Glassbook display looked more like a book and incorporated more user-friendly reading features. Penetration of the Glassbook PDF reader, however, was currently much lower with an estimated 700,000 copies downloaded as of October 2000.¹⁴

Microsoft had made an eBook reader available as a free download for Windows users in August 2000, but downloads to date had been minimal. It was possible that the Microsoft Reader would be bundled with the next release of Windows. The Microsoft Reader was not available for the Macintosh, although plans to support the Mac had been announced.

Despite the possible ubiquity of a Microsoft Reader bundled with Windows, Adobe felt it had a number of advantages over Microsoft. Foremost, one couldn't print with the Microsoft Reader. A recent survey completed by Sherwood Research had shown that 80% of respondents would prefer to print a book out using an application like Adobe Acrobat rather than download the book to a handheld device.¹⁵

PDAs Adobe had plans to develop Acrobat Readers for devices other than the PC and Mac. As John Lin, product manager for eBook readers, commented, "We want to deliver on the Holy Grail of publishing: publish once, view or print anywhere. Content will automatically re-purpose itself to be viewed easily on the desktop or on a PDA." Acrobat Readers for both Palm and Windows CE platforms had been demonstrated at conferences. In addition, since PDF was an open standard, third parties such as BCL Computers and Ansyr had developed PDF readers for the Palm Pilot.

In April 2000 a version of the Microsoft eBook Reader was shipped with the Pocket PC operating system. All Pocket PC devices, therefore, had immediate access to content in Microsoft Reader format. Franklin Electronic had also announced an eBookman PDA device, to be shipped in the fall of 2000, that would display eBooks in Microsoft Reader format.

¹² SiliconValley.com, August 28, 2000.

¹³ D. Ries and V. Truong, "Amazon.com," C.E. Unterburg analyst report, October 13, 1999.

¹⁴ "EBooks digital future isn't likely to arrive soon," *Wall Street Journal*, October 2, 2000.

¹⁵ Stephanie Miles, "eBooks gauge budding market," CNET News.com, June 26, 1998.

Digital rights management In addition to the PDF Merchant product described earlier, Adobe had announced its intention to provide digital content server products to provide total solutions to digital rights management for eBook stores. With the acquisition of Glassbook, Adobe had gained access to leading edge digital rights management software called EBX. In addition, Adobe had announced a relationship with Price Waterhouse Coopers and InterTrust to develop digital rights solutions around PDF and Acrobat. Microsoft had also announced a Digital Asset Server platform and was in beta test with Barnes & Noble and Lightning Source. The initial version of the Microsoft Reader, however, had shipped without digital rights management.

Creating “buzz” In addition to its many announcements, Microsoft had achieved a great deal of publicity about its eBook initiatives. Much of this publicity revolved around Dick Brass, Microsoft’s VP of Technology. Dubbed an “eBook Evangelist” by the press, Brass was a powerful personality known for his outspokenness. Reporters often made him the focal point of their stories, even commenting on his “bushy eyebrows and...walrus moustache.”¹⁶ Brass had been aggressive in his promotion of both Microsoft and eBooks, predicting that “20 years from now, 90% of everything published will be published electronically.”¹⁷

Adobe was constantly feeling the pressure to keep up with Microsoft. In February 2000, Sarah Rosenbaum, group product manager of Adobe Desktop Solutions, commented:

I was at the gym working out watching CNBC when Steven Riggio of Barnes & Noble, and Dick Brass from Microsoft came on. Microsoft was announcing Pocket PC with the built-in eBook reader and ClearType technology. For three minutes of CNBC they were talking about Microsoft and eBooks. I started off doing 140 strides a minute, and when they finished I was doing 190! That’s the type of stuff we need to be going out there and pushing and getting ourselves into, but given Microsoft’s resources to throw at this sort of thing I’m not sure how we can keep up.

Gemstar While Adobe was focusing most of its attention on Microsoft, one other firm had its sites on controlling an eBook standard. Henry C. Yuen, chairman and CEO of GemStar, had been aggressively pursuing the eBook market, having acquired both eBook device makers—Nuvomedia and Softbook—for \$400 million in January 2000. Gemstar had developed the VCR Plus+ System, which allows users to record programs on their VCR by using program codes published in newspapers and television program guides. In addition to the eBook acquisitions, GemStar had also recently acquired TV Guide.

Yuen had planned a number of moves. Two next-generation eBook devices were to be introduced in the fall of 2000 at a price of about \$250. They were to be manufactured by Thomson under license from Gemstar and were to carry the RCA brand. A \$100 million marketing campaign was planned for their introduction. While the Rocket eBook and Softbook had had limited distribution through high-end catalogs and a select number of online retailers, the RCA eBook readers were to have broad distribution through bricks and mortar consumer electronics retailers. Yuen was boldly predicting that 500,000 of the new devices would be sold in six months.

Gemstar/RCA eBooks were in Rocket eBook format, which was not compatible with Microsoft Reader format or PDF. There was, however, some content already available in that format, and Gemstar had plans to provide its own eBook store directly accessible from the eBook device.

¹⁶ D. Gates, “E-Book Evangelist,” *The Industry Standard*, September 25, 2000, p. 129.

¹⁷ Ibid.

Consumers could bypass the Internet and simply dial up the Gemstar eBook store using the device's built-in modem.

GemStar had also begun moving into the European eBook market with the acquisition of a French online publisher—Les Editions 00h00 (Zero Hour). Les Editions carried 600 titles and planned to publish online material in many European languages.

Next Steps

While Adobe had an early lead, its eBook strategy was rapidly evolving. Joe Eschbach, VP of the ePaper® Solutions Group, had significantly increased the firm's commitment to eBooks, hiring a number of individuals, including Mike Looney—a new senior director of eBooks, in August 2000. Looney identified a number of critical choices he faced as he took on his new responsibilities.

Which target segments? While Microsoft had charged head on into the consumer market, Looney wondered whether Adobe should instead focus elsewhere. Other segments, such as Professional and Technical users, while smaller than the general consumer market, seemed to place more value on what eBooks had to offer and were leading in their adoption. In addition, Adobe's superior graphics capability was more highly valued by the professional market. If Adobe ceded the consumer market to Microsoft, however, would it ever be able to win it back? If Microsoft got a strong foothold in the consumer market, would they eventually leverage that in other market segments as the Microsoft Reader became more competitive with PDF?

The eBook market was only just beginning, and it was unclear when it would take off, if at all. How important was the eBook market as opposed to other markets for ePaper Solutions? Adobe had always included eBooks as a subset of ePaper Solutions, a category that included business and professional documents as well as books. The print market for documents was estimated at \$59 billion, as opposed to \$30.5 billion for books (see **Exhibit 14**). Estimates of the market for online sales of business and professional information were also large, with a forecasted size of about \$52 billion by 2003.¹⁸ Should Adobe concentrate on establishing PDF as the dominant standard for those interested in selling electronic documents instead of fighting in the eBook space? What would the long-term implications of this strategy be?

On-demand printing? New digital printers had changed the economics of print runs, enabling "on-demand" printing. Since one of Adobe's huge advantages over Microsoft was the ability of PDF to print, Looney wondered how aggressively the firm should pursue the market for on-demand printing. Bricks and mortar booksellers such as Barnes & Noble had articulated a vision of offering customers the ability to print titles on-demand in their physical stores. Customers would benefit from a larger inventory of books immediately available, and retailers would save the cost of physical inventory. Like eBooks, however, print on demand was an emerging market whose viability had yet to be proven. Could Adobe leverage its ties to the print world in order to dominate this emerging market?

Business model? So far Adobe had little experience selling products in a form other than shrinkwrap software for desktops. More and more firms were adopting an ASP (Application Service Provider) model whereby they rented software to customers, offering the customer end-to-end solutions. Looney wondered whether Adobe should leverage an ASP model for its PDF Merchant digital rights management software and charge a much higher price than the current \$5,000.

¹⁸ Veronis, Suhler & Associates, Simba Information.

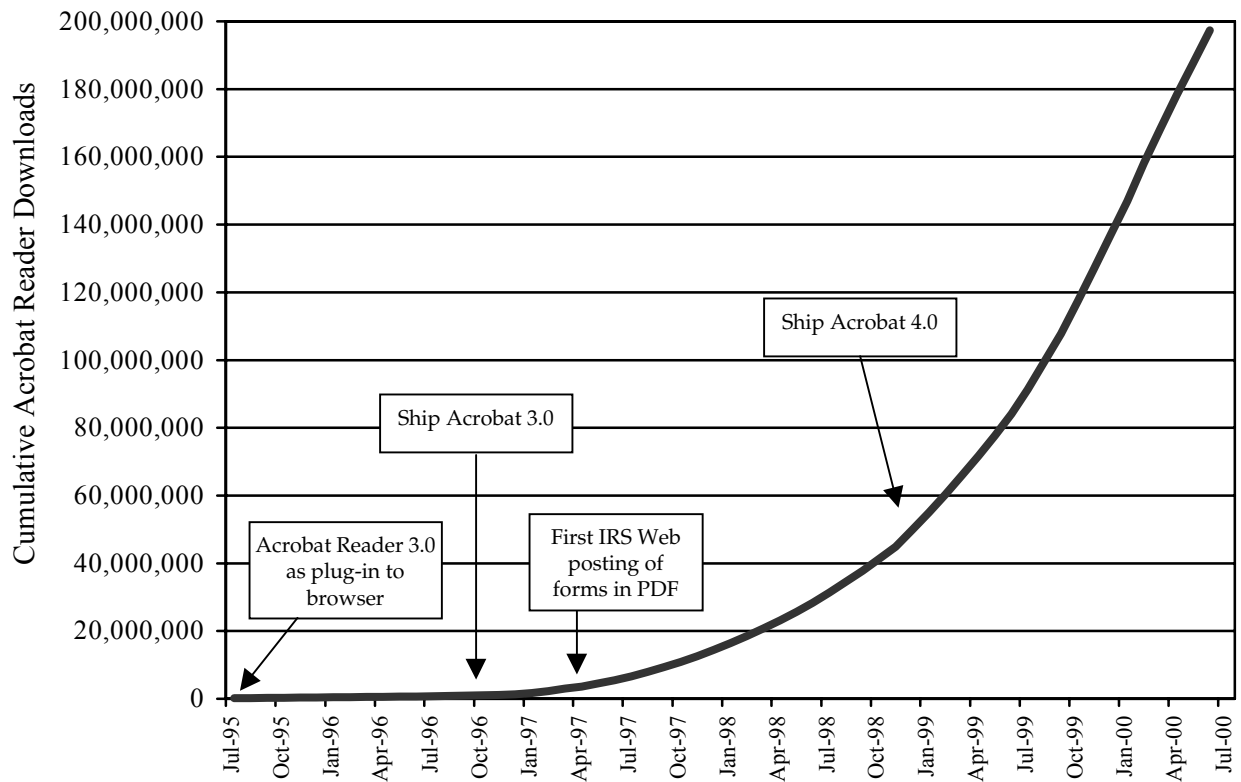
Give away PDF creation? While there was a lot of PDF content in existence, Microsoft was aggressively building content in its Reader format. Should Adobe respond by making it free to create PDF documents? Currently only 2% of desktops had the full Acrobat product. In contrast, Microsoft Word was present on 75% of editor's desktops.¹⁹ If Microsoft made creation of Microsoft Reader format easier through built-in functions in Microsoft Word, it wouldn't take long for a large amount of Microsoft Reader content to be created. Would the market then tip in favor of Microsoft?

Giving away the ability to create PDF documents, however, seemed like giving away the crown jewels and would hurt Acrobat sales significantly. The number one reason users purchased Acrobat was to create PDF documents. Could Adobe capture enough value through the creation of complementary products such as Acrobat Business Tools or the digital rights content server? And if Adobe didn't give away the ability to create PDF, would competition emerge in that market? Since PDF was an open standard, there was nothing to stop other firms from developing a competitive product. Would Adobe become a victim of its own success, encouraging competition if PDF became a dominant standard?

Looney felt himself in a quandry. If Adobe lost the war, then PDF might be relegated to the status of the Betamax—a footnote in technology history. On the other hand, if Adobe aggressively moved to make PDF a standard, it was unclear how they would make money from owning the standard. In the meantime, reporters were continuing to call looking for an angle on an eBook story. Given the publicity Dick Brass of Microsoft had been attracting, Looney wondered what he could do to gain similar publicity for Adobe.

¹⁹ Global Industry Analysts, Inc. "Adobe Systems Inc.: A Competitive Assessment Report," July 2000.

Exhibit 1 Cumulative Number of Acrobat Reader Downloads, July 1995–July 2000



Source: Adobe Systems Incorporated.

Exhibit 2 Acrobat Product Feature Overview

	Acrobat Reader	Acrobat Business Tools	Acrobat 4.0	Adobe.com
View and print PDF files	✓	✓	✓	
Fill in and submit Adobe PDF forms	✓	✓	✓	
Download and read eBooks	✓	✓	✓	
Mark up documents electronically		✓	✓	
Create “snapshots” of Web pages		✓	✓	✓
Digitally sign documents		✓	✓	
Create PDF files			✓	✓
Scan paper into PDF files			✓	✓
Create PDF forms			✓	
Price	free	\$49.00	\$249.00	\$9.99/month \$99.99/year

Source: Adobe Systems Incorporated.

Exhibit 3 Adobe Product Line Overview**EPaper® Solutions**

Adobe Acrobat®: *Complete PDF Solution* (\$249). Convert electronic documents into Adobe PDF files that can be viewed, annotated, and printed on any computer, with their original appearance preserved. Incorporates the functionality of Acrobat Reader and Acrobat Business Tools.

Adobe Acrobat® Reader™: *View and print* (free). Allows users to view and print PDF files, fill out PDF forms, and read PDF eBooks.

Adobe Acrobat® Business Tools: *Review and markup* (\$49 special). Collaborate on PDF documents using Acrobat’s markup, digital signature, search and Web capture tools.

Adobe PDF Merchant™: *EBooks*. (\$5,000 + 2% fee). This server-based software enables eBook and content providers to sell and distribute documents electronically with complete security.

Adobe Acrobat® Capture®: *Convert to PDF* (\$699). Turn printed documents into searchable PDF files for electronic distribution and archiving.

Exhibit 3 (continued)

Adobe Acrobat® Distiller® Server: *Server-based conversion.* (\$5,000). A server-based solution for the high-volume conversion of PostScript files to Adobe PDF documents.

Adobe Acrobat® Messenger™: *Workgroup delivery* (\$1,499). This paper to digital dispatch center that converts paper documents into PDF files and delivers them via e-mail, the Web, and more.

Print Publishing

Adobe Illustrator®: Drawing, painting and editing artwork for graphic arts professionals.

Adobe InDesign®: Page layout and design for publishing professionals.

Adobe Framemaker®: For professional publishers, Framemaker is intended for publishing long, content-rich documents such as books for a variety of media.

Adobe PageMaker®: Page layout software for business professionals.

Adobe PressReady®: Allows graphic designers to print color proofs from desktop color inkjets.

Adobe Type Library: Collection of over 2,500 PostScript fonts.

Adobe Acrobat® InProduction™: Targeted at print publishing professionals, InProduction extends the functionality of Acrobat to include tools for the management and analysis of PDF files used in a print workflow.

Adobe Design Collection: Bundle comprising InDesign™, PhotoShop®, Illustrator®, and Acrobat®.

Adobe Publishing Collection: Bundle comprising PageMaker®, PhotoShop®, Illustrator®, and Acrobat®.

Web Publishing

Adobe After Effects®: A graphics and visual effects program, to aid designers and visual-effects artists in creating motion graphics and visual effects for film, video, multimedia, and the Web.

Adobe GoLive™: Visual design and programming for website creation.

Adobe LiveMotion™: A Web graphics and animation authoring tool designed to compete with Macromedia Flash authoring programs. It supports both Flash and SVG (Scalable Vector Graphics).

Adobe® Premiere®: Digital video editing software for video professionals in multiple media.

Adobe Photoshop®: Professional image editing software for all media. Users can modify and retouch digital images, paint, draw, create types, design animation, and prepare images for the web.

Adobe® PhotoDeluxe®: A simplified consumer version of Photoshop.

Adobe ActiveShare: Consumer software for organizing, enhancing, and sharing photos on the web.

Dynamic Media™ Collection: A bundle comprising After Effects®, Premiere®, Photoshop®, and Illustrator®.

Web Collection: A bundle comprising GoLive™, Photoshop®, Illustrator®, and LiveMotion™.

OEM PostScript and Other

PostScript®: PostScript interpreters licensed to high-end imagesetter and laser printer OEMs.

Source: Adobe Systems Incorporated.

Exhibit 4 Adobe Reader Download Page

The screenshot shows the Adobe Acrobat Reader download page in a Netscape browser window. The browser title is "Adobe Acrobat Reader - Netscape" and the address bar shows "http://www.adobe.com/products/acrobat/readmain.html". The page features a navigation menu with links for PRODUCTS, ABOUT ADOBE, REGISTRATION, SUPPORT, SEARCH/SITEMAP, PERSONAL ADOBE, and FEEDBACK. Below the menu is a large graphic of a person in a blue suit running on a globe, surrounded by documents. The main heading is "Adobe Acrobat Reader" with sub-links for support, related products, user forums, and download now. The text describes the software as free for viewing and printing PDF files, available on Macintosh, Windows, and UNIX. It lists the current version as 4.05 and provides links for system requirements and platforms. A "Download now" button is visible. On the left, there is a "More Information" section with links to introduction, news, and how-to guides. Below that is a "Downloads" section with links to security updates and viewer versions. The "Resources" section includes support, forums, and accessibility information. On the right, there is a section titled "Adobe Acrobat Reader in Action" with a sub-heading "There's more to Acrobat than the Reader!". It features a "Test-drive Create Adobe PDF Online" advertisement, a "2000: the year of the eBook" article, and a "PDF access for the visually impaired" section. At the bottom, there is a "FEATURED IN ePAPER® Adobe ePaper Solutions" section. The footer contains copyright information for 2000 Adobe Systems Incorporated and links to terms of use and privacy policy.

Adobe Acrobat Reader - Netscape
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Back Forward Reload Home Search Netscape Print Security Shop Stop

Bookmarks Netsite: http://www.adobe.com/products/acrobat/readmain.html

TSS FRCC Lab Reservation Facility Reques OSS Work Reques OSS Supply Requ Baker Online Ca

Adobe

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[System requirements](#)
[Platforms and languages](#)

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Document: Done

Source: Adobe Systems.

Exhibit 5 Adobe Systems Incorporated Sales by Segment: 1998-2Q 2000

	Year Ending 11/27/98	Year Ending 12/3/99	Nine Months Ended 9/1/00
Revenue by segment			
Web Publishing	354.2	394.1	368.9
Print publishing	272.2	353.9	293.7
ePaper® solutions (Acrobat)	58.0	129.3	148.4
OEM PostScript & other	210.4	138.2	100.2
Total revenue	894.8	1015.4	911.2
% of total revenue			
Web Publishing	39.6%	38.8%	40.5%
Print publishing	30.4%	34.8%	32.2%
ePaper® solutions (Acrobat)	6.5%	12.7%	16.3%
OEM PostScript & other	23.5%	13.6%	11.0%
% dollar change year to year			
Web Publishing	13.6%	11.2%	32.3%
Print publishing	-15.2%	30.0%	15.0%
ePaper® solutions (Acrobat)	22.9%	123.2%	61.2%
OEM PostScript & other	-9.3%	-34.3%	-6.6%
Total revenue	-1.9%	13.5%	24.2%

Source: Adobe Systems Incorporated and Paine Webber estimates.

Exhibit 6 Adobe Systems Incorporated Financial Statements

Adobe Systems Incorporated—Income Statement (\$ millions)

	Nine Months Ended 9/1/00	Nine Months Ended 9/3/99	Year Ending 12/3/99	Year Ending 11/27/98
Revenue	911.2	733.7	1,015.4	894.8
Direct Costs	65.0	70.5	94.5	101.0
Gross Profit	846.2	663.2	920.9	793.8
Operating Expenses:				
Research and Development	179.9	140.5	197.5	188.3
Sales and Marketing	288.0	242.8	328.5	315.5
General and Administrative	84.6	78.7	103.6	118.6
Other	9.3	23.4	31.4	45.9
Total Operating Expenses	561.8	485.3	661.0	668.4
Operating Income	284.4	177.9	259.9	125.3
Total Nonoperating Income, Net	36.6	43.2	114.6	42.3
Income Before Income Taxes	321.0	221.1	374.4	167.7
Income Tax Provision	112.3	80.7	136.7	62.6
Total Net Income	208.6	140.4	237.8	105.1

Adobe Systems Incorporated—Balance Sheet (\$ 000s)

	9/1/00	12/3/99	11/27/98
Assets			
Cash and equivalents	\$ 191,015	\$171,145	\$110,871
Other assets	<u>852,622</u>	<u>632,714</u>	<u>656,460</u>
Total Assets	<u>\$1,043,637</u>	<u>\$803,859</u>	<u>\$767,331</u>
Liabilities and Stockholders' Equity			
Total Liabilities	\$ 369,953	\$291,650	\$ 250,966
Total Stockholders' Equity	<u>673,684</u>	<u>512,209</u>	<u>516,365</u>
Total Liabilities and Stockholders' Equity	<u>\$1,043,637</u>	<u>\$803,859</u>	<u>\$ 767,331</u>

Source: Adobe Systems Incorporated.

Exhibit 7 eBook Market Segment Characteristics

Category	Online Affinity of Audience	Importance of Fast Delivery	Key Word Value	Customizability of Content	Potential for Multimedia Enhancement	Scarcity
Textbooks	●	●	●	●	●	●
Professional and Technical	●	○	●	●	●	●
Business	●	●	●	●	○	●
Fiction	●	○	○	○	○	○
Non-Fiction	●	○	●	●	●	●
Juvenile	○	○	○	○	●	○
Reference	●	○	●	●	●	●
Travel	●	●	●	●	●	●



Source: Jupiter Communications, "eBooks: An Emergent Opportunity, but Stephen King Is Not the Model," August 2000.

Exhibit 8 The eBook Value System

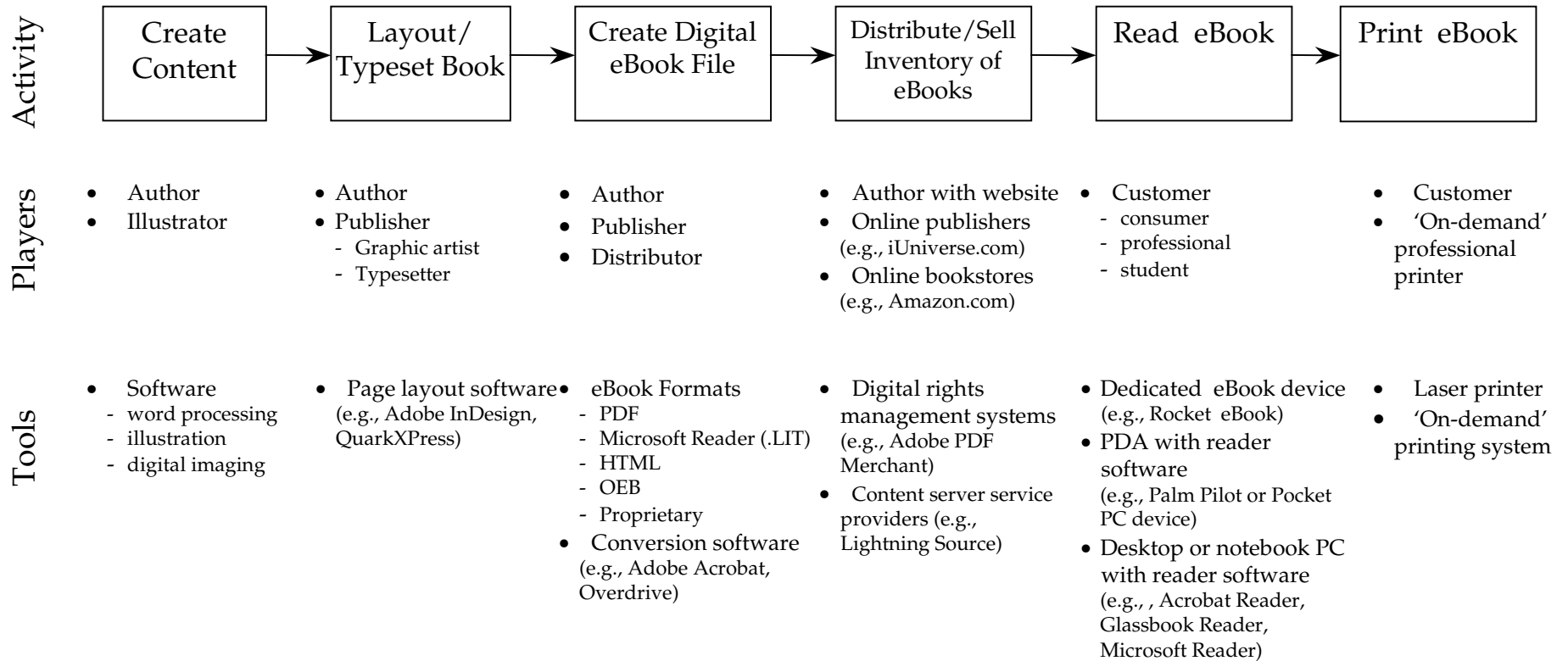


Exhibit 9 Typical Revenue Distribution for a Hardcover Book

Discount	10%	
Retailer's revenue	20%	
Wholesaler's revenue	20%	
Publisher's revenue	10%	Author's royalty
	25%	Printing, warehousing, and distribution
	10%	Operating expenses
	5%	Publisher's operating profit

Source: Association of American Publishers; CIBC Oppenheimer; "Horror Story," *Forbes*, August 21, 2000.

Exhibit 10 Dedicated eBook Reading Devices**a. Rocket eBook**

The Rocket eBook is 5"x7.5"x1.5", the size of a standard paperback book, weighs 22 ounces and holds about 3,200 pages of reading material, approximately 10 paperback books. The Pro version of the Rocket eBook holds 15,200 pages—about 40 books or documents.

The Rocket eBook attempts to mimic the use of paper books and is targeted at consumers. Users of the eBook can thus underline passages, insert notes, set bookmarks, find specific texts, look up words from a built-in Random House Dictionary, and display the list of owned eBooks on a virtual bookshelf. The Rocket eBook also features tools for the manipulation of text size and backlight intensity, includes a page navigation bar, and is touch-sensitive. The resolution of the eBook is approximately 106 dots per inch, with a high light contrast, monochrome display which allows a wide viewing angle. Users of the Rocket can download published material from the Internet through their PC, as well as store personal material from their computer.

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The SoftBook costs \$599.95 or \$299.95 plus a \$19.95 per month content package for 24 months.

Exhibit 11 Comparison of Adobe PDF and Microsoft Reader Formats

Feature	Adobe PDF	Microsoft Reader Format
Publicly Available Specification	Y	N
Proprietary Viewer	N	Y
Raster Graphics (PNG, JPEG)	Y	Y
Resolution Independent Graphics	Y	N
Display Layout	Y	Y
Publicly Available Packaging Standard	Y	N
Open, Extensible Rights Management	Y	N
Windows	Y	Y
Mac	Y	N
Unix/Linux	Y	N
Windows CE	D	Y
Palm	D	N
Dedicated Devices	D	D
LCD-Enhanced Type	D	Y
XML-Based Content	Y	Y
Scale/Reflow to Fit Screen Size	D	Y
Printing/Print-on-Demand	Y	N
Supports HTML Content	Y	Y
Wide Range of Content Available	Y	D

D = In Development

Source: Adobe Systems Incorporated.

Exhibit 12 Adobe and Microsoft eBook Announcements

Date	Adobe Systems Incorporated Announcements	Microsoft Announcements
10/98		VP Dick Brass endorses Open eBook Standard.
8/31/99	Pre-release availability of PDF Merchant and Web Buy. Partners for testing and product integration include Barnes & Noble, Everybook, Fatbrain.com, Glassbook, Pearson, R.R. Donnelley and Simon & Schuster. Relationship with Xerox Content Guard to develop digital rights management systems.	
9/6/99		Microsoft Reader, an eBook reader that uses ClearType text technology announced
9/21/99		Open eBook Standard agreement and release reached by Microsoft and its committee on OEB.
10/6/99	Partners CyberTrust, InterTrust, Plug'n'Pay, PublishOne Inc., SheetMusicPlus.com and SoftLock.com begin testing PDF Merchant.	
10/14/99		Partnership with publisher Penguin for the creation and release of eBook CD featuring eBooks in Microsoft Reader format.
10/21/99		Partnership with Havas to transfer the French publisher's material into a French version of Microsoft Reader format.
11/4/99	Collaboration with Reciprocal to distribute and sell secure content online.	Partnership with R.R. Donnelley & Sons Co. to convert thousands of print books to Microsoft Reader format.
1/7/00		Partnership with Barnes & Noble to create an eBook store on bn.com with content in MS Reader format.
2/7/00	Adobe PDF Merchant and Web Buy ship. CoolType, technology to improve the quality and resolution of on-screen text is announced.	
2/11/00		Pocket PC, a PDA operating system that includes Microsoft Reader is announced.
2/22/00	Announces alliances with publishing companies Salon.com, Seybold Publications, Total Training, Planet PDF, and PeachPit Press.	
3/27/00	Partnership with Amazon and publisher Simon and Schuster to extend online availability of Stephen King's <i>Riding the Bullet</i> to Macintosh users.	
3/28/00		Partnership with Contentville.com.
4/00		Pocket PC with Microsoft Reader ships.
4/11/00	DeepCanyon announces the availability of its research reports for electronic purchase in PDF format, using PDF Merchant.	
4/28/00		Made minority investment in Xerox spin-off Content Guard in the area of digital rights management.
5/15/00		Partnership with Lightning Source, an Ingram Subsidiary, to create eBooks in Microsoft Reader format.
5/23/00		Time-Warner's iPublish.com to offer eBooks in MS Reader format. Exclusive release of Michael Crichton's <i>Timeline</i> in Microsoft Reader format, available for download on bn.com

Exhibit 12 (continued)

Date	Adobe Systems Incorporated Announcements	Microsoft Announcements
5/24/00	Mary Higgins Clark's new book, <i>Before I Say Goodbye</i> , is published as PDF, along with eighteen previously print novels and other works.	
5/00		Microsoft-led Open eBook Authoring group releases criticized draft recommendation for Open eBook 1.0 Specifications.
5/29/00		Announces partnership with OverDrive Inc., to develop a set of authoring tools and services for publishers creating eBooks in Microsoft Reader format.
5/31/00	Partnership with Lightening Source, an Ingram Subsidiary, to create eBooks in PDF format using PDF Merchant. Price WaterHouse Coopers and InterTrust agree to develop eBook publication solutions using PDF and Acrobat.	Announces partnership with Quark, Inc. to facilitate creation of Microsoft Reader format eBooks from QuarkXPress files.
6/00		Participation of over 30 publishers in launching program for Microsoft Reader eBooks, potentially making more than 800 eBooks available for readers.
6/2/00		Licensing arrangement with Labyrinten Data AB and isSound to allow text and audio synchronization for eBooks in Microsoft Reader format.
6/15/00		Partnership with Chapters Online to launch a Microsoft Reader eBook store in its digital book section.
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Exhibit 13 Adoption of eBook Standards

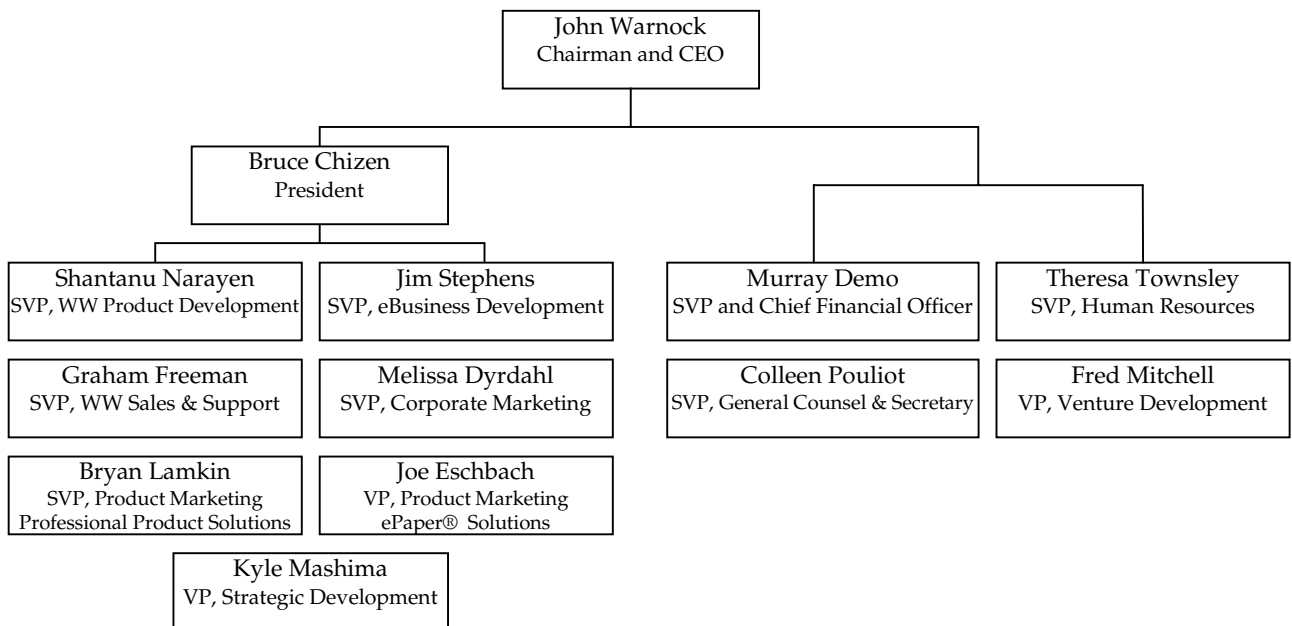
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Mac desktops, Laptop	PDF	
Publishers		
Lightning Source (Ingram)	PDF, Microsoft Reader	
Simon and Schuster	PDF, Microsoft Reader, Rocket eBook	
Random House	PDF, Microsoft Reader, Rocket eBook	

Exhibit 14 Print Publishing Market-Size Estimates

Document Market Segment	Approximate Number of Publishers	Approximate Number of Publications	Annual Sales (billions)
Newsletters	8,000	24,000	\$ 8.0
Journals	12,000	73,000	\$22.0
Research and Special Reports	2,000	8,000	\$20.0
Directories and Catalogs	5,000	15,900	\$ 5.0
Trade Magazines	3,000	20,400	\$ 3.0
Total	30,000	141,300	\$59.0
Traditional Book Market			\$30.5

Source: Adapted from Veronis, Suhler & Associates, Simba Information, AAP, estimates.

Exhibit 15 Adobe Systems Incorporated Organization Chart



Source: Adobe Systems Incorporated.