Case 6

EASTMAN KODAK: MEETING THE DIGITAL CHALLENGE*

On Monday April 16, 2001, Patricia F. Russo began her new appointment as President and Chief Operating Officer of Eastman Kodak Company, reporting to Chairman and Chief Executive Officer Dan Carp. The press release announcing her appointment stated: "Russo will oversee the day-to-day operations of Kodak's operating divisions and serve as the CEO's strategic partner in pursuing the business opportunities created by the convergence of imaging and information management technologies."[1] In addition to her role as President and COO, Russo also headed up the Consumer Group, Kodak's biggest operating division (see Figure 6.1).

Pat Russo's appointment to the number two position in Kodak's top management team marked the high point of an outstanding career in IT and telecommunications. After graduating from Georgetown University with a degree in political science and history, Russo spent eight years with IBM before joining AT&T in 1982. In the tumultuous years following the breakup of AT&T's Bell system, Russo held management positions ranging from human resources to strategic planning, and completed Harvard's Advanced Management Program in 1989. In 1992, Ms Russo took charge of AT&T's business communications equipment division, which was then spun off as part of the new Lucent group. The Kodak press release noted that:

> Russo brings to Kodak more than twenty years of broad management experience in the computing and communications industries:
>
> As President of the Business Communications Systems division of AT&T Corp. and Lucent Technologies Inc. from 1993 through 1997, Russo drove the successful turnaround of a $6 billion technology business.
>
> As Executive Vice President of Lucent, Russo had executive oversight for such corporate functions as Strategy, Procurement, Human Resources, Investor Relations as well as Business Development.
>
> Prior to her departure from Lucent in August of last year, Russo headed the $24 billion Service Provider Networks group that developed and delivered networking systems, software and services to communications companies worldwide.
>
> She most recently served as chairman of the board of the Lucent spin-off Avaya…
>
> In 1998 and 1999, Russo was named to *Fortune* magazine's list of the Fifty Most Powerful Women in American Business.

Although responsible for operations throughout the Kodak group, it was her potential to lead Kodak's ongoing transition to digital imaging where her primary contribution would be. "Pat's broad management experience in improving operational performance in large global businesses and in generating growth from existing and new markets will serve Kodak well in our transition to the digital age," noted Chairman Dan Carp. "She arrives at Kodak at a time when imaging and information management technologies are converging. Pat's knowledge of the information technology industry will bring a fresh perspective to driving change at Kodak."[2]

At a time when digital technologies were gnawing away at Kodak's traditional market for film and chemical-based photographic products, Russo viewed digital imaging as an area of huge opportunity for Kodak:

> Kodak has an enormous set of assets, including its technology, market position and a great brand. I believe these assets are equally relevant to the emerging digital imaging industry. Pictures are the ultimate information form and clearly the most powerful. I see an exciting opportunity to help accelerate Kodak's execution of its digital strategy and position the company as a leader in the new markets created as imaging and information management technologies converge.
>
> Images generate commerce, especially in the digital economy. Kodak's position as the largest producer of traditional photographic products and services will be the foundation of our efforts to become the leading provider of digital imaging products and services, supporting a host of new ways in which images will enrich commercial transactions.[3]

Despite Russo's enthusiasm over her opportunities "…to improve the performance of the business, looking for ways of accelerating top and bottom-line growth, and really leveraging the incredible access that Kodak has,"[4] she was well aware of the magnitude of the challenge that awaited her.

Kodak's transition from the world's biggest photographic company with a dominant position in photographic film, photographic papers, and several other chemical-based photographic products into a leading supplier of digital

imaging products had been far from smooth. Despite investing over $3 billion in digital technology and new digital imaging products since the late 1980s, Kodak had failed to establish either market or technological leadership within the sector, and continued to earn losses on this investment. Two days after joining Kodak, the company announced its first quarter financial results. Compared with the first quarter of 2000, sales were down 4 percent and operating earning down 48 percent. Digital imaging revenues increased by 2 percent to $712 million, representing a little under a quarter of Kodak's total revenues. Losses from digital imaging increased from $1 million to $6 million.[5] In the consumer market, Kodak's sales of digital products and services decreased by 4 percent, adversely affected by strong competition and falling prices. Irrespective of Ms. Russo's achievements in the field of digital communication, many outside observers believed that Kodak simply wasn't up to the challenge of digital imaging. After a century of dominating the market for traditional photography, it was unclear whether Kodak could successfully make the transition to the fast-moving world of electronics. Even if Kodak could master the new digital technologies, converting these technologies into market winning products, and converting market success into shareholder value remained massive challenges for the company.

[Figure 6.1 about here].

BEGINNINGS

When George Eastman told a co-worker at the Rochester Savings Bank that he had made plans for a vacation to Santo Domingo, the co-worker suggested that Eastman take photographs to remember it by. Eastman heeded the advice and purchased a state-of-the-art 3-by-4-foot camera, along with all of the developing plates, glass tanks, developing tents, chemicals, jugs of distilled water, tripods, phosphoric flashes, and photographic emulsions he would need. Eastman never made it to Santo Domingo with his heavy load, but he did fall in love with photography and set about the challenge of creating amateur photography as a more convenient and affordable pastime.

Eastman began the commercial manufacture of a new type of dry photographic plate in 1880 and established the Eastman Dry Plate Company the following year. In 1884, Eastman developed silver halide paper-based photographic film, followed by the first fully portable camera in 1888. With these two products, and the processes to develop and print the new film, photography became a leisure activity for the masses. The company changed its name to the Eastman Kodak Company and was incorporated on October 24, 1901. Kodak's strategy was to provide a fully integrated photographic service supplying the camera and film through to processing and printing. Its first advertising slogan was "You push the button, we do the rest." George Eastman remained chairman until his death in 1932, during which period Eastman Kodak came to dominate the world market for photographic film, photographic paper and chemicals, and low-cost cameras.

Eastman established seven basic business principles for Kodak that he felt were vital to the company's future success. Kodak claims that these remain its guiding principles.

?? Mass production at low cost

?? International distribution

?? Extensive advertising

?? A focus on the customer

?? Fostering growth and development through continuing research

?? Treating employees in a fair, self-respecting way

?? Reinvesting profits to build and extend the business

After Eastman's death, Kodak continued to build upon its dominant position in the world photographic market. Its approach was one of vertical integration combined with continuous innovation and product development—especially in color photography.

THE 1980s: STORM CLOUDS AND NEW HORIZONS

By the end of the 1970s, a series of new challenges and market reversals were eroding Kodak's dominance of the world photographic market. In cameras, Kodak's leadership in amateur cameras was undermined by the rise of the Japanese camera industry with its sophisticated, yet easy-to-use 35 mm cameras. In film too Japanese competition was a growing problem as Fuji Photo Film Company stepped on to the world stage. Fuji's combination of cost leadership, high quality, and market aggressiveness forced Kodak to retaliate through price cuts and bigger advertising budgets, severely denting Kodak's margins. Fuji's sponsorship of the 1984 Los Angeles Olympic games proclaimed its presence in Kodak's backyard. In instant photography, Kodak was held up by a protracted patent suit that was ultimately settled in 1986 when Kodak was forced into a humiliating withdrawal. Several of Kodak's other innovations were also unsuccessful, most notably the disk camera introduced in 1982.

In July 1983, amidst declining earnings and a falling share price, Colby Chandler took over as Chairman and CEO with Kay Whitmore as President. Under the guidance of these two executives, Kodak embarked upon a decade of

diversification and technology-driven business development. Chandler and Whitmore's initiatives were concentrated in two main areas: imaging and life sciences.

Imaging and Data Storage Products

The 1980s and early 1990s were a period of rapid development in imaging technologies and new printing and reprographic products. Chastened by its having passed up the opportunity to acquire Chester Carlson's xerography patents (these were bought by Haliod Corp., which renamed itself Xerox Corp.), Kodak was determined not to be sidelined by new technological opportunities. Kay Whitmore took a leading role in broadening Kodak's imaging interests beyond its traditional area of chemical-based photographic imaging and into electrostatic imaging, electromagnetic imaging, and electronic imaging and thermal printing. Whitmore invested heavily in electronic data storage and data processing products and systems and engaged in acquisitions and joint ventures to access the necessary technologies. For example:

?? Eikonix Corp. acquired in 1985 gave Kodak a leading position in commercial digital imaging systems that scanned, edited, and prepared images for printing.

?? Kodak developed the world's first electronic image sensor with 1.4 million pixels (1986). This was followed by a number of new products for electronic publishing, scanning, and editing for the printing and publishing industry, including Imagelink for document imaging and Optistar for micrographic or digital capture of images (1989).

?? Kodak became a leader in image storage and retrieval systems. Its KAR4000 Information System provided computer-assisted storage and retrieval of microfilm images (1983). The Ektaprint Electronic Publishing System and Kodak Image Management System offered integrated systems to edit, store, retrieve, and print text and graphics (1985).

?? Kodak became involved in a range of data storage products including floppy disks (the acquisition of Verbatim Inc. in 1985 placed Kodak among the three leading manufacturers of floppy disks for PCs), a 14-inch optical disk capable of storing 6.8 billion bytes of information (1986), and magnetic recording heads for disk drives (through the 1985 acquisition of Garlic Corp.).

?? Through a joint venture with Matsushita, Kodak began supplying alkaline batteries (in competition to Duracell) and videocassettes.

Kodak's electronic sales amounted to a little under 5 percent of total sales in 1984, and increased modestly throughout the 1980s. Most sales of imaging and image processing products were primarily to the commercial sector—especially to publishing and printing. However, by the end of the 1980s, Kodak was putting major efforts into the development of digital imaging products for the consumer market. As a result of its collaboration with Philips, Kodak announced its Photo CD system in 1990. The PhotoCD allowed digitized photographic images to be stored on a compact disk, which could then be viewed and manipulated on a personal computer. Launched in 1992, the PhotoCD was the basis for a number of digital products offered by Kodak.

Life Sciences

The second area of development built upon Kodak's capabilities in chemical technology. Eastman Chemicals had been established in the 1920s to supply photographic chemicals both to Kodak's film and processing division and to third-party customers. By the 1980s Eastman was a major international supplier of photographic chemicals, fibers, plastics (especially for soft drink packaging), printing inks, and nutrition supplements.

Building upon its capabilities in chemicals and its existing healthcare activities (e.g., nutritional supplements and diagnostic equipment), Kodak established its Life Sciences Division in 1984. The new division forged joint ventures and alliances with a number of pharmaceutical and biotech companies to pursue research and new products in the areas of antiviral compounds, nucleic acid, and recombinant proteins. In 1986 Kodak established Eastman Pharmaceuticals, and greatly expanded its pharmaceutical interests with the acquisition of Sterling Drug in 1988 and a series of joint ventures with Sanofi during 1991–2. In addition, Kodak expanded its range of medical imaging products including its Insight Thoracic Imaging System and X-Omatic RA cassette for pediatric patients.

Organizational Changes and Performance Outcomes

Chandler and Whitmore also sought to change Kodak's internal organization. After 75 years of dominating the world photographic industry, Kodak was perceived as centralized, bureaucratic, slow-moving, and risk averse. It's system of lifetime employment engendered strong employee loyalty but insulated the company from external influences. Pressured by falling profits, Chandler and Whitmore cut costs and reshaped the organizational structure. Employment was cut from 136,500 in 1982 to 110,000 in 1992. To decentralize and increase profit orientation, divisions were subdivided into business units with clear bottom-line responsibilities. To promote entrepreneurship, an internal venturing fund that supported new business proposals was established. To accelerate new product development and improve product-launch quality, Kodak introduced a new product

development methodology called the "Manufacturability Assurance Process" based upon a sequence of phases and gates.[6]

Despite the many initiatives of the late 1980s and early 1990s, the deluge of new business ventures added little to Kodak's revenue or profit growth. Two main criticisms of Whitmore's strategy were prevalent: lack of focus and inadequate attention to cost cutting. With regard to the former, the efforts to push Kodak into the future by pioneering computer-based, digital technologies had been dissipated among too many technologies, too many projects, and by the expansion into healthcare. Whitmore was undeterred: "We are not interested in doing more new things. We've got all the new things we need; it's making a success of each of those areas. Silver halide photography is successful. Our chemical company has a very solid base; it's successful. The thing we need to do is to make a success of the commercial applications of digital imaging and make a success of our health strategies."[7] Despite Whitmore's commitment to developing new imaging technologies, the effectiveness of Kodak's digital strategy had been undermined by a lack of integration between Kodak's different digital products and projects, and by spreading its resources too thinly.

With regard to costs, Whitmore's commitment to growth had meant lack of attention to overheads and productivity. Despite a series of restructurings, Kodak earned a dismal return of about 6 percent on capital that cost more than 14 percent while the burden of debt continued to grow. The Kodak board became increasingly skeptical of Whitmore's ability to deliver and in 1993 replaced him with George Fisher, then CEO of Motorola.[8]

THE GEORGE FISHER ERA, 1993-2000

Attracting George Fisher was seen as a major coup for Kodak. His success at implementing total quality management at Motorola and building a leading position in hardware for wireless telephony had made him one of the most highly regarded CEOs in America. He was viewed as one of the leaders of America's resurgence in high technology and was on every headhunter's list. He had already turned down the opportunity to become IBM's CEO (IBM's Board subsequently turned to Lou Gerstener). Moreover, with a doctorate in applied mathematics and ten years of R&D experience at Bell Labs, he had a scientist's grasp of electronic technology. From taking up the reins at Eastman Kodak in November 1993 to stepping down as chairman on December 8, 2000, Fisher was the primary architect of Kodak's push into digital imaging.

Refocusing on Imaging

From the outset, Fisher's strategic vision for Kodak was as an imaging company: "We are not in the photographic film business or in the electronics business, we are in the picture business."[9] In order to focus Kodak's efforts and lower debt, Fisher immediately approved proposals to spin off Eastman Chemical Company. This was followed by a string of other divestments. In 1994 the divestment of all healthcare businesses (other than medical imaging) was announced, the most important being the Sterling Winthrop pharmaceutical company. Sterling had been acquired at a cost of $5.1 billion in 1988; it was sold to SmithKline Beecham for $2.9 billion. The funds generated were used mainly to pay off debt.

The intention of the divestments was to enable Kodak to focus all of its resources on its core imaging business. However, developing a coherent strategy for digital imaging business was not easy. After reviewing the company's financials, Fisher was shocked to learn that Kodak had poured several billion dollars into digital imaging research since the mid-1980s yet had little to show for it in terms of world-beating products.

Digital Imaging Strategy

Fisher's digital strategy was to create greater coherence among Kodak's multiple digital projects, in part through creating a single digital projects division headed by newly hired Carl Gustin (previously with Apple Computer and DEC). Having established greater coherence, Fisher's digital strategy emphasized three key themes.

1. An incremental approach.

"The future is not some harebrained scheme of the digital Information Highway or something. It is a step-by-step progression of enhancing photography using digital technology," declared Fisher[10]. This recognition that digital imaging was an evolutionary rather than a revolutionary change would be the key to Kodak's ability to build a strong position in digital technology. If photography was to switch rapidly from the traditional chemical-based technology to a wholly-digital technology where customers took digital pictures, downloaded then on to their computers, edited then, transmitted them through the internet to be viewed electronically, then undoubtedly Kodak would face an extremely difficult time. Apart from Kodak's positions in digital cameras and picture editing software, most of this digital chain was in the hands of computer hardware and software companies. However, fortunately for Kodak, the whole of the 1990s and the early part of the next decade featured only selective incursions of digital technology into traditional photographic imaging. During the 1990s, digital cameras achieved only limited market penetration, the vast majority of photographic images were still captured on traditional film. The critical advantages of digital imaging were in image manipulation and image transmission.

Hence, central to Kodak's strategy was a hybrid approach where Kodak introduced those aspects of digital imaging that could offer truly enhanced functionality for users. Thus, in the consumer market, Kodak recognized that image capture would continue to be dominated by traditional film for some time—digital cameras did not offer the same sharpness of resolution as conventional photography. However, digital imaging offered the potential for image manipulation and transmission that were quite beyond traditional photography.

This hybrid approach involved Kodak in providing facilities in retail outlets for digitizing and editing images from conventional photographs, then storing, transmitting and printing these digital images. Kodak's first walk-up, self-service systems were its CopyPrint Station and Digital Enhancement Station. In 1994, Kodak launched its Picture Maker which allowed digital prints to be made from either conventional photo prints or from a variety of digital inputs. Picture Maker allowed customers to edit their images (zoom, crop, eliminate red-eye, and add text), and print them in a variety of formats. By the end of 2000, some 30,000 retail locations worldwide offered Picture Maker facilities. The internet offered the potential for image storage and image transmission both from retail kiosks and from home PCs. In 1998, Kodak consolidated its position in this market by acquiring Picture Vision which supplied PhotoNet, a rival system of internet-based image storage and print ordering. A particular advantage of these retailer-based digital photography systems was that they allowed Kodak to exploit a key resource—its extensive distribution presence. Ultimately, digital imaging had the potential to by-pass retailers and photofinishers completely, however, during the transition period, Kodak viewed its huge retail presence as a means of bringing digital imaging to the mass market.

Kodak also used digital technology to enhance the services offered by photofinishers. Thus, the Kodak I.Lab system offered a digital infrastructure to photofinishers that digitized every film negative and offered better pictures by fixing common problems in consumer photographs. Kodak's Picture Center was introduced to improve the process of customer drop-off and pick-up allowing fast self-service ordering of processing and print ordering.

Central to Kodak's digital strategy has been using the worldwide web to allow consumers to post their photographs and order prints online. Picture Vision's PhotoNet system replaced Kodak's own Picture Network (first introduced in 1997). This allowed consumers to drop off film at retail locations and view their digitized images on Kodak's PhotoNet web site from which prints could be ordered. In addition, Kodak partnered with AOL to offer *You've Got Pictures* which allowed AOL members to send photographic images to one another.

Kodak's hybrid approach was also evident in introducing digital enhancement of connectional film. In February 1996, Kodak unveiled its Advantix brand of advanced photo system films. Advanced photo system was the result of agreement between Kodak and Fuji on technical standards for cameras and film that store both chemical film images and data that can be downloaded electronically. The system combined the resolution of conventional film with the versatility and communicability of digital imaging.

In addition, Kodak introduced a wide range of purely digital photographic products that extended from image capote to image printing. From 1995, these were launched under the Kodak Digital Science brand name, to help bring attention to Kodak's positioning and strengths in digital imaging technology.

- ?? Image capture. Kodak developed digital cameras for both the top end and the bottom end of the market. In January 1994, Kodak launched a Professional Digital Camera (the camera alone costing $8,500) and the Apple Quicktake computer camera (manufactured by Kodak, marketed by Apple Computer), which, at $75, was the cheapest digital camera available at the time. In March 1995, Kodak introduced the first full-featured digital camera priced at under $1,000. During the subsequent six years, Kodak continued to bring out new, more sophisticated digital cameras, including professional cameras developed in conjunction with Canon. By 2000, Kodak offered a wide range of digital cameras. At the top end was its DC4800 camera with 3.1 megapixel resolution, at the other a PalmPix camera that allowed a Palm personal digital assistant to be used as a digital camera.
- ?? Image scanning. During the late 1990s, Kodak introduced a range of high-resolution image scanners designed for photographic-quality digital imaging. By the end of 2001, Kodak's focus was almost entirely upon scanners for the business and professional market.
- ?? Image storage and editing. After the failure of its initial launch of the Photo CD system, based upon a Photo CD player that could store digital images on compact disks, in February 1995 Kodak introduced the next-generation Photo CD imaging workstation, which targeted commercial laboratories, photo processors, and PC users. The system comprised a CD-player capable of reading high resolution digital images and viewing them on a TV or computer monitor, and for uploading images for editing and subsequent printing.
- ?? During the 1990s, Kodak introduced a broad range of printers including thermal printers for the professional market, laser printers for the professional and medical markets, and inkjet printers (manufactured by Lexmark) for the consumer market.

- These products were supported by a range of software products. These included: DSL software that allowed the editing and printing of digital images in retail photofinishing labs, Access software permitting the reading and display of PhotoCD disks, PhotoCD Player software that allowed photographic images to be merged with text, graphics and sound, and Kodak's Color Management System for color reproduction.
- Finally, digital imaging created a growing market for one of Kodak's traditional product areas: specialty papers for printing photographic images. During 2000, sales of Kodak's inkjet papers and media business increased by 30 percent. Kodak's new products for photographic printing included its Ultima range of picture paper.

2. Distinct strategies for consumer and professional markets.

Kodak's approaches to consumer and professional markets were different. Kodak's incremental strategy—providing a pathway for customers from traditional to digital photography—was most evident in the consumer market. Here Kodak focused upon the mass market rather than leading-edge users and sought to exploit the strengths of the Kodak brand and Kodak's huge retail presence to provide consumers with the security and reliability they needed to voyage into the uncharted waters of digital photography.

> Four years ago, when we talked about the possibilities of digital photography, people laughed. Today, the high-tech world is stampeding to get a piece of the action, calling digital imaging perhaps the greatest growth opportunity in the computer world. And, it may be. We surely see it as the greatest future enabler for people to truly "Take Pictures. Further."
>
> We start at retail, our distribution stronghold. Here consumers are at the peak moment of satisfaction, when they open their photofinishing envelopes. We believe the widespread photo-retailing infrastructure will continue to be the principal avenue by which people obtain their pictures. Our strategy is to build on and extend this existing market strength which is available to us, and at the same time be prepared to serve the rapidly growing, but relatively small, pure digital market that is developing. Kodak will network its rapidly expanding installed base of *Image Magic* stations and kiosks, essentially turning these into nodes on a massive, global network. The company will allow retailers to use these work stations to bring digital capability to the average snapshooter, extending the value of these images for the consumers and retailers alike, while creating a lucrative consumable business for Kodak.[11]

It was in the professional market where Kodak launched its major innovations in digital imaging. The sophisticated needs of the government in satellite imaging, planning military campaigns, weather forecasting, and surveillance activities favored digital technologies for transforming, transmitting and storing images; medical imaging (especially CT, MRI and ultrasound) required digital technologies for 3D imaging, diagnosis, and image storage; while publishers and printers needed digital imaging to complement the new generation of computerized publishing and printing systems for newspapers and magazines. For professional applications ranging from journalism, to highway safety, to real estate, digital imaging provided the linkage to the internet and sophisticated IT management systems.

The role of the professional segment as the lead market for Kodak's new digital products was reinforced by the huge price premium for professional products as compared with mass-market consumer products. The divide in the digital imaging industry between the professional and the consumer segments remained wide, despite the continuous trickle down of advanced digital technologies and product features from the professional to the consumer market. Most manufacturers—including Kodak—maintained clearly differentiated product range for each segment, which was reflected in clear price differentials. During 1999, price multiples between professional and consumer models were as much as 150 times for cameras ($30,000 vs. $200), 100 times for scanners ($10,000 vs. $100), and 15 times for color laser printers ($30,000 vs. $2,000).

In addition to the sophisticated digital cameras that Kodak released first to the professional market, Kodak established a leading position in digital imaging systems for medical diagnosis and commercial printing. For example:

- In the medical field, Kodak's Ektascan Imagelink system included the capability of converting medical images to digital images, which could then be transmitted via phone lines to local hospitals was launched in 1995. Kodak established world leadership in medical laser imaging through its Ektascan laser printer, introduced in 1996. This leadership was extended with the acquisition of Imation's Dry View laser imaging business in 1998. By the end of the 1990s, Kodak had built a powerful position in digital health imaging based upon both laser imaging and digital radiography. In 2000, Kodak launched its Application Service Provider business to the medical community allowing images to be captured and managed via Kodak's digital systems to Intel Online Services' data center.
- In the US space program, Kodak cameras and imaging equipment accompanied a number of missions including the Mars probe and the IKONOS Earth-orbiting satellite.

?? Elsewhere in the public sector, Kodak's digital scanning and document management systems were used in national censuses in the US, UK, France, Australia and Brazil. At a unit of the German post office, a Kodak team achieved a world record, creating digitized copies of 1.7 million documents in 24 hours.

?? In commercial printing and publishing, Kodak held a strong position in high-quality, high-speed digital printing systems. Kodak's involvement in this market was increasingly through NexPress, a joint venture between Kodak and Heidelberger which developed and supplied a range of printing and copying machines.

?? In moving pictures, Kodak's traditional role as a supplier of cinematography was extended into the digital field through Kodak's services for digitizing conventional movie films, providing digital formats for cinema and TV film, and generating visual effects.

3. Alliances

In its traditional photographic business, Kodak had been exceptionally vertically integrated. It had dominated the photographic value chain from basic research through to the processing of customer's photographic film. In digital imaging such dominance was impossible. Unlike silver halide imaging where Kodak had pioneered the development of the film, the cameras, and the chemicals and paper for film processing, in digital imaging the field was already populated by some dominant companies. In computers there were Dell, Compaq, Toshiba, and many others; in operating systems and browsers Microsoft dominated; in image formatting software Adobe Systems was the key player; in printers Canon and HP led the field. If Kodak was to provide an integrated solution for its customers, it would need to partner with companies that were already well-established in key digital technologies and in key markets for component software and hardware. Under Fisher's leadership, Kodak forged a series of joint-ventures and strategic alliances. The partnerships with Canon, Lexmark, AOL, and Heidelberger have already been mentioned, in addition, Kodak established the following alliances:

?? Kodak's Picture CD was developed with and co-marketed with Intel Corporation. Kodak's longstanding alliance with Intel also extended to the development of an ASP system for archiving and downloading medical images on a pay-per-use basis.

?? Hewlett-Packard has played a key role as a source of inkjet technology for Kodak. Phogenix Imaging, a joint venture between Kodak and HP was established to develop high-quality inkjet solutions for micro and mini photofinishing labs. The systems utilize Kodak's DLS software.[12] In addition, HP had collaborated with Kodak (as well as Microsoft and Live Picture Inc.) in developing the FlashPix image storage system for digital cameras.

?? Kodak's collaboration with Microsoft also included cooperation to establish standards for Windows-based digital and cooperation in the development of PhotoCDs.

?? A cross-licensing agreement with Olympus to share digital camera technology and to join forces in developing a common approach to web-based storage and printing of photographs. The press release accompanying the announcement noted that Kodak had over a thousand patents related to digital cameras and digital photographic systems, while Olympus also possessed over a thousand patents with particular strengths in high resolution digital cameras. A similar cross-licensing deal was agreed with Sanyo.

?? Several of Kodak's alliances were primarily orientated towards opening Kodak's worldwide distribution system to partner companies. For example, in 2001, Kodak agreed to distribute Better Light Inc.'s top-of-the-line digital cameras (offering up to 12,000 x 16,000 resolution) as part of its professional range.

A key element of George Fisher's legacy was the recognition that, in every segment of the digital imaging market—consumer, professional, entertainment, and commercial—Kodak could only achieve a prominent market position if it forged partnerships with those companies that already possessed leadership at particular stages of the digital imaging value chain, whether it was Intel in semiconductors, AOL in consumer internet services, HP in inkjet printers, or Heidelberger in commercial printing systems. Willy Shih, head of Kodak's digital imaging division, observed: "We have to pick where we add value and commoditize where we can't."[13] The difficult decision was identifying the activities and product areas where it could add value, and those that were best left to other companies.

THE SITUATION IN APRIL 2001

Much of Pat Russo's first week at Kodak was spent reviewing Kodak's digital strategy in relation to its current situation and future market prospects. Her review focused upon two main areas: the market for digital imaging and Kodak's potential for competitive advantage within it.

The Market

By the time Russo arrived at Kodak, a much clearer consensus had developed around what digital imaging was and what the size of the market was. Increasingly the term *infoimaging* was used to describe the imaging products and services that used electronic technologies to capture, store, transform, edit and display picture images. Broadly defined, the infoimaging market comprised hardware ("devices"), software ("services and media"), and infrastructure. The total infoimaging market was estimated to be in the region of $44 billion (see Table 6.1).

[Table 6.1 about here]

For over a decade, a key uncertainty facing Kodak concerned the rate of penetration of digital imaging, and with it the rate of decline of sales of traditional photographic products—film in particular. The transition to digital was slowed by the fact that digital imaging was not unambiguously superior to conventional film-based photography. In particular, with the exception of the most sophisticated (and expensive professional cameras) digital cameras did not offer such fine resolution as connectional film. And, while digital images could be electronically stored and transmitted, these size of image files meant that storage was highly memory intensive and transmission was slow. Hence, market acceptance of digital imaging was dependent upon the development of high-capacity memory devices and software for compressing image files. The overall result was a gradual shift to digital imaging and, in the consumer market, a slow transition from early adopters to mass market. With greater ease of use and more integrated solutions, Kodak believed that market penetration would accelerate. Yet, despite a sharp increase in the sales of digital imaging products during 1999 and 2000 (Kodak's sales of digital cameras increased by about 90 percent during 2000), by the end of 2000, the consumer photographic market remained dominated by conventional imaging. For example, digital cameras in use represented only 20 million out of a total of about 830 million (including single use cameras),. In 2001, most industry observers expected the rate of growth of digital cameras to decline, with an annual growth of unit sales of around 50 percent. In the US, sales of 4.2 million digital cameras in 2000 were expected to increase to 6.5 million in 2001.[14]

While unit sales of digital products and digital services showed strong volume growth, revenues told a different story. During 2000, Kodak's revenues from digital products and services increased by a mere 5 percent, most of the growth coming from consumer digital (where sales revenues rose by 16 percent). The failure to convert strong unit sales growth into revenue growth was a consequence of falling prices. In common with electronic products generally, digital imaging products were subject to steeply declining prices and unit costs. During 2000, prices of digital cameras fell by an average of 18 percent. During the first quarter of 2001, priced cuts continued with many manufacturers reducing prices by between 10 and 15 percent.

Steep price declines were an indication of the intensity of competition in the digital imaging business. While Kodak had long enjoyed market dominance in conventional photography (until the emergence of Fuji as a global competitor), in digital it was forced to compete against a diversity of rivals:

- *Digital cameras.* Casio had been the early leader, with over half the world market during the early 1990s. By 1998, 45 companies had entered the market, with Sony emerging as market leader, and HP, Olympus, Kodak and Fuji some way behind (see Table 6.2).
- *Printers*. Kodak positioned itself at the high end producing commercial and professional printing equipment and high quality inkjet printers for the consumer market. medical imaging, Kodak was the leading supplier of laser printers. For its consumer range, Kodak increasingly relied upon Lexmark to source inkjet printers. A reassuring feature of digital imaging for Kodak was the continued preference of both professional and amateur users for printed images. The problem for Kodak was that, as standard inkjet printers increased their quality and sharpness of resolution, so the market for dedicated photographic printers became squeezed. Throughout 2000 and early 2001, the prices of both inkjet and laser printers continued to fall, reflecting the intense competition in this field.
- *Scanners*. As with printers, in photograph image scanners, Kodak focused upon the high-price, high quality segments supplying high-resolution, sophisticated scanners for professional and commercial use and scanning modules for retail photo kiosks. In 1999, Kodak's Digital Science 3500 commercial scanner was named product of the year by *Imaging and Document Solutions*. Kodak had also entered into the consumer market. However, the consumer market, especially the lower end, was fiercely competitive and as mass-market consumer machines increased their resolution, so Kodak's position at the upper end was increasingly squeezed.
- *Software*. Software for digital imaging comprised editing software for manipulating images, color control software, file format and storage software, and software for transferring image files between computers through the internet. Editing software ranged from programs to fulfill basic image manipulation, such as Microsoft's Picture It, to more comprehensive editing software where Adobe's Photoshop dominated the market. In software to keep the color consistent from the point of capture, through manipulation, up until the point of display, Kodak's color management software held a strong market position. The other area

where Kodak hold a significant position is in its DLS System Management and Enhanced Services Software for managing retail processing and printing operations. This software allows for manipulation of images (e.g. red-eye elimination) for both film and digital images, printing across a variety of formats and media, order processing, and work flow management.

?? *Online photographic services*. Kodak strengthened its position with the acquisition of Picture Vision's PhotoNet business, however, in providing services to upload digital images, post photographs on the web, and order prints, Kodak's PhotoNet lagged behind Zing and competed strongly with PhotoPoint, ClubPhoto, Hewlett-Packard's Cartogra, Fuji.net, and many others.

[Table 6.2 about here]

Kodak's Resources and Capabilities

The fundamental issue for Kodak's digital imaging business was that its competitive position was totally different from that in traditional photography. In silver-halide photography Kodak had been the pioneer, and in pioneering roll film and the cameras, chemicals, and photographic papers that used that roll film, Kodak had gone on to dominate the photographic industry. In digital imaging, Kodak was but one of many companies that had entered digital imaging as a result of the convergence of imaging and electronics. Kodak, like Fuji, had entered digital imaging to protect itself against the threat that digital technologies offered to photographic film (already in Japan film sales had stagnated by 2000, Europe and North America were believed to be about two years behind). Olympus and Minolta had entered from their positions in cameras. Canon, Ricoh and Hewlett-Packard came to digital imaging armed primarily with their expertise in microelectronics and printing. Sony entered digital imaging as an extension of its consumer electronics business. All these companies possessed different sets of resources and capabilities with strengths and weaknesses in different areas. Russo recognized that for Kodak to establish leadership in the new world of digital imaging it would need to marshal its considerable base of resources and organizational capabilities, while building the additional capabilities needed to succeed in this technologically fast-moving field.

Brand and distribution

Foremost among Kodak's resource strengths were its brand equity and distribution channel presence. After almost a century of global leadership in the photographic industry, Kodak possessed brand recognition and worldwide distribution reach that was unrivalled in the photographic industry. Russo saw Kodak's ability to bring new products to consumers' attention and to support these products with one of the world's best known and most widely respected brand names as a huge advantage in a market where technological change created uncertainty for consumers. Kodak's brand reputation was supported by its massive, worldwide distribution presence—primarily through retail photography stores, film processors, and professional photographers. This retail presence was critical to Kodak's entire digital strategy which was built around providing consumers with a pathway to digital imaging using services offered through retail stores and photofinishers.

To what extent would Kodak's strengths in distribution and brand equity be a source of competitive advantage in digital imaging? Once consumers possessed the computing power, the printing capacity, and internet linkage to enable them to download digital images directly from their camera to their PCs and edit, communicate, and print these images, then traditional distributional channels for photographic products and services would be irrelevant to their needs. Nor was it clear that the Kodak brand would carry the same weight in digital as in traditional photography—especially when it was competing against brands such as Canon, Hewlett-Packard, and Sony. In relation to professional, commercial, medical, and government markets, Russo believed that Kodak's market presence might be more secure. The long-established relationship between Kodak and its corporate and institutional customers and the range of support services that Kodak was able to provide provided a greater barrier to consumer electronics companies and high-tech upstarts.

Technology

In technology too, Kodak came to digital imaging with some well-established strengths. It's huge R&D investments into digital imaging since the early 1980s had created proprietary technologies across a broad front. Despite R&D cutbacks during the late 1990s, Kodak maintained one of the world's biggest research efforts in imaging. At its research labs in the US, UK, France, Japan, China and Australia, Kodak employed more than 5,000 engineers and scientists including more than 600 Ph.D.s.

Moreover, its century of innovation and development of photographic images gave Kodak tremendous depth of understanding of recording and processing images that were not negated by the transition from chemical to digital imaging. C. K. Prahalad, the guru of competence-based strategy, who played a key role in shaping Kodak's digital strategy during the early-1990s, viewed Kodak's imaging capabilities as transcending specific imaging technologies. Fundamental to Kodak's ability to make the transition from chemical to digital imaging was its color management capability. In the transfer of digital images to paper, Kodak possessed a powerful technology base,

especially in color management and thermal printing. As *Business Week* observed when Fisher joined Kodak: "The basic know-how of combining electronic image capture and color management has been Kodak's for years. Kodak is a world-beater in electronic sensors, devices that see and capture an image, and has a raft of patents in color thermal printing. It also has the best understanding of color management software, which matches the colors you see on the screen with what's on the printed page." By the late 1990s, Kodak was a world leader in color science, which studied the production, control, measurement, specification and visual perception of color. In particular, Kodak pioneered the field of *colorimetry* which it used to measure and quantify the initial visual response to a stimulus of light.

At the image capture stage, Kodak developed a leading position in sensors. In CCD image sensors for digital cameras, Kodak held a market share of 25 percent in 2000. Kodak also pioneered CMOS sensors and possessed deep knowledge of megapixel camera architectures. Kodak's image sensing technology provided the heart of its digital image scanners. Using a combined color and monochrome sensor, the i800 Series Scanners launched in early 2001 was the first scanner to produce simultaneous capture of bitonal and color information allowing a document that included both text and photos to produce images that were bitonal, color, or both in a single pass.

In the field of image processing, Kodak deployed complex statistical methods and artificial intelligence to develop algorithms for processing digital images. These were used for automatic color balancing, object and text recognition and image enhancement and manipulation across a wide range of digital imaging applications, including systems for digital photofinishing where electronically scanned film images or direct-capture digital images could automatically adjust for scene reflectance and lighting conditions, noise, and sharpness—while operating at thousands of frames per hour. Kodak's image processing technology also included algorithms for image compression. In commercial imaging satellites, such proprietary algorithms were used to transmit richly-detailed image files back to earth more efficiently that would be possible with non-compressed files.

In image storage, Kodak had a long history of pioneering research and product development including floppy disks for PCs (1984), 14-inch optical disks (1986), and compact disks (Photo CD was first announced in 1990). Kodak was a leading member of the consortium of firms (that also included Microsoft, Intel, Adobe, Canon, Fuji, HP, and IBM) that developed and promoted FlashPix for digital camera image storage.

In document and image management, Kodak had led the way in developing systems that store, retrieve, edit and print text and graphics for organizations such as government departments, banks and insurance companies that handle thousands of documents a day. The capabilities that Kodak developed in designing these complex, large-scale document and image management systems for its commercial and institutional customers have also been relevant to the creation of digital imaging systems for the consumer market. In creating digital imaging systems for retailers and photofinishers, Kodak has been involved in integrating various types of hardware and software in systems that must combine quality, versatility, and reliability. A key feature of such systems is that they require Kodak to partner and cooperate with other hardware and software companies whose products either form part of the Kodak system or which the Kodak system must be compatible with. As Kodak has increasingly used the internet as an infrastructure for linking itself with customers and photofinishers, so Kodak's capabilities in creating and integrating complex systems for editing, processing, storing and communicating images are extended to a new dimension.

At the root of Kodak's capabilities in designing and managing digital imaging systems was its predictive system modeling that allowed it to measure the characteristics of imaging systems and predict the performance of entire systems of digital and hybrid imaging that included optics, image sensors, scanners, image processing operations, printers, display media, and human visual responses. Such modeling allowed developers to evaluate quickly competing design proposals and select product features delivering the highest value to the customer.

Some of Kodak's traditional capabilities were also relevant to the new world of digital imaging. Even if digital imaging displaced most conventional photography, Kodak believed that consumers would still want to have printed copies of their photographic images. In print media, particularly specialty papers, Kodak was world leader. During 2001, sales of Kodak's inkjet papers were expected to grow at about 40 percent.

New Product Development

Despite Kodak's strengths in basic and applied research and its long history of successful new product development, Russo was acutely aware of the criticisms that have been leveled at Kodak for its weaknesses in bringing new products to market. Most of Kodak's most significant innovations in digital photography had been high-priced products for the professional market. In the consumer market, Kodak was viewed as being handicapped by marketers who had little understanding of the digital world.

Kodak's product development process still reflected the company's origins in chemistry. Product development traditionally began with basic research where innovations were exploited through a long and meticulous product development process before being rolled out on to the world market. One of George Fisher's major initiatives as Kodak chairman and CEO had been to streamline and speed Kodak's cumbersome product development process.

In place of Kodak's sequential "phases and gates" development process, Fisher transferred approaches that had worked well at Motorola—greater decentralization of new product development and the use of cross-functional development teams to accelerate cycle times.

Despite these changes, adapting to new product development methods that characterized the microelectronics sector remained a challenge for Kodak. The Silicon Valley model was based not simply upon speed, but also collaboration with other companies from the outset of the product development process. Kodak had no problem in establishing collaborative agreements with other companies—its size, brand name and technological strength was sufficient to make it a highly attractive partner for small, technology-intensive firms in digital imaging. The real challenge was for Kodak to overcome a long history of insularity and hierarchical control in order to make its newfound alliances fruitful. A key issue for Kodak was whether its history and location three thousand miles from California's Silicon Valley could permit it to develop the organizational capabilities needed to thrive in a hyper-competitive environment. Russo was reminded of the current woes of Xerox Corporation. Despite Xerox's remarkable success in IT research, its long history of market dominance, bureaucratic culture, and east-coast location had combined to preventing its successful adjustment to the fast-moving world of digital document processing.

Finances

One of Kodak's key advantages in withstanding the uncertainties and rapid technological changes of the market for digital imaging was its size and financial security. In contrast to the many start-up companies that sought to establish themselves in the sector, Kodak was independent of venture capitalists and the vagaries of the IPO market. In addition, Kodak could rely upon the cash flow from its traditional photographic products to finance its investments in digital imaging.

Throughout the 1990s, Kodak used its cash flow from conventional imaging to financing its R&D, capital investment and operating losses in digital. The problem was that the cash flows from its traditional business were being continually squeezed by competition—most notably by Fuji Film which continued to gain market share at Kodak's expense and squeeze margins by aggressive price cutting. The crunch came in 1997. After an average return on equity of 27.6 percent during 1995 and 1996, net income (after restructuring costs and losses on digital imaging of about $400 million) collapsed to almost nothing in 1997. In November 1997, Chairman George Fisher announced a turnaround strategy that involved aggressive cost reduction and greater selectivity in digital imaging investments. The resulting cost reductions and parsimony in capital investments did much to restore Kodak's bottom line: in 1999 and 2000 return on equity averaged 40 per cent. Despite this recovery, Kodak's top management team remained acutely aware of the risks of disappointing Wall Street—a fear that was reinforced by the dismal performance of Kodak's stock. During 2000, Kodak's return to shareholders was a negative 39 percent; during the first four months of 2001 the share price was largely stagnant, hovering around the low 40s.

Evidence of Kodak's increasing bottom-line sensitivity was its willingness to divest parts of digital imaging business and withdraw from particular markets if it felt that the potential returns could not justify the investments being made. In 1998, Kodak sold Fox Photo, and its investment in Gretag Imaging (a manufacturer of film processing equipment). In 1999, Kodak folded its digital printer and copier-duplicator business into a joint venture with Heidelberger, sold The Image Bank (which marketed and licensed image reproduction rights), and sold its Motion Analysis Systems Division (which manufactured digital cameras and digital video cameras for the automotive and industrial markets).

Table 6.3 summarizes Kodak's recent financial results.

[Table 6.3 about here]

LOOKING FORWARD

As Patricia Russo prepared to leave the office after her first week in her new position, she was struck by the sheer magnitude of the challenge that Kodak faced not just in building a strong market position in digital imaging, but also in turning that market position into solid profit returns. Despite all the focusing efforts of George Fisher during his six years of leadership, Kodak continued to compete across a remarkably broad front. In digital imaging, Kodak was supplying products that extended from digital cameras to capture images, right the way through to printing papers for the printing of these images. Despite Kodak's network of partnerships that permitted it to access other companies' technical capabilities and products, Kodak continued to develop digital capabilities across a wide range. In basic research, its efforts embraced sensors, image processing algorithms, color management systems, image system modeling and simulation, and many other areas.

Given the extent of competition in virtually every area of digital imaging and the technological resources of companies such as Hewlett Packard, Canon, Fuji, and Sony, Russo wondered whether Kodak had the technological, financial and managerial capacity to support its ambitious digital strategy.

But, if Kodak was to focus its digital strategy, what would that focus look like? Kodak's strengths in different parts of its value chain tended to pull its digital strategy in different directions. At the research end, Kodak had built strengths in a number of key technologies. However, to turn these technological strengths into top-line revenues, Kodak would need to embody these technologies into world beating products and collaborate with others to establish technical standards that were compatible with, if not based upon, Kodak's technologies. At the opposite end of the value chain, Kodak's key strengths were its well known and trusted brand and its powerful, extensive distribution network. If Kodak were to view its key strengths as located in these downstream activites, then Kodak's strategy should be to focus upon providing customer solutions in the form of integrated systems embodying both hardware and software. Whether the technologies or the individual products came from Kodak or from other companies was a secondary issue. Under this latter approach, the key task for Kodak was to use its brand and its systems integration capability to provide customers with a total solution to their imaging needs whether chemical or digital.

Whichever end Kodak's digital imaging strategy started from—its technological strengths or the creating of customer solutions under the umbrella of the Kodak brand—it was clear to Russo that Kodak must draw upon the resources and capabilities of other companies. To this end, Kodak would need to continue establishing collaborative relationships with companies that were leaders in microelectronics, consumer electronics, and computer software, as well as acquiring smaller companies whose innovative technologies and products could be leveraged ny Kodak's brand and global reach. Yet, given Kodak's heritage vertical integration and internal focus, establishing close and fruitful collaboration with other companies required managerial capabilities that were still relatively new within Kodak.

The role of networks of alliances and collaborative relationships was one factor that distinguished the new world of electronic imaging from Kodak's traditional photographic industry. Another was the sheer pace of change. Traditionally, Kodak had been a technological leader, and, because it had dominated the market for photographic products so effectively, it had been able to choose the pace at which it developed new technologies and the time when they would be embodied in new products. Moreover, the pattern of new product development had been a systematic one that began in the lab and worked through engineering and marketing into new products. The field of microelectronics was altogether a faster-moving field, where no company could expect or hope to dominate any substantial area of technology. The implications for the speed of new product development, for cross-functional integration, and for initiatives unbounded by organizational structure or formalized procedures were far-reaching.

The transition from a world of chemical imaging where technology developed gradually along clearly defined trajectories and where Kodak could control the pace of technolofical and market development to the chaotic, competitive, fast-moving world of digital imaging meant changing values, norms, behaviors, and attitudes withkin Kodak. If cultural change was the key, then shaking up the Kodak culture required leadership from the top. The 1997 refocusing and cost-cutting initiatives were accompanied by major changes among the top management team. A key feature of these changes was bringing in managers whose thinking was not dominated by the Rochester culture. Although Dan Carp (appointed as COO in January 1997), Robert Keegan (new head of the Consumer division), and Patrick Siewart (new head of the Professional division) were all Kodak insiders, all had spent the major part of their careers outside of Rochester. Other top managers were brought from outside the company: Daniel Palumbo, head of Marketing, came from Procter & Gamble; Willy Shih, head of the Digital Imaging division, had previously worked at Silicon Graphics, DEC, and IBM. As Figure 6.1 shows, Pat Russo was distinguished only by the fact that she was the latest and most senior of a major influx of new managerial talent into Kodak.

As she looked once more at the salutary first quarter results for 2001, Pat Russo recognized that the next 12 months would be critical for Kodak. The evidence from the past was not encouraging. When market leaders are challenged with a radically new technology—whether it is Digital Equipment with the microcomputer revolution, RCA with microelectronics, Bethlehem Steel with minimills, Sears Roebuck with discount stores and "category killers", or Xerox with new printing technologies, the result was a failure either to recognize the disruptive potential of the new technologies and to respond effectively to them. In Kodak's case, it had long recognized that the future of the picture business was digital imaging. The key question was whether it could develop the capabilities needed to success and deploy these capabilities through an effective, far-sighted strategy.

Figure 5.1. Kodak's Top Management Team

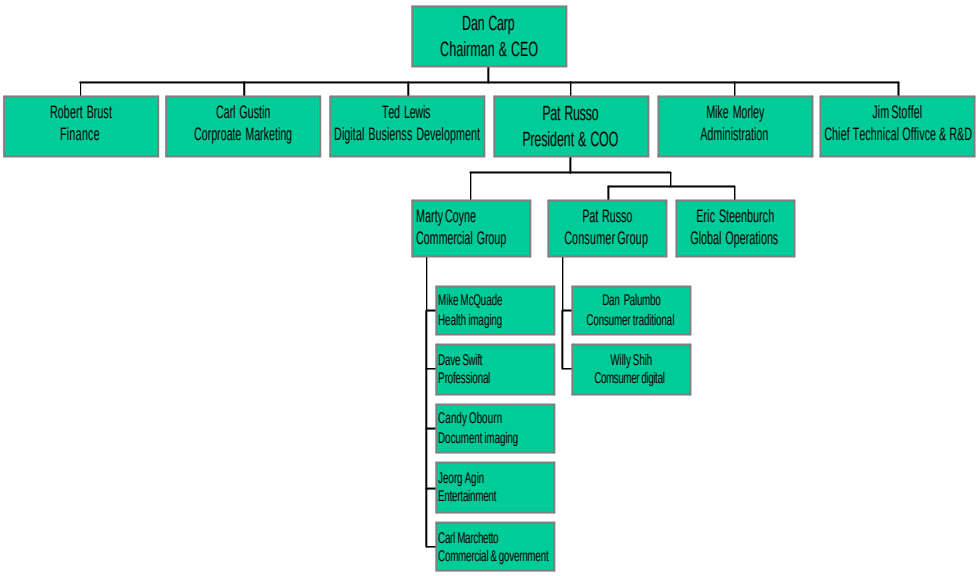

TABLE 6.1
The Worldwide Infoimaging Market in 2001.

DEVICES	General use digital cameras	$ 3.5 billion
($44.4 billion)	“Toy” digital cameras	$ 0.2 billion
	Mass market flatbed scanners	$ 3.4 billion
	Inkjet printers	$11.7 billion
	Flatpanel displays	$25.7 billion
SERVICES	All consumer & professional photography	$54.6 billion
& MEDIA	Inkjet cartridges & inks	$25.7 billion
($136.5 billion)	Document imaging	$22.9 billion
	Health imaging	$28.0 billion

	Inkjet papers and media	$ 5.3 billion
INFRA-STRUCTURE ($44.1 BILLION)	Photofinishing systems & networks	$38.1 billion
	Photoprocessing equipment	$ 3.0 billion
	Entertainment imaging	$ 2.2 billion
	Consumer kiosks	$ 0.9 billion

TABLE 6.2

Brand Shares of the US Market for Digital Still Cameras (by units)

Brand	*2000*	*Jan. 2001*
Sony	26%	41%
Olympus	18%	11%
Kodak	17%	12%
Hewlett-Packard	9%	17%
Fujifilm	8%	5%
Polaroid	6%	4%
Canon	3%	4%

Source: IDC

TABLE 6.3

Eastman Kodak: Selected financial data, 1996–2001 ($ million)

	2001	*2000*	*1999*	*1998*	*1997*	*1996*
From income statement						
Sales	13,234	13,994	14,089	13,406	14,713	16,244
Costs:						
Cost of goods sold	8,670	8,019	7,987	7,293	7,979	8,326
Selling, general, and admin.	2,627	2,977	3,295	3,303	3,912	4,410
R&D costs	779	784	817	922	1,044	1,028
Operating earnings	345	2,214	1,990	1,888	1,778	2,480
Interest expense		219	178	142	110	98
83						
Other income (charges)	(18)	96	261	328	(1,441)	(564)
Restructuring and other costs (credits)	659	(44)	350	--	1,441	841
Provision for income taxes	32	725	717	716	48	545
Net earnings	76	1,407	1,392	1,390	5	1,288
From balance sheet						
Total current assets	4,683	5,491	5,373	--	5,475	6,965
Including:						
Cash and cash equivalents	448	246	20	--	728	1,777
Receivables	2,337	2,653	2,537	--	2,271	2,738
Inventories	1,137	1,718	1,519	--	1,252	1,575
Property, plant, and equipment (net)	5,659	5,919	6,189	--	5,509	5,422
Other noncurrent assets (excluding goodwill)	2,072	1,767	1,801	--	1,231	1,238
Total Assets	13,362	14,212	14,370	--	13,145	14,438
Total current liabilities	5,354	3,275	3,832	--	5,177	5,417
Including:						
Payables	3,276	3,403	1,163	--	3,832	4,116
Short-term borrowings	1,378	2,058	612	--	611	541
Other liabilities:						
Long-term borrowings	1,666	1,166	936	--	585	559
Post employment liabilities	2,728	2,610	2,776	--	3,075	2,967
Other long-term liabilities	720	671	859	--	1,019	557
Total liabilities	10,468	10,784	10,458	--	9,984	9,704
Shareholders' equity	2,894	3,428	3,912	--	3,161	4,734
Total liabilities and shareholders' equity	13,362	14,212	14,370	--	13,145	14,438
From cash flow statement						
Cash flows from operating activities:						
Earnings from continuing operations	76	1,407	1,392	1,390	5	1,011
Adjustments for non-cash items	1,989	(425)	541	93	2,075	1,473
Net cash provided by operating activities	2,065	982	1,933	1,483	2,080	2,484
Cash flows from investing activities:						
Additions to properties		(743)	(945)	(1,127)	(1,108)	(1,485)
(1,341)						
Proceeds from sale of properties	--	276	468	297	109	124
Cash flows related to sales of businesses	--	1	(46)	(59)	(194)	681
Acquisitions, net of cash acquired	(306)	(130)	(3)	(949)	(341)	(128)
Net cash used in investing activities	(1,074)	(783)	(685)	(1,839)	(1,896)	(636)
Net cash flows from financing activities	(804)	(314)	(1,327)	77	(1,198)	(1,833)

Source: Eastman Kodak *Annual Reports 2000 and 1997*.

TABLE 6.3

Eastman Kodak: Results by Business Segments, 1998-2001

(A) Segment results for 1999-2001 (from Annual Report 2001)

(in $, millions)	*2001*	*2000*	*1999*
Net sales:			
Photography	9,403	10,231	10,265
Health Imaging	2,262	2,220	2,159
Commercial Imaging	1,459	1,417	1,479
All Other	110	126	186
Consolidated total	13,234	13,994	14,089
Earnings from operations:			
Photography	787	1,430	1,709
Health Imaging	323	518	483
Commercial Imaging	165	233	257
All Other	(60)	(11)	(109)
Total of segments	1,215	2,170	2,340
Net earnings:			
Photography	535	1,034	1,261
Health Imaging	221	356	324
Commercial Imaging	80	90	178
All Other	(38)	(2)	(61)
Total of segments	798	1,478	1,702
Operating net assets:			
Photography	6,288	7,100	6,875
Health Imaging	1,426	1,491	1,229
Commercial Imaging	1,085	1,045	963
All Other	(219)	(92)	(123)
Total of segments	8,580	9,544	8,944

(B) Segment results for 1998-2000 (from Annual Report 2000)

($ millions)	*2000*	*1999*	*1998*
Net sales			
Consumer Imaging	7,406	7,411	7,164
Kodak Professional	1,706	1,910	1,840
Health Imaging	2,185	2,120	1,526
Other Imaging	2,697	2,648	2,876
Consolidated total	13,994	14,089	13,406
Earnings from operations			
Consumer Imaging	1,179	1,299	1,080
Kodak Professional	261	374	330
Health Imaging	503	470	321
Other Imaging	227	197	157
Total of segments	2,170	2,340	1,888
Consolidated total	2,214	1,990	1,888
Net earnings			
Consumer Imaging	860	900	785
Kodak Professional	111	265	237
Health Imaging	346	315	205
Other Imaging	161	222	162
Total of segments	1,478	1,702	1,389

Consolidated total	1,407	1,392	1,390

NOTES

[1] Eastman Kodak Press Release, "Kodak Names Patricia F. Russo as President, Chief Operating Officer; Will Intensify Focus on Growth in Traditional and Emerging Businesses" (Rochester, N.Y., April 11, 2001).

[2] Eastman Kodak Press Release, op cit., April 11, 2001
[3] Eastman Kodak Press Release, op cit., April 11, 2001
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[8] Linda Grant, "Can Fisher focus Kodak?" *Fortune Magazine*, January 13, 1997.
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[12] Eastman Kodak Company, "Kodak and HP Joint Venture to be Names Phogenix Imaging" (Press release, August 1, 2000).
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