Kapex Corporation

In May 1988, six months after being made a partner at the Boston Consulting Group, Shikhar Ghosh decided to accept a position as Chief Operating Officer of Kapex Corporation, with the understanding that shortly thereafter he would be made Kapex's Chief Executive Officer. At BCG, Ghosh's specialty was organizational structure, particularly how to create rapid-response organizations. "I left BCG with my head full of ideas of how to structure organizations. I was eager to try out my ideas at a small company where there was little hierarchy," Ghosh stated. Kapex, at the time, was a relatively small company, with twenty-five employees, and $2 million in revenue. The company was entrepreneurial, technology-driven, and loosely structured. But it was losing money rapidly and the venture capitalists who had invested in the firm were hoping that Ghosh would be able to turn it around. Ghosh commented on the nature of Kapex when he arrived:

> Everybody just did what they felt like. For instance, customer service people were supposed to start at 8:00 a.m. They wouldn't arrive until 10:00 a.m., but they would work until 2:00 a.m. Everybody did things on their own time, and the attitude toward the customer was—"We'll call you back."

> The chief financial officer of one of our customers told me of an incident he experienced at Kapex. He arrived at 8:00 a.m. to find few employees present. He waited for two hours. The Kapex group was playing basketball at a court nearby, and showed up at 10:00 a.m. Sweaty, and in their athletic clothes, they greeted him. Needless to say, we lost that account.

Reflecting on his initial impression, Ghosh stated: "I knew what had to be done. Kapex needed control and structure."

Company Background

Kapex Corporation, headquartered in Waltham, MA, provided management information systems and intercarrier network services to cellular telephone companies. The company was founded in May 1986 from the merger of Kapex, Inc. and Lunayach Communications Consultants (LCC). LCC specialized in the design and engineering of cellular radio networks for cellular companies. Kapex, Inc., founded in 1984 by Brian E. Boyle, focused on management information systems for the cellular industry and credit scoring systems for financial service companies. The consolidated company, named Kapex Lunayach Systems Corporation (ALS), integrated LCC's

engineering expertise and Kapex, Inc.'s business and systems expertise. ALS changed its name to Kapex Corporation in May 1989.

In 1990, *Business Week* rated Kapex the fastest growing high-technology company in the United States. Revenues grew 1600% between FY1987 and FY1990 (fiscal year September 1-August 31), and were expected to continue to grow rapidly.

Total Revenues (million)			
1987	1988	1989	1990
$1.0	$2.3	$6.8	$16.6

As of April 30, 1990, Kapex employed 172 people, of whom 153 were salaried and 19 were compensated on an hourly basis. Due to its growth, the company added about 10 new people every month.

The Cellular Telephone Industry

The cellular industry in the United States began in 1982 when the Federal Communications Commission established guidelines for the creation and structure of the industry. Cellular telephone service was capable of providing high-quality mobile telephone service to a large number of simultaneous users via telephones that were either vehicle-installed or hand-held.

Cellular service divided a market into large groups of contiguous "cells." Each cell was generally a few to several miles in radius and was covered by a base station that consisted of a receiver, transmitter, and antenna. When a person placed a call from a cellular telephone, the base station in the cell in which the caller was located would pick up the call. The call was relayed over either landline telephone lines or a microwave relay to what was called the mobile telephone switching office (MTSO). The MTSO then hooked the call into the regular telephone network, and the call reached the receiving party on the regular system. If a caller from a regular telephone called a cellular phone, the process worked in reverse. The MTSO received the call from the local telephone office, sought out the cell in which the receiving cellular phone was located, and instructed the base station to make the connection. If a call was being placed from one cellular telephone to another, the call could bypass the regular telephone system entirely. The signal would go from the caller's cell to the MTSO, and the MTSO would locate the receiving party and relay the call back to the base station in the receiving party's cell. The MTSO controlled the "hand off" of a call from one base station to another as either of the parties moved from one cell to another.

"Roaming" was the ability to use a cellular phone outside the area of the caller's "home" system. When a roamer made a cellular telephone call in a market outside his own, the host company would bill the call back to the subscriber's company, and the subscriber's company would pass the charge through to the subscriber. The economics of the transaction were governed by a "roaming agreement" between the two cellular operators. Roaming was usually billed at a substantial mark-up to regular per-minute rates. Because roaming service did not involve any incremental cost to the two operations, roaming was generally more profitable to operators than regular service. As of 1991, roaming represented approximately 10% of cellular subscriber revenues.

The cellular telephone industry in the United States had grown from 92,000 subscribers at the end of 1984 to 3.5 million at the end of 1989. Industry analysts expected the rapid growth to continue with subscribers growing to over 5 million by the end of 1990, to approximately 7.5 million by the end of 1991, and to nearly 20 million by the end of 1995. The growth in subscribers was due to the availability of lighter, lower cost phones, improvement in the quality of equipment and service, increased coverage, increased roaming activity, and enhanced marketing. The government anticipated establishing over four-hundred rural service area markets, the establishment of which

would increase roaming activity. International markets were expected to expand greatly, particularly those in Europe, Latin America and Asia. Furthermore, analysts predicted that the cellular telephone system might become the primary telephone system in regions of the world where conventional telephone systems were underdeveloped.

Kapex's products and services

Kapex provided service to cellular carriers to allow them to manage their customers in their "home" and "roam" territories. From the very outset, owing to the merger that resulted in its creation, Kapex's products and services could be divided into two different categories: Intercarrier Services (ICS) and Cellular Management Information Systems (IS).

The ICS business consisted of a set of on-line services that managed the information required for carriers to provide service to cellular subscribers to and from other markets ("roamers"). The primary services included an on-line national verification system that was used by carriers to authorize roamer calls (Positive Roamer Verification), a national financial clearinghouse for settlement of roamer charges between carriers (Intercarrier Settlement Services), and a national location and call forwarding system for automatically locating roamers and forwarding their cellular calls to them (Roaming America). ICS was a high volume transaction processing service that contributed approximately 60% of total company revenues in 1990.

The IS business was very different from the ICS business. It consisted of an integrated software system designed to manage the primary functions of a cellular carrier in its home market. CMIS (Kapex Cellular Management Information Systems) was an on-line software system that included customer information, billing information, accounts receivable, credit and collection information, equipment inventory control, and cellular network engineering analysis. ABS (Kapex Billing Service) was offered to customers that were either too small for the full CMIS system or preferred to have a professional IS service organization manage their systems. Kapex would operate the software for the customer and charged a fixed fee per subscriber of $3.00 to $4.00 per month. IS products contributed approximately 40% of total company revenues in 1990.

As of April 1990, Kapex had approximately 75 customers, including BellSouth, Cellular Communications, Inc., and Southwestern Bell. Contracts with customers generally were multi-market, multi-product, multi-year service agreements which ranged in value from $100,000 to over $2 million. Kapex served 250 markets in the United States and 34 markets in Canada.

The company marketed its services directly to cellular carriers primarily through trade and industry publications including *Cellular Business*, and *Mobile Phone News*. In addition, Kapex published a monthly newsletter describing its services and potential product applications, and distributed over 1,000 copies of the newsletter per month to existing and prospective customers.

The Start-Up Stage

The first CEO of Kapex was Brian Boyle, who had been CEO of Kapex, Inc. before its merger with Lunayach Communications Consultants. As Kapex's CEO, Boyle instituted few business procedures; formal procedures seemed unnecessary, given the relatively small size of the company. The key executives made all decisions, and all other employees were involved in developing and selling products. As Boyle stated: "People had particular expertise, but everybody did anything." Ted Baker, presently Vice-President of Operations and Service Management, described the culture of the

company when he joined in October 1988: "If you were interested in something, you just did it. Nobody had any sense of what their job description was."

The structure was very informal and fluid. Employees were focused, committed, and hardworking, and worked in close interaction with each other. As a result, Kapex was very responsive and effective at getting things done quickly and relatively cheaply. The company's ability to bring products to the market quickly and Boyle's innovative technical solutions enabled the company to compete against established firms that had an abundance of resources, such as GTE. At one point, four of Kapex's competitors, including GTE, Cincinatti Bell and McDonnell Douglas, put out a RFP (request for proposal) to establish a joint entity called ACT, which would address a particular service need in the cellular industry. ACT had all the resources, expertise, and capital it needed. While ACT was busy planning how to address the need, Boyle created a solution and installed it in the market. As a result, ACT was disbanded.

In the early days, the market was growing quickly and so was Kapex. The company was project-based, meaning work was organized around projects. As the number of projects increased, people worked on more and more projects at once. When the workload began to seem overwhelming, the company hired more people. Kapex was spending cash quickly and not monitoring its expenses.

Shikhar Ghosh was recruited in May 1988 to head Kapex because Kapex's investors believed that the company was spending cash too haphazardly. Ghosh had graduated from Harvard Business School in 1980, and had spent eight years as a consultant at BCG. The investment group that owned Kapex Corporation had hired other BCG consultants to run companies, and targeted Ghosh to bring more control to Kapex.

Ghosh realized early on that the atmosphere at Kapex was changing from "entrepreneurial" to chaotic. People arrived at work and would react to whatever crisis the company happened to face that day. There was only "fire-fighting" and no development of an underlying planning structure. Anything a week away had no priority. Denise Allen, Sales Manager, described the way in which the organization functioned: "Brian (CEO) came up with ideas. Michael (Engineering Manager) converted them to reality. I sold the service. Mark (Finance Manager) made sure we didn't run out of money." Nobody had time to plan schedules or meetings. Eventually, it became difficult to accomplish basic tasks, such as the preparation of price analyses of new products. People who could not withstand the chaos quit.

Customers began to complain too. One customer claimed to have called 150 times before he received a response. Kapex could not address all the technical assistance requests of customers. Those customers who received assistance were pleased with the quality of Kapex's support, but other customers requesting assistance did not receive any. The volume of customers and orders had increased, and the company could not handle the increased demand.

Kapex started to fall behind schedule and to miss installation dates. The company experienced failures in product development. For example, one developer would not know what another developer was doing. So, developers, working on the same system, would develop software codes that clashed, causing the system to crash. Information flow, in general, was becoming more difficult.

There was no financial planning, and all planning seemed useless. For example, in a plan written in June 1988 Kapex predicted it would go from 36 people by the end of calendar year 1988 to 55 people by the end of calendar year 1989. At the end of 1989, the company had 103 employees. (See **Exhibit 1** for forecasted and actual growth in number of employees.)

Ghosh recognized that the way in which Kapex functioned had become unproductive: "This complete project-orientation and looseness did not work." Ghosh believed that Kapex needed to address both long-term planning issues and immediate issues, such as who should attend which

meetings, how to pay people, and how to begin employees on a career path. There had to be defined areas of responsibility. As Ghosh explained, "We needed a system of accountability. We needed structure."

Innovative Structures

As the new CEO of a rapidly growing company, Ghosh was eager to try out some of the innovative organizational structures he had been exposed to or had envisioned as a BCG consultant. The first structure he implemented was a circular one similar to what he had seen being used by Japanese companies.

A circular structure meant that there were concurrent circles expanding out from a middle circle. At Kapex, the innermost circle contained the senior executives. The next circular layers out included the managers of functions, and the employees in the functions. In the environs around the circle were Kapex's customers. The intention of the circular structure was to create a nonhierarchical organization in which information flowed continuously and freely within the organization and between the organization and its environment. (See **Exhibit 2** for circular organizational chart.)

Ghosh soon realized that a circular structure did not suit the company for several reasons. One reason was that employees could not relate to the circular structure. They were completely unfamiliar with the structure. The new hires, in particular, who were not accustomed to Kapex's culture, could not understand how they were meant to fit into the organization. Ghosh stated: "People who joined Kapex expected to see a more traditional organization chart. They did not know with whom to talk to get things done. They did not know the power structure and who had authority to make which decisions. They did not know how their performance was evaluated. The circular structure did not answer any questions or achieve anything." Another reason the circular structure did not work, according to Ghosh, was because "a mentality developed that the customer was the enemy." A third reason was that it was completely geared toward responsiveness, not toward any form of planning. Those tasks that required planning did not get done.

He next tried a horizontal structure—the traditional, vertical organization chart turned on its side. The employees did not respond enthusiastically. For instance, when Paul Gudonis, Senior Vice-President of Sales and Marketing, called a meeting of his new direct reports the first day the horizontal structure was implemented, nobody showed up for the meeting.

Within two to three months, it became clear that the innovative structures were inadequate. "My creative notions about network, nonhierarchical, team-oriented structures blew out the window," Ghosh stated. Following the failures of his innovative structures, Ghosh adopted a new strategy: "I realized that I first needed control, and the way to get it was through a traditional, hierarchical structure. After I achieved a minimal threshold of control, I could begin to break down the structure. Bureaucracy has some purpose."

Hierarchical, Functional Structure

In February 1989, Ghosh established a hierarchical, functional structure. The functions were organized as teams: there was a sales/marketing team, a software development and services team, an engineering and technology team, an operations team, and a finance, human resource, and administrative team. In creating the functional structure, Ghosh was faced with several issues: How many distinct functional teams should he create? For example, should marketing be a separate group or part of sales? Should there be separate finance and accounting and human resources teams? Who

should head each of the teams? Could the personnel given certain management responsibilities now handle the responsibilities that would come with the rapid growth of the company? For example, could the person made vice-president of sales at a time when sales were $2 million/year handle the sales function when sales were $20 million/year?

While firmly believing in the importance of hierarchy, Ghosh wanted to diagram the structure in a way that minimized the sense of hierarchy. He illustrated the functions as reporting to him in a horizontal fashion. This displeased the board of directors that wanted Ghosh to present a traditional diagram of a hierarchical organizational structure. (See **Exhibit 3** for functional organizational chart.)

At first, titles were given out rather informally. Soon it became apparent that people cared a great deal about what titles they were given. For example, someone wanted to be called senior vice-president, not vice-president. Also, people became concerned with desk locations, i.e. who sat where. Ghosh commented, "Even though we were a relatively small company, politics came into existence."

The team structure succeeded in focusing the company on completing tasks. The sales people now focused on sales. The financial people did financial planning. The structure improved the company's basic capabilities. There was a system of accountability, in which the team heads reported regularly to Ghosh. As Ghosh reflected, "I was involved in everything."

After the functional structure had been in place a few months, various things began to occur. The heads of each team displayed a natural tendency to create sub-functions within their team. For example, the sales team divided into sales and marketing, and then into sales, marketing, and product management. Each of these functions had a manager and then assistant managers. Soon national sales managers and regional sales managers were appointed, and they managed subgroups. All these changes within the sales team occurred within six months of the establishment of the functional structure. (See **Exhibit 4** for the sales team's organizational structure by August 1989.) Every three to four months after the functional structure was originally established, the organizational chart grew vertically and horizontally; more layers were added and more sub-functions created.

Over time, the teams became polarized. For example, in the past, Kapex had an engineering department run by one person. The distinction between engineering and operations, that is building a system and operating it, did not exist. After an operations team was established, the operations people proceeded to clearly define their area of responsibility and to restrict engineering's involvement in operations' functions. The structure inhibited a working relationship, and Kapex ended up having to spend more money on system development and operation than previously.

The role of "personalities" became more pronounced. Standards were set by individuals rather than company policy. The way in which tasks were handled reflected the influences of particular personalities more than notions about how best to accomplish a task. Ghosh told about a meeting he had with the engineering and operating people that went terribly, until Ghosh devised a plan: "Midway through the meeting I told everyone to take out their egos and put them in an imaginary box—'the ego box,' which we then tossed out the window. After that, the meeting was more productive."

Another ramification of the functional structure which proved problematic was that the source of authority was functional, not managerial, expertise. The head of engineering was the best engineer. The same held true for the other functions. Ghosh hired outside people experienced in management to head teams, but they did not know the product as well as did the people in the team. It was often difficult for new managers to gain the respect of the teams because employees had not valued managerial competence traditionally. Ghosh also found that it was very difficult to measure managerial competence.

In addition to finding people with managerial expertise, Ghosh needed people with broader functional expertise. Employees, who had the skills appropriate to a small company or a certain company culture, did not necessarily have those skills needed in a larger organization. Ghosh adapted to the expanding demands by reshuffling people, hiring new people, and promoting and demoting people. For example, some of Kapex's first engineers were "great band-aid" people, according to Ghosh, but did not have the skills to address the emerging need of the company— quality control. Ghosh hired engineers better skilled in quality issues, and had them assume responsibility for the engineering function. The company, in general, had to learn to value new types of aptitudes and to adjust to the attendant changes in the power structure of the company.

In March 1989, four weeks after joining Kapex, Paul Gudonis, Senior Vice-President of Sales and Marketing and General Manager at the time, submitted a letter to Ghosh; in it, he expressed his observations of the existing functional structure's deficiencies, and proposed that Ghosh set up product teams. Gudonis believed that there should be separate product teams for each of Kapex's main products, and that each product team should be comprised of a product team manager and representatives from the functional areas. The product team managers would write business plans for the products, and integrate the functions represented in the product teams. (See **Exhibit 5** for Gudonis's letter.) Ghosh liked Gudonis's ideas and gradually began to hire product managers and to establish product teams. The product teams co-existed with the functional teams. Through this arrangement, the functional teams were informed about product happenings on a daily basis. Although the creation of product teams ameliorated some of the problems of the first functional structure, it generated new problems.

Within the multi-functional product teams, there was no system that specified who had the authority to make which decisions. For example, who had the right to decide a product's features? Should sales people be allowed to decide discounts? Should the product manager be allowed to tell engineering what its priorities should be? The product teams became larger and larger, and the question of who had authority became more troublesome. The conflict between product managers and operations people became acute. The product managers, who developed marketing strategies, often did not know the products as well as the operations people; thus, the operations people believed that their ideas for the product were what should be implemented. According to Ghosh, "there were constant battles among the functional representatives in the product teams. There would be several people in the product team working on one account, each of whom looked at the same problem a different way and none of whom had the authority to make the final decisions. We couldn't afford this."

The product teams did not know where their authority ended. For example, product managers would try to set a sales price, and would be overruled by senior management. The engineering person on the product team would try to commit to the product team's engineering plans, but had no authority to change the engineering team's schedule. Each product team would want its product to be the highest priority of the engineering department. Every product team wanted the most senior person from the functional team to be on its team, in the hope that that person would have more influence within their respective functional team. A solution to the authority problem was to have senior executives attend all product team meetings and make all decisions; some senior managers did this for a while. For example, the head of operations spent over 40 hours per week in product team meetings. However, this was not a feasible solution because the senior executives needed time for their other responsibilities.

The product teams also generated more resource allocation problems, both within the product teams and among them. The product teams had no system to set priorities about how resources should be divided within the team. In addition, the corporate management team was faced with new allocation decisions. For example, each product team wanted a strong marketing department, which made sense, but it was difficult for corporate to justify spending so much on marketing when other functions lacked some resources.

In response to the authority and resource allocation problems, Ghosh created business teams. The business teams were intermediaries between the product teams and the corporate management team, and had the authority to make decisions, including resource allocation decisions, regarding the products. The business teams included representatives from senior management. Those product teams that operated on the same network and shared the same customer base reported to one business team. Business teams were established in November 1989. (See **Exhibit 6** for product team/business team organizational chart.)

Overall, the functional structure overlaid with a product team/business team structure proved to have many shortcomings. One shortcoming, in Ghosh's words, was that "there was more tail than tooth." He explained: "In the past we had many revenue-producing people, people who were consultants, dealt with customers, built products. Now we had a lot of people planning, counting, and greasing the wheel." As the company created new products and extensions of existing products, there were more product groups, meetings, and layers of management. The company had approximately 120 employees, many of whom were recent hires. Bob Lentz, Senior Vice-President and General Manager for the IS division, explained that training costs were high: "We kept stretching the organization, and bringing in new people. The new people generally had no experience in the cellular industry because the industry was only seven years old. They had to be introduced to the industry and the product." The infrastructure costs kept escalating, and this was problematic because the company's pricing policy relied on Kapex being a very lean organization.

Moreover, customer focus diminished. People became more concerned with internal processes and issues than with meeting customers' needs. For example, people began having many meetings about how to communicate, and how the product teams/business teams should make decisions.

Finally, people became less concerned with meeting company-wide financial goals. One reason for this was that there was no system of profit and loss accountability. Ghosh explained: "There were too many variables for any individual to control in getting a task done, so it was unclear who was responsible when something did not happen. People could get away with a 'who-cares-attitude.'" Profit and loss statements at the end of the month did not meet expectations. Ghosh stated the general outcome of functional/product team/business team structure: "Kapex moved from an organization where everybody was doing everything to one with a lot of process and where things were not getting done." It was time for a structural change.

Divisional Structure

In August 1990, Ghosh implemented a divisional structure. He established two broad divisions (businesses): Intercarrier Services (ICS) and Cellular Management Information Systems (IS). Kapex's products logically could be divided into one of the two businesses. At the same time, he created a third division, Operations, which included utility functions that serviced the two businesses. Each division had one head who was responsible for the entire division and reported to Ghosh. The vice-president of finance and administration and the director of human resources also reported to Ghosh. (See **Exhibit 7** for divisional organizational chart.)

The divisional structure had many advantages. It improved accountability, budgeting, and planning. Employees focused on meeting financial targets. Within divisions, there was a great deal of cooperation. Ghosh was able to spend less time addressing the day-to-day operations of the company and more time planning its strategic direction. Ghosh commented on how his role changed: "One year ago, I was involved in everything. Under the functional structure, all information came to me. In the divisional structure, there was a lot of information I didn't see. We keep moving to the point where the company could run without me."

In time, the divisional structure generated its own problems and challenges. Some problems of the functional structure persisted after the implementation of the divisional structure. One such problem was resource allocation. The senior executives' decisions about resource allocation were not always perceived as equitable. Ghosh explained: "People think senior management is violating some intrinsic equity code, but sometimes it is necessary to allocate resources in a way that to some might seem unjust. The problem of shared resources has led to antagonism between the divisions." Ghosh provided an example about the politics involved in resource allocation: The person made head of IS was previously the company's chief financial officer. He was told about his new position three days before the plan was implemented. After it was implemented, members of the ICS group accused him of securing resources for IS when he was still chief financial officer. As Ghosh stated, "There was a lot of second guessing going on." Ghosh decided to remove all development money from each division, and have the divisions present funding requests on an individual project basis.

Another resource allocation issue was that divisions wanted control over all their resources; they did not want to share resources. For example, each division wanted its own database manager. When the first database manager was hired for the whole company, the person was told to report temporarily to one of the division heads. Right away, that database manager was subsumed into that division, and Ghosh had to hire a database manager for the other division. Ghosh found that he often had to buy things in triple because that was necessary or because it was too difficult to coordinate the sharing of resources among the divisions.

A second problem with the divisional structure was that while there was cooperation within them there were high walls between them. There was little communication flow across divisions, and little cross-pollination of ideas. Ghosh noted that once the divisional structure was implemented, he received few new product development ideas. Kapex's forte had always been new product development. Ghosh hypothesized that certain products did not get developed because they did not fall neatly into the narrow confines of one division or the other. He received many product extension or improvement ideas, but few brand new ideas.

Ghosh hoped to spur product development and communication across divisions by setting a company theme of quality and creating multi-divisional, multi-functional quality teams. He also established other centralized teams, such as a centralized product development team (in addition to the divisional product development teams). He rotated employees across divisions, and made the head of one of the divisions the head of the centralized product development team.

Another phenomenon Ghosh observed was that after a short while the divisions began to act like small companies. They each developed their own business procedures. For example, each division wanted to use a certain technical platform. The company, though, could not support more than one technical platform. As each division grew (in fact, each division was becoming two to three times the size that Kapex had been when it was organized functionally), the division faced structural questions similar to those Kapex faced as a young company. For example each division questioned whether it should divide itself into functions or if that would impede cooperation within the division. The divisions began to "play games" with their financial statements (e.g. setting aside an unreported pool of money) to meet financial objectives. As the divisions subdivided into more layered structures, each sub-division "played games" with its numbers, and it became difficult for the senior executives to gain an accurate sense of the financial status of the company.

Ghosh's Structure Philosophy

Ghosh anticipated that the next structural change would be implemented in mid-1991. He believed that Kapex's structure should be altered regularly: "Every six months by design I change the organizational structure. I changed it in January 1991, and I'll change it again in June 1991. We're growing at 10% a month. I feel when a company has grown 50%, it is time to change." Many

structural changes reflected employees' suggestions: "Changes come about because people identify a problem and propose a solution to me. I get confidential suggestions about what structural changes to make."

One suggestion, proposed by Ted Baker, was to have the operations division's functions be incorporated into the other two divisions, and operations as a division be disbanded. Data processing would be the exception; it would be a centralized, shared function. In February 1991, Baker stated: "The current structure is untenable for any length of time because the divisional heads want to control all the major components of their respective divisions. I think the divisional structure as it exists now will only last one more month." He expected that a third division—international business—would be established to position Kapex abroad.

Ghosh was always surprised by the immediacy of the impact of structural changes: "What's striking to me is how quickly behavioral changes occur in reaction to structural changes." He asserted that although structural changes created some anxiety among employees, they were necessary: "As we hire new people and the business changes, we need to change the structure to match the people and the business with the structure. People feel a lot of confusion. I tell them, 'whatever you're sure of will change.'" He mitigated the uncertainty caused by structural changes by clearly communicating company financial targets. Targets established stability. Ghosh stated: "I create the semblance of control by setting targets. Targets send a clear message that everyone can understand. Everyone has a point they can focus on."

Ghosh also asserted that changing the structure involved more than cosmetic changes to an organization chart or changes in the reporting structure. The incentive scheme, resource allocation system, and other systems had to reinforce the structure. For example, in 1991 Ghosh established a bonus system, which in his view seemed to be fostering teamwork.

Post-EDS Acquisition

In October 1990, Electronic Data Systems (EDS), a $6 billion information systems management company owned by General Motors, acquired Kapex. As a division of EDS, Kapex had to follow EDS's requirements, such as its financial planning systems, resource allocation systems, and administrative procedures. Ghosh's role changed after the acquisition: "I spend my time dealing with EDS and planning the strategic direction of Kapex within EDS." Following the acquisition, Kapex's challenge was to work out its own divisional structure and structural changes in the context of its role as a division of a larger, bureaucratic organization.

Exhibit 1   Forecasted and Actual Growth in Number of Employees
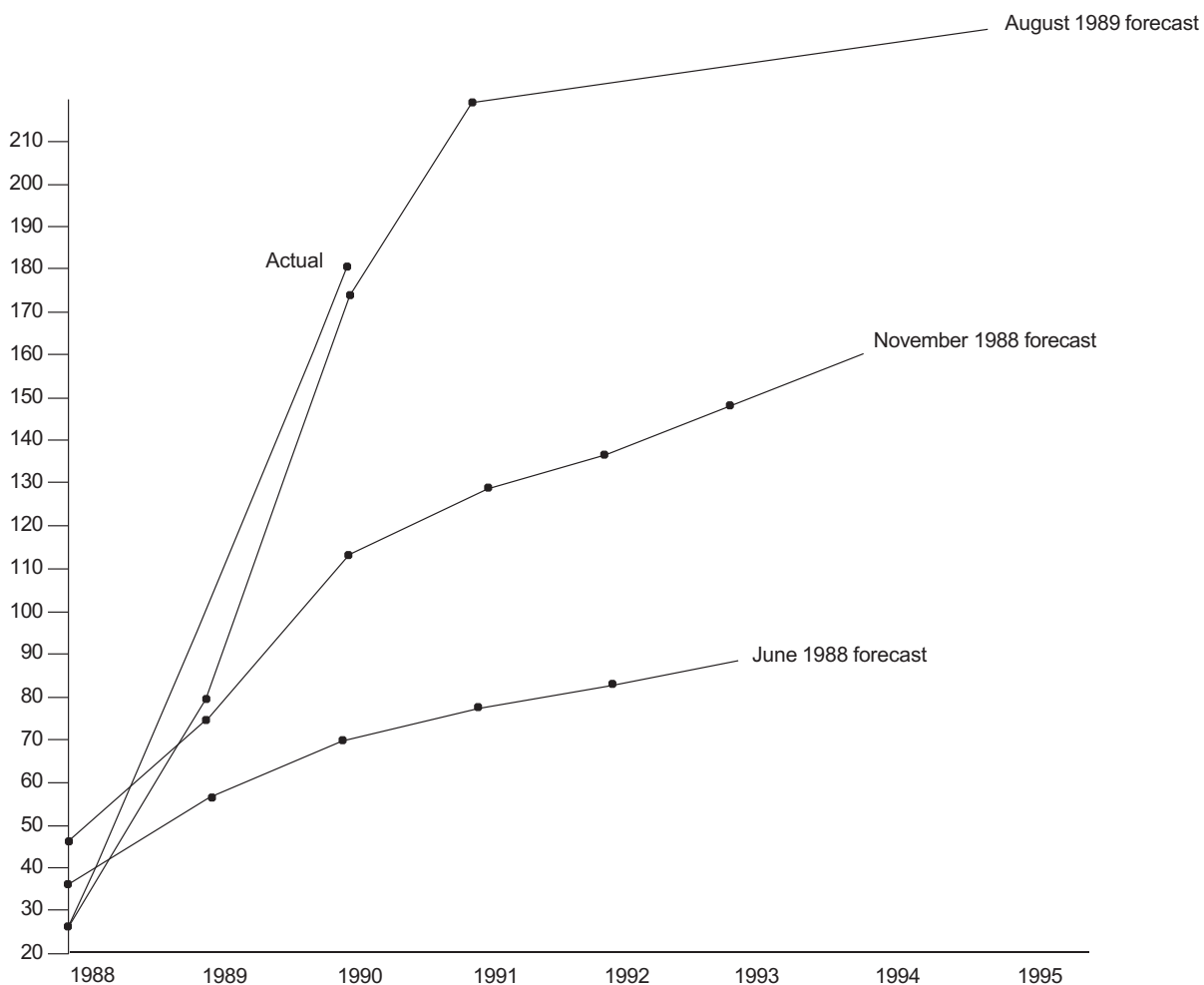
Calendar Year End	June 1988 Forecast	Number of Employees November 1988 Forecast	August 1989 Forecast	Actual
1988	36	45	26	26
1989	55	75	79	103
1990	66	112	176	180
1991	72	130	265	
1992	77	134	369	
1983	83	145	480	
1994		159	586	
1995			675	

Exhibit 2 Circular Structure

Customers

Customer Service People

Customers

Customers

Customer Service
Manager
(Beverly Watts)

Operations
Manager
(Bill
Pistorino)

Operations
People

Sales
People

Sales
Manager
(Denise
Allen)

CEO
(Brian
Boyle)

COO
(Shikhar
Ghosh)

Customers

Admini-
stration
(Mark
Lohr)

Admini-
stration
People

Customers

Engineering Manager
(Michael Perfit)

Engineering People

Customers

Exhibit 3   Functional Structure

SALES AND MARKETING Paul Gudonis

- Information Systems Marketing
- Billing Service
- Network Product Management
- Marketing Communications

FINANCE, ADMINISTRATION, AND HUMAN RESOURCES Bob Lentz

- Finance/General Accounting
- Facilities
- Word Processing
- Human Resources Administration

OPERATIONS Ted Baker

- AB + ISS, Computer Operations
- AB + Client Support
- Technical Support
- Network Implementation
- PRV Installs and Development
- ICS Customer Support
- Roaming America Support

CHIEF EXECUTIVE OFFICER Shikhar Ghosh

SOFTWARE DEVELOPMENT AND SERVICES Jim Driscoll

- Software Development
- Product Support Services
- Client Support
- Documentation
- Consult Q/A & Training

ENGINEERING & TECHNOLOGY Paul Senn

- Roaming America Development
- New Product Development
- Network Engineering
- Software Development

Exhibit 4   Sales and Marketing Team's Organizational Structure (August 1989)

MARKETING AND SALES TEAM

Paul Gudonis
Sales & Marketing

• Sales and Marketing Management
• P&L responsibility for all product lines
• Product line operating plans
• New business development, joint ventures

Denise-Archer Allen
V.P. Sales & Account
Management

• Sales management responsibility for all
  APEX accounts
• Participation on all APEX Product Teams
• APEX sales strategy development

Bruce Linton

National Sales Manager

• Responsibility for driving monthly sales
  forecast; account training and accounting
  planning

National Account Manager
• **Account Management Responsibility**
  for all APEX accounts

Kevin O'Reilly
• LIN, CCI, ComCsst, etc.
Allison Woodhull
• MetroMobile, Cantel, Syracuse, etc.
Chris Considine
• SW Bell, Contel, Nynex, BAMS, etc.
Chuck MacGillivray
• McCaw
        Regional Managers
• **Account Management Responsibility**
  for Regional Accounts

Tom Williams
• MidWest: Chicago Cell One, U.S. Cellular, etc.
Jon May
• South: Metrocel, Houston, Radiofone, etc.
Randy Thompson
• West: PacTel Corp., U.S. West, BACTC, LACTC. etc.

Tom Wetmore
Director
Information Systems
Marketing

• CMIS product line marketing strategy
  and Business Plan
• P&L responsibility for CMS products
• Pre-sale support for CMIS sales opportunities

Jackie Appel
Tom Payne

• Marketing project responsibility
  for CMIS Product Line
• Pre-sale support for CMIS sales
  opportunities

Pam Joy

Team Leader
Product Mgmt

• Marketing strategy and Business Plan for ICS
  product line
• P&L responsibility for ICS products (PRV,
  ISS, CCB, CCR, RR)
• Pre-sale support for ICS sales opportunities

Andrew Arnoff
 • P&L responsibility Roamer Rating & QC products
Cheryl Curran
• P/L responsibility for RSA Products & RTRB products
Maxine Link
• P/L responsibility for Roaming America products
Rhonda Koegel
• P/L responsibility for PRV products

Kathy Adams

Project Director
International

Greg Hillman
Director
Billing Service

• ABS marketing strategy and
  Business Plan
• P&L responsibility for ABS
  Operations
• Pre-sale support for ABS
  sales opportunities

Kim Obremski
Marketing
Communications
Manager

• APEX Marketing Communications
• Newsletter
• CTIA Trade

Linda Valiant
• Associate Writer

Henry Kowalczyk

Director
Industry Marketing

• B-Band Mtkg
• CTIA Interface

Keith Liettke
Director
Network Services
Marketing

• LD
• Excell
• Network Mgt
• Sprint JV

Exhibit 5   Paul Gudonis's Organizational Audit (March 1989)

Observations about functional structure:

1. There is no business/operational plan, just fire-fighting and multitudes of projects. There are no financial forecasts.

2. Nobody, except the president, is acting as "integrator" with responsibility for products and projects across departments.

3. The company's growth has out-stripped the management capabilities of certain personnel.

4. There is no "checks and balances" system among departments.

5. No one has responsibility for the system architecture, capacity planning, and the integrity of the network.

6. There is limited senior management teamwork.

7. There is a lack of accountability, unclear job definitions, and people do not know who is responsible for what.

8. There is a lack of tactical planning, and scheduling of meetings and trips. Meetings are called at last minute.

9. The culture permits laxity in meeting commitments. People take a "who cares" attitude.

10. There are staffing delays because of recruiting problems. There is no evaluation about why we are not getting the people we need.

11. The technical culture implies an "it's good enough" attitude rather than an effort to truly meet customers' needs.

Recommendations

1. A "3-page business plan" should be created for each product line (CMIS, ABS, PRV, ISS, RoamAmerica). The plan should include financial information, quarterly tasks and milestones, departmental tasks, and staffing requirements.

2. There should be product managers responsible for product teams. The role of product managers should be announced to the company. Product team members should be appointed from the functions. Product managers should be coached about how to do their job.

3. The company should reduce the scope of management responsibilities, and hire product managers from the outside.

4. A product team organizational chart should be diagrammed. The chart should show the responsibilities of the product team, and the relationships within the product team and between the product teams and senior management.

5. There should be regular meetings to review the progress of the structure.

6. Clear job descriptions should be written, and people should be told what their responsibilities are.

7. Everybody should be required to write four week advance plans.

8. Senior management should lead the way by setting an example of good managerial practices.

Example of Product Team Structure for RoamAmerica

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                    ┌─────────────────┐      • 12 month business plan
                    │ Product Manager │      • Master project schedule
                    │ RoamAmerica     │      • Integrate the functions
                    └─────────────────┘      • Product's functional speculations
                                             • Acceptance of software
                                             • Marketing details
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Development Representative	Operations Representative	Finance Representative	Customer Service Representative	Sales Representative
• Development Speculations • Timetable • Resources • Testing • Systems Requirements (Hardware and Software)	• Operational Plan • Procedures • Staffing • Operational Reporting • Capacity Planning	• Financial Forecasts (Revenues) • Capacity Financing • P&L Reporting vs. Plan Contract Administration	• Customer Service Plan • Staffing • Procedures • Training Customer Service Representatives • Training Customers	• Sales Plan • Sales Forecast • Sales Training • Proposal Sample

Exhibit 6   Product Team/Business Team Structure

General Management Team	Business Teams	Product Teams
		PRV/IS41
	Intercarrier Services Paul Senn* Denise Allen* Pam Joy	**ISS**
		QuickCollect
		RoamingAmerica
General Management Team S. Ghosh* B. Lentz P. Gudonis T. Baker		**CMIS**
	Information Services/AB+ Art Zamkoff* Tom Wetmore Jim Driscoll Jose Quintana	**AB+**
		Roamer Rating
	New Products/Markets Mark Lohr* Denise Allen Paul Senn Jim Driscoll	**National Accounts**
		Excell/ Network Mgmt.
		International
		Joint Ventures

• Product line strategy
• Annual Operating Plan

• Overall Business Plan and Strategy
• Functional Strength
• Capital/Resource Allocation
• Investor/Board issues

• Investment priorities
• Actual vs. planned results
• Key customer relationships

• Functional coordination
• Execution of plans
• Product development/ improvements

∗ Chairpersons

Exhibit 7   Divisional Structure

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                          ┌─────────────────────────┐
                          │ Chief Executive Officer  │
                          │     Shikhar Ghosh        │
                          └─────────────────────────┘
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| ICS Division

Paul Gudonis | ICS Division

Bob Lentz | Operations

Ted Baker | Finance & Human Resources
Mark Lohr
Catherine Latham |

- P&L Responsibility for ICS Business
- ICS Marketing

- P&L Responsibility for IS Business
- IS Marketing

- Customer Service Data Center and Network Services for Businesses

- Administrative Support