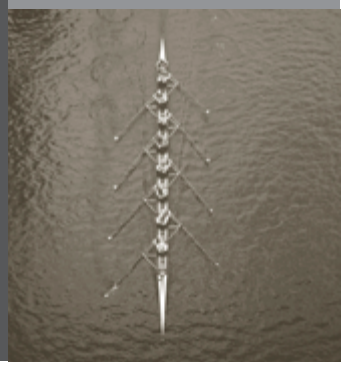
case 7

Eastman Kodak: Meeting the Digital Challenge



January 2004 marked the beginning of Dan Carp's fifth year as Eastman Kodak Inc.'s chief executive officer. By late February, it was looking as though 2004 would also be his most challenging.

The year had begun with Kodak's dissident shareholders becoming louder and bolder. The critical issue was Kodak's digital imaging strategy that Carp had presented to investors in September 2003. The strategy called for a rapid acceleration in Kodak's technological and market development of its digital imaging business – involving some $3 billion in new investment. This would be financed in part by slashing Kodak's dividend. Of particular concern to Carp was Carl Icahn, who had acquired 7% of Kodak's stock. Icahn was not known for his patience or long-term horizons – he was famous for leading shareholder revolts and leveraged buyouts. His opposition to Carp's strategy was based on skepticism over whether the massive investments in digital imaging would ever generate returns to shareholders. He viewed Kodak's traditional photography business as a potential cash cow. If Kodak could radically cut costs, a sizable profit stream would be available to shareholders. The release of Kodak's full-year results on January 22, 2004 lent weight to Carp's critics: top-line growth was anemic while, on the bottom line, net income was down by almost two-thirds. Press commentary was mostly skeptical over Kodak's future prospects. The *Financial Times*' Lex column observed:

> *. . . Two key problems remain. The first is that, as Kodak extends its imaging technology into consumer electronics, it will encounter severe competition from existing camera makers and the brutal profit margins of a business where prices seem in perpetual freefall. If prices continue to plummet, it may still all be too little too late. Though few would question Kodak's technological expertise, its relative lack of experience in hardware was shown*

by its pride in attending the Las Vegas consumer electronics show for the first time this year. It has also been hit by a failure to develop new models fast enough and has tended to focus on the ultra-competitive entry-level market. . . .

The other potential problem stems from predicting that descent curve for film. Much hope has been placed on growing demand for old-fashioned film cameras in emerging markets like China, India and Russia. So far, sales in the rest of the world as a whole have been declining at the same speed as the US . . .[1]

Carp resolutely believed that to deviate from Kodak's goal of establishing leadership in the field of digital imaging would betray Kodak's heritage and mission and would condemn the company to a lingering death. The challenge, he believed, was to sharpen the focus of Kodak's digital strategy, to articulate that strategy more persuasively, and to ensure that the strategy was implemented with greater speed and effectiveness.

As a first stage, Kodak needed to emphasize the distinct strategies for Kodak's "traditional businesses" and its "digital businesses." The traditional businesses would be "managed for cash to maximize value." This meant revenue contraction of around 7% per year together with aggressive cost cutting. During 2004–6, between 12,000 and 15,000 jobs would be axed and one-third of traditional factory space would close.

For digital businesses, Kodak's options were broader, but the uncertainties were more daunting. The transition from traditional to digital imaging over the next few years was a certainty. With digital revenues projected to grow at 26% annually, the balance of Kodak's business would shift: in 2002 "traditional" had accounted for 70% of Kodak's revenues; by 2006 this would be down to 40%. But how technologies, products, and customer usage would develop remained unclear. The greatest uncertainties related to Kodak's potential for competitive advantage in digital imaging. Kodak's traditional strengths were its brand, its global distribution network, and its chemical imaging capabilities. Digital imaging was a very different market. Not only were the technologies very different, but also Kodak faced a different array of competitors. In hardware Hewlett-Packard, Canon, and Sony were leaders. In software, the key players were Microsoft and Adobe – not to mention the online services companies such as AOL, Google, and Yahoo. For Kodak to succeed in digital imaging required that it developed a view of how the market would evolve, evaluate its strengths and weaknesses in relation to this emerging future, developed a clear strategy of where and how it would compete, and developed the resources and capabilities needed to realize this strategy.

Kodak's History, 1880–1993

George Eastman transformed photography from an activity undertaken by professional photographers working in studios into an everyday consumer hobby. Between 1880 and 1888 Eastman developed a new type of dry photographic plate, silver halide roll film, and then the first fully portable camera. In 1901 he established the Eastman Kodak Company whose 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." The business principles established by Eastman were:

- 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

By the time George Eastman died in 1932, he had created a vast new market that Eastman Kodak dominated.

By the end of the 1970s, Kodak was facing its first competitive challenges. In cameras, Kodak's leadership was undermined by the rise of the Japanese camera industry, with its sophisticated yet easy-to-use 35 mm cameras. In film, Fuji Photo Film Company embarked on a strategy of aggressive international expansion. Fuji's sponsorship of the 1984 Los Angeles Olympic Games proclaimed its presence in Kodak's backyard. New imaging technologies were also making their mark. In instant photography, Polaroid was the dominant player. In copying, Xerox had established itself as the leader in the new field of electrostatic plain-paper copying (Kodak had turned down the opportunity to acquire the original patents on xerography), while the personal computer was ushering in a new array of printing technologies.

Diversification 1983–1993

Under the new management team of Colby Chandler and Kay Whitmore, Kodak launched a series of diversification initiatives in two main areas – imaging and life sciences – with several new imaging ventures:

- Eikonix Corp., acquired in 1985, gave Kodak a leading position in commercial imaging systems that scanned, edited, and prepared images for printing.
- Kodak developed the world's first megapixel 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 digital image capture (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 (Verbatim was acquired in 1985), 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 and videocassettes.
- Kodak acquired IBM's copier services business.

- As a result of its collaboration with Philips, Kodak announced its Photo CD system in 1990. Photo CDs allowed digitized photographic images to be stored on a compact disk, which could then be viewed and manipulated on a personal computer.

The second area of development built on 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 on its capabilities in chemicals and its existing healthcare activities (e.g., nutritional supplements and diagnostic equipment), Kodak established its Life Sciences Division in 1984. In 1986 Kodak established Eastman Pharmaceuticals and in 1988 acquired Sterling Drug.

Creating a Digital Strategy: George Fisher, 1993–2000

By the early 1990s, it was clear that Kodak was extended over too many initiatives with too little commitment to any area outside of its traditional imaging business. In 1993, the Kodak board ousted Whitmore and replaced him with George Fisher, then CEO of Motorola. Fisher was a leader 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 Gerstner). 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 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."[2] To focus Kodak's efforts and lower debt, Fisher approved the spin-off of Eastman Chemical Company and the sale of most healthcare businesses (other than medical imaging), including the Sterling Winthrop pharmaceutical company.

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

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.[3] 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 them onto their computers, edited them, and 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, during the 1990s digital technology would make only selective incursions of into traditional photographic imaging. For example, by 2000 digital cameras had achieved limited market penetration; the vast majority of photographic images were still captured on traditional film.

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 offered inferior resolution compared with conventional photography). However, digital imaging offered immediate potential for image manipulation and transmission.

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.

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 hybrid approach was also evident in introducing digital enhancement of conventional film. In 1996, Kodak launched its Advantix advanced photo system that allowed both chemical film images and electronic data to be stored on a single film. The new standard failed to establish itself securely in the market.

Despite the inferior resolution of digital cameras, Fisher recognized their potential and pushed Kodak to establish itself in this highly competitive market. Kodak's digital cameras addressed 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.

For digital camera users, Kodak was quick to recognize the potential of the internet for allowing consumers to transmit and store their photographs and order prints. 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 website 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.

Distinct Strategies for Consumer and Commercial Markets

Fisher advocated different approaches to consumer and commercial markets. Kodak's incremental strategy – providing a pathway for customers from traditional to digital photography – was most evident in the consumer market, where Kodak could exploit its brand and distribution strengths.

> *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 workstations 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.*[4]

It was in the commercial and professional markets 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; publishers and printers needed digital imaging to complement the new generation of computerized publishing and printing systems for newspapers and magazines. For commercial applications ranging from journalism to highway safety to real estate, digital imaging provided the linkage to the internet and sophisticated IT management systems. In professional photography, the huge price premium of professional over consumer products encouraged Kodak to focus R&D on these leading-edge users in the anticipation of trickle-down to the consumer market. Most manufacturers – including Kodak – maintained clearly differentiated product ranges 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 sought leadership in digital systems for medical diagnostic imaging, commercial printing, and document management systems for large organizations. For example:

- In the medical field, Kodak's Ektascan Imagelink system – which enabled medical images to be converted into digital images that could be transmitted via phone between hospitals – was launched in 1995 followed by its Ektascan

medical laser printer 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 on both laser imaging and digital radiography.

- 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 Heidelberg, which developed and supplied a range of high-end color and black-and-white printing machines.
- In moving pictures, Kodak offered services for digitizing conventional movie films, digital formats for cinema and TV film, and systems for generating visual effects.

Alliances

In its traditional photographic business, Kodak strategy was one of vertical integration: it had sought to dominate the photographic value chain from image capture through to the processing of customers' photographic film. In digital imaging such dominance was inconceivable: the digital imaging field was already heavily populated – with some firms holding dominant positions. In digital cameras, Kodak was just one among more than 20 suppliers. In computers and printers, there was Dell, Compaq, Toshiba, HP, and Canon. In software, Microsoft dominated operating systems and browsers while Adobe Systems dominated image formatting software. Willy Shih, head of Kodak's digital imaging products from 1997 to 2003, observed: "We have to pick where we add value and commoditize where we can't."[5] The difficult decision was identifying the activities and product areas where it could add value, and those that were best left to other companies.

Fisher recognized that for Kodak to become a key player in digital imaging, it would need to partner with companies that were already leaders in digital technologies and hardware and software products. Under Fisher's leadership, Kodak forged a web of joint ventures and strategic alliances. In addition to the already mentioned alliances with Canon, AOL, and Heidelberg, Kodak's alliances included:

- Intel Corporation: development and co-marketing of Picture CD; development of digital image storage media; and development of an ASP system for archiving and downloading medical images on a pay-per-use basis.
- Hewlett-Packard: a primary source of inkjet technology for Kodak, Phogenix Imaging was a joint venture between Kodak and HP to develop high-quality inkjet solutions for micro and mini photo-finishing labs utilizing Kodak's DLS software.[6]

- Microsoft: cooperation to establish standards for Windows-based Picture Transfer Protocols and cooperation in the development of Photo-CDs and development of FlashPix image storage for digital cameras (also with HP).
- Olympus: sharing digital camera technology; developing common standards for web-based storage and printing of photographs (each company had over one thousand patents relating to digital cameras and digital photographic systems).
- Sanyo Electric Co.: joint development of color, active matrix organic electroluminescent (OLED) displays.

The Digital Transfomation Gathers Pace: Dan Carp, 2000–2004

Daniel A. Carp succeeded George Fisher as CEO on January 1, 2000. Unlike Fisher, Carp was a Kodak veteran – he started at Kodak in 1970 as a statistical analyst. As chief executive, his approach was to develop and refine the strategic direction established by Fisher. His key priority was to provide greater focus for Kodak's efforts in terms of specifying areas of business together with products and services where Kodak would build market leadership. To this end he articulated the following vision for Kodak:

Kodak will be the brand and market share leader for:

- *Consumers who take, share, album and print their life experiences in pictures;*
- *Commercial customers who use integrated imaging systems to communicate and educate;*
- *Healthcare professionals who manage, diagnose, and treat patients using image-centric technologies.*[7]

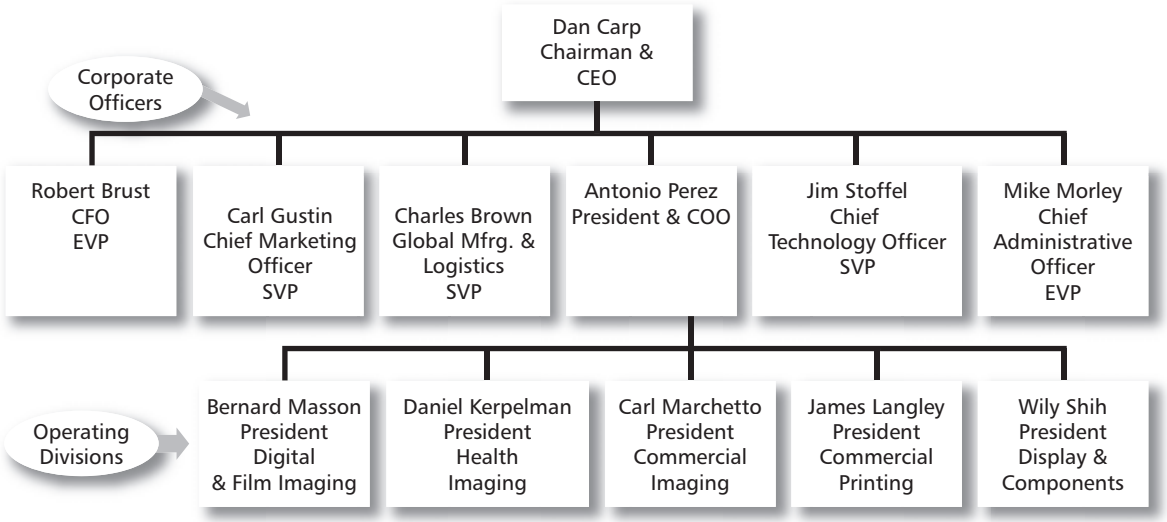
Carp's emphasis on developing products and services for specific customer groups was reflected in Kodak's organizational structure (see figure 7.1).

The Consumer Market

In the consumer market, Carp believed that Kodak should establish a market position in digital imaging that was similar to its positioning within traditional imaging: Kodak should be the mass-market leader providing security and reliability for customers bewildered by the pace of technological change. This required Kodak to maintain its strategy of providing a transition path for customers seeking to migrate from traditional to digital imaging. Thus, Kodak would offer an array of services that would allow consumers to digitize conventional photographs, edit digitized images, and obtain printed photographs in a variety of formats.

Mass-market leadership also required that Kodak provided the fully integrated set of products and services needed for digital photography. The essential characteristic of the Kodak system would be ease of use. "For Kodak, digital photography is all about ease of use and helping people get prints – in other words, getting the same experience they're used to from their film cameras," said Martin Coyne, head of Kodak's Photographic Group, at the 2002 Kodak Media Forum. He supported his argument with data showing that while 90% of consumers were satisfied with the

FIGURE 7.1 Kodak's organizational structure, February 2004



pictures obtained from traditional photography, for digital photography the numbers were only between 50 and 70%.[8] A systems approach rather than a product approach was based on the recognition that most consumers had neither the time nor the patience for reading instructions and integrating different devices and software. Kodak believed that its integrated system approach would have particular appeal to women – who comprised the major part of the consumer market.

The result was Kodak's EasyShare system, launched in 2001. According to Willy Shih, head of digital and applied imaging, EasyShare's intention was to:

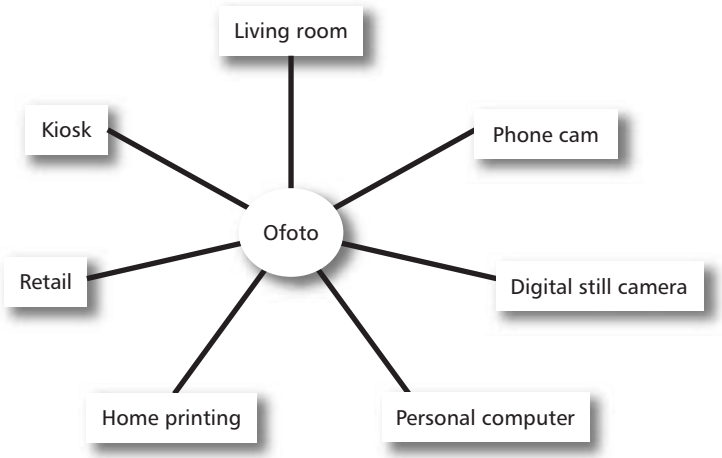
> *. . . provide consumers with the first easy-to-use digital photography experience. . . . Digital photography is more than just about digital cameras. This is just the first step. . . . People need to get their pictures to their PCs and then want to share by printing or e-mail. So we developed a system that made the full experience as easy as possible.*[9]

The result would be a digital system within which consumers could take digital pictures (or have conventional photographs digitized) and could print their digital images at home, at kiosks, at retail outlets, or through an online processing service (see figure 7.2).

By 2003, most of the main elements of the EasyShare system were in place.

- Kodak had a broad range of EasyShare digital cameras.
- EasyShare camera docks allowed the transfer of digital images from camera to PC at the touch of a button.
- EasyShare software allowed the downloading, organization, editing, and emailing of images, as well as ordering online prints. EasyShare software was bundled with Kodak's cameras as well as being available for downloading for free from Kodak's website.
- EasyShare printer docks enabled photographic prints to be made direct from the camera without the need for downloading to a PC.

FIGURE 7.2 Kodak's EasyShare Network: "Enabling the picture experience anytime, anywhere: at home, at retail, or on the road"



SOURCE: BASED ON EASTMAN KODAK COMPANY, *4TH QUARTER 2003 REPORT AND 2004 OUTLOOK*, JANUARY 22, 2004.

The EasyShare initiative required Kodak to build a stronger position in three highly competitive areas where it lacked a strong market position initially:

- *Digital cameras*. Casio had been the early leader, with over half the world market during the early 1990s. By 1998, 45 companies were offering digital cameras. Suppliers including long-established camera manufacturers (Canon, Kodak, Fuji, Olympus), electronics companies (Casio, HP), and – most recently – manufacturers of wireless handsets (Nokia, Motorola, Samsung, and others). When Kodak entered the digital camera business, it was already weak in conventional cameras and lacked the electronic imaging capabilities of Canon, Sony, and HP. Its EasyShare range resulted in substantial market share gains – by the fourth quarter of 2003, it was among the top three market leaders in the US, western Europe, and China. (See table 7.1 for market share data.)

TABLE 7.1 Brand shares of the world market for digital still cameras (by units)

Brand	2003	2002	2001	2000
Sony	18%	20%	25%	26%
Canon	16%	14%	10%	9%
Olympus	13%	16%	11%	18%
Kodak	12%	10%	14%	11%
Hewlett-Packard	n.a.	3%	8%	7%
Fuji Film	10%	15%	14%	12%
Total units sold	48m	28m	17m	n.a.

SOURCE: COMPILED FROM DIFFERENT NEWSPAPER ARTICLES.

- *Printers*. Like digital cameras, printers were a brutally competitive market where, in 2000, Kodak had a strong position in commercial and medical printers (using thermal, inkjet, and laser technologies) but almost no presence in the consumer market. The appointment of Antonio Perez as President and COO in 2003 reinforced Kodak's push into printers: Perez was formerly the head of HP's Consumer Business. He argued: "If a company wants to be a leader in digital imaging, it necessarily has to participate in digital output."[10] In the consumer market Kodak focused on special purpose printers for producing photographic images. Initially, Kodak sourced inkjet printers from Lexmark. The 2003 EasyShare dock printer represented a major step forward for Kodak: a combined printer and camera dock that offered "one touch simple" thermal-dye printing either with a PC or direct from the camera. In 2002, Kodak acquired Scitex, a leader in continuous-flow inkjet printing, to augment its capabilities in variable data digital printing.
- *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 picture editing and formatting software, where Adobe's Photoshop dominated the market. Kodak's main strengths were in its color management software and its DLS System Management and Enhanced Services Software for managing retail processing and printing operations. In 2003 – despite Adobe Systems' domination of the market for image display, formatting, and editing with its Photoshop and Acrobat products – Kodak released its EasyShare software. Adobe quickly followed with Photoshop Album – a $49 derivative of its Photoshop software.
- *Photographic paper*. To complete its home printing system, Kodak offered a number of technical advances in inkjet printing paper designed to place it ahead of the competition. Most significant was its Colorlast technology designed to preserve the fidelity and vibrancy of photographic prints for a hundred years or more.

Kodak's EasyShare system provided an integrated digital photography home-based solution for the consumer market. However, the key market advantage over rival systems would come from Kodak's linking of its hardware and software products to the capabilities offered by its retail network and online presence. Under Carp and Perez, Kodak invested heavily in both of these networks:

- *Kodak's retail-based processing*. By the beginning of 2004, Kodak was the clear leader in self-service digital printing kiosks, with 24,000 installed Kodak Picture Makers in the US and over 55,000 worldwide. The kiosks offered consumers a number of scanning, editing, and printing services, with particular emphasis on the scanning of conventional photographic images. During 2004, Kodak began installing its G3 Picture Maker kiosk, which had the ability to print pictures in as little as five seconds.
- *Kodak's online digital imaging services*. The internet was central to Kodak's strategy for the consumer market. According to Willy Shih: "the next Killer app. . . . is when photography meets the network effect. Or, in other words,

when the internet is coupled with digital photography." In 2001, Kodak increased its presence in online photographic processing by acquiring Ofoto, the leading online photographic company. In addition to offering online processing, whereby consumers emailed their digital images and received their photographic prints by mail, Ofoto allowed members to build online albums through which family and friends could view and order prints for themselves. Kodak's press release stated: "Ofoto will serve as a critical connection between Kodak's film scanning and uploading services and Kodak's output capabilities through labs operated by its Qualex Inc. subsidiary. These capabilities will give customers and consumers unlimited flexibility in storing, sharing, enhancing and printing pictures." In 2002, several online providers of photographic services exited the market – leaving Shutterfly, Snapfish, Wal-Mart, and Fuji as Kodak's main rivals. Kodak also sought a leading position in "mobile photography" – the use of cell phone cameras to capture and transmit images. Kodak partnered with Cingular, Nokia, and AT&T to launch its Kodak Mobile Service, which allowed users to store and organize pictures and phone-captured video in one location and order prints.

The Commercial Sector

In the commercial sector, Carp's approach was to focus on a few markets that were both attractive and where Kodak's distinctive capabilities gave it a competitive edge. By 2004, Kodak's commercial business was organized around three divisions:

- *Health Imaging*. This was viewed as an especially attractive segment by Carp on the basis of the margins available and Kodak's potential to carve out a strong niche in medical imaging products using both chemical and digital technologies. In 2000 alone, 45 new health imaging products were introduced, including digital radiography systems and a new dental radiography film. It also acquired Lumisys, a provider of desktop radiography systems, and PracticeWorks, a producer of dental practice management software.
- *Commercial Imaging*. Kodak's strength in commercial imaging has been built around its leadership in certain types of hardware (notably, high-speed scanners), its ability to supply integrated document management systems (allowing images of paper-based documents to be created, archived, referenced, and retrieved), and its relationships with customers (both commercial and public sector).
- *Commercial Printing*. Under Dan Carp, Kodak had built up a strong presence in several parts of the commercial printing business – chiefly through joint ventures and acquisitions. These included: (a) Polychrome Graphics (a JV with Sun Chemical), which produces offset printing plates and proofing equipment; (b) NexPress (a JV with Heidelberg[11]), which makes high-end digital printers; (c) the production of inkjet printers by Encad (a producer of wide-format inkjet printers) and Versamark (previously Scitex Digital Printing), which makes high-speed, narrow-format inkjet printers. Commercial printing products were focused on specific market segments, notably short-run "on-demand" printing and "transactional printing" (e.g. bills, statements, checks, and invoices). Government sales were an important component of commercial printing revenues. Commercial printing was seen

as an important market opportunity for Kodak: the shift to digital printing was creating serious disruption and Kodak was able to offer a comprehensive range of hardware, consumables, and customer support.

In both consumer and commercial segments, a key element of Kodak's strategy was the use of acquisitions to reinforce Kodak's position in certain markets, extend its range of products and services into new markets, and build Kodak's technical capabilities. Table 7.2 shows Kodak's major acquisitions under CEOs Fisher and Carp.

TABLE 7.2 Kodak's major acquisitions, 1993–2004

1994	Qualex, Inc.	Provider of photo-finishing services. Became key link in Kodak's on-line photofinishing service
1997	Wang Laboratories	Acquisition of Wang's software unit
1998	PictureVision, Inc.	Provider of PhotoNet online digital imaging services and retail solutions; this service integrated within Kodak's Picture Network business
	Shantou Era Photo Material, Xiamen Fuda Photographic Materials	Kodak strengthens its position in the photographic film market in China
1999	Imation	Kodak acquires Imation's medical imaging business
2000	Lumisys, Inc.,	Leading provider of desktop computed radiography systems and x-ray film digitizers
2001	Bell & Howell	Imaging businesses only acquired
	Ofoto, Inc.	Leading online photography service
	Encad, Inc.	Wide-format commercial inkjet printers
2003	Practiceworks	Digital dental imaging and dental practice management software
	Lucky Film Co., Ltd,	20% of the largest maker of photo film headquartered in China
	Laser-Pacific Media Corporation	A provider of post-production services for filmmakers
	Algotec Systems Ltd	Developer of picture archiving and communications
	Applied Science Fiction	Digital PIC rapid film processing technology
2004	NexPress	Acquired Heidelberg's half-share of this joint venture which supplied high-end, on-demand color printing systems and black-and-white variable-data printing systems
	Scitex Digital Printing	A leader in high-speed variable data inkjet printing (renamed Kodak Versamark, Inc.)
	Chinon Industries	Kodak purchases outstanding shares
	National Semiconductor	Kodak acquires National's imaging sensor business

SOURCE: EASTMAN KODAK 10-K REPORTS.

Kodak's Resources and Capabilities

Building a competitive advantage in digital imaging, Carp realized, would require, first, that Kodak's strategy was firmly based on its existing resource and capability strengths and, second, that Kodak quickly put in place the resources and capabilities necessary to success that it did not already possess. The central problem was that the resources and capabilities that were the foundation of Kodak's dominance of traditional photography were very different from those required by digital imaging. In digital imaging, Kodak was but one of many companies that had been drawn to the emerging sector 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 presented to photographic film. Canon, Olympus, and Minolta had entered from their positions in cameras. Casio, Ricoh, and Hewlett-Packard entered from office electronics and printing, while Sony came out of consumer electronics. All these companies possessed different sets of resources and capabilities, with strengths and weaknesses in different areas. In reviewing Kodak's Competitive position, Carp focused on the following resources and capabilities.

Brand and Distribution

Foremost among Kodak's resource strengths were its brand equity and distribution presence. After almost a century of global leadership in the photographic industry, Kodak possessed brand recognition and worldwide distribution reach that was unrivaled in the photographic industry. Kodak could bring new products to consumers' attention and support these products with one of the world's best-known and most widely respected brand names, giving the company 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 photo-finishers.

To what extent would Kodak's distribution and brand strengths continue to be a source of competitive advantage in digital imaging? Kodak's retail network was a depreciating asset as consumers' own home-based computer, email, and print capabilities increased. The brand, according to Chief Marketing Officer Carl Gustin, would continue to be Kodak's most valuable asset: "I have always said our brand is almost bulletproof when it comes to images, to memories, to trust, reliability, family values, and more." In studies of digital imaging products, Kodak's brand had ranked either No. 1 or No. 2 in recent years. However, the huge changes in the market might necessitate changes in Kodak's brand strategy. As Gustin remarked: "Does the Kodak name go everywhere, or is a variance of the Kodak name required? Does the name need some tagline? Multiple taglines? Does it mean the same in the commercial and services sector as it does in the consumer sector? That's all being investigated."[12] 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, Dan Carp 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 supply provided a greater barrier to consumer electronics companies and high-tech upstarts.

Technology

In technology, Kodak came to digital imaging with some well-established strengths. Its huge R&D investments in 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 PhDs. In 2003, Kodak filed more than 900 patent applications and received 748 US patents, an increase of 11% over 2002. Table 7.3 identifies some of Kodak's principal areas of technological strength.

Moreover, its century of innovation and development of photographic images gave Kodak insight and intuition regarding the recording and processing of images and the development patterns of imaging technologies that transcended specific imaging technologies. Central to Kodak's imaging capability was its color management capability. As *Business Week* observed more than a decade earlier 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."[13] Kodak used the term "color science" to refer to the production, control, measurement, specification, and visual perception of color; this included "colorimetry" – the measurement of color characteristics.

Kodak's technological capabilities meant that it was positioned at each of the principal stages in the digital imaging value chain – even though, at most of these stages, it was not a clear market leader (see figure 7.3).

At the image-output level, Kodak believed that consumers would continue to demand printed photographs. In print media, particularly specialty coated papers, Kodak was world leader. During 2000–3, Kodak introduced a number of new inkjet papers embodying new technologies.

New Product Development

Despite Kodak's strengths in basic and applied research and its long history of successful new product launches, Carp was acutely aware of the criticisms that had been leveled at Kodak for its weaknesses in bringing new products to market: Kodak was too slow and its marketers had little understanding of the digital world.

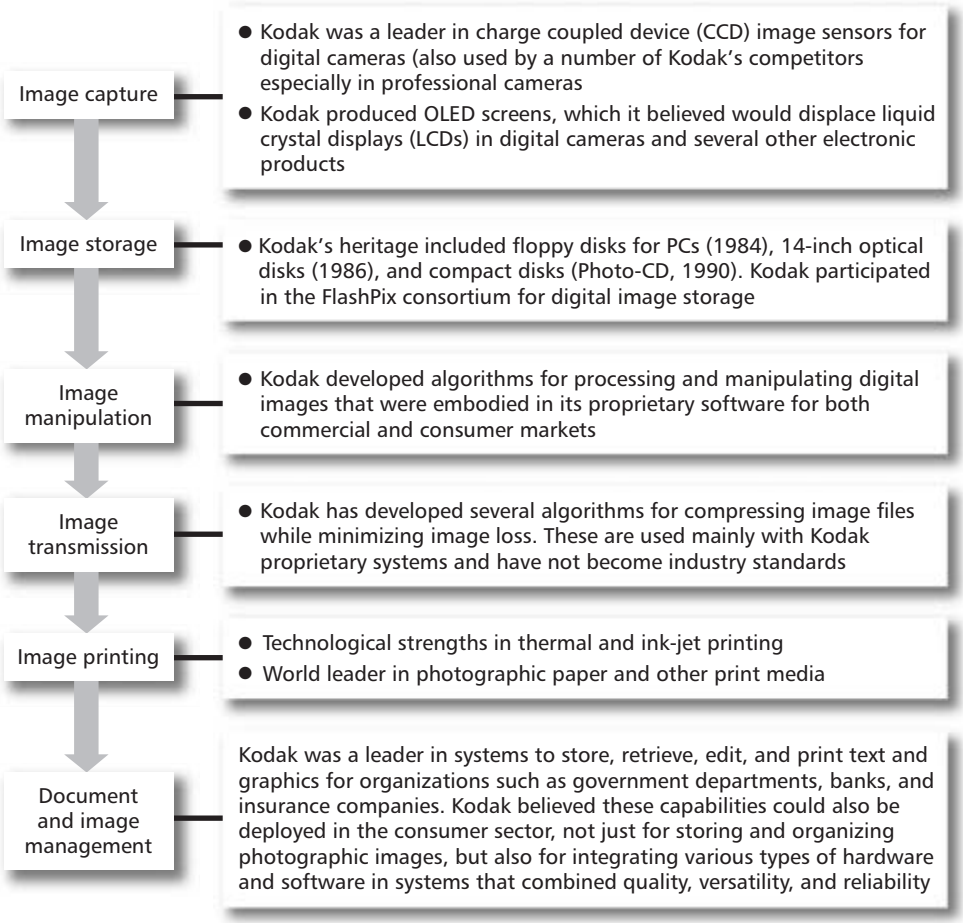
Kodak's product development process still reflected the company's origins in chemistry. Product development traditionally began with basic research where innovations were exploited through a long and meticulous product development process before being rolled out onto the world market. One of George Fisher's 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

TABLE 7.3 Kodak's technical capabilities

Area of technology	Kodak capabilities
Color science	Kodak is a leader in the production, control, measurement, specification, and visual perception of color. Essential to predicting the performance of image-capture devices and imaging systems. Kodak has pioneered colorimetry – measuring and quantifying visual response to a stimulus of light
Image processing	Includes technologies to control image sharpness, noise, and color reproduction. It is used to maximize the information content of images and to compress data for economical storage and rapid transmission. Kodak is a leader in image processing algorithms for automatic color balancing, object and text recognition, and image enhancement and manipulation. These are especially important in digital photo-finishing for image enhancement, including adjustments for scene reflectance, lighting conditions, sharpness, and a host of other conditions
Systems analysis	Provides techniques to measure the characteristics of imaging systems and components. Predictive system modeling is especially important in Kodak's new product development, where it can predict the impact of individual components on the performance the entire system
Sensors	Kodak is a world leader in image sensor technology, with 30 years' experience in the design and manufacture of electronic image sensors, including both CCD and CMOS image sensors that serve both high-volume and specialty imaging markets, ranging from satellite and medical imaging to digital cameras, camera phones, and machine vision products
Printing technologies	
Ink technology	Kodak leads in technical understanding of dyes and pigments. It has pioneered *micro-milling technology* (that it originally invented for drug delivery systems). It has advanced knowledge of *humectants* (which keep printhead nozzles from clogging) and *surface tension and viscosity modifiers* (which control ink flows)
Microfluidics	Microfluidics – the study of miniature devices that handle very small quantities of liquids is relevant to film coating, fluid mixing, chemical sensing, and liquid inkjet printing
Print media	Kodak has unrivalled know-how in applying polymer science and chemical engineering to the materials that receive ink: paper, glass, fabric. Key strengths include *specially constructed inkjet media* in which layers of organic and/or inorganic polymers are coated onto paper or clear film and *multi-layer coated structures* of hydrogels, inorganic oxides, and similar substances
Electronic display technology	Kodak pioneered *organic light-emitting diode* (OLED) technology, which allows flat panel displays to be self-luminous
Software	Kodak supplies software for image manipulation and printer control. It has particular strengths in control software and printing algorithms that can overcome many of the technical limitations of inkjet printing and optimize color and tone reproduction (e.g. the Kodak One Touch Printing System)

SOURCE: WWW.KODAK.COM

FIGURE 7.3 Kodak's technological position within the digital imaging chain



Motorola – greater decentralization of new product development and the use of cross-functional development teams to accelerate cycle times. Speed also required collaboration to access the technologies and capabilities of outside companies. Kodak had no problem in establishing collaborative agreements with other companies – its size, brand name, and technological strength were 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 new-found alliances fruitful. Kodak's track record of alliances and joint ventures was mixed. Its Phogenix joint venture with HP to develop digital minilabs for film and image processes was dissolved in May 2003 after three years.

Under Dan Carp, Kodak has greatly increased the flow of new digital imaging products to the markets. To enhance Kodak's ability to develop successful new products, Carp continued Fisher's strategy of hiring senior executives from leading-edge IT companies. Table 7.4 shows the backgrounds of Kodak's senior executives. In addition, Carp increased the pace of Kodak's acquisitions of companies that could fill key gaps in its own know-how. Despite these positive developments, there were lingering

TABLE 7.4 Eastman Kodak's senior management team, March 2004

Name	Position	Joined Kodak	Prior company experience
Corporate Officers			
Daniel Carp	Chairman & CEO	1970	Kodak veteran
Antonio Perez	President & COO	2003	CEO, HP Inkjet Imaging
Robert Brust	Chief Financial Officer	2000	Unisys, General Electric
Michael Morley	Chief Admin. Officer	1964	Kodak veteran
Gary Graafeiland	General Counsel	1979	Kodak veteran
Charles Brown	Director, Global Manufacturing & Logistics	1973	Kodak veteran
Carl Gustin, Jr.	Chief Marketing Officer	1994	DEC, Apple Computer
Henri Petit	Director, International	1975	Kodak veteran
James Stoffel	Chief Technology Officer	1997	Xerox
William Lloyd	Director, Inkjet Systems	2003	Inwit, Gemplus, HP
Daniel Meek	Director, Operating System	1973	Kodak veteran
Kim VanGelder	Chief Information Officer	1984	Kodak veteran
Divisional Presidents			
Bernard Masson	Digital & Film Imaging	2002	Lexmark
Daniel Kerpelman	Health Imaging	2002	GE Medical Systems
Carl Marchetto	Commercial Imaging	1996	Lockheed Martin
James Langley	Commercial Printing	2003	HP
Willy Shih	Display & Components	1997	Silicon Graphics

SOURCE: EASTMAN KODAK ANNUAL REPORT, 2003; WWW.KODAK.COM

doubts as to whether a former monopolist of the photographic industry, with its activities heavily concentrated on Rochester, New York, could ever adapt to the fast-cycle product development practices of Silicon Valley.

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 contrast even to some of its large and well-established rivals, Kodak had the security of cash flows from its traditional photographic business.

By the beginning of 2004, Eastman Kodak remained a financially strong company, but it was no longer the financial powerhouse of yesteryear. Since the late 1990s, debt had risen considerably, and retiree healthcare benefits represented a substantial long-term liability. Meanwhile, profitability declined substantially between 2000 and 2003 – both because of the deterioration of the core photography business and because of the restructuring charges that were becoming a regular feature of Kodak's income statement. As a result, some analysts doubted Kodak's ability to finance its "digital growth strategy," which involved investing some $3 billion in capital expenditures and acquisitions during 2004–6. Tables 7.5 and 7.6 summarize Kodak's recent financial results.

TABLE 7.5 Eastman Kodak: selected financial data, 1997–2003 ($ million)

	1997	1998	1999	2000	2001	2002	2003
From income statement							
Sales	14,713	13,406	14,089	13,994	13,234	12,835	13,317
Costs:							
Cost of goods sold	7,979	7,293	7,987	8,019	8,670	8,225	9,033
Selling, general, and admin.	3,912	3,303	3,295	2,977	2,627	2,530	2,648
R&D costs	1,044	922	817	784	779	762	781
Operating earnings	1,778	1,888	1,990	2,214	345	793	238
Interest expense	98	110	142	178	219	173	148
Other income (charges)	(1,441)	328	261	96	(18)	101	51
Restructuring and other costs	1,441	–	350	(44)	659	98	484
Provision for income taxes	48	716	717	725	32	153	(66)
Net earnings	5	1,390	1,392	1,407	76	770	265
From balance sheet							
Total current assets	5,475	–	5,373	5,491	4,683	4,534	5,455
Including:							
Cash and cash equivalents	728	–	20	246	448	569	1,250
Receivables	2,271	–	2,537	2,653	2,337	2,234	2,389
Inventories	1,252	–	1,519	1,718	1,137	1,062	1,075
Property, plant, and equipment	5,509	–	6,189	5,919	5,659	5,420	5,094
Other noncurrent assets	1,231	–	1,801	1,767	2,072	3,540	4,269
Total assets	13,145	–	14,370	14,212	13,362	13,494	14,818
Total current liabilities	5,177	–	3,832	3,275	5,354	5,502	5,307
Including:							
Payables	3,832	–	1,163	3,403	3,276	3,351	3,707
Short-term borrowings	611	–	612	2,058	1,378	1,442	946
Other liabilities:							
Long-term borrowings	585	–	936	1,166	1,666	1,164	2,302
Post employment liabilities	3,075	–	2,776	2,610	2,728	3,412	3,344
Other long-term liabilities	1,019	–	859	671	720	639	601
Total liabilities	9,984	–	10,458	10,784	10,468	10,717	11,554
Shareholders' equity	3,161	–	3,912	3,428	2,894	2,777	3,264
Total liabilities (& equity)	13,145	–	14,370	14,212	13,362	13,494	14,818
From cash flow statement							
Cash flows from operating activities:							
Earnings from continuing operations	5	1,390	1,392	1,407	76	770	265
Adjustments for non-cash items	2,075	93	541	(425)	1,989	1,448	1,361
Net cash provided by operating activities	2,080	1,483	1,933	982	2,065	2,204	1,645
Cash flows from investing activities:							
Additions to properties	(1,485)	(1,108)	(1,127)	(945)	(743)	(577)	(506)
Proceeds from sale of businesses/assets	(85)	238	422	277	0	27	26
Acquisitions, net of cash acquired	(341)	(949)	(3)	(130)	(306)	(72)	(679)
Net cash used in investing activities	(1,896)	(1,839)	(685)	(783)	(1,074)	(758)	(1,267)
Net cash flows from financing activities	(1,198)	77	(1,327)	(314)	(804)	(1,331)	270
Number of employees (thousands)	97.5	86.5	80.7	78.1	75.1	70.0	63.9

SOURCE: EASTMAN KODAK ANNUAL REPORTS.

TABLE 7.6 Eastman Kodak: results by business segments, 1999–2003 ($ millions)

	1999	2000	2001	2002	2003
Net sales:					
Photography	10,265	10,231	9,403	9,002	9,232
Health Imaging	2,159	2,220	2,262	2,274	2,431
Commercial Imaging	1,479	1,417	1,454	1,456	1,559
All other	186	126	110	103	95
Consolidated total	14,089	13,994	13,229	12,835	13,317
Earnings from operations:					
Photography	1,709	1,430	787	771	418
Health Imaging	483	518	323	431	481
Commercial Imaging	257	233	172	192	166
All other	(109)	(11)	(60)	(28)	(78)
Total of segments	2,340	2,170	1,222	1,366	987
Net earnings:					
Photography	1,261	1,034	535	550	347
Health Imaging	324	356	221	313	382
Commercial Imaging	178	90	84	83	99
All other	(61)	(2)	(38)	(23)	(73)
Total of segments	1,702	1,478	802	923	755
Total assets:*					
Photography	6,875	7,100	9,225	8,798	8,905
Health Imaging	1,229	1,491	2,038	2,011	2,600
Commercial Imaging	963	1,045	1,438	1,405	1,396
All other	(123)	(92)	(16)	66	10
Total of segments	8,944	9,544	12,715	12,280	12,911

*Net operating assets for 1999 and 2000.

Looking Forward

As he reviewed Kodak's results for 2003 and plans for 2004, Dan Carp felt that after ten years of struggle, Kodak's digital strategy was coming together and beginning to yield fruit.

In the medical and commercial sectors, the company had strong, profitable positions in several markets where Kodak possessed particular technical strengths and strong customer relationships. However, it was in the consumer photographic sector that Carp felt that Kodak had made particularly significant progress under his leadership. Kodak was finally a full-system supplier – it was positioned at every stage in the digital imaging chain and under its EasyShare brand was communicating its system capabilities to consumers. Particularly important was Kodak's ability to serve the needs of several types of customer. Through its retail network it provided digital scanning, enhancement, and storage facilities to consumers who took pictures with conventional film. For consumers with digital cameras, it offered editing and printing services both through retail kiosks and on-line. And, with its EasyShare printers, it

allowed customers the independence to pursue digital photography without using any of Kodak's retail services. In addition, Kodak had established strongholds in a number of key technologies, from sensors and flat screens to inks and specialty papers and – most impressive – Kodak had established itself as a leading supplier of digital cameras.

Despite this progress, the financial outlook remained troubling. Carp realized that the 2004–6 period would be critical for Kodak – especially in the consumer sector. Carp's excitement at gaining US market leadership in digital cameras was tempered by the realization that Kodak lost money on every one. The situation was much the same throughout the consumer market for digital photography: competition was brutal and margins either thin or non-existent. Kodak's most direct competitor was Fuji Film. While Kodak had experienced stagnant revenues for the past four years, Fuji had grown rapidly and had achieved much higher operating earnings than Kodak.[14] Fuji was strongly positioned across a broad range of the technologies relevant to the new world of digital imaging: digital image-processing software, nano-technology, pigmentation technology, CCD technology, lenses, and lasers. Its "Vision 75" strategy (culminating in Fuji's 75th anniversary in 2007) planned for heavy investment and rapid sales growth. Many of the targeted markets were precisely the same as those where Kodak was also focusing: digital cameras, flat panel displays, print-on-demand digital commercial printing, digital minilabs, and the Chinese market.

Apart from Fuji, a number of other competitors – well established in the electronics industry – were growing their presence in digital imaging: Hewlett-Packard, Sony, and Canon, to mention a few. Given the tendency for most of the standards in the industry to be open rather than proprietary, it seemed likely that competition would continue to be aggressive, with no one company building a dominant position.

Meanwhile, the strategy of supporting investments in digital imaging with the cash flow from Kodak's traditional film business was threatened by the accelerating decline in sales of photographic film. Of particular concern was the likelihood that emerging markets where the demand for home photography was expected to grow rapidly – China in particular – might move directly to digital photography, missing out on film-based photography almost entirely.

Given this outlook, what were Kodak's prospects for gaining a satisfactory rate of return on its investments in digital imaging? This depended on whether Kodak's present digital strategy – especially its strategy of integrated digital solutions for the consumer market – was sound. Even it was, would Kodak win against so many powerful competitors? And, if it gained market leadership, would the profit returns justify the investments required? Given the pressure from activist shareholders, an alternative strategy might be for Kodak to abandon its ambitious attempt to position itself as a broad-line supplier of digital imaging solutions, and to focus on those product and markets where it had already established a strong market position and where margins were strong: the commercial and medical imaging markets and the supply of photo-finishing services and consumables such as paper and ink.

Notes

1 Lex, "Kodak Focuses on Digital Future," *Financial Times*, January 23, 2004.
2 Address to the Academy of Management, Boston, August 1997.
3 "Kodak's New Focus," *Business Week*, January 30, 1995, pp. 62–8.
4 Eastman Kodak Company, "Kodak leaders outline road ahead to get Kodak 'back on track'," Press Release, November 11, 1997.
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6 Eastman Kodak Company, "Kodak and HP joint venture to be named Phogenix Imaging," Press Release, August 1, 2000.
7 Kodak Strategy Review, September 2003.
8 Eastman Kodak Company, "The Big Picture: Kodak and Digital Photography," www.Kodak.com/US/en/corp/presscenter/presentations/020520mediaforum3.shtml
9 Ibid.
10 Interview with Antonio Perez, President and COO, Kodak, www.photomarketing.com/0204_PEREZ.htm
11 In March 2004, Kodak agreed to purchase Heidelberg's 50% share of NexPress, together with Heidelberg's digital black and white printing systems (see Annual Report for 2003, p. 17).
12 Interview with Carl Gustin, Chief Marketing Officer, Kodak, www.photomarketing.com/0204_Gustin.htm
13 "Kodak's New Focus," op. cit.
14 Fuji's ratio of operating income to sales was 11.0% in 2000, 10.8% in 2001, 7.0% in 2002, and 7.3% in 2003.