CASE III-7

R. R. Donnelley & Sons: The Digital Division

Artemis March

"My biggest worry," said Barbara (Barb) Schetter, vice president and general manager of R. R. Donnelley's Digital Division, "is that we don't become an orphan. We could build up the division and even meet our revenue numbers, yet still not be embraced by the rest of the organization." Indeed, by early June 1995, many group and division managers at the $4.9 billion printing giant had yet to sign on to the strategic potential of digital technology or accept the Digital Division as the most appropriate locale for the business. Some still saw digital printing as a technology in search of a market. Others had indicated that if they did decide to embrace digital printing, they might do so on their own.

These concerns were very much on the minds of Schetter and Mary Lee Schneider, the division's director of marketing, as they sat down for a meeting on June 7, 1995. In two weeks Schneider was scheduled to make a presentation to one of Donnelley's business groups, Book Publishing Services, which was deciding whether to move into digital technology on its own or to bring its digital work to the division. Schetter and Schneider were hoping to craft a plan that would convince the Books Group to come to them. But they were still struggling to find convincing arguments and the right set of incentives.

COMPANY AND INDUSTRY BACKGROUND

R. R. Donnelley & Sons was founded in 1864. By 1995, it had become the world's largest commercial printer, with 41,000 employees in 22 countries. A privately held, family-run, Chicago-based company for almost a century, Donnelley went public in 1956; the first outsider was named chairman 20 years later. Donnelley had begun printing telephone directories and the Montgomery Ward catalog in the late 1800s, and still generated 60 percent of its revenues from directories, catalogs, and magazines (see Exhibits 1 and 2). Its major customers were telephone operating companies, retail and direct-mail merchandisers, and publishers of books, magazines, and software. In 1995, the company was organized into 38 divisions; the divisions, in turn, were collected into eight business groups, which were part of three sectors.

Organization and Incentives

At Donnelley, manufacturing and sales were the core functions. Schneider observed:

> In this company, you either make it or you sell it. Our divisions are therefore organized around manufacturing assets [i.e., plants].[1] The trim size of the magazine, the binding requirements of the book—that's how we look at structure.

Highly autonomous, division managers were vice presidents who could choose the printing jobs they wanted to run and the equipment they wanted to buy. They sought the most profitable jobs because they were held accountable for operating profit, based on targets set during the budgeting process. Division P&Ls reflected plant revenues and costs, as well as allocations of corporate and selling expenses. Because most sales forces were aligned with business groups rather than divisions, each had a sales expense ratio that was applied to the work it sold into any plant.

Until 1991, division managers' incentive compensation was tied to their particular division's profit performance. This formula was subsequently changed in the oldest parts of the company, such as commercial printing, where the assets of individual divisions were similar and could be used for the same type of work. In these parts of the company, division-level incentives became groupwide in 1991, and sectorwide in 1993. As Jeff Majestic, financial director of the Information Services Group, explained:

> We couldn't move work around when each division wanted to maximize its own profitability. Now the division directors ask, "What is the most profitable way to run this job for Donnelley?" because they can make the best decision for the company without its affecting their incentive pay.

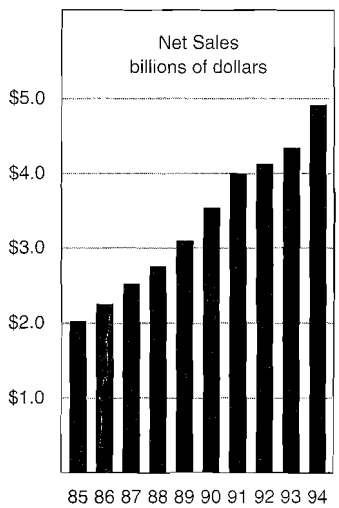
With few exceptions, division managers reported to business group presidents. Each business group contained several plants (divisions), as well as its own sales force and such staff functions as marketing and finance.

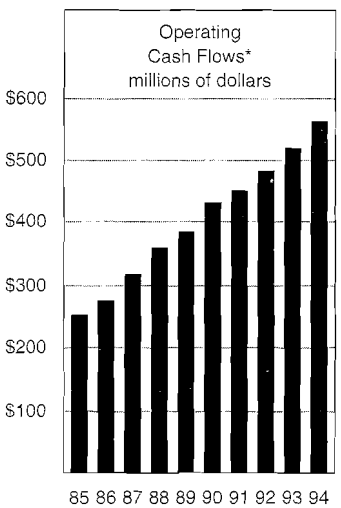
[1] Although the fit was not perfect, Donnelley employees used the terms *division, plant,* and *assets* interchangeably.

EXHIBIT 1 Financial Highlights

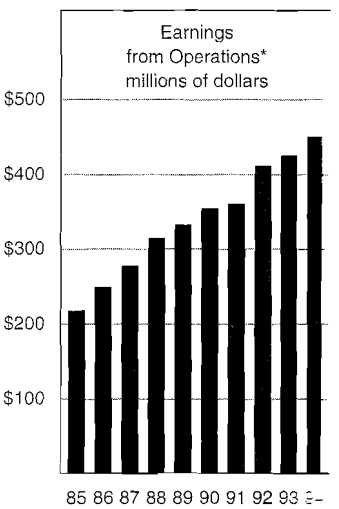
Thousands of Dollars (except per Share Data)	Year ending December 31 1994	1993
Operating performance:		
Net sales	$4,888,786	$4,387,761*
Earnings from operations	459,431	415,607*
Net income	268,603	245,920*
Operating cash flow**	582,066	520.724*
Per common share:		
Net income	$ 1.75	$ 1.59*
Dividends	0.60	0.54
Other selected financial data:		
Capital investments	$ 545,651	$ 484,255
Working capital	551,480	424,473
Total assets	4,452,143	3,654,026
Total debt to total capitalization ratio	38.6%	27.8%
Return on average equity	14.1%	13.3%*

*Excluding the effects of one-time items in 1993 for a restructuring charge, required accounting changes for postretirement benefits and income taxes, and the deferred income tax charge related to the increase in the federal statutory income tax rate.
**Operating cash flow represents net income from operations, excluding one-time items, plus depreciation and amortization.
Source: Annual report.





Net income excluding one-time items plus depreciation and amortization.



*Excluding one-time items.

Group P&Ls were therefore the aggregate of their plants' P&Ls, and business presidents' incentive compensation was tied to the profits and losses of those plants. According to one senior manager:

> This incentive system creates a tremendous bias for the business group presidents to deploy their sales forces to fill their assets. The sales force is an expense to its home group; you only benefit from it if they sell against your assets.

Salespeople worked solely on commission and were paid no matter what they sold or to whose assets the work was assigned. Technically, salespeople were free to sell work that was printed at any plant in the Donnelley system. But because sales managers' incentives, like those of business group presidents, were tied to the profitability of their particular group, there was considerable pressure to fill the home group's plants with profitable jobs

EXHIBIT 2 Sales and Customers by Business Category (% of Consolidated Sales).

Catalogs	**Magazines—18%**	**Books—13%**	**Metromail—5%**
Lands' End	TV Guide	Random House	Procter & Gamble
L. L. Bean	Family Circle	Simon & Schuster	First Card
Eddie Bauer	Time	Harcourt Brace	Mutual of Omaha
J. Crew	Glamour	HarperCollins	Whirlpool
	People	Bantam Doubleday	
31%	Reader's Digest		
Retailers	**Telephone Directories—12%**	**Financial—5%**	**Software/Hardware—16%**
Wal-Mart	Sprint	Merrill Lynch	Microsoft
JC Penney	Ameritech	Smith Barney	IBM
Kmart	Nynex	Paine Webber	WordPerfect
Service Merchandise	Bell Atlantic	Goldman Sachs	Quicken
Toys "R" Us	Southwestern Bell	Schwab & Co.	
	US West		

Source: R. R. Donnelley.

In a typical group, the salesforce sold 80–95 percent of its volume to its own plants.

In total, Donnelley's sales force numbered nearly 500 people. They were often described as the company's greatest strength, and sold primarily to print buyers, whose first consideration tended to be cost per page. Salespeople developed considerable knowledge about their customers, particularly on the operational side; they might become quite involved, for example, in helping a catalog customer reduce inventory and shorten cycle times. Most of Donnelley's upper management had come from sales, and many sales representatives did extremely well financially. CEO John Walter reportedly said that after being a sales representative, it took him six jobs to make equivalent money. Marketing, a recent innovation at Donnelley, for the most part supported the sales forces and focused on current customer needs, rather than creating long-term strategies.

Sectors were also a relatively recent addition to the organization. They were formed in 1993, when the president of Donnelley resigned. Instead of naming a successor, Walter clustered the business groups into three sectors: Commercial Print, Networked Services, and Information Resources. Each business group president reported to one of the three sector presidents, who were also executive vice presidents of the corporation. Together, Walter, the sector presidents, and key corporate staff formed Donnelley's management committee.

The Traditional Print Business

Donnelley's traditional businesses were geared to long printing runs on gravure and offset/web presses. These enormous machines, dubbed "heavy iron," required large capital investments. A typical offset press cost $12 million, and a gravure press cost considerably more. Offset presses used film and plates and were cost-effective for runs of 25,000 to 500,000, while gravure presses used etched copper cylinders and were employed for run lengths of 500,000 or more.

The company considered long-term relationships with customers to be the key to its commercial printing business. About 70 percent of this business was based on contracts of 3 to 10 years. Donnelley's strategy was to secure multiyear "enabling contracts," worth tens of millions of dollars, from select customers and to then build a plant specifically for each one, with equipment dedicated to its needs. Resource allocation likewise followed this opportunistic approach. While most people at the company viewed enabling contracts as the secret of the firm's success, others raised concerns. Allen Cubell, director of strategic planning for the Commercial Print Sector, noted: "You get an emergent strategy based on opportunities, as opposed to selecting the right opportunity based on a strategic assessment of alternatives."

The traditional print business was one of high fixed and low variable costs: the longer the run length on heavy iron, the lower the cost per page. Technology projects initiated by the corporate Technology Center and the divisions kept Donnelley's $3.7 billion asset base at the forefront of these traditional, electro-mechanical print technologies, while allowing some tailoring and customization. Majestic explained what customized binding equipment could do, using a Donnelley customer, the *Farm Journal,* as an example:

Subscribers to this magazine include farmers of all kinds, and our customer wants to target the variable portions of the magazine to each of their interests. At the same time, we want to save the customer money. We do that by mailing according to zip code—in fact, by carrier route. Our binding lines allow us to assemble different versions of the magazine according to subscribers' interests, and then have them come off the equipment in zip code sequence, all correctly addressed. In total, we do 66,000 versions of the *Farm Journal*!

Industry Shifts and New Technologies

Industry trends were moving increasingly toward such local, targeted communications, often called "mass customization." Long-time customers such as *TV Guide* wanted shorter runs, more versions, tailored inserts, and greater use of color. Newer customers like Microsoft put a premium on speed, simultaneous global distribution, and the ability to revise materials quickly. All customers faced sharply rising postal rates and paper prices, which, along with increased inventory, warehousing, and shipping costs, were creating incentives to develop alternative, electronic media and new channels of distribution.

Imaging technologies had been fairly stable since the development of offset/web printing in the 1960s, but major changes were underway, largely because of the rapid spread of office computing. Schetter noted: "Last year, for the first time more paper was produced on desktops than on web presses." Desktop publishing, which emerged on a large scale in the late 1980s, integrated many craft-based, front-end, editorial, and prepress operations, and triggered their migration away from traditional production sites in the publishing and printing industries. The economic impact was significant, as Schneider observed: "The craft side of the business that we made big money on—stripping, color correction, etching—has migrated to the hands of the document creator."

Filmless printing technologies, such as digital four-color and computer-to-plate, were expected to have an even more profound impact. By eliminating the demanding intermediate steps of converting to film, these technologies would significantly reduce cycle times and chemical pollution. Digital four-color printing went the furthest, eliminating plates altogether and printing directly from computer files. It allowed short run, four-color printing whose image was infinitely customizable, and could be delivered in variable quantities as often as desired. This capability, together with the low cost (approximately $200,000 in 1995) and small size of digital presses meant that they did not need to operate in a manufacturing environment but could be sited at distribution points anywhere in the world, even on customers' own premises. Rory Cowan, president of the Information Resources Sector and a staunch advocate of digital technology, summarized the likely impact: "Digital technology will atomize the printing industry the way the microprocessor did the computer industry." In 1995, digital growth was forecast at around 16 percent annually, while traditional printing was expected to grow by 3 percent.

Emerging Competition

In 1995, at least 55,000 printing companies operated worldwide. Most had fewer than 25 employees. Donnelley, with 6 percent of the $80 billion print market, was larger than its next nine rivals combined. Threats, however, were emerging from several directions, largely because of new technologies and new entrants to the business.

Online service providers and software packagers were making four-color images available electronically, at the same time that color printers were improving rapidly in quality and migrating to homes and small businesses. Smaller printing companies were building alliances among themselves and with firms that had high-capacity networks for transmitting files. For example, AT&T had recently forged a multiparty agreement in which Adobe Systems and Quark provided the software to compose documents directly on computers; Xerox provided the software to compress and decompress document files before and after transmission; and digital print manufacturers provided the hardware. Moore Graphics and EDS had announced similar plans. Pulled together, these offerings provided the infrastructure to support networks of local printing companies and link them with retail chains such as Sir Speedy. Schetter explained the implications: "Digital print is rapidly migrating to retail. With these alliances, a small printer can now look like a very large printer."

THE DIGITAL VISION

One Donnelley executive alert to these changes was Cowan, who over the years had championed a series of efforts, including the formation of the Digital Division, to focus the company's attention on the opportunities of digital technology. Cowan joined Donnelley in 1986, when the company he then owned, CSA press, was acquired by the printing giant. Ten years earlier, while still in business school, he had bought CSA from his father and grown it into a $20 million printer of documentation books and bundles for the software industry. In 1987, Cowan was

named senior vice president of sales for Documentation Services (soon renamed Global Software), Donnelley's first major nontraditional business group. Global Software served companies such as Microsoft, Apple, and IBM that needed to reproduce and distribute technical documentation in a variety of formats worldwide. By 1990, the business had quintupled in sales to several hundred million dollars, and Cowan was promoted to group vice president.

Throughout this period, Cowan attempted to build his new business in parallel with the old. Rather than directly challenging the traditional organization and values, he preferred, in his words, "to create a new business and have it drip on the culture." He viewed Donnelley as being "like IBM in 1983—PCs are coming in, but management has grown up in a mainframe world." Global Software therefore sought and developed a younger breed of managers, more of them women and all of them comfortable with computers. Epitomizing the breed was Janet Clarke, manager of the group's hardware sales force, who in 1985 had sought out IBM's PC division and made a crucial $50 million sale.

In 1991, Cowan was promoted again, and became Donnelley's sole executive vice president. He was effectively the number two person in the company, with responsibility for Global Software, Books, Financial, Information Services, and Metromail, as well as the corporate Technology Center. Meanwhile, he was becoming convinced that "value was leaving the book" and began exploring how Donnelley's traditional scale advantages could be preserved in a digital future.

A New Business Model

As Cowan saw it, digital presses were an essential enabling technology, but were unlikely, by themselves, to provide Donnelley with enduring competitive advantage. Instead, he believed that economies of scale would come from an information architecture that linked Donnelley with upstream "content owners" and downstream customers. Donnelley would become an electronic warehouse and distributor, with the critical ability to print on demand. In the early 1990s, Cowan began developing the broad outlines of a new business model based on these concepts, with distributed digital printing at its core.

In the new world, publishers would send data files of their manuscripts to Donnelley, where they would be retained in a database. When a bookstore needed copies of a particular book, it would contact Donnelley, and the files would be printed in the appropriate numbers, bound, and shipped; Donnelley would simultaneously send a check to the publisher for the necessary royalties. This process eliminated a range of costly steps, including warehousing and inventory, that represented roughly 60 percent of book publishers' costs. The approach also avoided the usual mismatching of demand and inventory. Because data files could be printed anywhere in the world—preferably in a print-on-demand (POD) site that Donnelley located near the final point of sale—end user stock could be replenished within 24 hours. To make the model work, Donnelley would need to develop and control four database systems: a transaction management system for triggering and managing the purchasing process, a system for royalty accounting and payment, an object-oriented database for managing the intellectual property, and a manufacturing database for directing the digital printing presses.

The underlying economics and selling process would be fundamentally different from traditional printing. Once the digitalized document was in the database, virtually no time or setup costs would be required to convert it to a final product in nearly any quantity. Cost per copy would thus be independent of run length, constant rather than declining. Costs would be higher than offset/web or gravure for long runs, but lower for short runs. Moreover, on-demand printing would have an enormous effect on customers' total system costs when warehousing, transportation, obsolescence, and throwaways were factored in. Total cycle time would be reduced by orders of magnitude—from 20 days to 2 or 3, and, if necessary, to a single day. Customization also offered the opportunity for more tailored marketing and better sales, so new selling approaches were likely to be needed.

For these reasons, Cowan suspected that a new division, dedicated to this approach, would be required, rather than simply spreading digital technology throughout the company. He recalled:

> I did not want to put two digital presses in every plant. They wouldn't see the light of day. They would be wonderful toys, but would be swallowed up if they were scattered.

Economic and Technical Validation

Between 1991 and 1993, Cowan began selling his vision within the firm, particularly to senior management. He established a venture capital fund to invest in new print-related technologies, and put a Donnelley executive on the board of each venture. And he asked the corporate Technology Center to research the capabilities and costs

of new imaging technologies, to determine Donnelley's potential competitive advantage in a "digital future." A small group of technologists were assigned the task. They soon dubbed themselves the Field of Dreams Team, after the movie that spawned the phrase "build it, and they will come."

The team began by establishing close contact with technology suppliers such as Xeikon, a Belgian manufacturer of digital presses that was partially funded by Cowan's venture capital fund. Team members provided direction for Xeikon's development work, as well as oversight and monitoring. When prototypes became available, they conducted over 200 beta tests, using data files solicited from Donnelley customers. These tests produced estimates of throughputs, machine stability, and the readiness of the technology for full-scale manufacturing. Costs were higher than expected: the presses were expensive, required skilled and dedicated operators, and used more toner than anticipated. Nonetheless, for run lengths of 2,000 or less, digital's per unit costs were lower than the costs of offset printing.

Traditionally, Donnelley's competitive advantage had come from the scale economies associated with heavy iron. Cowan asked the team to determine whether scale advantages existed in digital technology, based on investments in information architecture and databases rather than the manufacturing process itself. Surprisingly, team members found that, in addition to these economies, Donnelley's ability to negotiate volume discounts and its efficiencies in using sophisticated production control systems and multiple presses provided advantages even in manufacturing. As team member Grant Miller noted, "We found that scale is good, and that we could make money at digital printing."

As part of their ongoing work, the team made numerous presentations about the technology to Donnelley marketing staff and customers. Miller alone made presentations to more than 60 major customers. He recalled:

> Internally, people thought digital was a good idea, but no one wanted it because it was outside their core business. They all had some potential digital work, but didn't know enough about the markets and were scared of an unproven technology. Customers, on the other hand, almost jumped up and down, even though they too didn't know what to do with the new technology, or were themselves just starting to convert to digital format.

To improve the odds of successful adoption, Cowan sought to link the Technology Center's work more closely with Donnelley's businesses. In 1993, he asked Schetter, who was then running a Financial Services printing facility, to join the Tech Center and informally manage the emerging digital effort. The goal, Cowan indicated, was to find a home for digital within Donnelley, or at least to spark a major digital program. One early candidate for this role, the Magazines Group, shelved its digital initiative just prior to launch because the new sector president wanted the group to focus on long run, high volume markets instead. Shortly thereafter, Donnelley launched an ambitious reengineering effort, with important consequences for digital's development.

REENGINEERING THE TECHNOLOGY DEVELOPMENT PROCESS

Between January and April 1994, seven teams worked to reengineer the processes of the corporate center. One, headed by James (Jim) Turner, who had come to Donnelley from IBM and was senior vice president for technology and head of the Technology Center, was assigned the task of improving the technology development process. Schneider, who had been actively involved in the Magazine Group's canceled digital program, was also a member of the team.

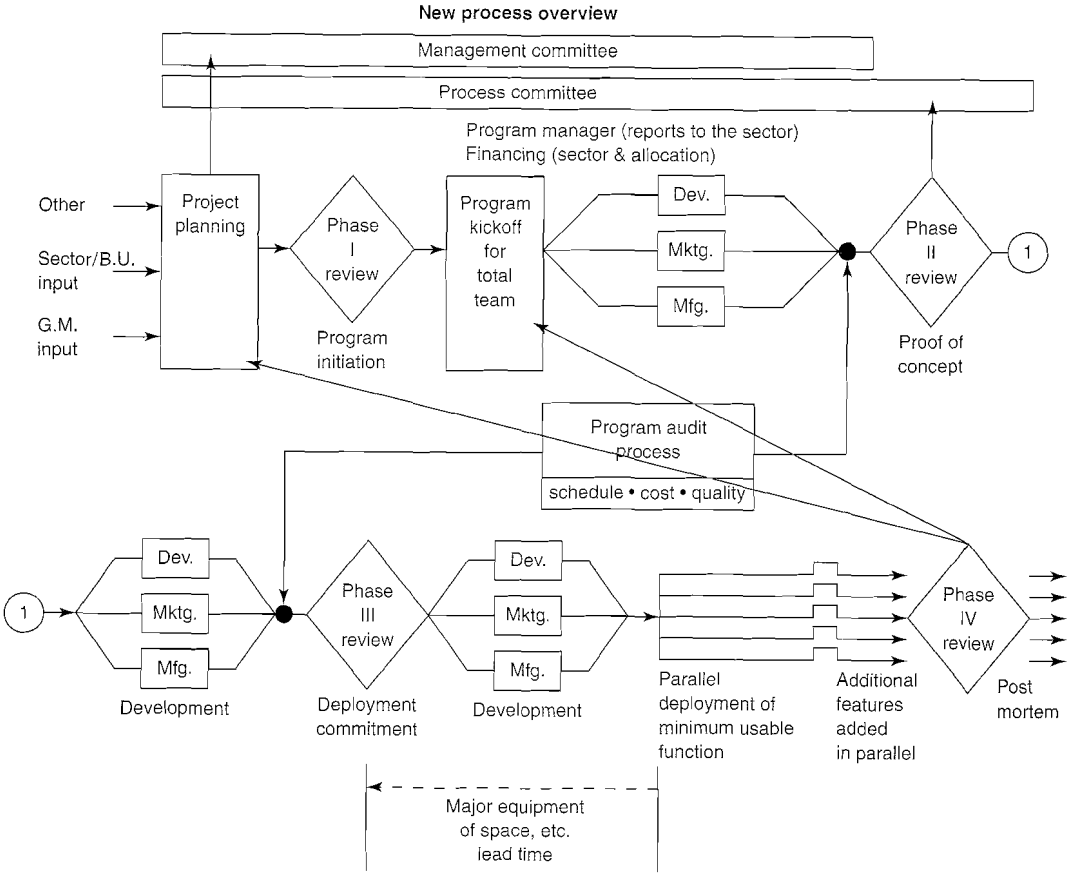
The Existing Process

The group quickly discovered, Turner recalled, "that all the technology development processes were ad hoc." Projects were not chosen on the basis of customer needs, nor were their economics carefully screened. Instead, senior managers with clout got their projects funded, particularly when they were identified and championed early in the budgeting cycle. One result was that resource decisions were often governed by a "first pig to the trough" mentality. Bootleg projects gained momentum once they secured highly placed sponsors; at that point they were rarely canceled. Technology projects seldom had financial gatekeepers, and there were no formal reviews of how development money was being spent. Division and marketing managers played a minor role in guiding technology development. Turner summarized the traditional approach:

> There were no limits on spending, no deliverables, and you could spend as much as a million dollars investigating a technology. No one was looking. There were no gates at the beginning. No one was saying "go/no go."

After analyzing 10 years of projects, the team also discovered that Donnelley, while often first with new technologies, rarely realized their full market potential. Miller explained:

EXHIBIT 3 Technology Development Process



Source: R. R. Donnelley.

> We at the Tech Center would roll the technology out to one plant; they would try it, we would refine it, and then we'd take it to the next plant. With 38 plants, that takes a long time. They also wind up with different versions, and we had to support all them all.

Manufacturing managers could, and often did, say: "We'll take it later after you've gotten the bugs out," or, "We'll do our own version on our own equipment." The reengineering team discovered that divisions were spending, on their own, an amount equal to the Technology Center's budget, primarily on information systems technology and incremental technology improvements that were not transferred or transferable to other divisions. As a result, no one technology or information system worked across the company or across groups in a sector; some did not even work across closely related divisions.

The Redesigned Process

To overcome these problems, Turner's team devised a new process, guided by the objectives of greater speed, improved financial data and checkpoints, and better connections with the divisions. The underlying philosophy, Turner noted, was that "discipline does not have to mean bureaucracy."

The new process consisted of four structured phases. Each phase concluded with a formal review that specified deliverables to be met before the next phase could begin (see Exhibits 3 and 4). The divisions were offered incentives to take a broader, shared approach: corporate would pay half the bill if projects were at least sector-wide, and all projects were assigned to cross-functional teams, with representatives from marketing, manufacturing, and development. Teams operated through a matrix. Developers continued to report to the Technology Center,

EXHIBIT 4 Deliverables for Phase Reviews

Phase review requirement

Phase I (Program Initiation)*	Phase II (Proof of Concept)	Phase III (Deployment Commitment)	Phase IV (Post Mortem)

• SWAG** analysis
  • Financial benefits
  • Cost of development/ deployment
  • Capital requirements
  • Revenue stream
  • Cost savings
• Schedule of development/ deployment
• Make vs. buy
• Skilled set of people
• Initial market assessment
• Set maximum $ that can be spent prior to next justification
• Approval by sector president/sr. VP Technology
	• Rigorous financial review
	• Detailed
	  • Development schedule
	  • Deployment schedule
	  • Cost of development/ deployment
	  • Capital requirements
	  • Cost savings
	  • Ongoing cost estimates
	  • Revenue stream
	  • Marketing plan
	  • Implementation plan
	• Completed program audit
	• Determine capital commitment, lead time to meet deployment schedule
	• Set maximum $ that can be spent prior to next justification
	• Approval by sector president/sr. VP Technology
		• Final financial
		  • Financial justification
		  • Deployment schedule
		  • Capital requirements
		  • Market assessment
		• Completed second program audit
		• Approval by sector president/sr. VP Technology
		• OK to deploy
			• Metrics
			• Actual vs. planned
			  • Costs
			  • Schedules
			  • Function vs release
			  • Field performances
			  • Installation problems
			  • Lessons learned
			• Roles and responsibility problems
			• Process problems

*Up to $100,000 can be spent without completing Phase I requirements.
**SWAG = "scientific wild-assed guess."
Source: R. R. Donnelley.

while marketing and manufacturing representatives continued to report to their business groups. But they all also reported to a program manager, who was appointed by the appropriate sector or group president. Together, the program managers met monthly to decide on future projects, with Turner acting as their self-described coach and mentor. He observed:

> The program managers run this process; they are the ones empowered to make decisions. If there are complaints from the business presidents, I say to them, "The program managers report to you. You go after them if you're not getting value."

The process was triggered when a new technology or concept was deemed worthy of investigation. An ad hoc Technology Center team was formed and could spend up to $100,000 of strategic development funds to investigate the idea. Preliminary project and financial planning had to be completed within two months; the idea was not to be studied to death. At the end of two months, the project faced a Phase I review in which Turner, the relevant business groups, vendors, and other key players decided whether a formal program should be initiated. If the decision was yes, a program manager and cross-functional team were assigned. There were no limits on how much money this team could request to prove the concept in the next phase; the point was to move as quickly as necessary. Phase II and III reviews were rigorous financial checkpoints, and no project could receive major funding without first completing a successful Phase III review. Once a project passed a review, it had a green light until the next one; the only person empowered to stop a project between reviews was the program manager. Turner observed:

> With this system we are inviting senior management to stop meddling in technology programs. In the past, that was understandable, given our poor financial discipline. But not with the new process.

Turner believed strongly in the broad applicability of these techniques; he was convinced that the redesigned process could even be extended to new business creation:

> I see project management as being identical with process management, whatever the process. It's the Deming cycle: plan-do-check-get feedback. That's process management in

a nutshell, and it's also what good project management is all about. You could even run a new business through this process; you'd just present business plans at phase reviews instead of simple IRRs.

FROM VISION TO REALITY

The digital project was the first to tie into the newly revised technology development process. In April 1994, Barb Schetter was named program manager, with the objective of creating a new digital color printing business. She continued to report informally to Cowan. Because the project was already under way, it was grandfathered in at Phase III of the development process, and its Phase III review was scheduled for June. Schetter observed:

> Until we developed this new approach to technology development, digital was wandering. Then all of a sudden, we were catapulted into a process that gave us structure, hurdles, and credibility, allowing us to set dates, have meetings with general management, and get through the CFO's office.

The project's cross-functional team included Schneider for marketing, Lew Waltman for manufacturing, and Miller for development. They quickly dubbed themselves the Trapeze Team because they felt that they were "working without a net." The scheduling of the Phase III review meant that the team had to establish the existence of a market, identify possible applications, construct a deployment schedule and funding plan, and define the scope of the business in only two months. Every week, the team held day-long meetings, assembling cost estimates, integrating plans, crafting a preliminary design, rolling up projected costs and revenues, and generating an IRR that, in Schetter's words, "showed ourselves and others that we could roll out a division that could make money." During this period the team also began securing several digital presses, determining where the facility would be located, defining the database and transaction systems, obtaining the necessary capital appropriations, and creating a marketing plan.

Meanwhile, Schetter was making the case for a dedicated digital division to Cowan and other members of senior management. She recalled her reasoning—and the reaction to it:

> We had to get moved out of the Tech Center and into a P&L area, where we would also get HR and financial resources. I thought digital should be its own standalone business unit, with its own complete P&L, because our finances and marketing would be so dramatically different and because, with growth, we would become huge. They said absolutely not; they saw digital only as a [manufacturing] division.

Following the Phase III review, Schetter redoubled her efforts. This time, in addition to Cowan, she targeted Bart Faber, president of the Information Services Group (ISG), and asked to be moved there. On July 1, 1994, she was successful: Schetter was named vice president and general manager of the Digital Division, reporting directly to Faber. The division would have its own P&L, with marketing and a freestanding sales force reporting to Schetter.

The Information Services Group

ISG, digital's new home, was characterized by Faber as a

> greenhouse group that incubates small, internally generated divisions and manages a portfolio of venture capital investments. Those investments are our over-the-horizon radar to look at new technologies that may impact our core businesses and new ways that our customers will distribute information.

The businesses were unified, in part, by the goal of creating a "scaleable digital architecture," in which a single database drove outputs to diverse media. Faber observed: "Selling information in only one medium doesn't give you enough revenue to build a robust business model; you have to reslice it and remarket it." Daniel Hamburger, ISG's vice president for marketing and business development, added:

> We are laying a digital architecture for the company. Eventually, even commercial printing will be done by this new technology. From the same image database, we will be able to print at any scale, using any print technology, or deliver the image in any other form the customer wants—CD-ROM, fax, or online. The entire process, including the formatting for a particular medium, will be automated.

Faber had established several additional criteria for these new businesses: they should have the potential to grow twice as fast as the corporation, reach at least $100 million in sales, and achieve an above-average ROA. Because each ISG division was unique and their plants did not produce interchangeable work, division managers' incentives focused on divisional, rather than group, performance.

ISG's 60-member sales force, which sold about 85 percent of its $280 million volume outside the group's divisions, was often challenged to get their work into non-ISG plants. Faber observed:

> We are not tied to heavy iron, and other group's plants often throw my reps' stuff out. To succeed, they have to offer better priced, more profitable work. So my reps tend to be tougher, to leap on new businesses that are struggling for work and still answer the phone when they call.

The ISG sales force targeted industries such as financial services, pharmaceuticals, and health care, where the primary focus was not publishing; salespeople worked not only with purchasing agents, but with marketing and senior managers, trying to meet their business and print requirements. As such, they tended to bundle together Donnelley products, and to include database services in the package.

In addition to the group salesforce, each of ISG's divisions had its own small, dedicated sales force. Faber noted:

> I have found that if a new business doesn't have control over its sales destiny, it has little chance of succeeding. It will wind up a second- or third-tier priority in most of Donnelley's other sales organizations. We have learned to build a dedicated sales force for all our new businesses.

BUILDING THE DIVISION

On becoming vice president and division general manager, Schetter's first decision was to "pick a date and drive to it." She chose November 11, 1994, noting that "with even a few digital presses we could be up and running; not perfect or full scale, but by then we could be a real business." Funding was delayed by several months, however, as the $40 million budget was finalized, and the start date for the new operation was moved to January 1995.

Operations and Technology

Memphis, Tennessee, was chosen as the site of the first digital facility, primarily because it was the central processing and distribution point of Federal Express. By locating close to the FedEx runway, the division gained several hours of work time each day, and could offer rapid, reliable delivery even without dispersed print-on-demand (POD) facilities or a complete database management system. In essence, Memphis offered "virtually distributed manufacturing" from a single location.

Manufacturing director Lew Waltman's immediate task was to test and operationalize the digital technology. Eleven digital presses were selected from three vendors. Each had strengths for different kinds of jobs, and the aim was to integrate the presses into an operation that would be the industry's low-cost digital producer. As Waltman noted, the challenge was enormous:

> There are very few pieces of this model anchored in any way. You cannot go somewhere else, observe for a day, and say, "Yes, we're running it properly." The equipment is new, and most of it is unproven.

Working with a third-party vendor, Waltman and his team also began building the transaction system and database to hold customers' content. A customer's order would trigger the transaction system, which would then access the right content, send it to the appropriate digital press, and pull together the printed pieces for the customer. New functional capabilities were added rapidly. By mid-1995, the system could accommodate Macintoshes as well as the original PC-based machines, and would soon be reconfigured so customers could do their own invoicing. In addition, the division developed three software tools that allowed customers to manipulate and vary the content in Memphis's database without ever leaving their offices. Target-IT allowed customers to pick, pull, and compose their own pages, depending on what they wanted to promote in a particular week. Send-IT allowed customers to send orders by dragging and dropping an icon on their desktop computers, while Order-IT allowed them to assemble the order itself.

These developments aligned closely with Faber's view of the division's purpose:

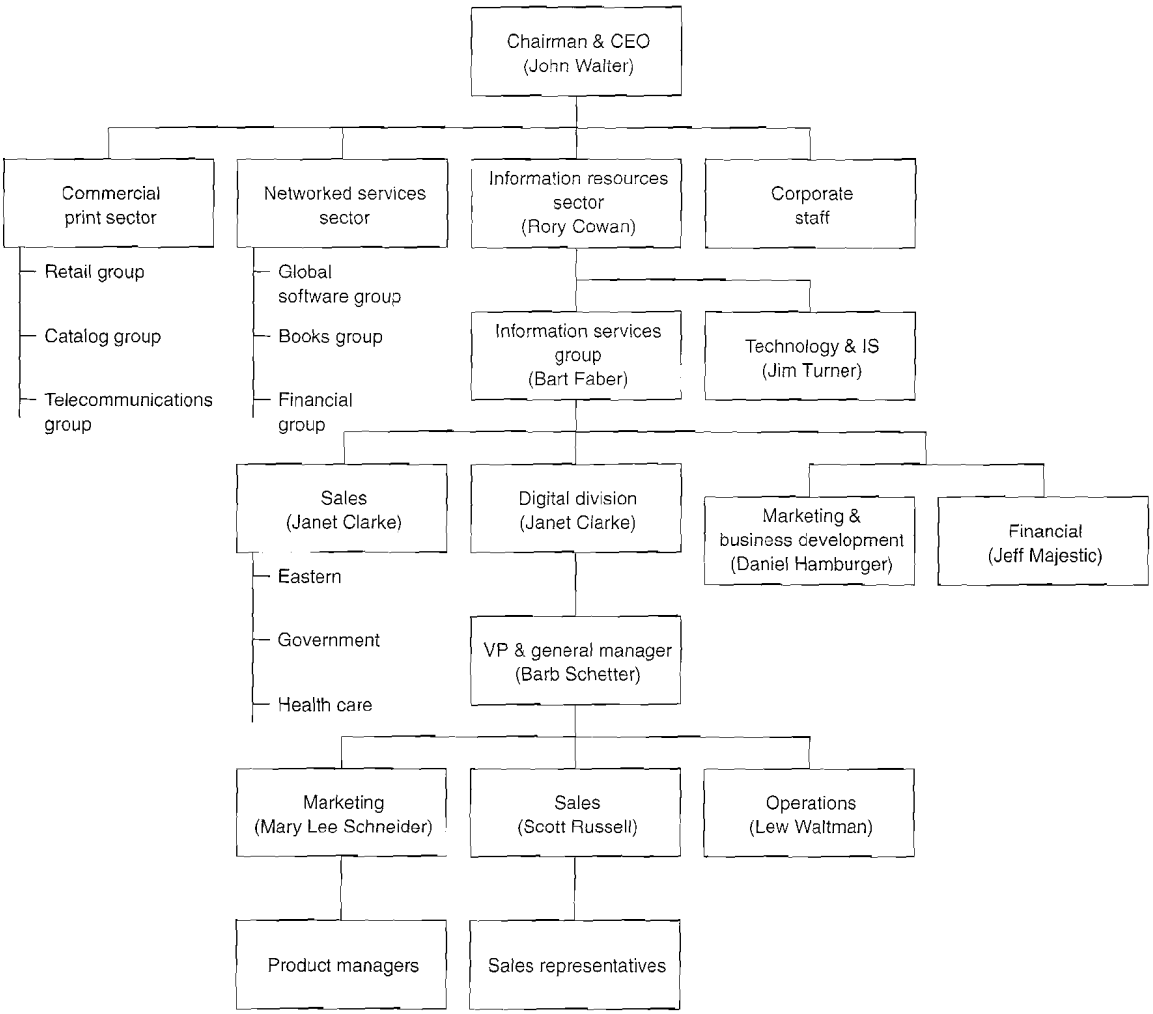
> The Digital Division is an attempt to take three distinct value creation devices—a content management system, a transactions management system, and digital imaging technology—and combine them to create a new product. They have a very different value that way, and allow us to get significantly higher margins. If we simply put Xeikon presses in each of our existing divisions, we would end up selling short-run printing jobs the same way that we sell longer runs—as images on pieces of paper. With the atomization of the printing industry, that wouldn't be very profitable.

Organization, Reporting Relationships, and Roles

In August 1994, Walter and Cowan asked Janet Clarke, now a Donnelley senior vice president, to head the Digital Division and become Schetter's boss (see Exhibit 5 for a partial organization chart). Clarke would report directly to Faber and would also manage half of the ISG sales force. Faber explained:

> By adding a sales animal like Janet to the mix, we covered the major weakness of a strong and seasoned team, added some capabilities we didn't have, and ensured our getting better sales performance. We could hold Janet responsible for some value.

EXHIBIT 5 Partial Organization Chart, 1995



Source: R. R. Donnelley.

Clarke added: "This was a people decision, not a strategy or structure decision." Schetter agreed, noting that

> Janet provides the balance. She is building the business from a customer base. She doesn't say to me, "I need a transaction system at less than $X per order." That's what Bart does. Rather, Janet asks, "Are we ready to sell?" Right now the issue is revenues, but once we get them, it will be our ability to deliver. The delivery of the Digital Division—that's my responsibility and not anyone else's.

Clarke, who was based in New York, described her role:

> I spend my time as little as possible on [affecting] whether capital appropriations will be approved, or whether the plug will be pulled on the equipment, or the project management of the administrative system. I have a weekly conference call with Barb and her direct reports, and I go to Chicago fairly often. But my focus is on external sales, on things outside our radar scope, and for that, the best place is New York.
>
> My job is to create robust revenue streams that use the advantages of the division and make it grow the way Global Software did in the 1980s. My job is to leverage digital for the whole company. I see the division as an incubator, from which we can figure out the opportunities for proliferating the technology, and can then integrate them into the business.

Clarke felt accountable for meeting revenue and marketing plan objectives, for monitoring technical and financial performance against division plan, for aligning the division strategy with company objectives, and for keeping the division's efforts broad enough to be

transformational. She had chosen not to focus on internal lobbying at the sector or executive level, and had asked Faber to manage these relationships. She would, however, meet with senior-level customers to influence their thinking—what she called an "education and demand-creation function." She would also meet with customer influencers (such as consultants and advertising agency presidents) as a route to "backing into" their customers. Like Cowan and Faber, she would monitor technology developments, verifying her perceptions with investment bankers and analysts. Her role in dealing with "stray cats at a high level," was "catalytic . . . keeping Rory's vision . . . and being an ambassador for the company."

To supplement these efforts, Clarke organized her portion of the ISG sales force into three vertical teams: health care, federal government, and the eastern U.S. region, with the latter encompassing retail banking, credit cards, and high-end consumer marketing. She not only spent time with her sales managers and representatives, but also made sales calls, especially when a potential new customer or new area was involved.

In addition to Clarke's ISG sales force, the Digital Division was seeking revenue through Donnelley's other sales forces, for which Schneider, now the division's director of marketing, and her product managers provided technical and product support. The Digital Division was also building its own small sales force under Scott Russell, who had been at Xerox for 11 years and was hired by Schetter as sales manager in April 1995. By June, he was actively searching for six sales reps who, in his words, were both "hunters and farmers—people who can aggressively go after business, who have the confidence and know-how to close hard and professionally, and can farm and build relationships."

Marketing and Sales Strategy

Target Markets To identify target markets, Schetter and Schneider developed a matrix from interviews with customers and Donnelley's marketing directors. Potential applications for short-run digital printing were first characterized by operating characteristics (e.g., turnaround time, paper requirements, repetitive database needs). The technology's capabilities were then mapped against these cells, and targets were established; they were continually updated based on experience in the marketplace. The primary near-term candidates were customers already using a digital format such as desktop publishing but who were encountering problems such as high physical distribution costs or high information obsolescence. Other potential candidates were those with unmet printing needs such as a desire for overnight delivery to multiple sites, increased customization of print materials, or growing need for color. Based on this analysis, magazine reprints, corporate literature, marketing and product literature for pharmaceuticals and health care, and advance, liquidation, and prospecting catalogs were identified as target markets for 1995.

Positioning Because the Digital Division would offer services that differed quite a lot from Donnelley's traditional businesses, new marketing strategies were required. The division was not selling specific printing jobs in well-defined markets; instead, it offered a business capability that allowed customers to carry out printing in new ways, resulting in cost reductions and revenue enhancement. As Schneider put it: "We sometimes say we're not selling printing anymore; we're selling a marketing tool. We are teaching people to do things differently."

In most companies, the process of disseminating corporate literature and documents, whether for direct selling purposes or general information, was undermanaged, if managed at all. Typically, people scattered throughout the organization made piecemeal decisions about the production and distribution of reports, pamphlets, advertising, and other printed material. The result was literature that was costly to produce, expensive to inventory, and frequently out of date. Digital printing offered a much more effective approach, one that was likely to reduce the total costs associated with documents and printing. Moreover, by introducing new capabilities—the creation of short-run, on-demand, customized materials—digital printing could also increase customers' revenues by allowing greater market segmentation and more focused selling. To profit from these opportunities, however, most customers had to rethink the way that they conceived, produced, stored, and distributed their print materials.

To illustrate, Schneider cited a telephone operating company that produced generic corporate publications and marketing materials. These documents had never been customized and quickly became outdated. There were lengthy time gaps between updates, and salespeople had to root among "dead documents," stashed in dozens of cubbyholes, before sales calls. The digital alternative, Schneider noted, was an infinitely customizable "living document database"; electronic inventory would replace physical inventory, and each sales office would have a terminal with a "window into the materials of theirs that we have in Memphis." She elaborated:

> We're teaching them to think of their information as something that is alive and needs to be updated. There are two pieces, the content and the customers, and they need to be well matched. We're telling them to reengineer the way they gather and produce their information, publish it, and store it, so that the content is current and targeted to individual customers.

Unfortunately, the activities that Schneider hoped to reengineer—which she termed the "literature management process"—had not yet been identified as a process by most customers. Thus, a major aspect of selling the division's services was helping customers recognize that they already had an implicit process for creating, managing, storing, and distributing literature, and that with digital technology the process could be reengineered to reduce total costs and enhance revenues. This required sophisticated positioning, as Clarke explained:

> We are selling to customers who sell to customers, rather than to people whose business is publishing. In essence, we are providing tools for marketing. So instead of calling on customers in the print procurement area, who only want to know the price per page, we are talking to senior people about their systems costs and total competitive advantage.

Consultative Selling The multiple selling challenges, in turn, affected the sales approach. According to Russell:

> I don't want print reps on my sales force; it's not about printing. I want people who can find the right members of the organization, articulate digital's advantages, make them aware of their need for services, and help them see things in a new way. Our job is to lead customers, not be led by them. We don't want to meet current requirements, but to ferret out deeper, unmet needs and then satisfy them.

In fact, Schneider had discovered that if she or her product managers could provide proof of revenue enhancement, companies became more open to rethinking their literature management process. She observed:

> Our goal with a customer is to get to a prototype job, and compare the response it generates with their usual response rate. In every case so far, we have gotten a significantly higher rate—maybe two or three times what the customer was getting before. With that evidence, inertia is overcome, and it's like a runaway train. We suddenly have a champion within the organization.

To develop additional sales opportunities and better cross-industry data, the division was funding research with five partner-customers to measure the response rates of generic versus customized marketing messages.

Like Clarke, Schneider and Russell also viewed client influencers, such as consulting firms and advertising agencies, as an important leverage point, and planned to focus sales attention there. Russell noted:

> These channels magnify and expand our reach. We are in start-up mode, so people are at a premium, and we need to engage outsiders to spread our message. I also discovered very quickly that focusing on channels was a way to avoid conflict with the traditional Donnelley sales force. With corporate clients, I was running into, "That's our account," or, "We have a big deal pending there and we don't want anything else going on there right now" all the time.

Mobilizing Sales In fact, the Digital Division had to motivate three overlapping and potentially conflicting sales forces: the division's own sales reps, the ISG sales force, and the sales forces of other business groups. One problem was that if Russell or Clarke wanted an existing account reassigned to someone in their own group—who would then get credit for the sale—they first had to petition an account adjudication board. Schneider noted, "If you go through too many of those, you get a bad reputation as a group." Faber, however, was comfortable with the situation, and saw the need for diverse sales forces. He observed:

> In my view, it's better to have sales conflict and overcoverage than to be missing sales. The tension keeps everybody on their toes. It can be a little messy, but creation usually is.

One fallout of Donnelley's complex incentive structure was that business group leaders, sales managers, and sales representatives did not always see eye to eye. Clarke explained:

> Getting the middle of the organization to buy in is tough. Business group presidents and sales managers will not encourage their people to spend time selling the services of the Digital Division because the profits will accrue to another group. We therefore focused our incentives at the rep level because we needed the support of the complete Donnelley sales force.

To that end, Clarke had proposed an aggressive commission plan to motivate other groups' reps to sell work into Memphis. It included a "kicker," to be paid by the Digital Division, based on the page price of the work sold relative to a preestablished page price. Although more aggressive than most plans, such incentives were not uncommon, as Faber explained:

> When you are trying to get new businesses going, you really have to provide sales reps with special incentives.

> You are offering products and services that they don't know anything about. So you have to spend money to make it lucrative for them to learn about your business and become interested in it.

CHALLENGES OF INTERNAL ACCEPTANCE

By June 1995, the Memphis facility was up and running. But expected sales had not yet materialized, and the Digital Division was under intense financial pressure. Faber wanted to see profits by the fourth quarter, and a break-even year in 1996. He noted:

> We at Donnelley demand early profits from our new businesses. It's hard to be unprofitable around here for even a few years, unless you are making clear progress and it's part of a long-term plan. I have to run Digital as a strong stand-alone business because a marginal or unsuccessful organization won't convert anybody. The best way to convince people at Donnelley is to be successful.

As a result, Faber was not in favor of expanding the division or building other print-on-demand (POD) sites until Memphis was working well.

Schetter, by contrast, believed that the Digital Division represented an entirely new model, where the traditional incremental approach to investment was unlikely to succeed. She observed:

> You have to have large databases that integrate the software of multiple operating systems at multiple geographic locations. Our success depends on developing these new skill sets which are hard to find. We need an organized approach to expansion beginning right now.

Schetter's biggest concern, however, was being embraced by the business groups. She explained:

> We have not, as a company, stood up and said, "Short-run, on-demand, color printing and the associated delivery systems are a strategic initiative." There is no companywide rollout plan. We had envisioned a real pull for this capability, throughout Donnelley and from multiple customers. Instead, it has been more "wait and see" from the management committee. They say, "Let's see" if the business model proves out. "Let's see" if the transactions processing system pans out. Instead of taking a companywide position that digital is a strategic necessity, they're waiting for enablers who will pay the bill, and have said to the business group presidents, "You can use the Digital Division if you want, or you can do it on your own."

An immediate issue had arisen with the Books Group, which had a single digital press that had received few resources. Within 60 days, the group would decide whether it would invest in digital printing on a larger scale, or move its growing digital business to the Digital Division. Schetter and Schneider were trying to develop a presentation that would convince Books managers that the Digital Division offered the better opportunity. The question was, what arguments and incentives would be most effective?

CASE III-8

Intel Corporation: The Hood River Project

Intel's traditional OEMs and consumer electronics companies are driving towards increased integration of computers and consumer electronics products. . . . Entertainment media, both audio and video, are transitioning to digital formats. . . . The computer is uniquely positioned to add value in the world of digital media. . . . To take advantage of this opportunity, the computer must be positioned at the logical center of the entertainment control point in the home—tightly integrating microprocessor power with consumer electronics equipment.

—Hood River Market Requirements Document, 8/30/[illegible]

Raymond S. Bamford

As the clock struck midnight in his office on December 15, 1996, Rob Siegel leaned back in his chair and thought more about the future of Hood River, the project he had led since its inception almost a year earlier.[1] The central goal of Hood River was to define the standards and establish a market presence for the PC in the living room, and Siegel and his team felt that they had made good progress toward achieving these goals. However, the Hood River team had recently encountered a series of challenges and setbacks. In October, while Siegel was attending a speaking engagement at a prominent East Coast business school, the funding for Hood River had been suddenly

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 This case was prepared by Raymond S. Bamford, M.B.A. 1996, under the supervision of Professor Robert A. Burgelman as a basis for class discussion, rather than to illustrate either effective or ineffective handling of a management situation.

[1]The names of some of the players in this case have been disguised.