SYSTEMS OPERATIONS VENDOR ANALYSIS

1991

INPUT

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Systems Operations Program (SOP)

Systems Operations: Vendor Analysis

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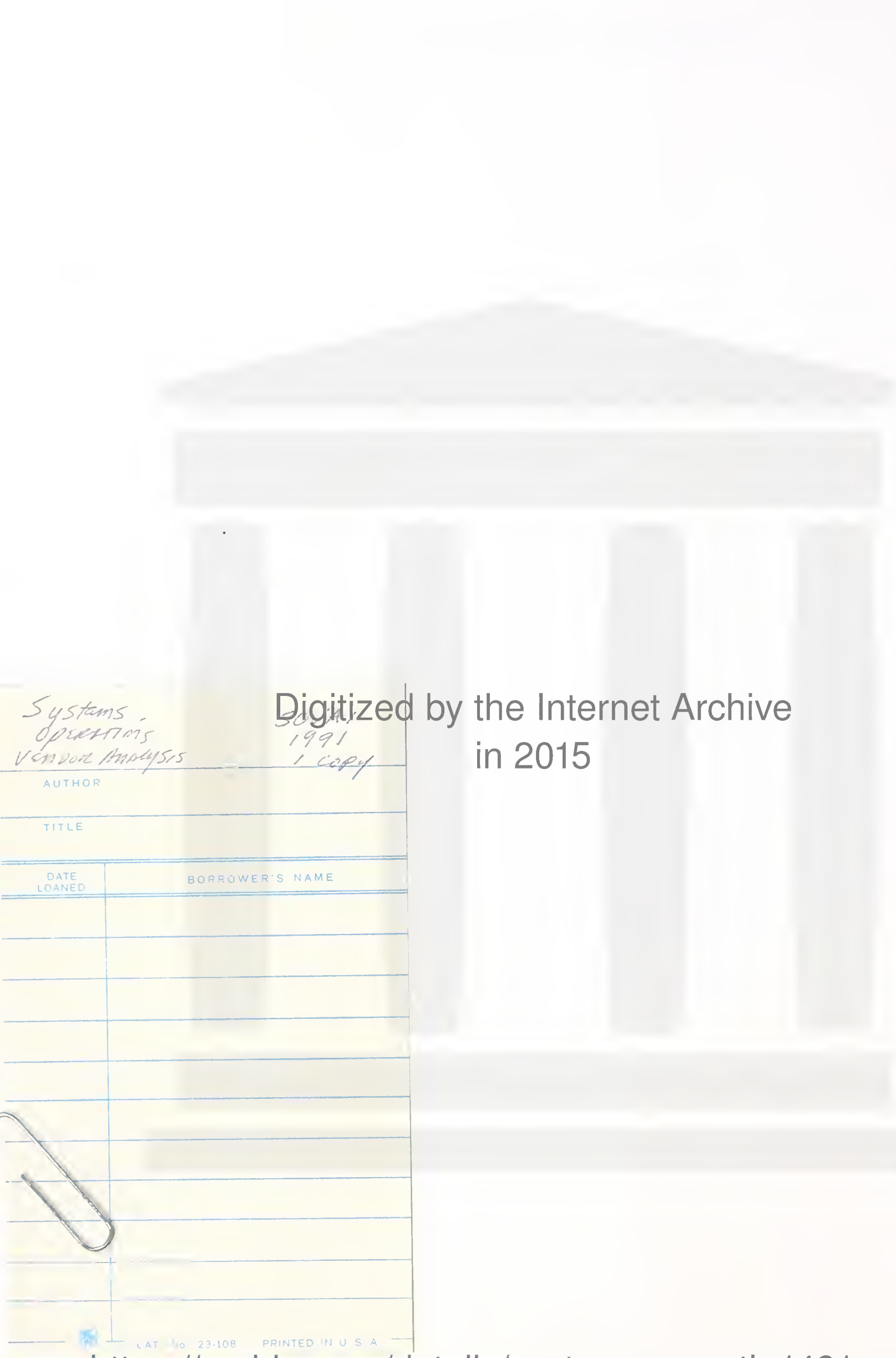
Abstract

This report examines competition in the systems operations market in the U.S., based on 1989 revenues and organizational structure. Once included as components of the processing services and professional services markets, INPUT now views systems operations as a separate and major information services delivery mode.

This report is based on a definition of systems operations, where the vendor contracts to perform all or a major portion of an information system operation on a long-term basis, longer than one year.

The report includes a competitive structure for the systems operations market and provides comparative analysis of the classes of vendors within that structure. It includes detailed profiles of the major SO vendors and examines their business objectives, organizations, financial characteristics, strategies, market focuses, and capabilities. The report also identifies and analyzes user trends and issues that provide the driving forces for this market.

Conclusions are drawn about the likely evolution of the market.



Systems Operations Vendor Analysis

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AUTHOR

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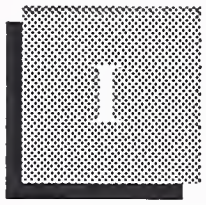


Introduction

The systems operations market has emerged as one of the strongest growth markets in the information services industry in the last two years. Changes in vendor relationship to users, rapid acceleration in technology improvements, and changes in the economic conditions of U.S. business have all had an effect on the systems operations market.

The relationship of vendors to users began changing when buyers looked to vendors for systems integration help to take advantage of new technology more rapidly. Clients became more willing to entrust their major projects to third parties. Vendors successfully demonstrated they could provide expertise that many firms could not maintain in-house.

Some of these systems integration projects led inevitably to systems operations contracts. When the vendor had done a good job of developing and implementing the new system, the client believed the vendor should be able to provide ongoing systems operations also. Early success in outsourcing operations in these cases made the concept of systems operations—where the vendor provides the services previously provided by the in-house staff—more acceptable to companies that had not considered it before.

Outsourcing solved other major client problems also. Clients were losing the race to keep up with technology changes and to maintain the level and quality of staff required, particularly in light of this ever-changing technology. This was especially true in the federal government and in industries with narrowing profit margins.

These two factors alone would have stimulated the demand for outsourcing of systems operations, but the recent downturn in economic conditions has heightened the need for many companies to reduce their information services expenses. Many companies have also recently undergone transition in their information service demands because of mergers and acquisitions.

A

Objectives

INPUT has been closely watching these trends and directions, and presents this report to examine the competitive structure of the systems operations market. The report analyzes the current vendors' activities in the marketplace, projects emerging trends among vendors, and reviews systems operations issues.

The primary objective of this report is to present an accurate analysis of the competitive structure of the market for systems operations. To this end, the following goals have been established for this report:

- Identify the leading vendors in the systems operations marketplace today
- Examine the origins of the leading vendors and how their roots affect their strategies in this marketplace
- Describe how systems operations are being offered and what the trends are in delivery modes
- Project how the leading vendors will behave in the market in the next three years
- Identify emerging vendors and the markets in which they will most likely participate.

B

Scope and Methodology

1. Scope

This report examines the activity in the U.S. commercial and federal systems operations markets. The vendors profiled represent both multi-industry vendors and some who have chosen to concentrate their activities in only one or two vertical markets.

2. Methodology

To examine how vendors are dealing with the emerging SO market, INPUT conducted a survey of 13 executives in systems operations companies. The list of companies is contained in Exhibit I-1.

EXHIBIT I-1

Companies Interviewed

Company Type	Company Name
Hardware Manufacturer	Digital Equipment
Equipment Services	Andersen Consulting Computer Task Group SAIC McDonnell Douglas
Processing Services	EDS Systematics Genix Group Power Computing STM Systems Corp. Systems & Computer Technology
Other	Citicorp Mellon Bank

The topics that were examined are outlined in Exhibit I-2. The results of the survey and discussions are a series of individual vendor profiles that are included in this report. As part of INPUT's continuing Systems Operations Program, additional interviews will be conducted, and profiles of additional companies will be added to this report.

EXHIBIT I-2

Survey Subject Areas

- Background
- Organization/responsibilities
- Customer Base
- Financial Characteristics
- Strategy and Markets

In addition to the individual profiles, the information gathered in the survey process was aggregated and analyzed to identify trends and issues relevant to the market.

C

Report Structure

This report is organized in the following manner:

- Chapter I, Introduction, acquaints the reader with the objectives of the report and outlines what is to follow.
- Chapter II, the Executive Overview, provides a summary of the contents of the entire report.
- Chapter III, Competitive Structure, groups vendors participating in the systems operations market into four classes based on their primary businesses. It also identifies forces that are driving the systems operations market and identifies the leading vendors in this market.
- Chapter IV, Vendor Profiles, contains the profiles for individual vendors. Additional profiles, as they are developed by the INPUT staff, will be sent to SO program clients for insertion in this report.
- Chapter V, Comparative Analysis, summarizes the strategies, capabilities, and offerings of the various market participants and compares them by vendor class.
- Chapter VI, Summary and Conclusions, presents INPUT's summary of the market conditions and some recommendations for operating in this growing marketplace.
- Appendix A contains the vendor questionnaire used to obtain much of the research information used in this report:

D

Related INPUT Reports

For a complete view of the information services market, readers are encouraged to review the following INPUT reports:

Information Services Industry Reports—
Industry-Specific and Cross-Industry Markets (1990)

For a further look at the systems operations market, readers are directed to the following INPUT reports:

Systems Operations—Growth for the 1990s (1989)

Systems Operations—Management Issues and Practices (1990)

Systems Operations Market Analysis, 1990-1995 (1990)

Federal Processing Services/Systems Operations Market, 1989-1994 (1988)

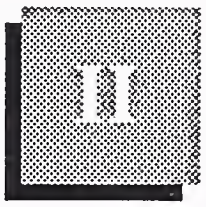
Network Operations Management (1990)

Those interested in details on the systems integration market are directed to the following additional INPUT reports:

Systems Integration Market Analysis, 1990-1995 (1990)

Network Integration—A Growing Market (1990)

U.S. CIM Systems Integration Markets (1990)



Executive Overview

A

Background

This report examines competition in the systems operations market. Only a few years ago there was serious question as to whether the facilities management business had significant growth potential.

During the last two years, for a number of reasons that will be described later in this summary, there has been a renewed interest in a new form of this service, which INPUT calls systems operations (SO). Under systems operations, services vendors take full responsibility for the planning, management, operations, and control of the user's information systems.

The objectives of this research and the resulting report are to present a current and accurate analysis of the competitive structure of the market, to examine the capabilities and strategies of key players, and to identify key trends and issues that will impact the position and strategies of vendors over the next five years. Thirteen vendors participated in this study.

INPUT has been tracking the development of the systems operations market for several years. Prior to 1990, INPUT tracked the systems operations market as two delivery submodes of the processing services and professional services delivery modes. In 1989, it became apparent that systems operations was becoming much more important, and INPUT established it as a separate delivery mode in 1990—one of eight that INPUT tracks. This vendor analysis report is the first that deals only with systems operations vendors.

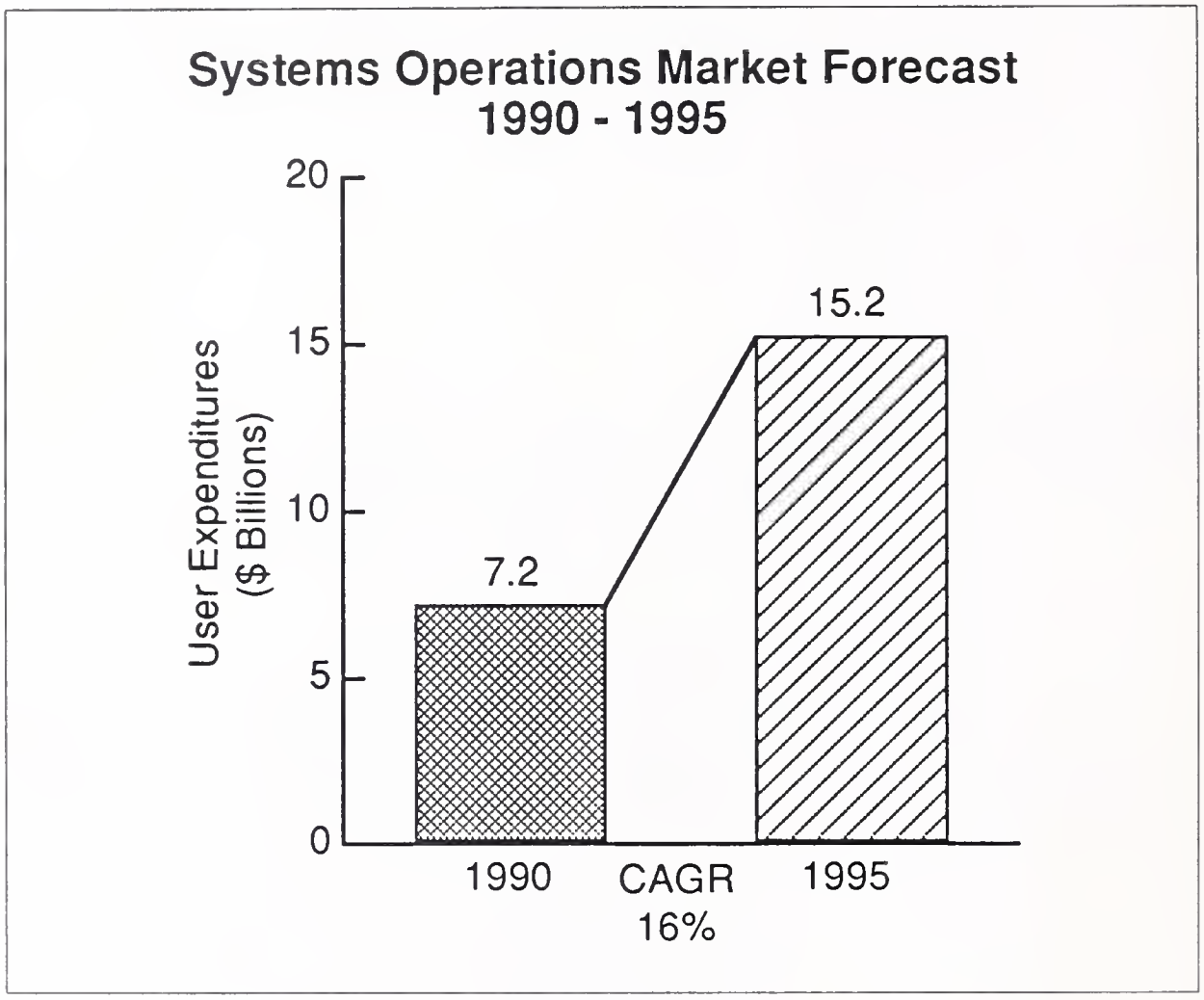
B

Systems Operations Market Forecast, 1990-1995

In 1990, systems operations revenues reached $7.2 billion for all segments of the U.S. market, representing 7.2% of the $100.6 billion information services industry. INPUT believes that for the period 1990 to 1995, systems operations is the third fastest growing information services delivery mode, with a 16% compound annual growth rate (CAGR). It trails only systems integration, with a CAGR of 19%, and network

services with a CAGR of 17%, and is growing two percentage points faster than the entire information services industry, forecasted to grow at a CAGR of 14%. Exhibit II-1 presents the forecast for the systems operations market for 1990 to 1995.

EXHIBIT II-1



C

Leading Vertical Industry SO Markets, 1990

A detailed analysis of the systems operations market by 16 vertical industry markets is available in the INPUT report, *U.S. Systems Operations Markets, 1990-1995*. The banking and finance industry is the largest vertical market for systems operations in 1990, as shown in Exhibit II-2, where the next four vertical markets are also identified.

EXHIBIT II-2

Leading Vertical Industry SO Markets, 1990

Vertical Industry	1990 User Expenditures ($ Billions)
Banking and Finance	1.9
Federal Government	1.3
State and Local Government	1.0
Medical	0.8
Insurance	0.8

D

Systems Operations Driving Forces

It is important to recognize the driving forces of the systems operations market. They are identified in Exhibit II-3.

Skilled information systems personnel are becoming harder to acquire and more difficult to retain. Certain industries, because of their depressed wage structures, are finding it difficult to attract personnel. Others are finding staff with certain skills in short supply, particularly those with communications technology expertise. By using outside vendors, existing expertise is leveraged across several clients.

Corporate management has become concerned that much of its attention and energy is being diverted to information systems problems when it should be focused on more fundamental operational problems. It's a dilemma for management, since most executives recognize the importance of information systems to the health of their business, yet do not understand the technology or how to manage its day-to-day operations. INPUT believes that more will decide to entrust systems operations, and in some cases systems development and maintenance, to outside experts as information technology continues to increase in complexity.

EXHIBIT II-3

Systems Operations—Driving Forces

- Lack of skilled personnel
- Management focus on core business
- Need to preserve capital/reduce expenses

Coupled with the demands of rapidly changing technology, management is increasingly under pressure to preserve capital and reduce expenses. Shrinking margins in many commercial industries, changing demand patterns for goods, reduced budgets in the government sectors, and a general slowdown in the economy are all affecting the availability of funds. The restrictions on new spending add to the pressure to do more with existing funds. Under these conditions, the economies of scale and leveraging of resources offered by systems operations vendors become very attractive.

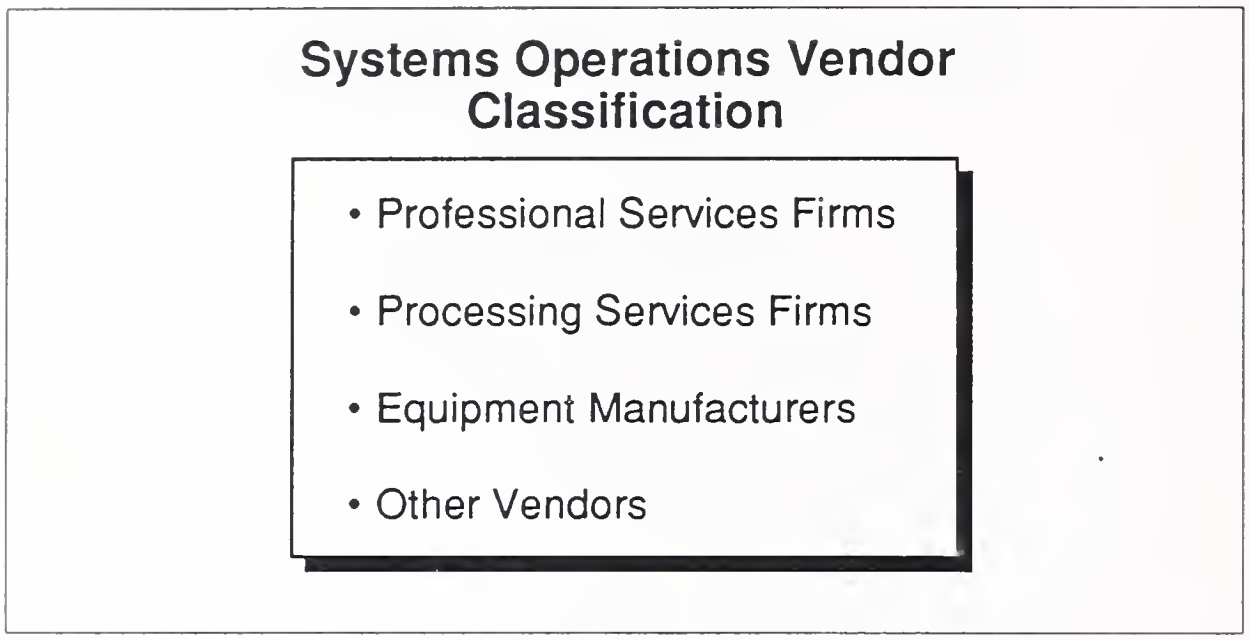
These fundamental trends are translating into an accelerated demand for systems operations. Many executives across the broad range of vertical industry markets are asking their information systems executives to examine systems operations for applicability to their businesses.

E

Systems Operations Vendor Classification

Examination of the vendors' backgrounds and analysis of the data identified correlates between the overall classes of vendors and their general approaches to the SO business. INPUT established the four classes of vendors, identified in Exhibit II-4 and discussed below:

EXHIBIT II-4



- Professional services firms have entered the systems operations business either as an outgrowth of their systems integration business or as a follow-on to other professional services engagements where they were providing personnel to develop or maintain applications software or to operate existing hardware.

- Processing services companies are looking for new markets since the introduction of the personal computer and departmental computing destroyed most of the demand for their timesharing services. While other forms of remote processing services supplemented some of these losses, systems operations offers opportunities for exciting new growth.

- Equipment manufacturers developed a renewed interest in the systems operations business over the last two years as they saw the other SO segments begin to penetrate their client bases. They recognize that SO can provide new sources of revenue and profits as equipment margins fall, but also understand that they must participate to protect distribution channels for their traditional products.

- A group of "other" vendors emerged that are also participating in the SO market. These companies developed superior operating procedures internally and are applying that experience, strong vertical market knowledge, and excess internal capacity to generate revenue.

F

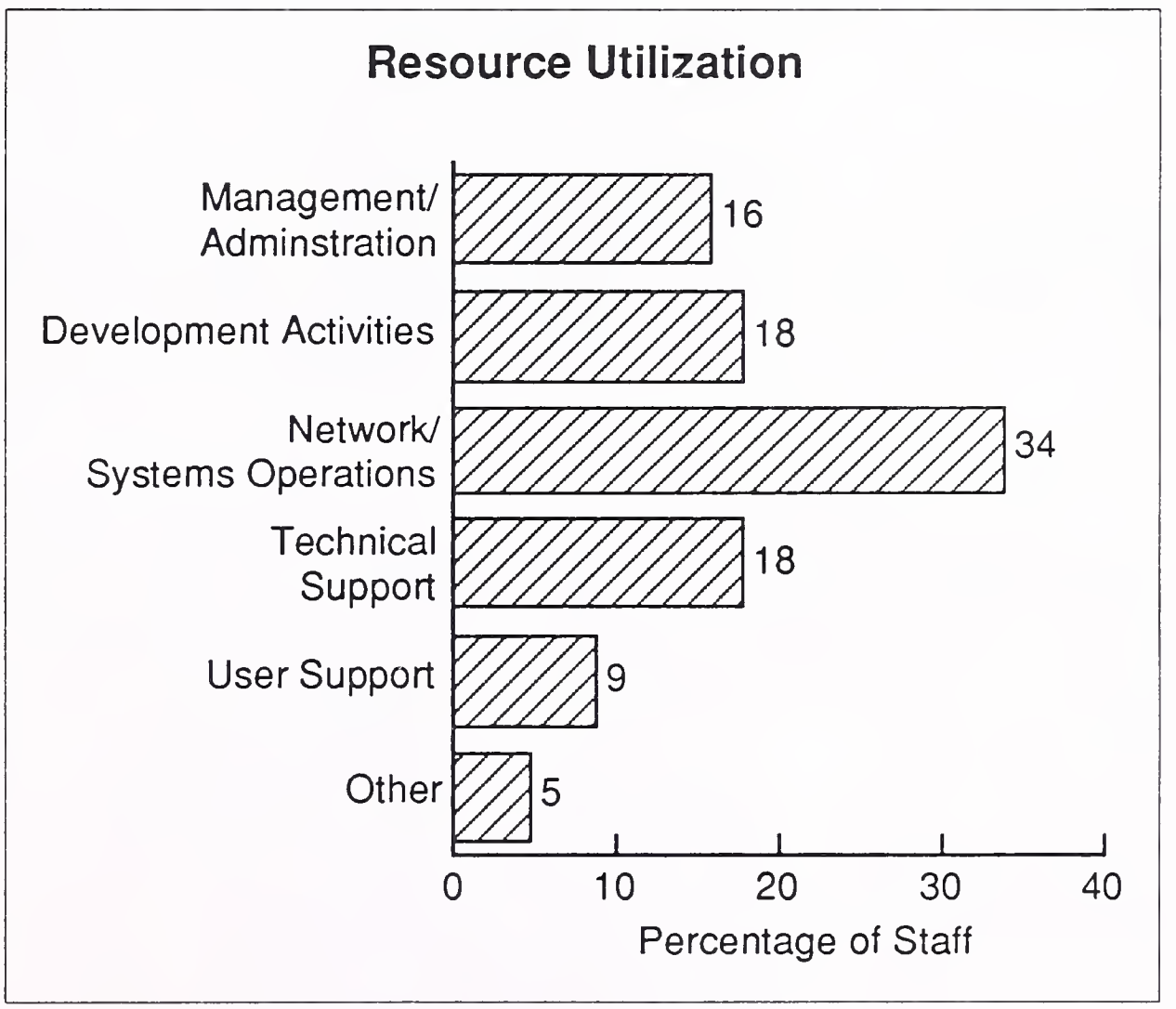
Organization/Resource Utilization

The organizations of the 13 systems operations companies studied varied. Most of the processing services firms that participated in the survey are independent or wholly owned companies whose primary business is SO. The remainder of the companies that come from the other segments generally operate as divisions of their parent organizations.

Within the organizations, resources are generally distributed as shown in Exhibit II-5. As might be expected, the majority of the resources are assigned to network and systems operations and technical and user support.

Almost 20% of the resources are devoted to application and network design and development. A growing number of SO vendors are expanding their services into applications and network development and maintenance activities. This supports the notion that users are looking for and vendors are selling expanded information services outsourcing services.

EXHIBIT II-5



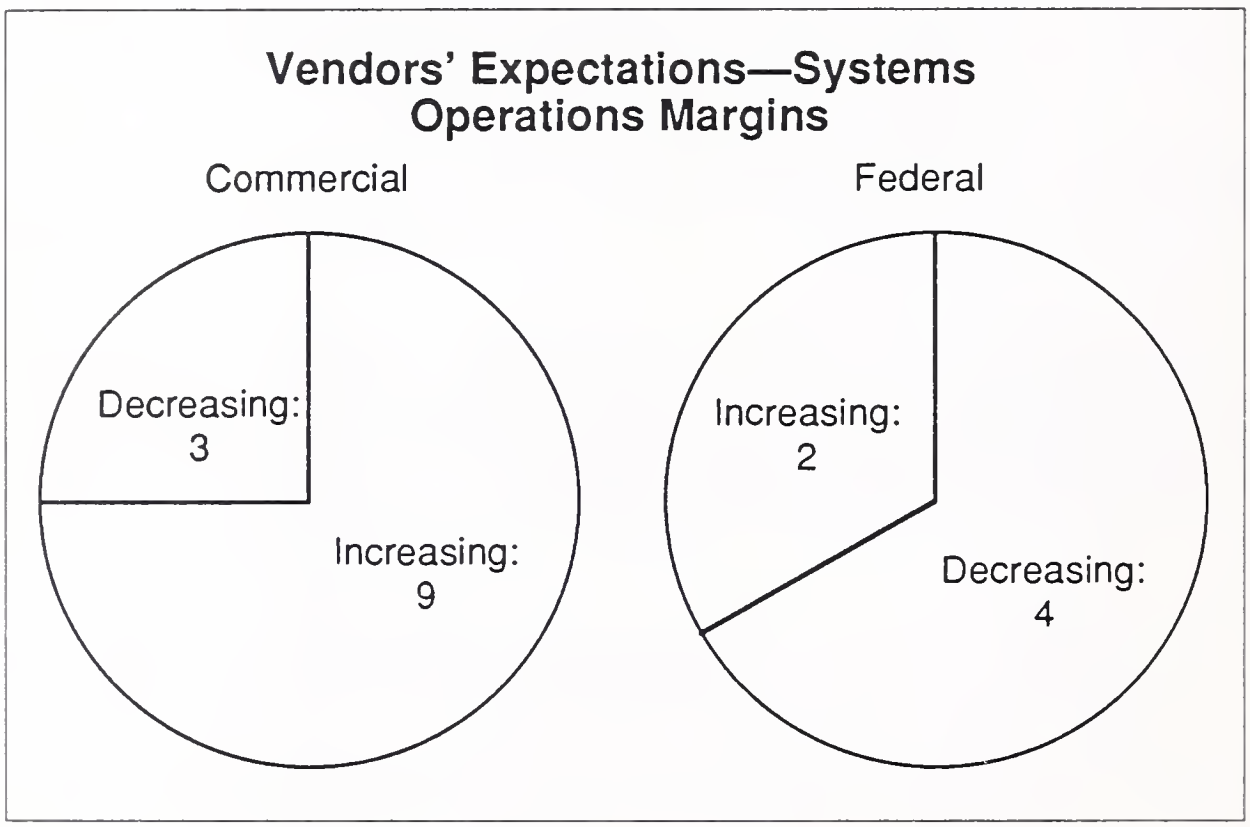
G

Financial Characteristics

While large systems operations contracts receive much publicity, the majority of SO contracts are relatively small. Nine of the 13 vendors surveyed provided data on over 1,200 contracts. Average annual revenues for these contracts were $1.5 million, and most were from three to eight years in length.

Most vendors would not divulge details on systems operations margins. Those who did indicated that before-tax margins were in the range of 8% to 12%. As shown in Exhibit II-6, most vendors thought that commercial margins are improving, and four out of six thought federal margins were decreasing.

EXHIBIT II-6



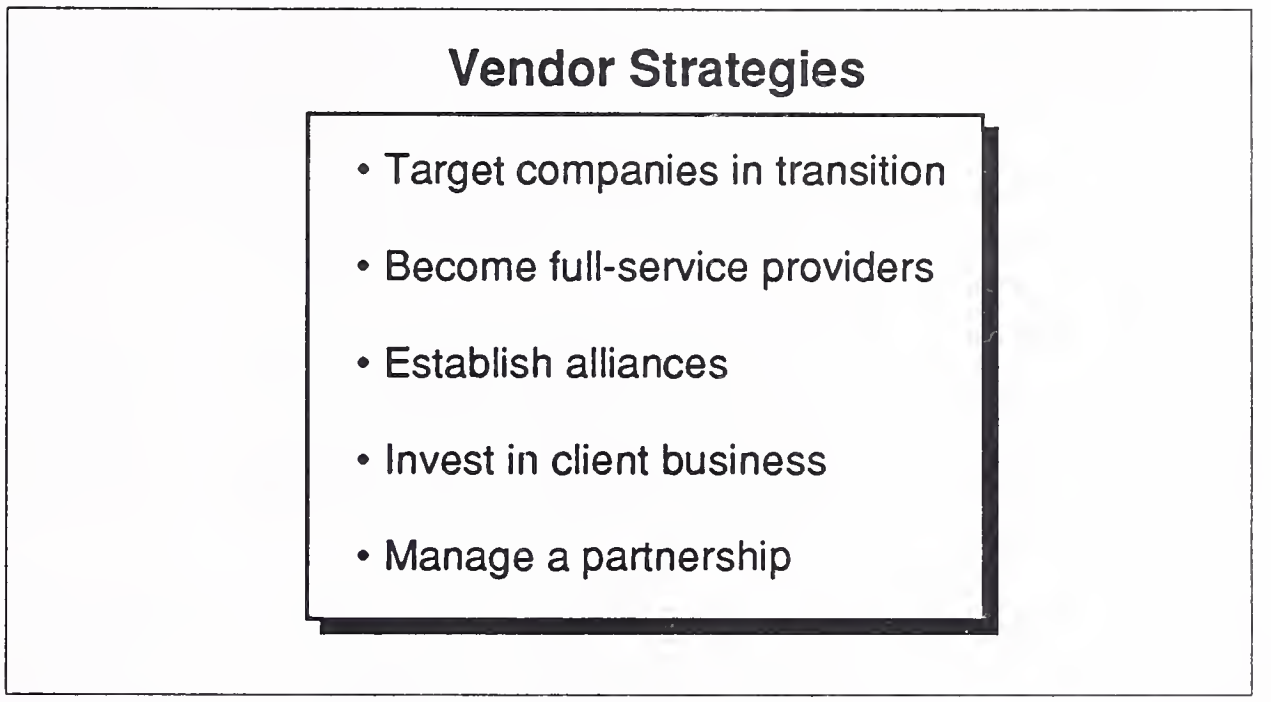
H

Vendor Strategies

A number of vendor strategies are summarized in Exhibit II-7. They have evolved as a result of market conditions and user requirements. INPUT has identified them through this and a number of other systems operations studies.

Early targets for systems operations vendors were companies in transition. These can be fast growing companies or, in the trying economic times of the 1990s, companies that are under organizational or financial stress. They can be companies experiencing divestiture or going through consolidations.

EXHIBIT II-7



The market is moving toward one where users are asking for and vendors are providing a full set of services, from business consulting to systems integration and then systems operations. The hardware vendors and larger professional services and processing services firms are implementing this strategy to accommodate their clients and provide an additional source of revenue. Vendors that lack all of the resources to satisfy this customer requirement, are establishing alliances to provide the perception that they are full-service vendors. Even the largest vendors are using alliances to add services that they may not offer, or where they lack cost-effective expertise.

Vendors are investing in their clients' businesses. They are investing through building facilities on their customers' sites, by buying new equipment and software technology and in some cases by taking equity positions in the clients' businesses. This is requiring both partners to see their relationship more as a partnership than a contract. This is a fundamental change for vendor and client and requires the skills and willingness to manage the relationship accordingly.

I

Recommendations

The systems operations market continues to grow at an attractive rate. Many of the early participants have been successful, and new participants are being attracted by the need to protect existing client relationships and the opportunity to leverage existing relationships and resources.

This market will require vendors to operate in creative ways, as shown in Exhibit II-8.

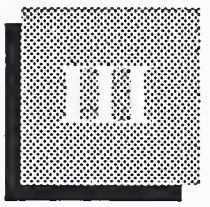
- Vendors should be prepared to assume more financial risks and invest in their clients. These investments can take the form of equipment and software technology, or even facilities, in or near clients' sites. In addition, it may be necessary to invest in the prospective clients' businesses. Access to investment capital will be essential to grow with the systems operations market.

- Few vendors have all the resources and capabilities to meet evolving systems operations clients' needs. Vendors should take steps to supplement existing capabilities with alliances that allow them to provide a broad range of competitive services and present a full-service vendor image.

- Prospective clients are looking for more than service suppliers. They are looking for vendors who will enter into a long-term partnership with them, and who are committed to their (the clients') success. Vendors need to learn how to be partners with their clients.

Vendors who master these changes in operating style will improve their odds of competing successfully in this growing information services market.

EXHIBIT II-8



Competitive Structure

The systems operations market is emerging as one of the growth markets in the 1990s. A number of well recognized and respected U.S. companies have selected outside vendors to operate their information processing centers. At the same time, vendors, recognizing the potential, are positioning themselves to participate in this new and growing market.

To assist in analyzing and understanding motivations and behavior, INPUT has classified vendors into four groups:

- Professional services firms have naturally entered the market either as a follow-on to consulting, program development, or systems integration activities, or as a natural outgrowth of other professional services engagements where they were providing personnel to operate client-owned and -managed data centers.

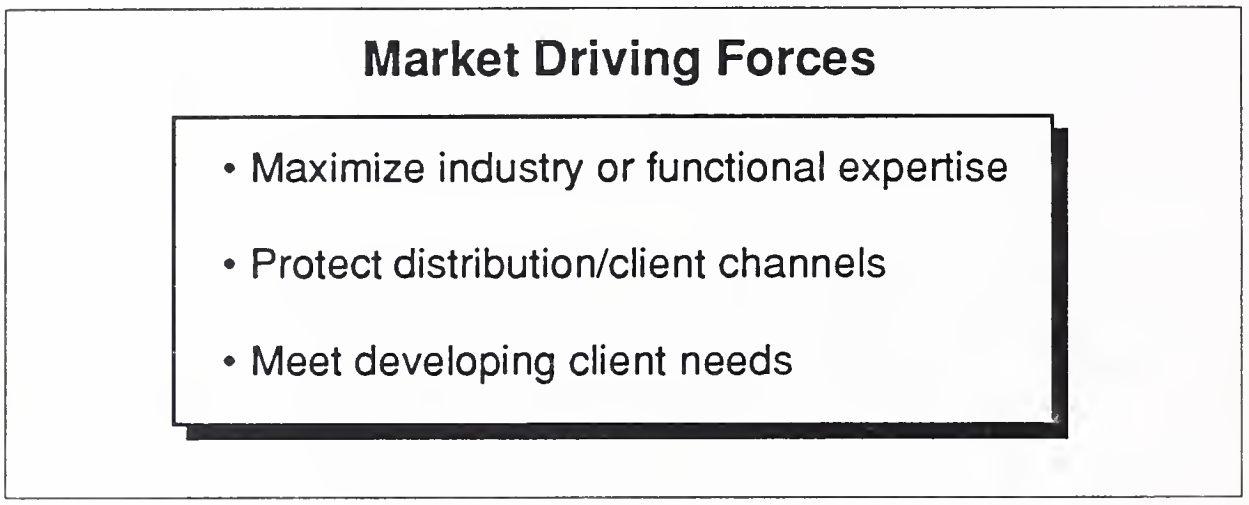
- Processing services companies began looking for new markets when their traditional timesharing business was rapidly eroded by increased PC usage and increases in departmental computing. While remote processing services supplemented some of these losses, system operations offered opportunities for exciting new growth.

- Hardware manufacturers are newer arrivals in the systems operations market that see it as a required strategy to provide a broader range of services to their clients and, in the process, protect their channels of equipment distribution.

- "Other" companies have seen the systems operations market as a means of leveraging their in-house base of expertise and equipment by expanding the services they provide to other companies, often ones in their own market segment. While the "other" companies included in this initial study are banks, firms from other industry sectors also participate in the systems operations market.

The market driving forces of all of the groups are summarized in Exhibit III-1. Vendors want to leverage the expertise they have acquired into profitable ventures. They are attempting to maximize the productivity of in-house resources by spreading their use over a number of clients, some internal and many external, generating revenue and profit from the external clients.

EXHIBIT III-1



Certain vendors, in particular the equipment manufacturers and the professional services firms, also need to protect their distribution channels and retain strong ties with their current client base.

Finally, the systems operations vendors, like all good suppliers, need to respond to customer needs. Internal information systems organizations are increasingly turning to outsourcing as a solution for a number of problems. Vendors need the resources in place to meet these needs.

A Vendor Classification

The vendor mix in this marketplace contains many of the same information services vendors found in other market segments. In fact, the entry into the systems operations market is often a function of what those vendors were previously doing for clients. Exhibit III-2 lists a representative sampling of vendors.

There are both veterans and newcomers in this list of vendors. Perot Systems and Affiliated Computer Systems are relatively new companies—with veterans at the helm—that have grown rapidly. EDS and CSC have been market leaders in their fields for many years, and they continue to be. The equipment giants, DEC and IBM, are still newcomers in the systems operations arena. Both recently announced major restructuring plans to better position themselves in the marketplace.

EXHIBIT III-2

Systems Operations Vendor Classifications

Category	Companies
Professional Services	Andersen Consulting Computer Task Group SAIC Computer Sciences Corp. Perot Systems McDonnell Douglas Systemhouse
Processing Services	EDS Systematics Power Computing Genix Group STM Securities Industry Automation Corporation Shared Medical Systems SCT Affiliated Computer Systems Boeing Computer Services
Equipment Manufacturers	IBM DEC Unisys CDC
"Other" Companies	Mellon Bank Citicorp FMC Corporation

Mellon Bank and Citicorp, the two banks identified in the exhibit that offer systems operations services, were unexpected competitors for Systematics, a company that has provided processing services and software to the banking community for 22 years. Other companies, such as BCS and Unisys, are reorienting or reorganizing their businesses. Boeing has gotten out of the commercial business altogether, and Unisys recently changed its reporting structure so that commercial activities are now reporting to the executive who manages Unisys' involvement in the federal government.

No discussion of the systems operations marketplace would be complete without a reference to the relative importance of the federal segment of the market. Federal agencies were among the first organizations to turn to vendors for the management of data processing operations, because of staff shortages and congressional directives. Some of the industry veterans, EDS and CSC, gained important experience in this segment. Many of the vendors still derive more than 50% of their revenues from that client base. Yet INPUT projects the commercial segment of the market to grow at a 17% rate over the 1990-1995 period, while the federal government segment will only grow at a 10% CAGR.

B

Driving Forces

Vendors trying to position themselves in the systems operations market will have to consider both user motivations and the market structure itself.

To be successful, a vendor will have to adjust its approach to the market to fully respond to user needs while leveraging the resources at its disposal. The major issues and trends that have been identified by executives in user firms represent one set of driving forces. What vendors consider to be their business objectives comprise the opposing forces.

1. User Trends and Issues

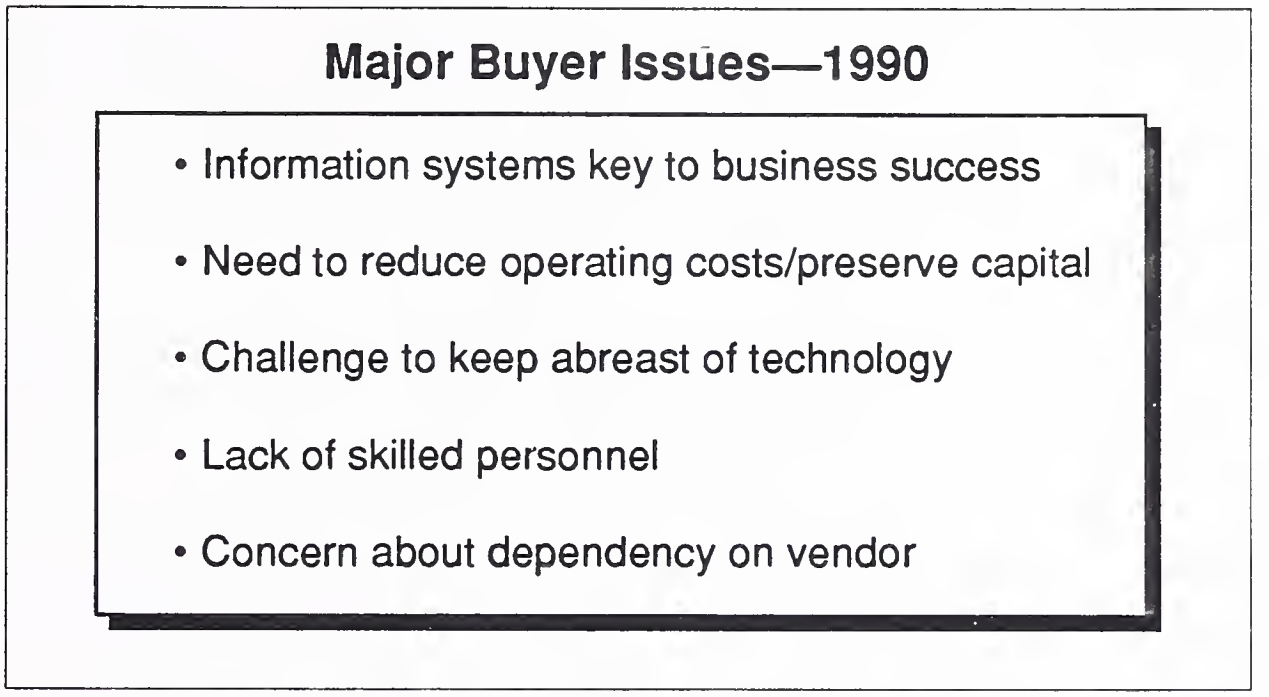
The buyer issues listed in Exhibit III-3 have been identified by executives in user firms as the motivators for growth in systems operations. Many information services executives are finding that outsourcing to systems operations vendors is a viable alternative to operating information processing with internal resources.

Management realizes that information services are the key to success in most industries. They emphasize that they need to have information on markets, sales, and production status to compete in today's marketplace.

Shrinking margins in many industries, a change in the demand pattern for goods, and a slowdown in the economy are all affecting the availability of funds. The restrictions on new spending only add to the pressures to do more with existing resources. Once again, the economies of scale and the leveraging of resources offered by systems operations vendors become even more attractive.

Some firms are becoming more and more troubled by the fast changes in technology they must assimilate. This is another area management wants to turn over to experts to minimize the time devoted to tracking technology. They prefer to rely on vendors to keep current with the state of technology. User management believes that vendors have strong profit incentives to improve their own operating efficiency.

EXHIBIT III-3



As business conditions change, companies also need to change rapidly. An example is the rapid constriction of the oil drilling industry and its subsequent effect on staff and budgets. Many firms in that sector turned to systems operations firms to eliminate large data centers they no longer needed. These same firms merged and downsized, and found they needed to preserve capital or improve cash flow rapidly.

Skilled information services personnel are becoming harder to acquire and more difficult to retain. Certain industries, in particular, are finding it difficult to attract personnel because of their depressed wage structures. Others are finding staff with experience in certain disciplines in short supply, particularly those with communications technology expertise. By using outside vendors, existing expertise can be leveraged across several clients.

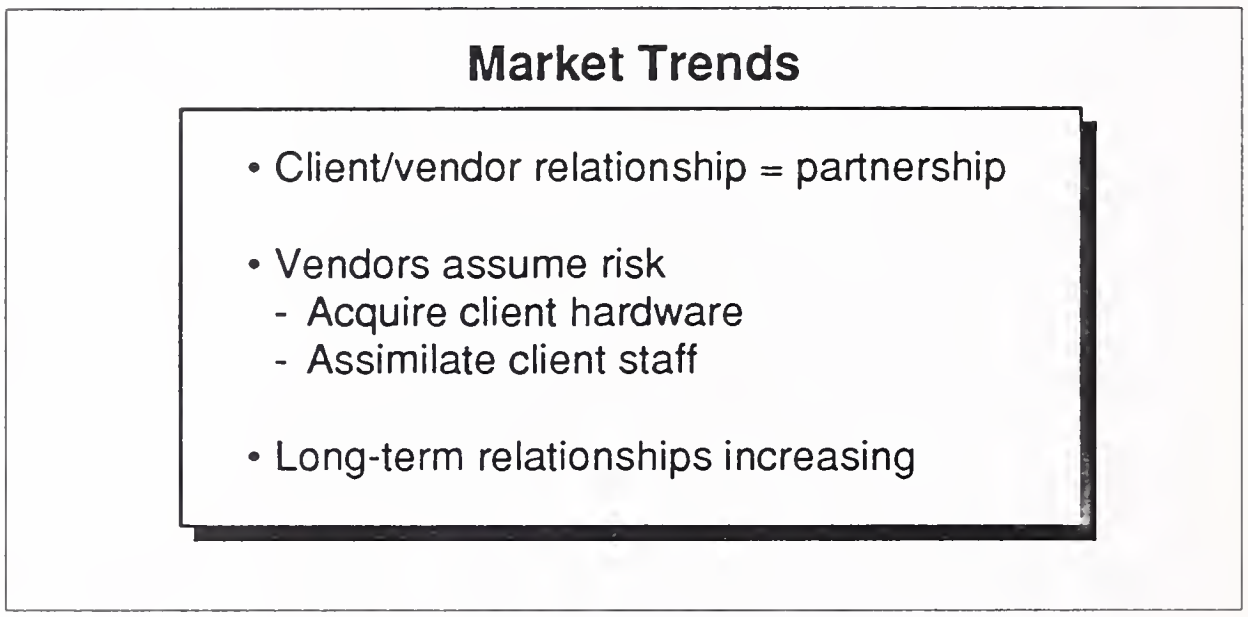
Corporate management is becoming concerned that much of its attention and energy is being diverted to information systems problems when it should be focusing on more fundamental, core-business-related operational issues. It is a dilemma, since most executives recognize the importance of information systems to the health of their businesses, yet don't understand the technology or the way to manage that part of the operation. INPUT believes more will decide to entrust systems operations to outside experts, as information technology continues to increase in complexity.

Outsourcing of systems operations requires turning over all data processing operations to a third party. It leaves the buying firm dependent on an outside vendor for information it has already judged to be crucial to its continued successful operation, which is of some concern to the buying firm. If systems operations is to be selected as an alternative, vendors need to address this concern.

Several trends are developing in the systems operations market, which are outlined in Exhibit III-4. The concept of a partnership is becoming accepted as vendors and users negotiate how the process will work. As vendors invest in equipment and facilities for the client, and assume responsibilities for staff over an extended contract period, mutual respect and trust will be required.

The partnership concept will solidify as more vendors assume responsibility for hardware and staff that currently are client-owned and reside on client premises.

EXHIBIT III-4



The relationship between vendor and client is also becoming a long-term one. Contracts for more than five years are common already, and ten years' duration for larger contracts.

2. Vendor Business Objectives

The primary objective of any systems operations vendor is of course to be profitable. INPUT asked systems operations vendors what performance incentives they established for their management team. Exhibit III-5 lists the top five criteria used by systems operations vendors to measure success.

As expected, management motivates its systems operations executives to be profitable. The equal weight assigned to staff productivity is essentially another vote for profitability. If the staff maintains high productivity, operating margins can be maintained or will improve. This is particularly important in view of another finding from INPUT's vendor survey. Most of the respondents stated they expect operating margins to shrink in the federal sector; for the commercial sector, responses were mixed. Three respondents foresee shrinking margins and five expect them to increase.

EXHIBIT III-5

Performance Incentives for Management

Criteria	Rank
Profitability	1
Staff Productivity	1
Client Satisfaction	2
Customer Relations	3
System Performance	3

Close behind is the recognized need to keep the clients happy, and management reports that it rewards those executives who do that effectively. Since many vendors view systems operations as a means to protect their more traditional product channels (equipment and software), it is imperative that they maintain their reputation with existing customers.

There is no better way to keep the client happy than to keep the system he interfaces with operating smoothly . There is no better way to improve operating efficiency than to fine tune the system performance.

In summary, the respondents really had two objectives in mind in establishing performance criteria for their management: profitablility and client satisfaction.

C

Vendor Ranking

Vendors who participate in systems operations usually follow one of two strategies. They either focus on a single vertical industry market or provide services to a number of industry markets.

A look at the vendor market share is presented in Exhibit III-6. To be a dominant vendor, it helps to be a multi-industry vendor; but there is opportunity for an industry specialist to capture a significant share of revenue. Both Electronic Data Systems (EDS) and Computer Sciences Corporation (CSC) are active across several industries. Boeing Computer Services (BCS) obtains most of its revenues from the federal market, but EDS is much more widely dispersed.

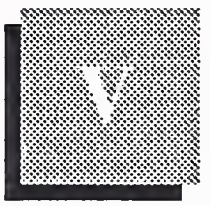
The other firms on the list specialize in one or two industries only, and have demonstrated good stability within their respective markets. The market is populated by a large number of additional firms, most specializing in one or two industries or with systems operations as a minor activity.

EXHIBIT III-6

Leading Systems Operations Vendors, 1989

Vendor	Market Share (%)
Electronic Data Systems	16
Computer Sciences Corporation	5
Systematics	3
Affiliated Computing Services	3
Shared Medical Systems	2
Securities Industry Automation Corporation	2
Boeing Computer Services	2

A market in which the leading vendor controls 16% of the revenue and 33% of the revenues are controlled by seven vendors is a healthy environment offering plenty of opportunity for new vendors. INPUT believes that the users will strongly shape the market in the near future as they begin to relinquish control over their own information services operations to concentrate on their core businesses and reduce operating expenses. They will select vendors that demonstrate strong management skills, offer cost-effective proposals, and are willing to establish a long-term partnership where client and vendor are winners.



Comparative Analysis

This chapter compares the vendors regarding a variety of factors, including:

- Organization/responsibilities
- Financial characteristics
- Strategies and markets
- Capabilities and products

A total of 13 vendors responded to INPUT's Systems Operations (SO) questionnaire. In Exhibit V-1, they are classified into four groups. This classification will be used later in this chapter to compare some company characteristics and strategies.

EXHIBIT V-1

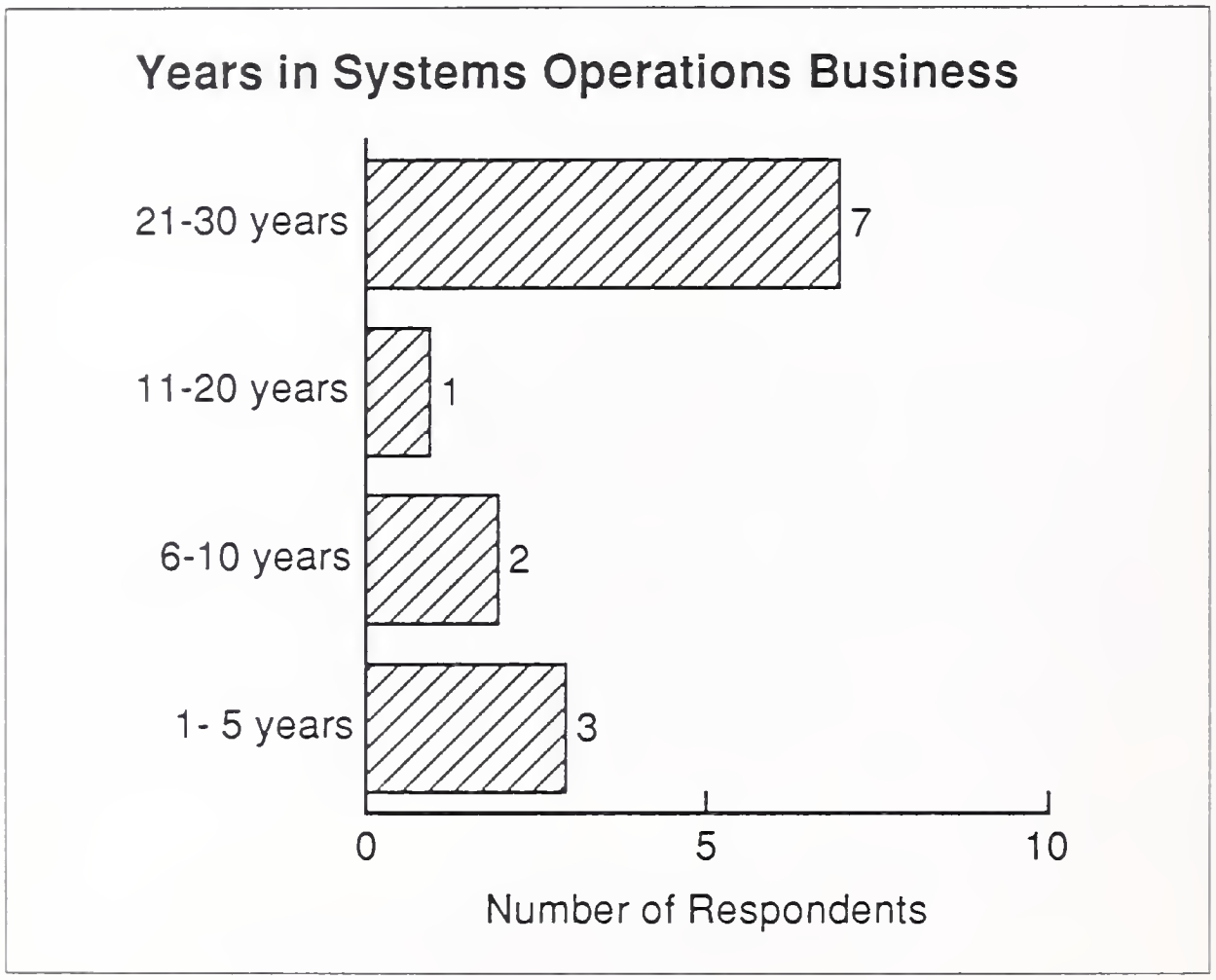
Systems Operations Respondents Distribution by Class

Number	Companies	Classification
4	Professional services	Andersen Consulting, CTG, SAIC, McDonnell Douglas
6	Processing services	EDS, Systematics, Genix Group, Power Computing, STM, SCT
1	Hardware manufacturer	DEC
2	"Other"	Mellon Bank, Citicorp

Six vendors provide service to only commercial clients, one vendor provides service exclusively to federal clients, and six vendors provide both commercial and federal systems operations services.

It is interesting to note that, collectively, these companies have a total of over 224 years experience with commercial projects, and 150 years experience in the federal marketplace. Over one-half of the vendors profiled are established firms with more than 20 years of SO experience. Exhibit V-2 shows the number of years in the systems operations business among respondents.

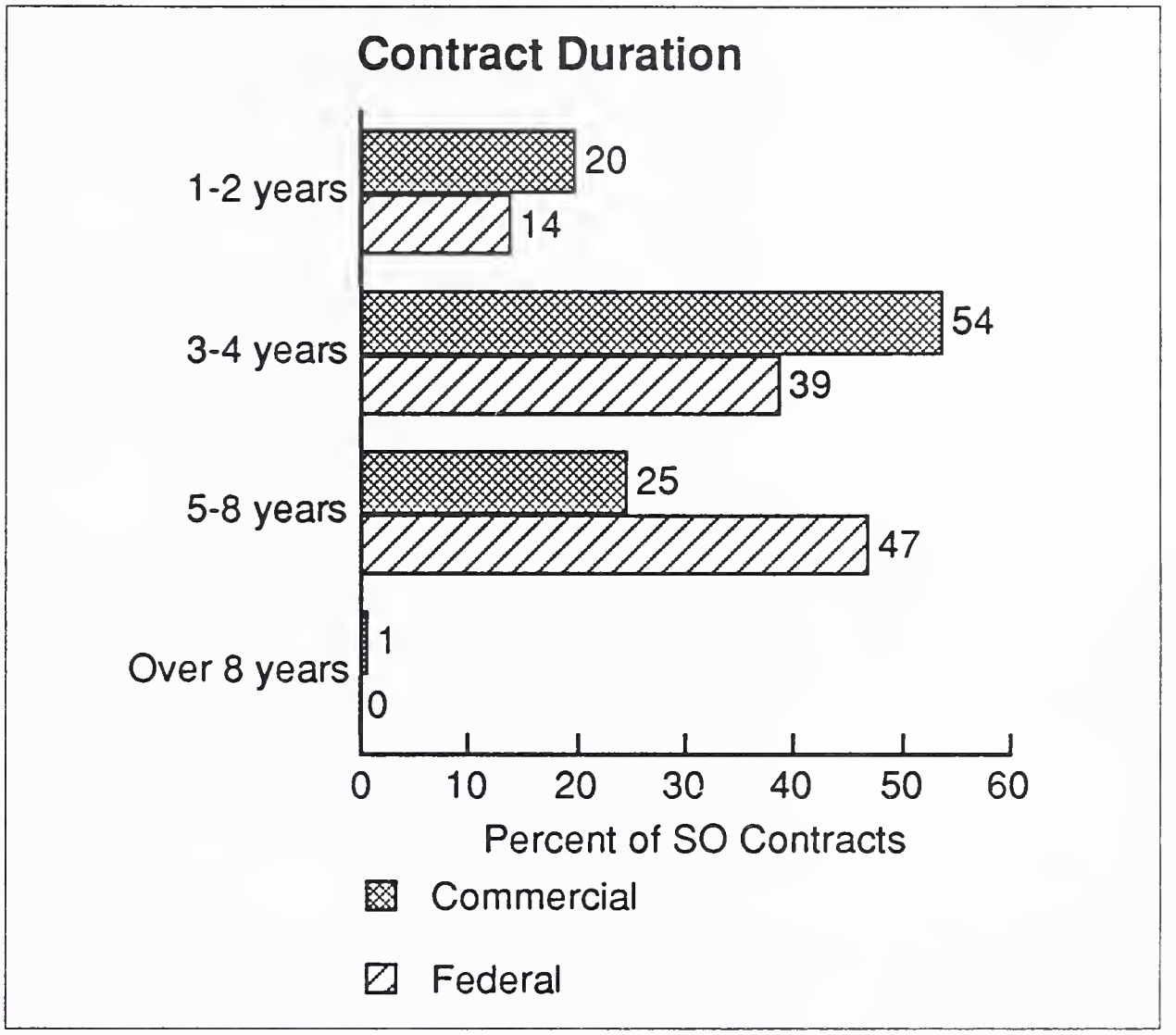
EXHIBIT V-2



Almost 75% of the commercial SO contracts serviced by these vendors have durations of less than four years. Slightly less than 50% of federal contracts are long term, within the range of five to eight years. Exhibit V-3 shows the duration of contracts. These findings were somewhat surprising in that most recent commercial contracts are publicized as being 10 years long. INPUT believes that future contracts will be longer in duration, particularly as vendors begin to invest more in equipment and facilities and commit to fixed-price contracts.

Vendors provided the total number of data centers for which systems operations services are provided. A total of 97 client-owned data centers were reported. There were significantly more vendor-owned data centers, with a total of 232.

EXHIBIT V-3



The data on the number of vendor-owned data centers should be viewed carefully, as there are two strategies that vendors use. With the first strategy, the vendor develops very large data centers to be shared among multiple clients. This strategy is designed to improve productivity, gain advantages from economies of scale, and provide very low operating rates.

With the second strategy, the vendor owns a data center on or near the client's location which, in many cases, is dedicated to that one client's work. Both of these strategies are viable and competitive, since they are driven by client as well as vendor preference.

A

Organization/ Responsibilities

1. Organization

The organizations of the systems operations firms studied vary. In some cases, the systems operations unit functions as a subsidiary or separate division that reports to its parent company. However, most of the processing services vendors that responded to INPUT's questionnaire are independent or wholly owned companies.

Only one of the vendors reported having separate, independent divisions for managing and providing commercial and federal systems services. All other companies provide both commercial and federal SO service through a single organizational structure.

Nine out of 13 vendors told INPUT the total number of their full-time systems operations staff. The companies range in size from 150 employees—the smallest—to over 16,600 employees—the largest. Seventy-eight percent of the 23,195 full-time employees identified in the study are allocated to commercial SO clients.

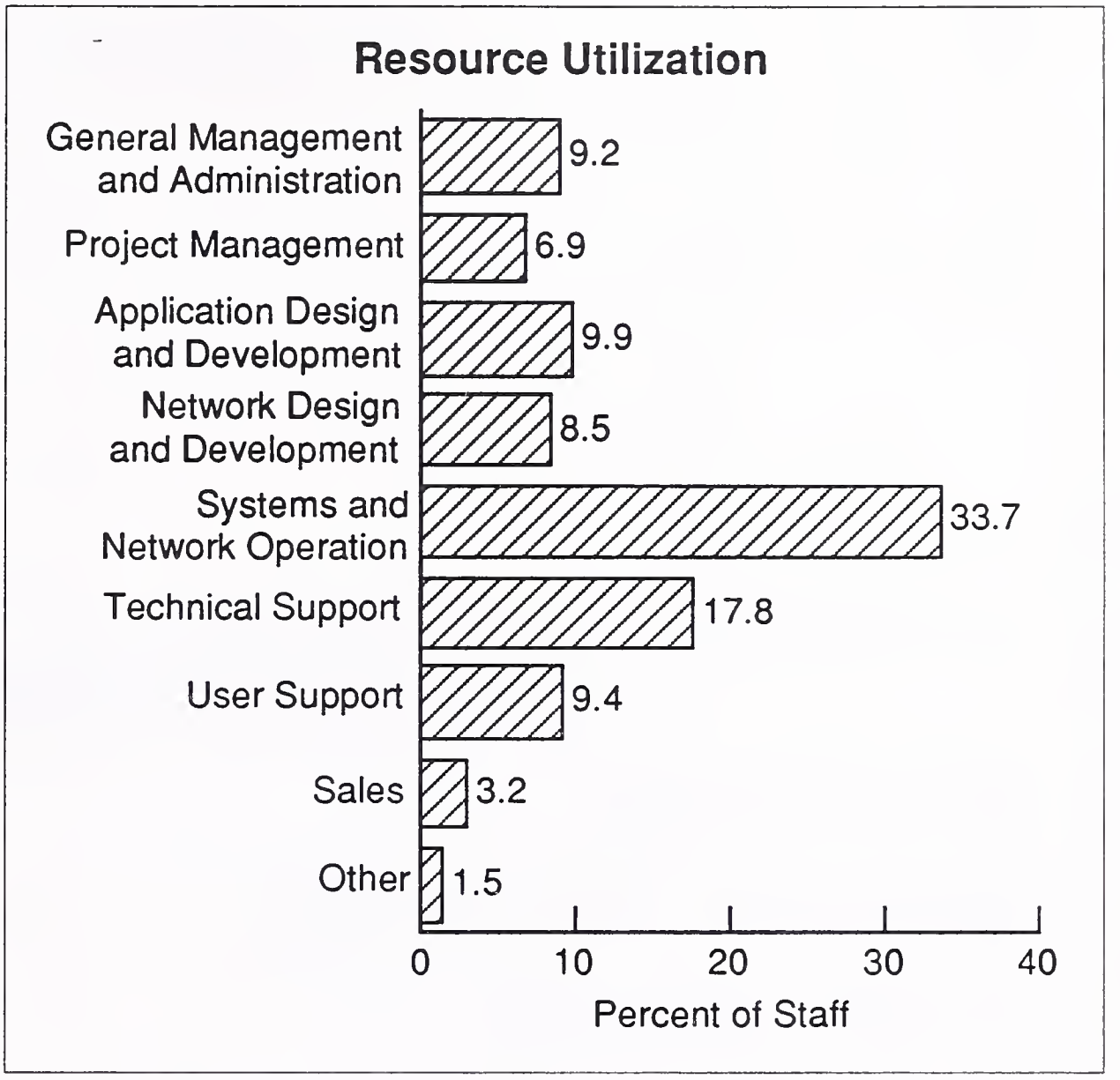
2. Allocation of Resources

There are key staff capabilities that are required by systems operations firms. In general, the professional services companies allocate more resources to administering and managing projects. This probably results from the fact that professional service companies frequently are involved in pre-engagement consulting during the problem identification phase of SO efforts. The other classes of vendors more often find themselves responding to bids, not creating them. This up-front consulting capability is a strong leveraging point for the professional services firms.

In contrast, processing services firms allocate more of their resources to application and network design and development and technical support expertise—in effect, focusing their resources on the implementation end of the project life cycle.

All of the firms displayed a strong emphasis in the areas of systems and network operations, as well as technical support. All vendors allocated the bulk of their SO resources to supporting systems and network operations. The percentage distribution of personnel for all major systems operations for the combined 13 companies' functions is illustrated in Exhibit V-4.

EXHIBIT V-4



B

Financial Characteristics

1. Leading Competitors' Revenues

Although INPUT was only able to obtain specific project data from a limited number of respondents, the results are consistent with those obtained from analyzing INPUT's systems operations project data base. That is, the majority of the commercial projects in the market have an average annual value of $1.5 million. INPUT excluded values for the federal market due to a lack of sufficient sample size. Exhibit V-5 illustrates the findings.

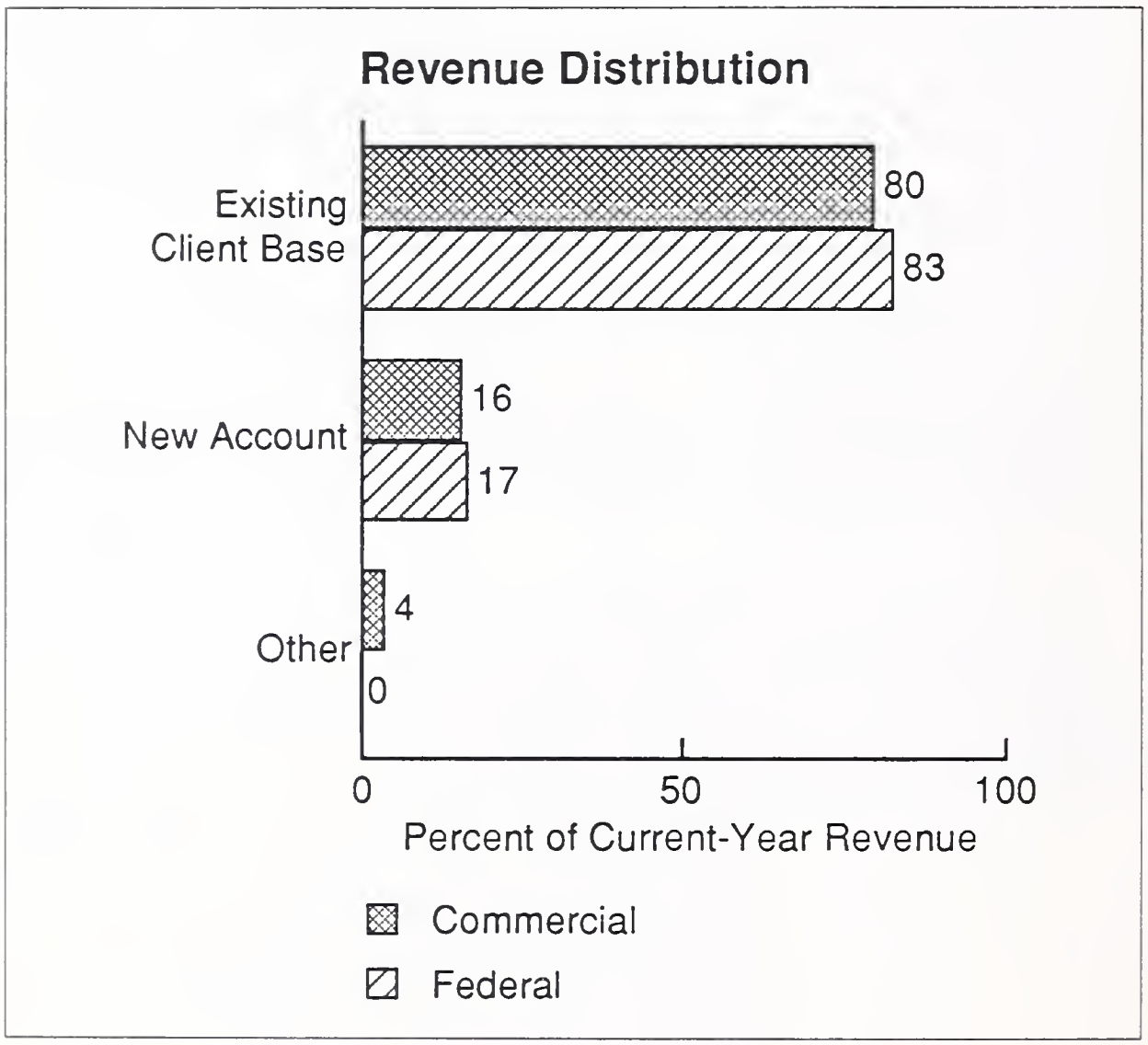
In general, the companies profiled reported that between 80% and 83% of their 1990 revenue came from existing clients, with the remainder from new accounts. There were minor variations between established companies, with new entrants in the SO market deriving a more significant portion of business from new accounts. Exhibit V-6 illustrates the source of current-year revenue.

EXHIBIT V-5

Survey Sample Project Sizes

Type of Project	Number of Projects	Total Annual Contract Value ($ B)	Average Annual Value ($ M)
Commercial	1,293	1.9	1.5

EXHIBIT V-6



2. Systems Operations Characteristics

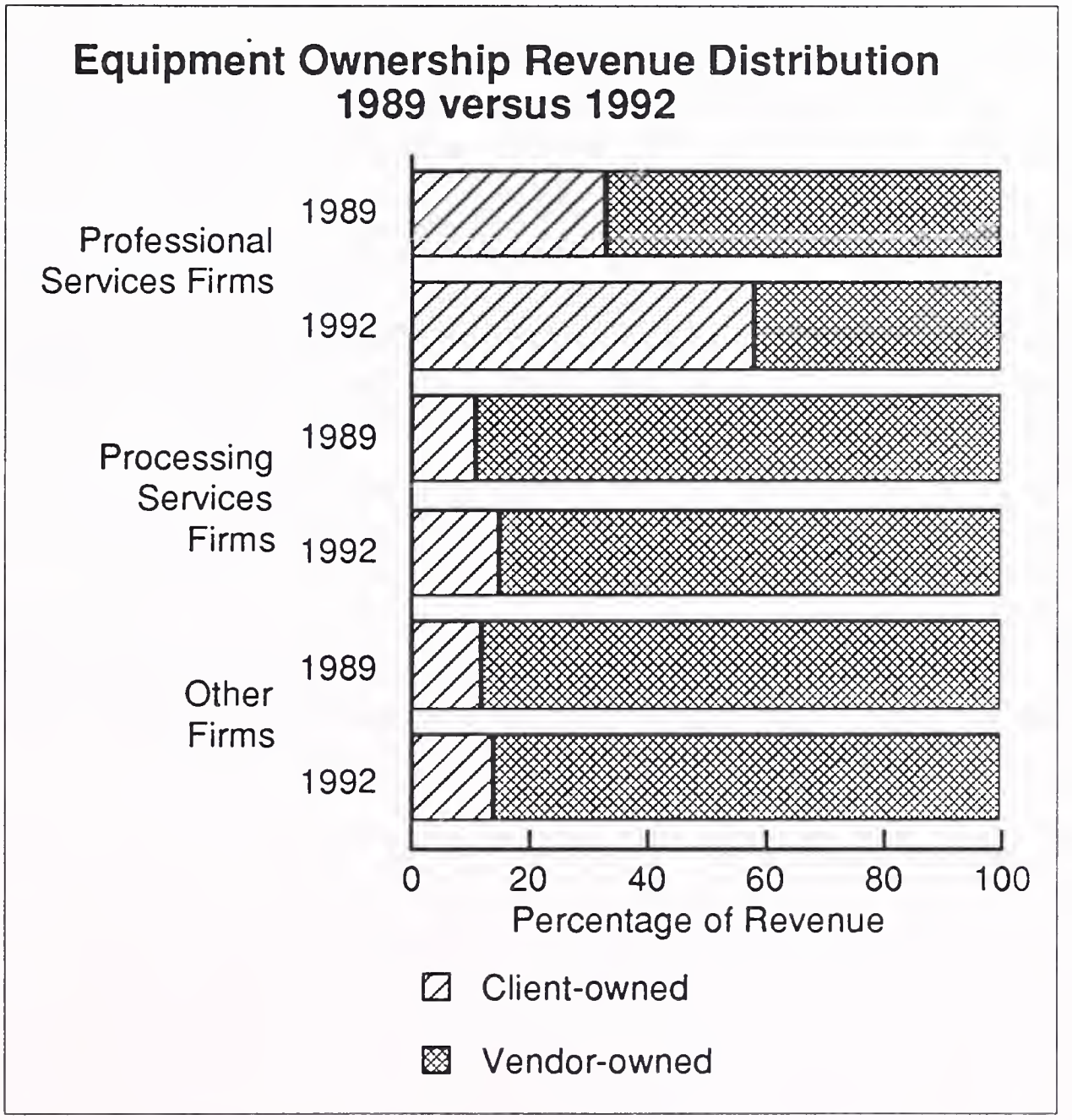
There are a number of characteristics that describe a vendor's systems operations business. One might be the percentage of total revenue a firm derives from systems operations on equipment it owns versus on equipment the client owns. INPUT requested each vendor to indicate 1989 actual revenue and 1992 expected revenue, in percentage, for the alternatives listed below:

- Equipment owned by client/vendor
- Operations located on client premises/vendor facility
- Equipment dedicated to a single client/shared among clients
- Application software developed by client/vendor/third party

The analysis and discussion of the following four exhibits, V-7 through V-10, do not include EDS or Digital; these companies refrained from answering this series of questions. Hardware vendors are omitted from these exhibits and this analysis because only one hardware vendor responded to INPUT's survey.

Exhibit V-7 shows the distribution of 1989 and 1992 revenue based on equipment ownership.

EXHIBIT V-7



In 1989, the professional services vendors realized two-thirds of their revenues from equipment they owned and one-third from equipment owned by their clients. In contrast, the processing services vendors and

"other" vendors realized almost 90% of their revenues from their own equipment.

In 1992, processing services and "other" vendors expect slight to no change in revenues distribution based on equipment ownership; professional services firms expect significantly higher revenues from client-owned equipment in 1992. Professional services firms have limited access to capital and prefer to engage in systems operations contracts where the vendor provides the equipment. They will emphasize this focus even more in 1992.

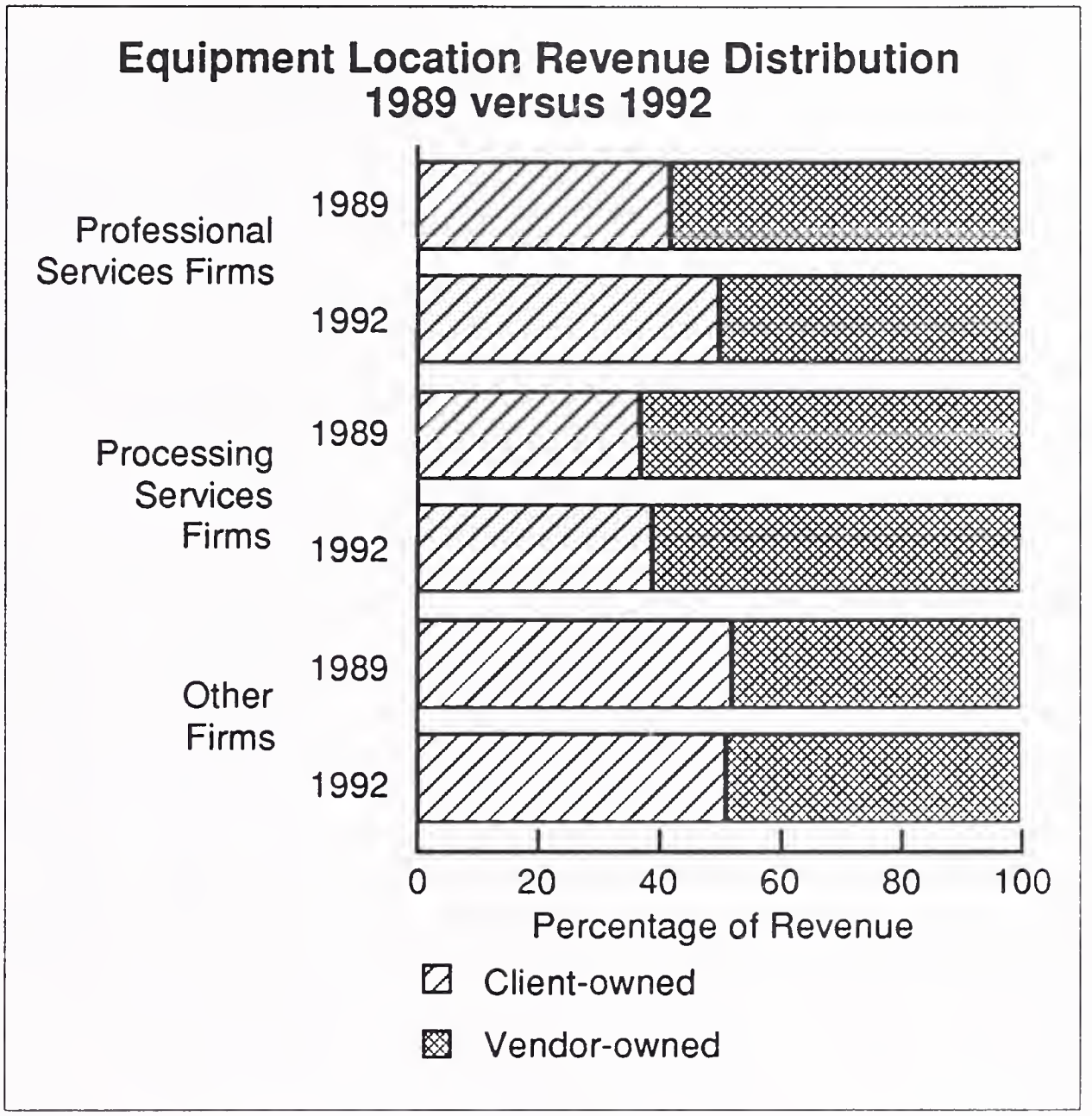
The second characteristic studied is the location of the systems operations service. Exhibit V-8 illustrates the distribution of 1989 and 1992 revenues from equipment located at client premises and vendor sites. In 1989 processing services firms derived almost two-thirds of their revenues from operations on the client's site. This will remain fairly constant through 1992, as will the roughly 50-50 split of the "other" firms. The most significant change will be in the professional services firms, which expect to add more customer premise business by 1992.

Overall, the mix for all three classifications includes more customer-site business. While at first this seems surprising, INPUT believes that this is a recognition that more large companies will be moving to systems operations. As they do, they will request, and vendors will provide, services on the client's site. IBM's recent large awards at Kodak and Bank South are good examples of this.

The third characteristic studied is the allocation of equipment. Exhibit V-9 shows the distribution of 1989 and 1992 revenue derived from dedicated versus shared equipment resources.

The processing services vendors and "other" vendors realized about 50% of 1989 revenue from equipment dedicated to single clients. The professional services firms realized two-thirds of 1989 revenues from equipment shared among multiple clients.

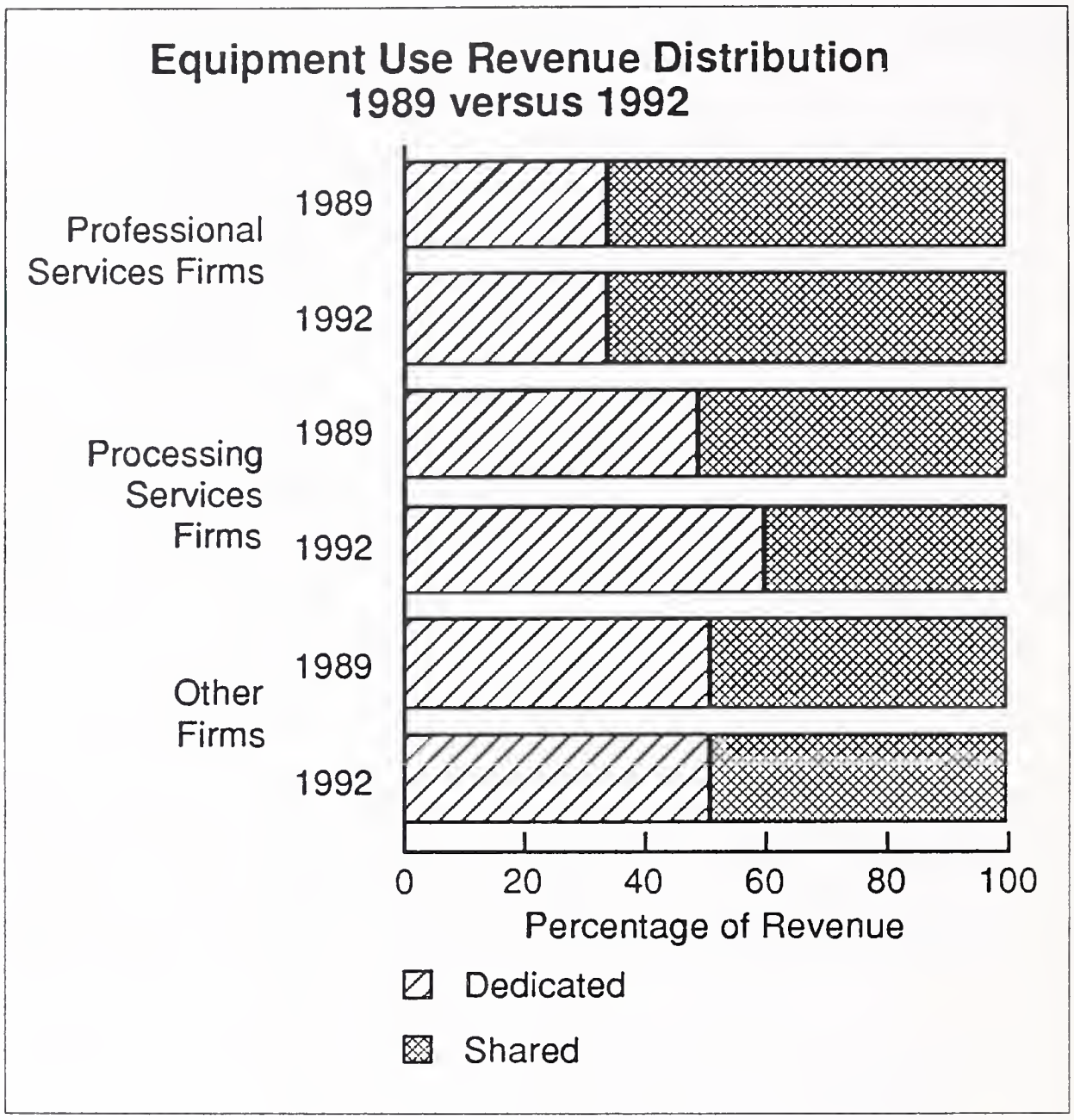
EXHIBIT V-8



In 1992, the professional services and "other" firms expect little change in this distribution. Processing services firms expect an increase in revenue derived from equipment dedicated to single clients. Once again, the move of larger companies to systems operations explains this change.

The final characteristic studied identifies the distribution of revenue from the operation of applications software developed by the client, vendor, or a third party, as illustrated in Exhibit V-10. The three classes of vendors differ in the source of the applications software they run for their clients. Over 50% of the professional services firms' revenues are generated from running client-developed applications. This is quite different from the "other" firms, which, typically, specialize in a vertical industry and have developed or acquired industry-specific applications programs which account for over 90% of their revenue.

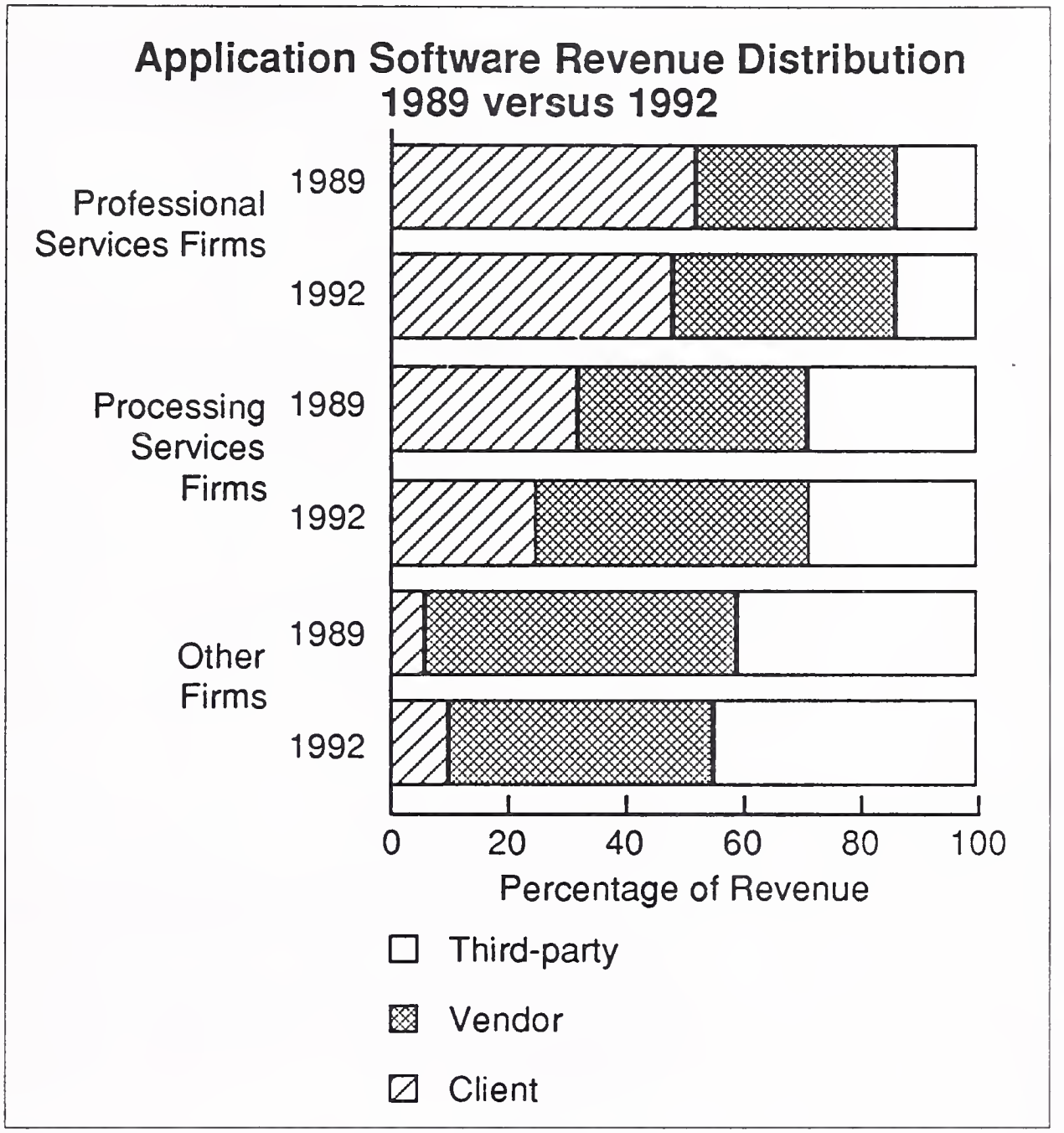
EXHIBIT V-9



Between these two classes are the processing services companies, some of which have the same characteristics as the "other" firms, in that they specialize in a vertical industry.

In 1992, the "other" firms anticipate generating a little more revenue from client-developed applications, while both the processing and professional services class will add more vendor-developed applications revenue. The latter represents an important trend toward industry specialization and industry-specific solutions.

EXHIBIT V-10



3. Profitability and Margins

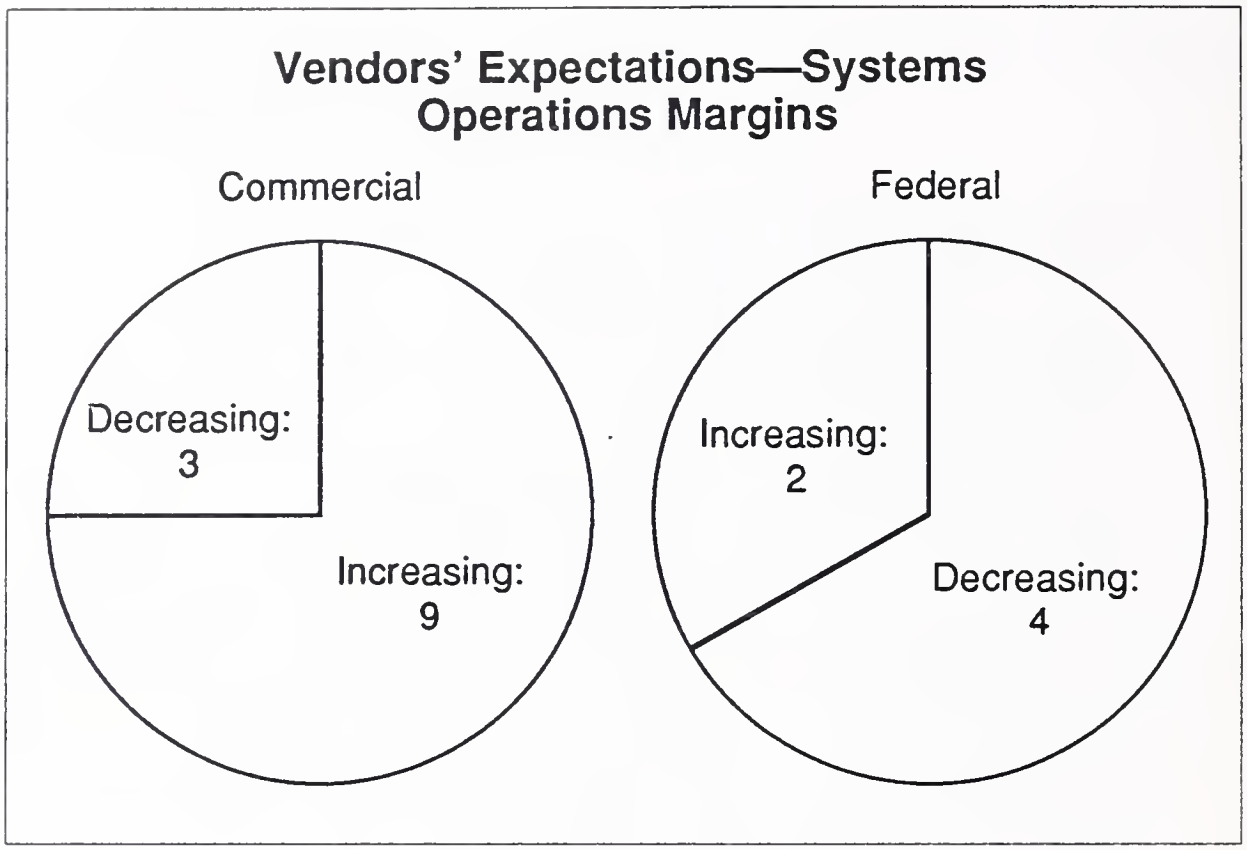
Although the majority of the companies who responded to the vendor questionnaire were not willing to disclose the profit margins of their SO businesses, those who did indicated the before-tax profit margins were in the range of 8% to 12%.

The respondents cited two reasons for these margins: Pressures are reducing the number of opportunities available, and these same pressures are making the market more competitive and less profitable.

Exhibit V-11 illustrates the vendors' expectations for the SO margins.

Vendors provided INPUT with their estimates of the compound annual growth rate (CAGR) for the systems operations industry over the next five years. All but one vendor responded, resulting in an average CAGR of 19% for commercial systems operations and a CAGR of 11% for federal systems operations.

EXHIBIT V-11



C

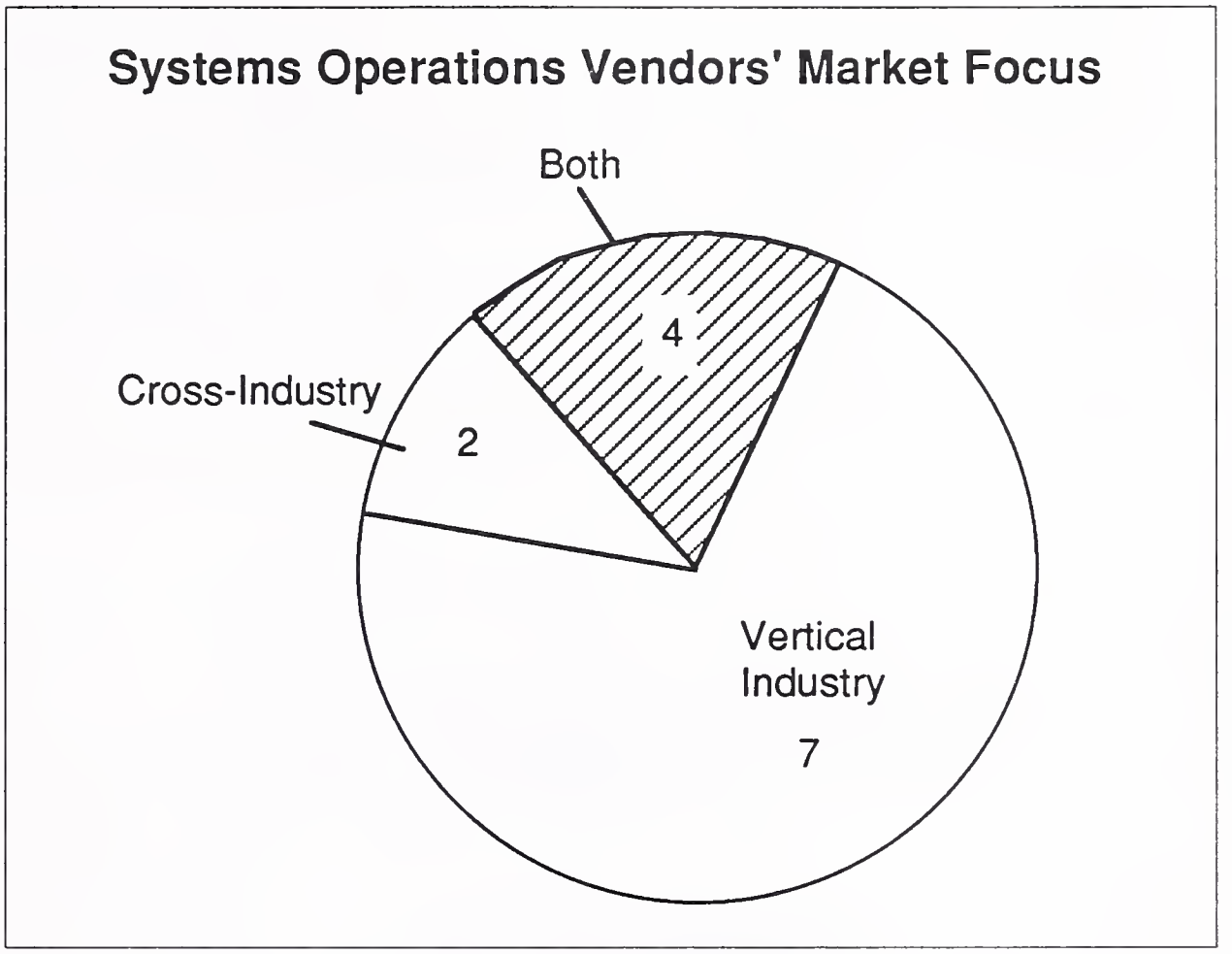
Strategies and Markets 1. Market Selection

Although the reasons may vary, it is very clear from the survey results that the majority of vendors have, or are in the process of developing a strong vertical-industry focus. Of 13 vendors, seven respondents operate exclusively on a vertical industry basis. By comparison, only two indicated they marketed exclusively on a cross-industry basis. Details are in Exhibit V-12.

Some observations worth noting are the following:

- Companies with a strong cross-industry orientation were focusing on the operation of a specific vendor's equipment.
- The hardware vendor and the large systems houses have strategies that are both functionally and vertically oriented. Most intend to operate in almost all markets. Their functional orientation is, most often, to provide network management services.
- The more business consulting capability available to a given vendor, the stronger the vertical industry focus.

EXHIBIT V-12



2. Contract Cost Distribution

The questionnaire requested that each vendor provide the distribution of products and services costs for systems operations contracts. The results show that 49% of contract value is for professional services.

Exhibit V-13 illustrates the contract cost distribution. The "other" category includes telecommunications, training, and supplies.

INPUT asked that each vendor provide an estimate of the percentage of contracts under various pricing alternatives for 1989 and 1992. The largest percentage (52%) of 1989 contracts are based on resource utilization. A substantial portion (31%) of 1989 contracts are fixed price. Exhibit V-14 illustrates the percentage of contracts that fall under the various pricing alternatives.

The vendors believe the 1992 pricing profile will be different. Fixed-price contracts will become the leading alternative, as vendors assume more risks and provide their users with predictable costs. The major decline will be in resource utilization pricing.

EXHIBIT V-13

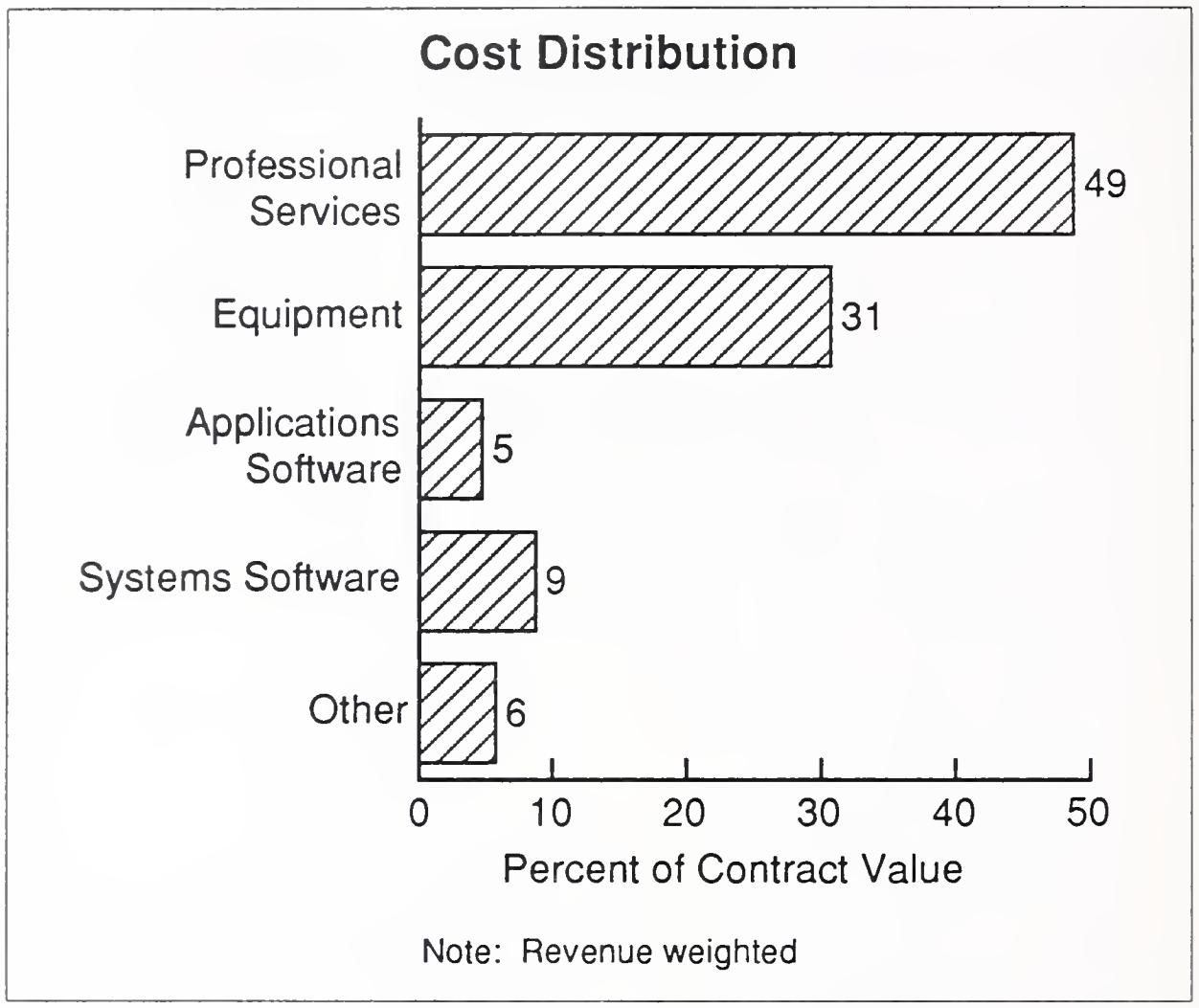
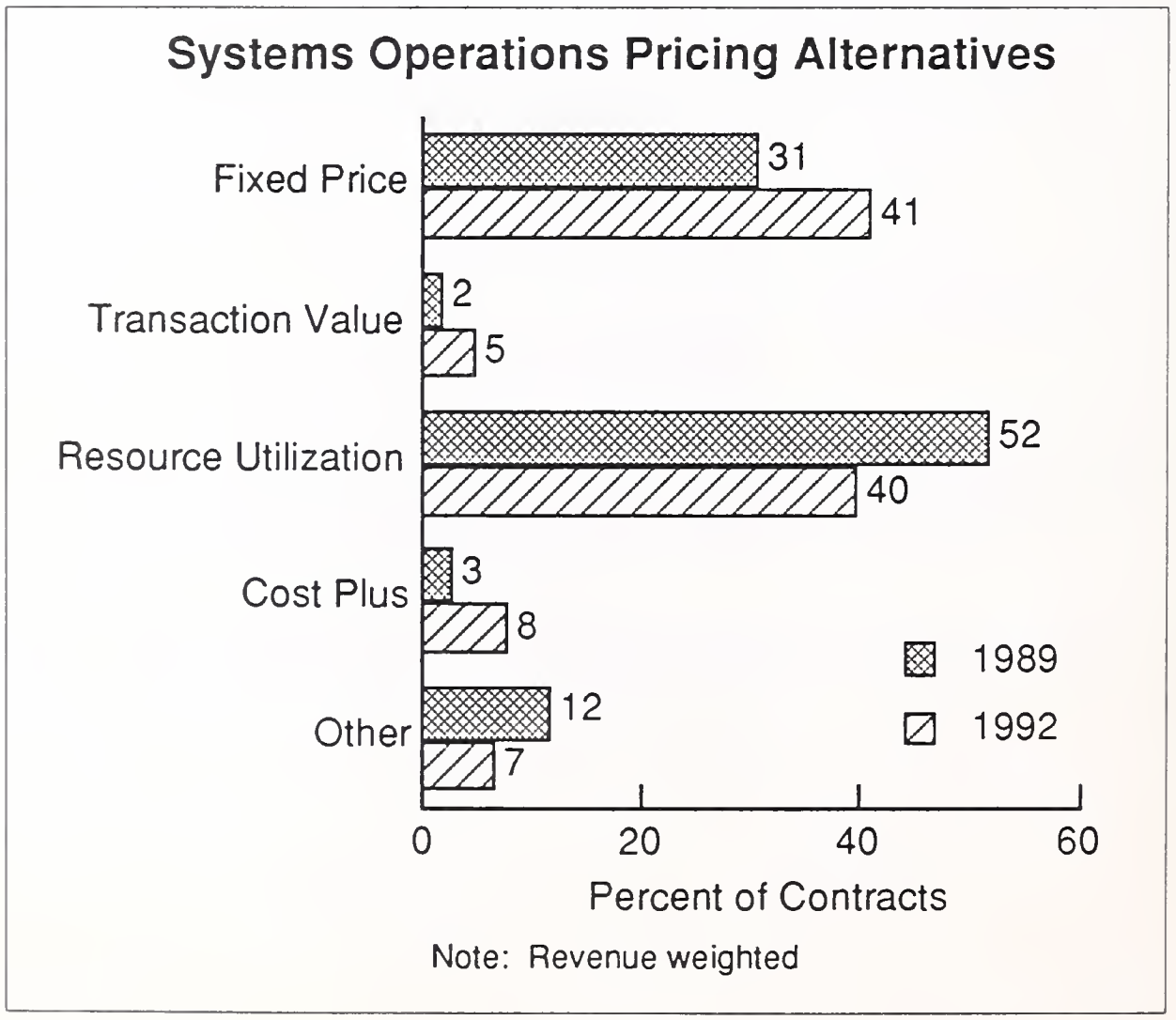


EXHIBIT V-14

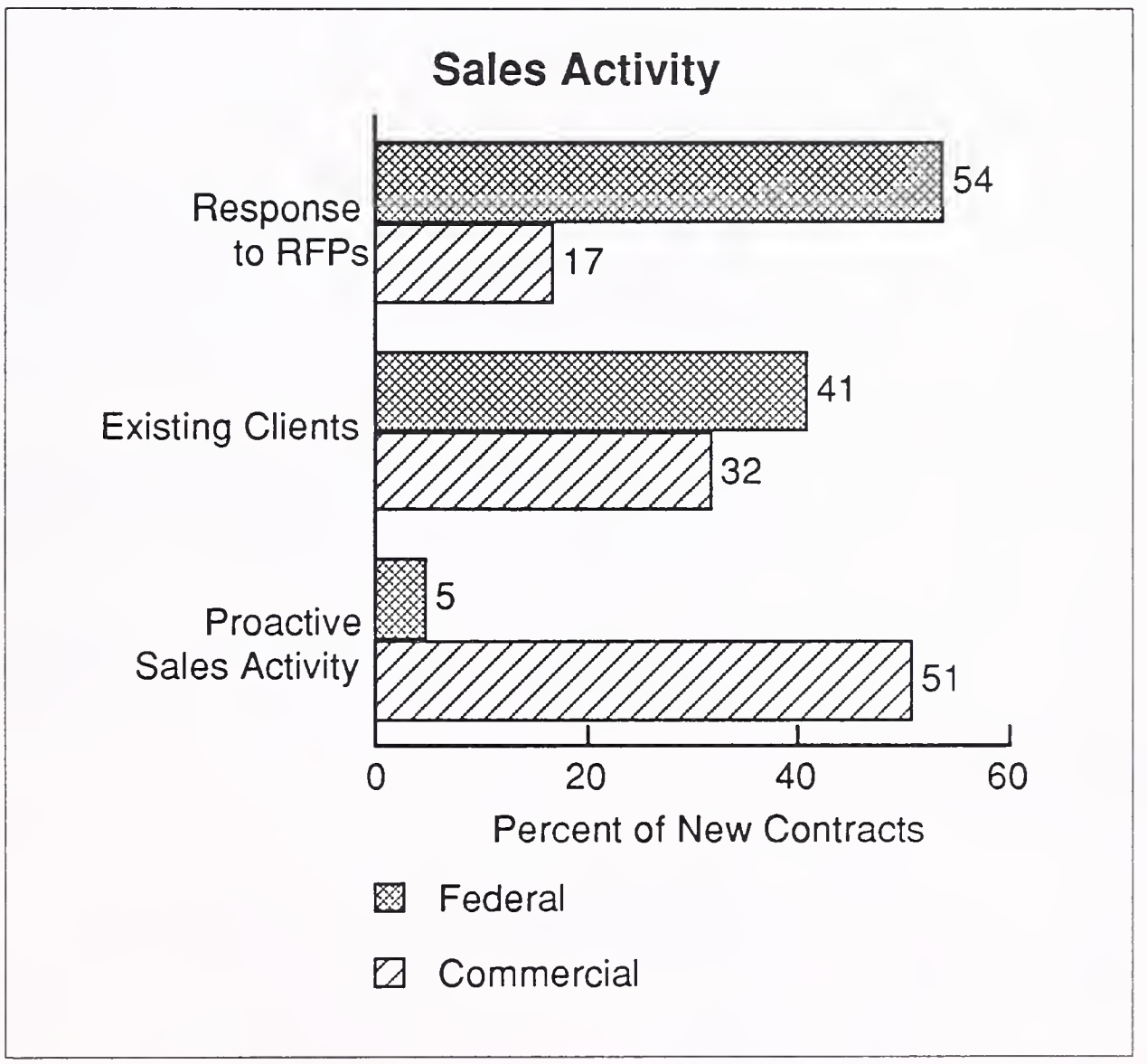


3. Sales Activity

INPUT asked vendors to report on the percentage of new contracts that are a result of various sales activities. The results show a substantial difference in commercial and federal sales activities.

Most vendors indicated a substantially higher percentage of contracts resulting from direct sales activity in the commercial marketplace. However, in the federal market, as might be expected, vendors realized most new contracts from responding to bid solicitations or RFPs. Exhibit V-15 illustrates the sales activity.

EXHIBIT V-15



Federal vendors that intend to participate in the commercial market must recognize this difference and must develop or acquire sales personnel who are familiar with and skilled in commercial sales prospecting. Vendors must develop targeted marketing and sales programs, identifying the specific types of prospects that are most likely to buy their services.

D

Capabilities and Products

1. SO Alliances

Virtually every vendor profiled makes substantial use of alliances in the execution of its systems operations business. The actual formation of alliances is typically on a contract-by-contract basis, and usually not under the auspices of a formal alliance program.

Examining how the various classes of vendors utilize their alliances provides some interesting insights into vendor capabilities and strategies. Exhibit V-16 presents the data.

The professional services firms have a high degree of self-sufficiency in the areas of computer systems operations, network management, and business consulting. However, they don't have disaster recovery and equipment maintenance services and depend on alliances for these components.

Understanding a particular SO vendor's alliances is a good indicator of a vendor's internal capabilities and provides insight into longer-range strategy. As competitors settle into specific market niches, INPUT anticipates an increase in acquisitions and mergers to reduce dependence on alliances for capabilities that are critical to a particular vendor's SO market strategy.

Some vendors, like EDS, use alliances to enhance their internal capabilities to provide customers with enhanced technological and industrial knowledge.

These strategic alliances yield strength and expertise for vendors while offering them a wider source of revenue and products, which often creates a competitive advantage.

EXHIBIT V-16

Vendor Capabilities and Alliances

Capability	Percentage Using Alliances	Percentage Having Capability
Business Consulting	85	46
Computer Systems Operations	100	31
Network Management	100	23
Applications Design/Development	92	54
Applications Maintenance	85	54
Packaged Applications Software	85	46
Disaster Recovery Service	62	69
Equipment Maintenance	46	69

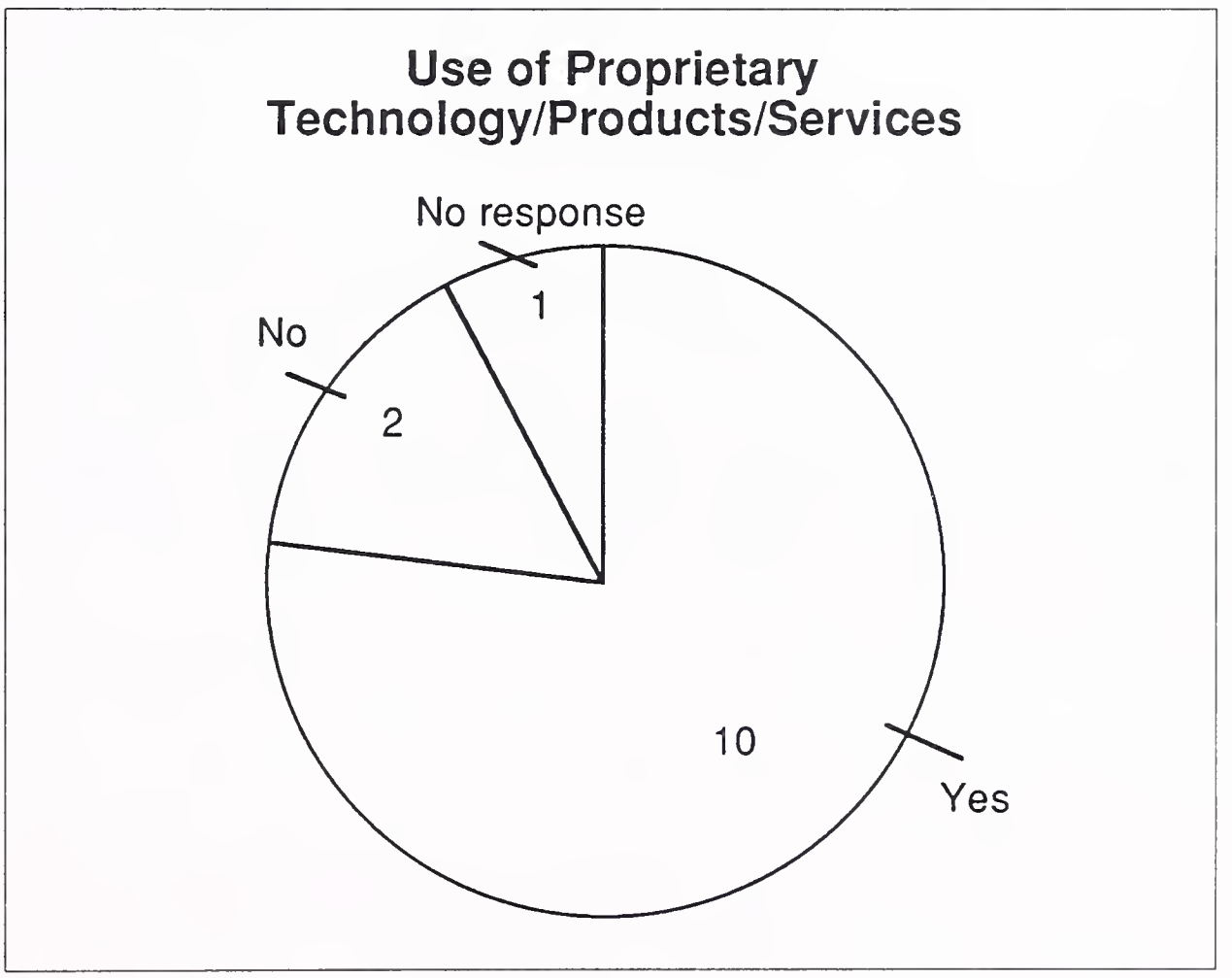
The sum of the two percentages, internal capabilities and use of alliances, in each row exceeds 100% in all cases. This is because many vendors use alliances as well as their own internal capabilities. This is often due to the fact that the vendor does not have enough of a given capability, is seeking unique skills, or needs a more cost-effective operating environment.

2. Proprietary Products/Technologies

In addition to its internal capabilities and the strengths of its alliances, other advantages that a vendor may offer are proprietary technologies and products.

As exhibited in V-17, 10 of the respondents indicated they have proprietary systems operations technologies, products, or services, which gives them either a unique or competitive advantage in the marketplace.

EXHIBIT V-17



While there is no explicit evidence that any vendor's existing proprietary product or service has a significant impact on its success in systems operations, INPUT is convinced that vendors with a unique capability—whether methodology, vertical industry expertise, or product—will have an edge.

INPUT believes that unique products, particularly with a vertical industry focus, could give specific vendors a real competitive advantage in the future. In addition, unique products that facilitate systems operations services should offer vendors an opportunity to achieve greater profit margins.

E

Summary

This chapter compared and analyzed the organizational structures, financial characteristics, strategies, and capabilities of the SO vendors who responded to INPUT's survey. In some cases, meaningful comparisons were made by using the vendor classification scheme developed at the onset of this chapter. In others, the classification scheme was of little value. To pull these comparisons together, INPUT identified key differentiating points, and offers the following summary.

1. Organization

There is some variety in how systems operations firms organize to support their SO business. Individual divisions or organizational units dominate. INPUT believes that the organizational structures of vendors will change as they gain additional experience in the market. Organization, in itself, does not appear to be a significant differentiator between vendors today.

2. Financial Characteristics

INPUT's market forecast for systems operations is reasonably aggressive. With a compound annual growth rate of 16% over the next five years, the systems operations market should offer good opportunities for vendors. However, some findings from this research warrant ongoing observation.

First, most vendors active in the federal systems operations market indicated they felt margins were decreasing. It is believed that the pressure generated by concern over the deficit, coupled with competition, are key factors.

Although some characteristics of the commercial market are different from those of the federal market, commercial systems operations firms will need to watch margins carefully as they face increasing competition.

The overall financial picture for SO vendors looks attractive and is likely to remain so for the foreseeable future.

3. Market Share

The processing services companies dominate the current market in terms of total systems operations revenues. This market inertia positions them well to continue to lead the pack. However, potentially declining margins for federal systems operations contracts could make maintaining the lead difficult. Finally, SO vendors can expect increased competition from the growing professional services organizations, hardware vendors, and other organizations, as more of them enter the SO marketplace.

4. Internal Capabilities, Alliances

It is difficult to make a clear-cut judgment as to how the four major classes of vendors compare on this point. The questionnaire proposed eight skill/capability areas which might be keys to effectively support a vendor's systems operations business, and explored vendors' capabilities in these areas from an in-house as well as an alliance perspective. Clearly, not every vendor's strategy requires all eight capabilities, in general or in specific projects.

5. Capabilities and Products

The array of capabilities that various vendors bring to the market is truly diverse. Nevertheless, there is no one vendor that has it all. This is particularly true when considering the variety of potential SO projects, which leads to frequent use of alliances for most vendors.

Technical expertise—including computer systems operations, network management, and technical support—are critical capabilities for vendors that intend to grow in the market. Clients weigh these capabilities heavily when selecting a vendor, and vendors have a higher probability of success when they participate in the application development and implementation process.

In terms of products, proprietary products—particularly applications software products and operations management techniques—offer an advantage over the competition. Unique technologies and applications software and the ability to apply them are clearly able to be leveraged and offer the vendor the opportunity to penetrate vertical industry markets.

COMPANY PROFILE

Andersen Consulting

1. Key Systems Operations Contacts

The systems operations activities at Andersen Consulting are under the direction of Paul Cosgrave, the Managing Partner for Integration Services and Technology. He reports directly to John T. Kelly, Andersen's Managing Partner, America. Mr. Cosgrave's office is located at:

Champion Plaza
400 Atlantic Street
Stamford, CT 06912

Systems operations are offered through Andersen Consulting's Systems Management service line. Each of Andersen Consulting's service lines is introduced in the following section.

2. Description of Principal Business

Andersen Consulting offers management and technology consulting to clients in nearly every business and governmental sector. The organization helps clients use information technology competitively in all phases of their management activities -- strategic, operational, and financial. Andersen Consulting believes it can ultimately help its clients "*reengineer*" or rethink the way they do business -- a process, the firm claims, that can lead to business integration, or the integration of technology, strategy, operations, and people.

Andersen Consulting breaks out its services through these service lines:

- Systems (operations) Management (operations and network services, facilities management, applications management, backup/recovery services)
- Systems Integration (systems design, building, integration, implementation
- Strategic Services (competitive and market strategy, organization and change strategy, business operations strategy, information and technology strategy)

. Change Management Services[sm] (organization change, technology assimilation, knowledge transfer, quality management)

Andersen Consulting also offers application products and computer-aided software engineering products.

Andersen Consulting's services (including systems operations) and products are offered through six major industry practices. Each of the following practices is headed by a managing partner and staffed with consulting specialists who have developed industry-specific expertise:

. Financial Services (financial markets, insurance, retail financial services)

. Government

. Healthcare

. Products (aerospace and defense, airlines, discrete/repetitive manufacturing, energy, food/consumer packaged goods, general retail and wholesale distribution, process manufacturing)

. Telecom industry group

. Utilities

Those classifications are not specialties but ways of organizing Andersen Consulting's varied industry work.

Andersen Consulting is no longer the consulting arm of tax/audit firm Arthur Andersen. In 1989 the two Andersens were designated as separate business units with their own operations and managing partners. Through this operating model, none of the partners in Andersen Consulting is active in Arthur Andersen and vice versa. Andersen Consulting's managing partner is George T. Shaheen.

3. Systems Operations Service Characteristics and Capabilities

Exhibit AC-1 compares the distribution of systems operations contracts under various pricing alternatives. Andersen expects some interesting changes in the next few years. Its share of fixed-price contracts will double, possibly as a result of the expected increase in client-owned equipment and sites. Charges, based on resource utilization, will decrease, at least as a percentage of overall

business. Andersen will also begin doing some changing based on transaction volumes. INPUT believes that, in an absolute sense, charges based on resource utilization will not actually decrease. Rather, its growth rate will lag behind other parts of Andersen's systems operations business.

Exhibit AC-1

Distribution of Contracts

Contract Type	*1989 (Percent)*	*1992 (Percent)*
Fixed Price	20	40
Transaction Volume		20
Resource Utilization	80	40

INPUT asked Andersen to characterize the duration of its contracts. The results showed a somewhat atypical dominance of very long-term projects:

- 3 to 4 years 10%
- 5 to 8 years 15%
- more than 8 years 75%

This long-term situation provides Andersen with a stable backlog of work on which to build.

Exhibit AC-2 compares systems operations capabilities internal to Andersen with those acquired through alliances. Unlike most other vendors studied by INPUT, Andersen does not overlap any internal capabilities with outside assistance. It relies on teaming partners only for disaster recovery services, network operations, and certain specialized service such as COM. There are several firms specializing in each of these two disciplines, and each discipline depends highly on advanced technology for cost-effective solutions.

Exhibit AC-2

Capabilities

Internal Alliances	*None*
Internal Only	. Business Consulting . Computer Systems Operations . Network Management . Applications Design/Development . Applications Maintenance . Packaged Applications Software . Equipment Maintenance
Alliance Only	. Disaster Recovery Service . Network Operations
Neither Internal nor Alliance	None

4. Markets Served

Andersen currently provides systems operations support to approximately 80 commercial customers worldwide, with an average contract value in excess of $20-$25 million. Currently, Andersen derives no systems operations revenues from federal clients. The low profit margins and highly competitive nature of federal systems operations business may be discouraging Andersen from pursuing it. However, given the breadth of Andersen's other federal business, Andersen will likely begin providing systems operations to federal agencies.

Andersen has targeted the following vertical industries for specialization:

. Financial Services
. Utilities
. Products (including energy)
. Manufacturing and Consumer Products
. Health Care
. Telecommunications
. Government

5. Competitive Position

While the firm began to formally market its SM services as a separate practice in 1988, it has provided clients with systems operations services for over a decade. This contrasts with some other firms which INPUT has investigated, which have been providing systems operations support for nearly thirty years. As previously indicated, Andersen has not yet entered the federal systems operations market.

It is interesting to compare Andersen with its two leading rivals, IBM and EDS. Each brings a different set of credentials to the market:

- Andersen has extensive industry-specific systems development and integration experience, helping it to understand its clients' needs.

- IBM provides unparalleled hardware and software experience, possessing a greater understanding of the technology's potential than either of the other two.

- EDS has dramatically more systems operations experience, network management experience, than its two prime competitors combined.

It will be interesting to see how this rivalry plays out over the next few years.

6. Recent Events

Andersen has formed a strategic outsourcing alliance with INFONET Services Corporation. The non-exclusive alliance enhances both firms' capabilities to offer communications, computing services, application support, and business operations expertise to meet specific customer needs. The alliance enables Andersen to offer INFONET's global communications network on a preferred basis, which will be very important to its SO capabilities.

In September, Andersen Consulting and Systematics Financial Services, Inc. formed a strategic business alliance to provide systems integration services and banking software to the nation's financial institutions. The alliance will provide financial institutions a full range of integrated information services, including systems integration, remote processing, facilities management, application software, and other management

information services. This is an exclusive arrangement, but both parties are free to honor specific client requests for alternatives.

7. Organization

As previously indicated, Andersen Consulting provides systems operations support through one of its service lines. It has been estimated that Andersen Consulting derived $2.26 billion of revenue from consulting services during FY91. Although systems operations represents a very small fraction of this business, INPUT expects it to take a steadily larger share, as it has become a strategic offering for Andersen.

Currently, Andersen has approximately 235 people dedicated to systems operations activities. As previously indicated, INPUT expects this to grow considerably. The bulk of this staff is engaged in five areas:

. Systems Operations	40%
. Technical Support	14%
. User Support	14%
. General Administration	10%
. Applications Design and Development	10%

Andersen also has limited staff dedicated to other areas.

8. Systems Operations Alliances

Except for the INFONET and the Systematics relationships discussed earlier, Andersen has few formal alliance programs for systems operations. It uses INFONET primarily for telecommunications backup and support. It has also established an arrangement with IBM and Sunguard for disaster recovery. As earlier indicated in Section 3, Andersen prefers to build internal systems operations capabilities whenever possible.

9. Systems Operations Marketing Strategy

Andersen expects to expand its systems operations business from both its existing client base as well as through new accounts. It has identified various selection criteria for pursuing new business:

. It is not cost effective for Andersen to pursue small systems operations opportunities. Therefore, it generally pursues only

those contracts with a minimum revenue stream of $3 million/year.

- Andersen currently plans to stay with the equipment it already knows. Therefore, it usually limits itself to systems operations projects involving IBM, Amdahl, and/or DEC equipment.

- Andersen also prefers to focus on technology-intensive industries and clients, since this is where it believes it can expect a competitive edge.

- Finally, it will focus on those opportunities where it can demonstrate a real business benefit to the client.

Andersen anticipates that a major portion of its ongoing systems operations business will be the result of existing client relationships. Andersen's strategy will be to leverage its extensive experience in other areas to grow its systems operations business. Andersen has estimated that its new contracts will come from the following sources:

- Responding to bid solicitations or RFPs 25%
- New contracts with existing clients 35%
- Proactive direct sales activity 40%

In competing for systems operations, Andersen identifies the following key factors, some of which differentiate it from its competitors:

- Access to flexible, high-performance operations
- Client service
- Well defined methodology
- Business integration approach
- Flexibility
- Leading edge technical expertise
- Cost-effective processing
- Application of business/technical expertise

- Full range of services offered, including applications development and planning
- Sensitivity to client relationships
- Independence of particular hardware or software solutions

10. Systems Operations Customer Base

Andersen currently has approximately 33 commercial clients in North America, and approximately 80 commercial clients worldwide. As previously indicated, Andersen has no federal clients for systems operations services. The following are typical of Andersen's engagements:

- At Sun Refining and Marketing, Inc., Andersen has responsibility for computer center operations, systems software maintenance, and telecommunications management.
- At Maxus Energy Corporation, Andersen has an agreement, being responsible for the management and operation of data processing, telecommunications, and applications development.
- Volunteer Hospitals of America depends on Andersen Consulting for all systems operations and applications software and development, building on the vendor's prior reputation in the health services industry.
- At BP Exploration in the U.K., Andersen has assumed total responsibility for the accounting function, including the acquisition and management of the clerical staff.

11. Summary and Future Directions

In responding to INPUT's survey, Andersen estimated that the commercial systems operations business is growing 30% annually, while the federal business is growing only at 15%. Andersen also believes that operating margins are increasing for commercial work, while remaining fairly flat for federal work. This explains Andersen's decision to focus on the commercial market for systems operations. Andersen has experienced some start-up costs associated with entering this business, and, therefore, has not yet achieved acceptable profit margins. However, as its systems operations business matures, margins will likely improve.

Andersen is investing to become a major player in this market. INPUT, therefore, expects it to grow faster than the overall market, and, subsequently, expand into other vertical industries. Essentially, any area in which it has consulting expertise will become a target of its systems operations efforts.

COMPANY PROFILE

Computer Sciences Corporation (CSC)

1. Key Systems Operations Contacts

The systems operations activities of Computer Sciences Corporation (CSC) fall within two different lines of authority, one for commercial and one for federal. The appropriate senior executive in each is:

. Commercial

Van Honeycutt
2100 East Grand Avenue
El Segundo, CA 90245

. Federal

Milton E. Cooper (As of January 1, 1992)
President, Systems Group
3170 Fairview Park Drive
Falls Church, VA 22042

2. Description of Principal Business

As stated in the company's annual report, Computer Sciences Corporation (CSC) solves client problems in information systems technology. Its broad-based services range from management consulting in the strategic use of information technology to the development and operation of complete information systems. A leader in software development and systems integration, CSC designs, integrates, installs, and operates computer-based systems and communications systems. It also provides multidisciplinary engineering support to high-technology operations and specialized proprietary services to various markets.

3. Systems Operations Service Characteristics and Capabilities

Computer Sciences has been providing systems operations services to the federal government for 20 years and to the commercial market for 15 years. Systems operations is a major line of business for the company.

The company owns one data center and manages 15 centers owned by clients. In 85% or more of CSC's contracts, the computing equipment is owned by the client, is located on the customer's premises, and is dedicated to the use of a single client. Of these contracts, 95% utilize CSC custom-developed application software.

The length of CSC's contracts vary depending on whether they are federal or commercial. In the commercial sector, 70% of the contracts are for five to eight years. Thirty percent are for three to four years. In the federal sector, there is a somewhat wider spread of contract terms:

- ten percent (10%) are for one to two years or over eight years
- fifty-five percent (55%) are for five to eight years
- thirty-five percent (35%) are for three to four years

CSC has the internal capabilities to provide the majority of the required systems operations services to its clients, ranging from business consulting to equipment maintenance. However, for packaged applications software, CSC relies on alliances to meet customer needs. The company also maintains alliances for services such as maintenance and training.

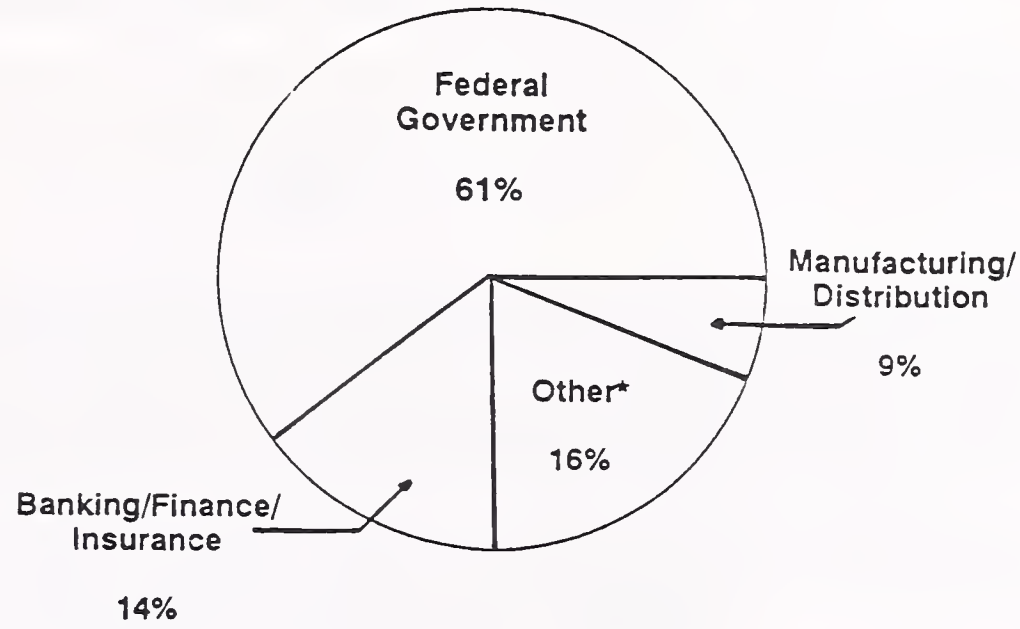
The company has developed a proprietary product development/project management methodology that it believes provides a significant competitive advantage.

4. Markets Served

Although there is no specific data regarding the breakdown of systems operations revenues by market, the percent of overall federal and commercial revenues may be considered as an indicator. In 1989, revenue from the federal government represented 73% of the company's total. In 1990, this declined to 61%. The change reflects CSC's interest in becoming a major participant in the commercial systems operations market. Exhibit CSC-1 provides a summary of CSC's revenues by business sector.

CSC-1

Revenues by Industry Sector



In November 1991, CSC won a contract to provide systems operations to General Dynamics Corporation, one of the largest outsourcing contracts ever awarded. This ten-year agreement has an estimated value of $3 billion dollars and has placed CSC firmly in the commercial outsourcing market. Under this contract CSC will provide GD's aerospace and defense groups with data center management, network operations, systems analysis, and applications development. The agreement also calls for CSC to purchase GD's three data centers and 28 regional data service sites for $200 million. CSC will also offer jobs to approximately 2,600 of the 3,400 employees of General Dynamics' data systems division. CSC has formed the Technology Management Division based in Washington, D.C., specifically to manage this contract.

Within the commercial arena, CSC has traditionally derived the majority of its systems operations revenue from the state

government sector as a major provider of processing services for Medicare and Medicaid claims.

CSC has processed approximately $13 billion Medicaid forms annually since 1986 for New York State's medicaid program, which is the largest in the nation. The company was chosen to continue the service through 1996. The revenue from this contract could exceed $150 million in revenue, if the state exercises its options for two extra years.

5. Competitive Position

The company has been active in the federal and commercial systems operations arenas for 20 and 15 years, respectively. In (fiscal) 1991, CSC's systems operations revenues were approximately $470 million. Of this, 26% was derived from commercial business and 74% from federal business.

The company reports that the margins on systems operations contracts have been declining on both commercial and federal contracts. The decline in margins on federal contracts is consistent with the experience of other vendors to the federal government.

INPUT believes that the decline in commercial contract margins may be explained by the fact that much of CSC's commercial revenues have been derived from state government contracts, where there is also strong competition and significant pressure to reduce contract costs. The contract with General Dynamics could change the situation.

Exhibit CSC-2 identifies the companies that CSC believes are its most significant competitors in the federal systems operations market.

CSC-2

Key Federal Market Competitors

- Unisys
- PRC
- Martin Marietta
- EDS

6. Recent Events

In January 1991, CSC acquired Analytics, Inc., which specializes in information security and communications systems. The acquisition will enhance CSC's ability to provide technical and engineering services in the intelligence, federal and DoD agencies.

CSC's international presence has grown with the acquisition of four consulting and IT companies: Butler Cox, Moria Informatique, Inforem, and CIG-Intersys Group. The acquisitions took place from June 1989 to June 1991.

On July 8, 1991, CSC acquired CompuSource, which maintains several data centers across the U.S.. CompuSource provides services to over 300 clients, many of which are in the commercial insurance and financial services markets. With this acquisition CSC hopes to expand its outsourcing services within the previously-mentioned areas, as well as enhance its disaster recovery capabilities. CSC holds a 97.1% share of the partnership and will act as managing partner in the deal.

7. Organization

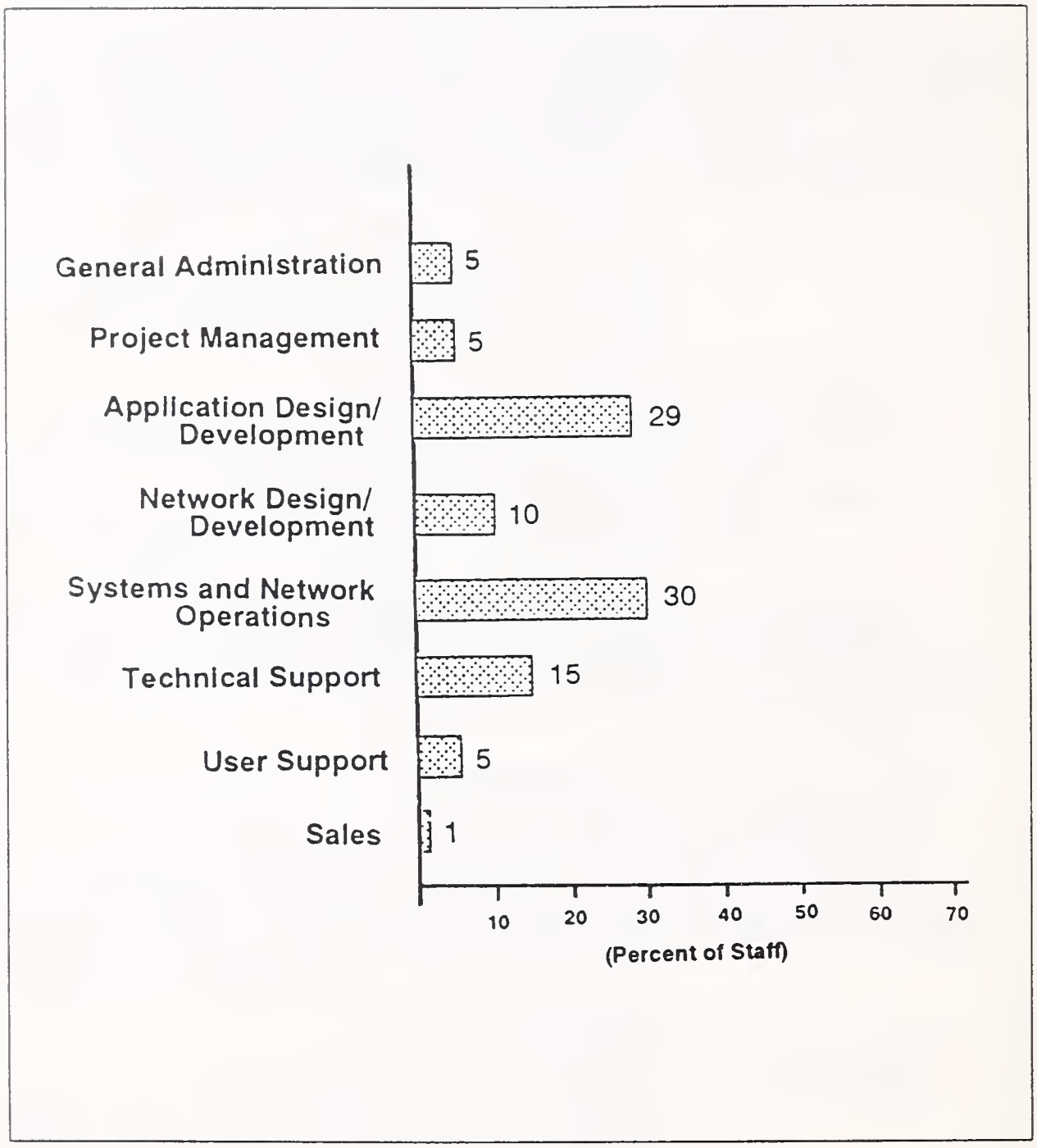
Organizationally, the company is divided into four major operating units: the Systems Group, the Industry Services Group, the Consulting Group, and CSC Europe. Although the company identifies systems operations as a major line of business, responsibility has traditionally been vested in a number of organizational units.

Until recently this did not pose a major problem, since the majority of CSC's systems operations work was with the federal government, which generally falls within the responsibility of the Systems Group. The agreement to provide systems operations services for General Dynamics suggests that other groups may become more heavily involved.

In total, CSC has more than 4,500 full-time staff dedicated to systems operations. Of these, 80% (3,600) are assigned to federal and 20% (900) to commercial contracts. The General Dynamics contract will increase CSC's system operations staffing to more than 7,000. Exhibit CSC-3 illustrates how CSC's staff capabilities are distributed.

CSC-3

Systems Operations Staff Capabilities



As part of most contracts, CSC retains approximately 75% of the client's personnel. The skills identified below were the top three out of a list of nine different skills CSC is most interested in retaining as part of a contract:

- Systems Operations
- Network Operations
- Application Design and Development

To ensure client satisfaction, CSC establishes both management and performance incentives. Exhibit CSC-4 identifies areas for which management and technical incentives are established.

CSC-4

Management/Technical Performance Measures

Management	*Technical*
Profitability	
Productivity	
Application Integrity	Application Integrity
System Performance	System Performance
Customer Relations	
Client Satisfaction	Client Satisfaction

8. Systems Operations Alliances

The company's traditional approach has been to establish an alliance to meet a specifically defined customer need. With one exception, they have not established any long-term alliance agreements. The one exception is an alliance with DEC, to meet requirements for logistics and distribution hardware and software.

The company reports no other specific alliances, but acknowledges that they establish alliances, as necessary, to provide packaged application software, equipment maintenance, and training.

9. Systems Operations Marketing Strategy

While CSC has become increasingly interested in the commercial market, the federal government will continue to be the company's 'bread-and-butter' market. The company identifies federal ADP and communications operations as the two areas of greatest interest.

To date, CSC has moved cautiously into commercial systems operations. Their primary criteria for entry into an area is centered around market potential and competitive environment.

The company indicates that 80% of its federal business comes from its existing client base. Only 20% is from new contracts. Of the total, 40% is from new contracts with existing clients, 30% results from responses to RFPs, and 30% results from direct sales activity.

10. Systems Operations Customer Base

The company has 15 active federal contracts, several of which are with the same customer, NASA. The average annual value of these contracts is $133 million. The company declined to provide data about the total number of commercial customers. Examples of CSC's contracts include the following.

- NASA/JSC Mission Operations & Support Contract - This five-year contract, valued at $170 million, calls for a variety of tasks such as maintenance, engineering, user support, integration, planning and acquisition of federal information processing resources.

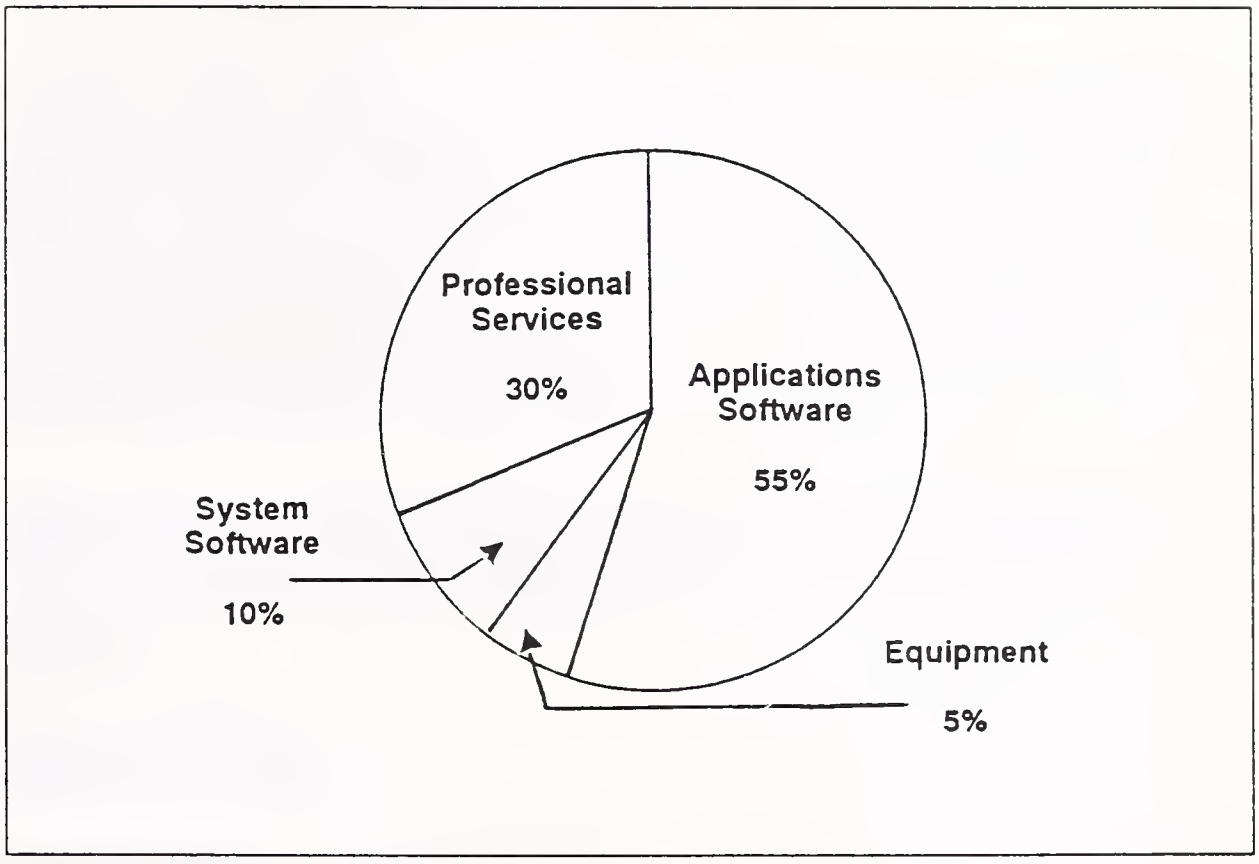
- New Jersey Automobile Full Insurance Underwriting Association (JUA) - CSC began work in 1989 for JUA, which serves drivers unable to obtain insurance coverage in the private sector. In October 1990, JUA was replaced by a new program titled Market Transition Facility (MTF). MTF provides a temporary holding facility for drivers previously insured by JUA, and others who are unable to obtain auto insurance though ordinary channels. CSC will continue to provide its current range of services through September 1992 and then will begin a 12-month phase-out as the MTF program closes. Under the agreement, in 1993 CSC will continue to perform most of the functions of a private insurer, with the exception of bearing the financial underwriting risk of the policies issued.

- EPA Systems Operations - This agreement includes a multi-year contract valued at $10.9 million. Under the contract with EPA's National Contract Payment Division at Research Triangle Park, NC, CSC will operate and maintain the agency's contract payment system. The contract covers a nine-month base period with three one-year options.

As shown in Exhibit CSC-5, the majority of CSC's contract cost is for application software. The percent for equipment is quite low compared to other vendors, suggesting that the client owns the equipment in most cases. Since CSC's revenues have traditionally been in the federal sector, this would be expected.

CSC-5

Systems Operations Contract Cost



11. Summary and Future Directions

Over the next several years, CSC's primary focus will be to continue placing increasing attention on commercial business opportunities. They expect the market to grow significantly and, considering reductions in federal spending, expect to become a major provider of commercial systems operations services. Their initial major contract with General Dynamics should build their credibility in the commercial arena and allow them to leverage their federal expertise to the benefit of commercial organizations.

COMPANY PROFILE

Citicorp Information Resources (Now part of FIserv Inc.)

1. Key Systems Operations Contacts

On April 1, 1991, FIserv Inc. of Milwaukee acquired the processing and consulting units of Citicorp Information Resources (CIR), the systems operations subsidiary of Citicorp, Inc. FIserv plans to operate CIR as a subsidiary of FIserv and is expected to shift its facilities management, outsourcing and Resolution Trust operations into the former Citicorp unit. Since the systems operations activities of the combined firms are expected to be managed by the CIR subsidiary, this profile concentrates on the CIR portion of FIserv's operations.

The systems operations activities at Citicorp Information Resources (CIR) are under the direction of Frank Martire, Chairman of CIR, who reports to Mr. George Dalton, Chairman of Fiserve. Mr. Martire is located at:

4 Stamford Forum
Stamford, CT 06901

2. Description of Principal Business

Citicorp Information Resources provides processing services, application software products, systems operations (facilities management), and associated support services to over 800 banks, thrifts (savings and loans, savings institutions, and mutual savings banks), finance companies, and credit unions.

CIR is a national supplier of information services in 43 states and in 24 countries around the world. CIR provides the following products and services to financial institutions:

- The National Service Product (NSP) is an on-line processing service for banks and thrifts.
- Resource Manager is a systems operations processing service that provides access to third-party software from a CIR data center.
- The Comprehensive Banking System is available as a software product or a turnkey system to banks and thrifts.
- Systems operations professional services are provided to banks and thrifts.
- The GALAXY 2000 Credit Union System is available as an on-line processing service, in-house software product, or systems operations professional service. Because GALAXY 2000 is vertically integrated software, all three delivery modes use the same software.

- EFT Services support a range of ATM transaction processing capabilities, including ATM driving, transaction switching, and point-of-sale support.

- CIR also provides consulting services to international financial institutions.

3. Systems Operations Service Characteristics and Capabilities

Exhibit CIR-1 presents CIR's view of the changes in its market over the next few years. All of the numbers represent a percentage of total revenue derived from systems operations. The first chart pairing indicates that there will be no change expected in the next few years in the percentage of revenues generated from client-owned equipment. The high percentage of vendor equipment is consistent with most responses to INPUT's survey. In general, most systems operations vendors derive greater revenues through their own equipment than through client-owned equipment.

The second pairing in Exhibit CIR-1 shows that all systems operations revenues are realized from client-owned sites. This suggests that, as CIR increases its systems operations business, it will continue to purchase equipment for installation at client sites.

CIR-1

Market Characteristics

		1989 (Percent)	1992 (Percent)
Equipment Ownership Percent of Revenue	CIR Client	80 20	80 20
Equipment Location Percent of Revenue	CIR Client	0 100	0 100
Processing Percent of Revenue	Shared Dedicated	0 100	0 100
Applications Software Developed by	Client CIR Third Party	10 10 80	10 10 80

The third pairing shows no expected change in the mix of shared versus dedicated facilities. In the nine data centers that CIR operates, each center is client owned, and therefore dedicated to the single client.

The fourth pairing shows that while most application software is developed by third-party vendors, an equal percentage of revenues are realized when application software is developed by either CIR or the client.

All of CIR's contracts are fixed-price contracts for a fixed period, each greater than five years in duration.

Citicorp Information Resources has the necessary capabilities to provide full service to its client banks, except in the areas of disaster recovery and equipment maintenance. In those areas, other companies are brought in to perform such functions. CIR has established an alliance with Sorbus to provide equipment maintenance.

In addition, CIR supplements its capabilities in the areas of software development and maintenance with the services of outside vendors. These vendors may provide custom services or packaged applications. Particular examples are the use of McCormack and Dodge and Hogan packaged software for financial institutions.

4. Markets Served

CIR provides its systems operations services only to financial institutions. It currently has nine banking customers to whom it provides a full range of processing and systems operations services.

5. Competitive Position

The company has been in the systems operations business for seven years. It had systems operations revenues of $15 million in 1989 and projects 1990 revenues from systems operations of more than $21 million. The 1989 revenue for all of CIR was $120 million.

CIR considers its principal competitors to be two companies that concentrate their energies on the banking sector—Systematics and Mellon Bank—and one broad-based SO provider—EDS.

6. Recent Events

In May 1989, CIR introduced Selector, a software package that permits National Service Products (NSP) customers to retrieve data from mainframe files resident at the CIR data center for manipulation on their microcomputers. Selector is available only to NSP clients.

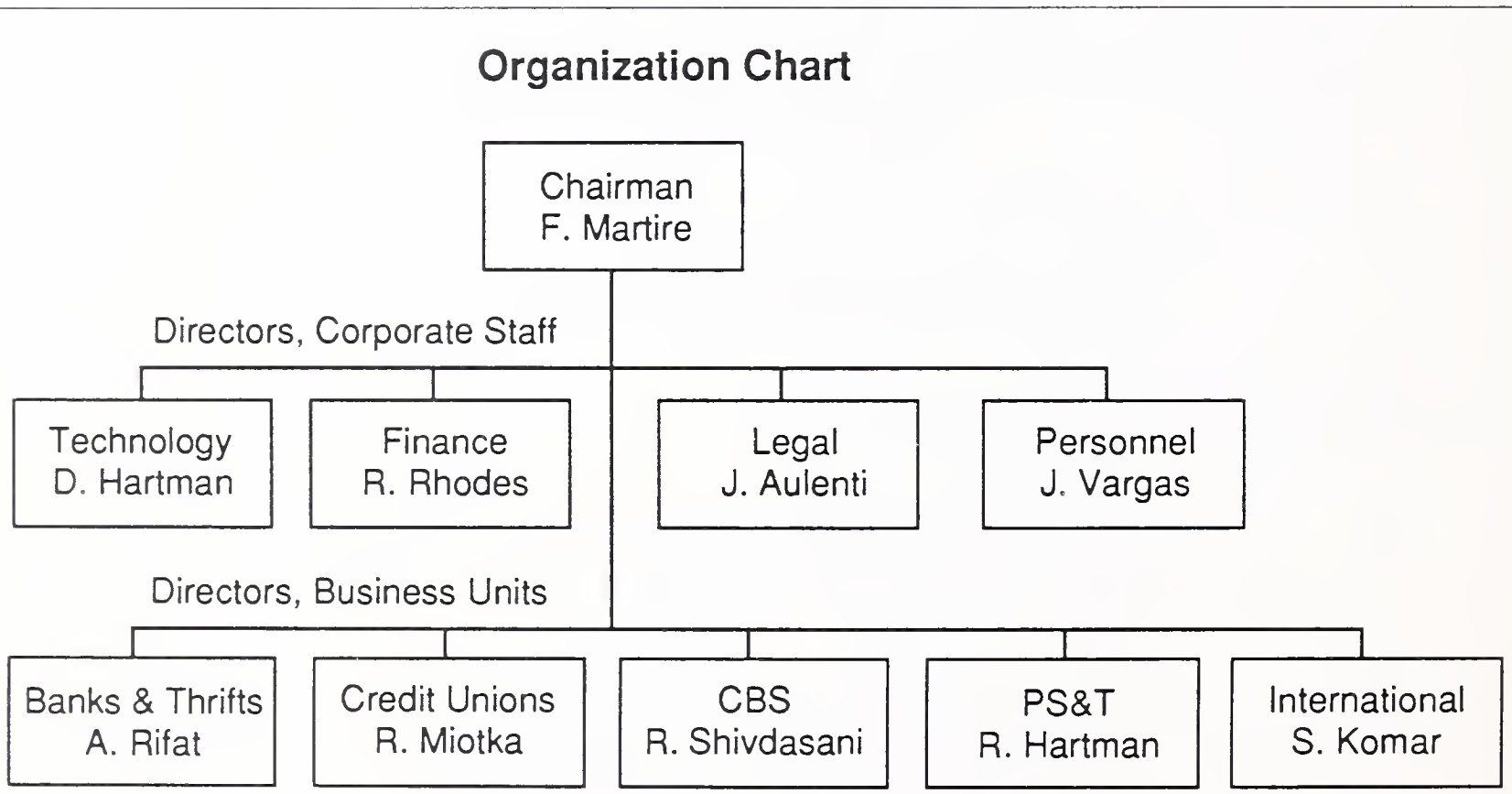
In April 1989, CIR introduced EFT Services, an integrated ATM service available from its Arlington Heights data center. ATM processing support was previously provided to CIR's NSP clients by GTE-Indianapolis and Deluxe Data Services.

7. Organization

Citicorp Information Resources is a subsidiary of Citicorp, which provides banking services to the financial community.

Exhibit CIR-2 presents the organizational structure of CIR. Though CIR does not identify its staff as dedicated to systems operations, there are approximately 900 employees. Exhibit CIR-3 shows an approximate distribution of these employees by function. As expected for a service provider, the largest concentration of resources is in the operations function (45%).

Organization Chart



8. Systems Operations Alliances

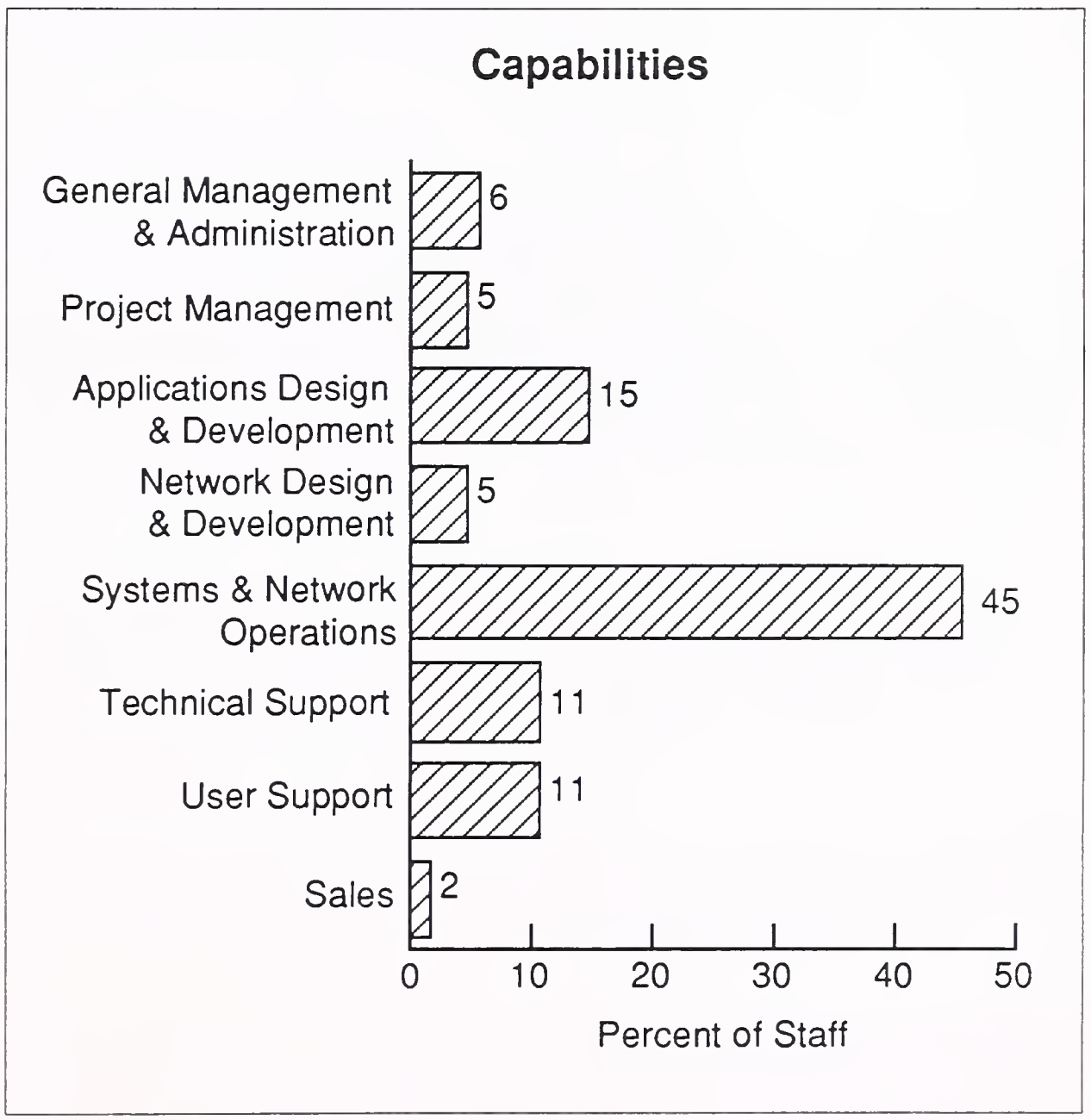
CIR has no formal alliance program to enhance its capabilities, but does use subcontractors to supplement its resources in the areas of applications software development and maintenance.

9. Systems Operations Marketing Strategy

Citicorp Information Resources expects to continue to grow by expanding its current base of clients. Management considers the needs of the prospect and the cost of entry of servicing that client in deciding which prospects to target.

For example, if a prospect is currently on a processing platform not supported by CIR, the cost of entry for that customer would probably make it an unlikely client. Another factor cited by management is the strength of competition in a particular geographic market. CIR will concentrate its efforts in areas where its perceived competitors do not already have a dominant position.

CIR-3



Currently, CIR derives 85% of its systems operations revenue from the current client base and expects to generate about 15% of that from new accounts. About 80% of these new sources of systems operations revenue are generated from within the current customer base, with 20% acquired in response to bid solicitations.

CIR provides its new clients with additional flexibility in its systems operations and can usually provide the service at a lower price than other vendors and internal resources.

10. Systems Operations Customer Base

Citicorp Information Resources currently has nine clients. Typical of those are Amarillo National Bank in Texas; First Guaranty Bank in Hammond, Louisiana; and Pacific Guaranty Bank in San Jose, California. In all of these instances, CIR manages the entire data center operation.

11. Summary and Future Direction

Citicorp Information Resources has successfully assumed the systems operations functions of a number of banks to fulfill all of their data processing needs. The sales force expects to continue its market expansion by seeking new clients in the banking community. Management is relying on its expertise, its reputation in the market, and current contacts for major new clients.

COMPANY PROFILE

Computer Task Group, Inc. (CTG)

1. Key Systems Operations Contacts

The systems operations activities of Computer Task Group, Inc. (CTG) are under the direction of John A. Lozan, a corporate Vice President. He reports directly to John P. Courtney, President of the corporation.

The executive offices of the company are located at:

800 Delaware Avenue
Buffalo, NY 14209
(716) 882-8000

However, Mr. Lozan's office is located at:

700 Delaware Avenue
Buffalo, NY 14209
(716) 881-3000

2. Description of Principal Business

Currently, systems operations is a major new emphasis area for CTG. Approximately 87% ($203 million) of CTG's revenue was derived from its various professional services, including systems operations, and 13% ($30 million) from commercial systems integration activities.

CTG classifies its services into three areas:

- Professional services—the company's major source of revenue is derived from this type of service. CTG staff provide programming, systems analysis and design, project management, systems operations, and other services in support of the client's data processing applications.

- Consulting—examples of specialty areas in which CTG has experience include information engineering, data base consulting, telecommunications/network consulting, conversions, migration, and document management services.

- Commercial systems integration services—these services are provided to the manufacturing and industrial markets through CTG's subsidiary, Scientific Systems Services. Services provided include management consulting; concept and applications planning studies; control-Spec™ functional specification and scope-of-work contracts; systems architecture services, including hardware selection, systems software evaluation and selection, application software, and communications; and project implementation.

CTG provides its commercial professional services through a network of 65 branches and field offices.

Currently, systems operations represents approximately 5% of CTG's sales. It is offered on a nationwide basis. A significant number of CTG's systems operations contracts are in partnership with IBM.

3. Systems Operations Service Characteristics and Capabilities

Exhibit CTG-1 presents graphically how CTG views the change in its market in the next four years. All of the numbers represent a percentage of total revenue derived from systems operations. The first chart pairing indicates that there will be significant change in the next few years in the percentage of equipment that is client owned. CTG expects client-owned equipment contracts to continue to be a very minor portion of its overall systems operations activities. The majority of activity will be third-party ownership. This indicates CTG's change in strategy from a service bureau orientation.

However, the second pairing suggests the opposite result for equipment locations, as equipment at client sites will shrink from 63% in 1989 to 50% in 1992. This suggests that, as CTG increases its systems operations business, clients will find it more economical to utilize shared sites.

On the other hand, CTG expects some change in the mix of shared versus dedicated facilities. This suggests that, as CTG or third parties convert ownership of client equipment, it will begin using that equipment for other clients. The three pairings of boxes, taken together, suggest some significant changes in the way CTG will conduct its systems operations business. However, since it currently supports only three centers, some changes would be expected as the business grows. Currently, all of CTG's systems operations activities involve client-developed applications software. However, as the fourth pairing in Exhibit CTG-1 shows, this will change slightly over the next few years. In view of its significant professional services activities, CTG does plan to leverage more of its software development efforts into systems operations.

Exhibit CTG-2 compares the distribution of systems operations revenue under various pricing alternatives. The data suggests some dramatic changes in the way CTG will conduct its systems operations business. In particular, by going to fixed-price work, CTG will be assuming considerably higher risks in the performance of its contracts. It is possible, as CTG builds up a critical mass of staff expertise in systems operations, that this risk will become manageable and fully justified by the potentially higher profit margins.

CTG-1

Market Characteristics

		1989 (Percent)	1992 (Percent)
Equipment Ownership Percent of Revenue	CTG Client Third Party	91 0 9	10 10 80
Equipment Location Percent of Revenue	CTG/IBM Client Third Party	37 63	10 50 40
Processing Percent of Revenue	Shared Dedicated	90 10	60 40
Applications Software Developed by	Client CTG Third Party	100	60 20 20

CTG-2

Distribution of Revenue

Contract Type	1989 (Percent)	1992 (Percent)
Fixed Price	9	80
Resource Utilization	91	
Cost plus Predefined Margin		20

Currently, CTG's systems operations contracts range from three to four years for half the work to more than eight years for the other half. Currently, CTG derives none of its systems operations revenue from the federal government.

Exhibit CTG-3 compares systems operations capabilities derived from internal sources with those derived from alliances. The data suggests that CTG has made significant teaming efforts in its systems operations activities. Since IBM currently has an equity investment in CTG, IBM will likely continue to provide the system software, the maintenance arrangements and the hardware platforms.

CTG-3

Capabilities

Internal and Alliances	• Business Consulting • Computer Systems Operations • Network Management
Internal Only	• Network Management • Applications Design/Development • Applications Maintenance
Alliance Only	• Equipment Maintenance • Disaster Recovery Service • Packaged Applications Software
Neither Internal nor Alliance	• Packaged Applications Software

On another issue, CTG is heavily involved in unique consulting and use of systems integration skills, including communications, imaging, documentation, conversion technology, and data base architecture, which give it a competitive advantage. Business growth will likely come from expansion of its professional services business and the above specialties with existing clients. Since this portion of CTG's business is so large, there will be a sufficient number of current clients to increase market penetration.

4. Markets Served

As previously indicated, CTG is just getting started in the systems operations business. It currently services several commercial clients and no federal clients. At this point, CTG appears to be focused on the financial and manufacturing industries.

5. Competitive Position

The company has been providing systems operations support for the past five years, exclusively in the commercial area. This business has grown from $4.89 million in 1988 to $6.72 million in 1989. As CTG grows its systems operations business, it expects its primary competition to come from the large, established firms, including EDS, Andersen Consulting, and Perot Systems.

6. Recent Events

CTG has recently been active in mergers and acquisitions. First, it acquired Connolly Data Systems, Inc., a Lowell, Massachusetts firm that specializes in networking systems integration. In its five-year plan, CTG had targeted networking, communications, and connectivity as areas of high growth. Therefore, the acquisition of Connolly fits well with CTG's strategic commitment.

In another action, World Software Group, a privately held Dutch company, increased its equity stake in CTG to 14.66% of outstanding common shares. World Software Group invests primarily in computer software firms, so CTG's position represents a slight departure from past trends.

Finally, CTG acquired the Rendeck International Group of companies. Rendeck will act as CTG's new European division. Rendeck, with 360 European employees and 1989 revenues of $24 million, provides consulting, professional services, training, and mainframe systems software.

7. Organization

CTG is organized around its three main business areas, as described in Section 2 above. In addition to a limited headquarters staff, CTG currently operates 60 offices.

During the second quarter of 1989, CTG closed four unprofitable branches and eliminated 65 overhead positions to save over $1 million. Results of operations for the second and third quarters were lower than expected, at which time the company announced it would undertake a major restructuring program.

- Overall during the year, CTG eliminated more than 300 positions through the consolidation of overhead functions and the sale or closing of branches. The company consolidated its field operations from 71 to 60 offices.

- The restructuring program resulted in charges to 1989 earnings of $4.2 million for losses on the closing of business units and $13.2 million for other restructuring expenses.

  - Included in the losses on closed business units were losses resulting from the sale of CTG's Amtec Systems Corporation subsidiary and the Ottawa, Ontario, branch office.

  - Other restructuring expenses included severances, costs related to streamlining administrative programs and benefit plans, and costs for consolidating business operations.

- As a result of the restructuring, CTG's first three quarters of 1990 provided record growth in profit, not including expansion into Europe during this period.

8. Systems Operations Alliances

CTG indicated to INPUT that it currently has a systems operations alliance with IBM. In June 1989, IBM made an equity investment in CTG, acquiring approximately 1.5 million shares of CTG preferred stock for $21 million.

- In conjunction with this transaction, the two companies agreed to levels of use of CTG's systems engineers on products for IBM and its customers. Some of these resources are being applied to some of IBM's large SO contracts, like Kodak and Bank South.

- Revenues from IBM, which were about 5% of total revenue prior to this contract, increased approximately 50% by the end of 1989.

INPUT believes that, as CTG increases its systems operations activities, this IBM relationship will continue to play an important role.

9. Systems Operations Marketing Strategy

As previously indicated, CTG plans to expand its systems operations business among its professional services clients. In addition, it will likely enter new markets. However, this latter thrust is expected to account for only 10% of its new business. The balance will come from existing customers. As of this writing, CTG plans no penetration of the federal market.

CTG expects to receive approximately 20% of its new systems operations business through formal solicitation. The balance of new business will come from direct sales activity. This is consistent with its overall plans to expand the contracted work with its current client base.

10. Systems Operations Customer Base

As indicated earlier, CTG has not yet developed systems operations into a major line of business. In 1989, systems operations revenues represented less than 3% of the firm's overall revenues. Its two current clients, IBM and USS/POSCO Industries, represent too small a sample from which to draw any conclusions. However, as the business grows, CTG may choose to focus on certain vertical markets.

11. Summary and Future Directions

In responding to INPUT's survey, CTG estimated that the systems operations market would grow at a 28% CAGR over the next five years, with margins increasing. Since CTG also views systems operations as a highly profitable business, INPUT expects it to increase both sales and marketing efforts in the near term. CTG sees the market segmenting into a number of solutions based on system size. In the large mainframe opportunities, it plans to partner with IBM as the staff provider. In smaller situations, it will provide complete services. CTG will also probably take advantage of its IBM relationship to reach new clients, while at the same time increasing penetration of its own client base.

COMPANY PROFILE

Electronic Data Systems (EDS)

1. Key Systems Operations Contacts

The commercial systems operations activities at EDS are under the direct supervision of Jeff Heller, Senior Vice President at EDS. He is located at:

7171 Forest Lane
Dallas, Texas 75230

Federal operations are under the supervision of Bob McCashin, Group Executive, located at:

13600 EDS Drive
Herndon, VA 22071

2. Description of Principal Business

Electronic Data Systems Corporation (EDS), founded in 1962, is a leading information and communications services company providing information processing, consulting, systems management, systems integration, and communications services to the financial, insurance, commercial, and communications industries domestically and internationally, and to state and federal governments. These markets include banking; credit union; property, life, health, and casualty insurance; distribution; manufacturing; transportation; retail; and energy.

- EDS currently has more than 64,000 employees and more than 7,400 clients in all 50 states and 28 other countries worldwide.

- EDS' largest cients are General Motors Corporation (GM) and its subsidiaries, which contributed approximately 53% ($3.23 billion) to EDS' 1990 revenue.

3. SO Service Characteristics and Capabilities

The company currently operates 20 Information Processing Centers worldwide. The systems operations for many of its SO customers are conducted at these centers in a multiple-client environment . These IPCs are interlinked via network. The processing load can be shifted from one center to another as the need arises.

There are 110 other data centers operated and owned by EDS throughout the world that serve a single client. In addition, EDS operates 35 data centers that are owned by the client.

Most of its contracts are for a minimum of three to five years but the terms and conditions vary considerably from industry to industry. They cannot be categorized into convenient groupings, such as fixed-price or cost-plus-fixed-fee.

EDS has the internal capabilities to provide all the required Systems Operations services to its clients, ranging from business consulting to equipment maintenance, but still chooses to use alliances to supplement its own resources in many instances. Typical alliance partners will be further identified in Section 8.

The company identifies several proprietary products that it believes give it a competitive edge over its competitors. These are:

- The EDS Card Processing Solutions comprehensively addresses issues faced in the card processing arena. It is composed of three offerings - Card Processing Service, Merchant Accounting Service, and First Advantage Procedures - that collectively meet the needs of every segment of the card processing industry.

- Electronic Funds Transfer (EFT) - EDS provides the single source for any EFT need, offering a complete line of services for automated teller machines (ATM), point of sales (POS) and electronic benefits transfer (EBT) programs. EDS supports regional, national and international applications.

- IPS Clinical Products - InterPractice Systems, Inc., an alliance between Harvard Community Health Plan and EDS, offers a comprehensive, integrated system tailored to

the needs of managed care participants. Physicians and patients are electronically connected to each other and to the technical and administrative support needed to ensure efficient, cost-effective, quality care.

. Total Plan - This system is a fully integrated Health Insurance Administration processing package that increases its clients' productivity and decreases unnecessary benefit payments.

. C4 Technology Program - This system of programs is designed to standardize, enhance and integrate CAD, CAE, CAM and CIM capabilities for the product engineering and design tasks in the client base.

4. Markets Served

EDS cannot split out of its customer base of 7,400 those for whom it is performing systems operations functions exclusively. The demographics of the customer base are as follows:

. 7,344 commercial clients
. 43 state and local operations
. 13 federal government agencies

EDS is a supplier to a broad range of industries in the commercial market. EDS provides systems operations services to federal, state and local government customers. Recent contract examples include the following:

. In September 1990, EDS' Manufacturing and Distribution Services Division signed a ten-year operational information utility agreement with Maybelline Holdings, Inc. Maybelline was recently acquired by Wasserstein Perella and Company. Under this contract, EDS provides on-site operations, project management, communications and management support to Maybelline's Little Rock data center. All of the Maybelline employees transitioned to EDS.

. In September 1990, EDS' State Operations Division entered into a contract with the Chicago Department of Revenue to operate its parking ticket system. Under this five-year fiscal agent contract, EDS is responsible for implementation, system maintenance, and operation of the city's enhanced Parking Enforcement Management System.

EDS will also provide image processing, automated ticket writers, portable data terminals, and a geographic information system component.

. In June 1990, EDS' Government Services Division was awarded a one-year facilities management contract with the U.S. Department of Energy to provide on-site operations, technical and administrative support for management of the Energy Information Administration's computer facility.

. In August 1990, EDS won a five-year contract to provide life cycle management services of Standard Army Management Information Systems for the Army's Information Systems Software Center at Fort Belvoir (VA). Maximum contract value is approximately $116 million.

. In March 1990, EDS was awarded a seven-year, $45 million contract with the U.S. Small Business Administration (SBA) to operate the SBA's Washington data center, which supports 1,700 terminals at SBA offices around the country.

. EDS currently processes more than two-thirds of all Medicaid claims submitted in the U.S. Medicaid contract awards, including the following:

- During the third quarter of 1991, EDS renewed a five-year contract for enhancement and operation of the Georgia Medicaid Management Information System.

- Also in the third quarter of 1991, EDS was awarded a five-year $77.9 million recompete for a systems management and maintenance contract within the State of Michigan's Department of Social Services' Medical Services Administration.

- During the first quarter of 1990, under a five-year contract with Kansas SRS, EDS will provide fiscal agent services and expand medical review, recipient assistance, provider relations, and enrollment services.

EDS offers financial institutions technology-based business solutions through systems integration, systems operations, and service bureau operations. Products and services

include data processing, communications, information management, back-office, bank card, and payment services. The company currently serves more than 6,000 banks, credit unions, and savings institutions worldwide.

. In May 1991, EDS signed a $300 million systems management contract with Signet Banking Corporation. EDS will convert Signet's existing applications into an integrated system and manage computer operations and network services. The contract calls for the Bank's 270 IS employees to be rehired by EDS.

EDS provides systems operations, processing services and turnkey systems to commercial insurance companies and Blue Cross/Blue Shield organizations.

. During 1990, EDS processed over 450 million life, health, and casualty insurance claims.

. In April 1990, EDS' Health and Benefits Division entered into a ten-year strategic alliance with American International Healthcare, Inc. Under this contract, EDS and AIH, an internationally-managed health care and consulting company, will use and market the AIH Triple Option Product Processing System (TOPPS), which processes insurance claims for group health organizations. EDS, along with 40 AIH employees, will assume ownership of TOPPS, complete the system, support new and existing customers, and provide maintenance and enhancements after the system is completed.

EDS also provides a range of systems operations and professional services to domestic and international clients. EDS was one of the world's first commercial systems operations specialists and has emerged as a major force in both government and commercial markets.

. Examples of recent domestic commercial contracts obtained by EDS include the following:

- In October 1991, EDS entered into a ten-year $34 million agreement to provide glass manufacturer, PPG Industries, with computer operation services. Under the agreement, PPG Applications Systems will move to an EDS processing facility.

- In July 1991, EDS and Continental Airlines Holdings, Inc. reached a ten-year agreement valued at $2.1 billion. Under this contract, EDS will assume responsibility of all information technology services for Continental Airlines and System One, which are both subsidiaries of Continental Airlines Holdings, Inc. As part of the agreement, EDS acquired System One's Airline Services Division, which provides reservations, ticketing, and other support services to a business base of more than 170 airline customers.

- In the first quarter of 1991, EDS signed a ten-year $500 million contract with National Car Rental Systems, Inc. to provide systems operations services.

- In August 1990, EDS was awarded a ten-year contract with the Permian Corporation to manage Permian's information technology in support of the energy company's oil and gas distribution operations.

5. Competitive Position

The company has been active in the commercial systems operations arena for 29 years and in the federal government arena for 24 years. In the early years, the process was known either as facilities management or operations management, but it essentially represents the same set of activities that is now known as systems operations.

Approximately 53% of EDS' total 1990 revenue was derived from its parent company, GM, and 1.5% was derived from interest and other sources. The remaining 45.5% ($2.79 billion) of total revenue was derived from clients in various industries, including banking and finance, insurance, manufacturing, retail, distribution, transportation, energy, federal, state and local government agencies, and international markets. Taken over the next five years, EDS projects its compound annual growth rate (CAGR) at 20% for its commercial and federal sectors, respectively.

EDS' 1990 source of revenue by industry market (including captive GM revenues) follows:

Manufacturing	40%
Financial	14%
Government	10%
Insurance	5%
International	18%
Other	13%
	100%

Corporate management at EDS recognizes the following set of primary competitors in its major markets. A different set is dominant in each sector, though some are common to both sectors. Exhibit EDS-1 identifies them for each sector.

EDS-1

Major Competitors in Each Market Sector

Commercial	*Federal*
IBM	IBM
CSC	CSC
Andersen Consulting	Grumman
Perot Systems	Boeing
Systematics	PRC, Inc.
	Martin Marietta

6. Recent Events

Recent acquisitions and joint ventures concluded by EDS include the following:

- In September 1991, EDS acquired McDonnell Douglas Systems Integration Company. The acquisition will create one of the world's largest concentrations of specialists dedicated to the development of CAD/CAM technologies for aerospace, automotive and other manufacturing markets.

- During the third quarter 1991, EDS and Consilium, Inc. announced an agreement to provide computer integrated manufacturing sytems to customers in the aerospace and

defense industries in the U.S. This arrangement, along with the McDonnell Douglas acquisition, enhances EDS' strategic presence in the manufacturing market.

. In November 1990, EDS acquired Appex Corporation, which provides information services to the cellular communications industry. Appex's services include billing, caller authorization, fraud prevention and intercarrier settlement to more than 250 markets in the U.S. and internationally.

. In October 1990, EDS acquired Systems Network, Inc., a professional services firm which provides systems development, consulting, training, and project management to the Canadian Government.

. In September 1990, EDS' Health and Benefits Division entered into a three-year strategic alliance with Envoy Corp. EDS' and Envoy's efforts will include joint marketing and sales in the areas of insurance and financial management technology services to the health care market through point-of-sale (POS) technology.

. In September 1990, EDS joined with Hewlett-Packard to finance the purchase of Ingres Corp., a relational data base supplier, by ASK Computing, a manufacturing software developer. In return for $40 million, EDS will get a 20% stake in ASK and access to a strong base of manufacturing and data base technologies.

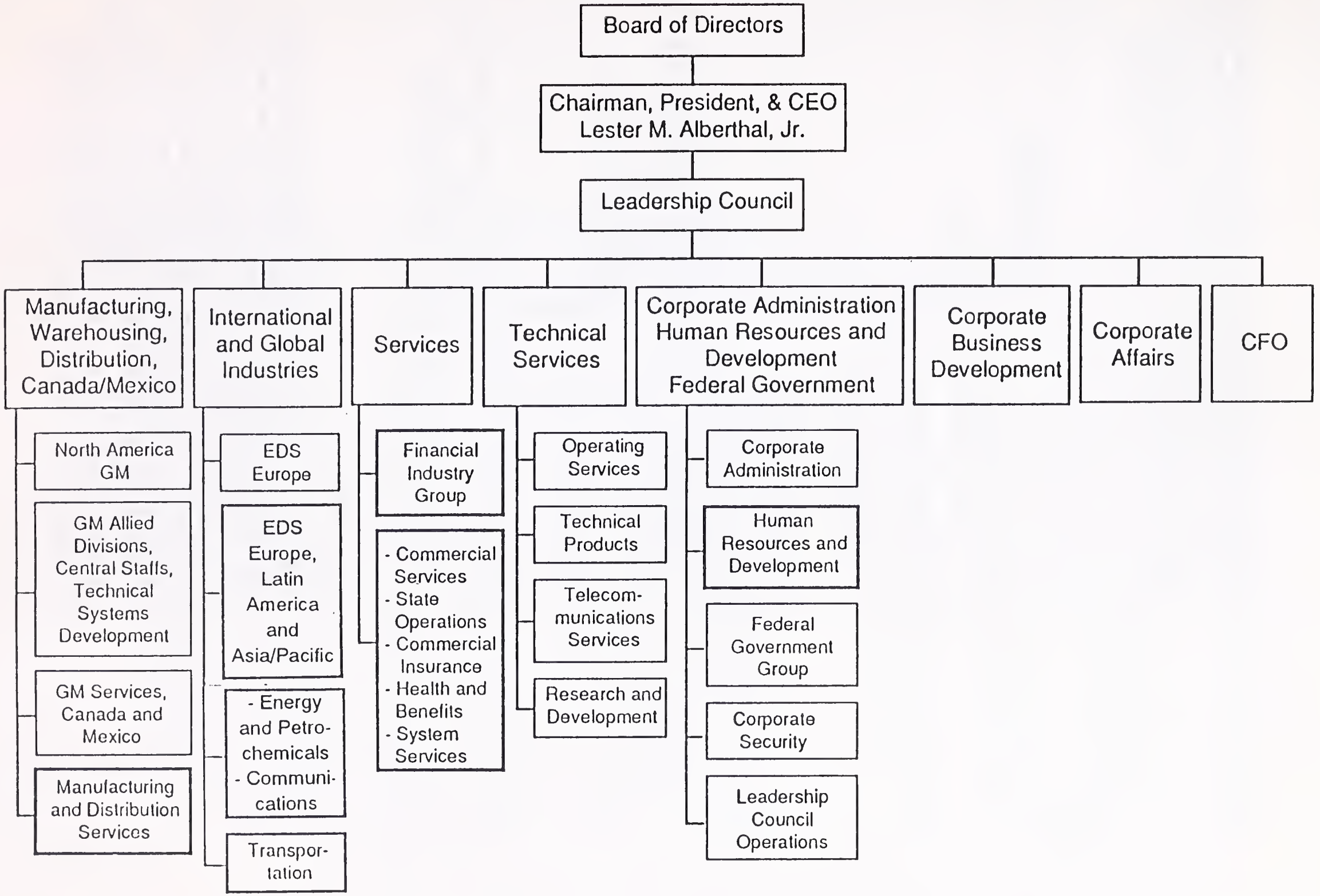
. In March 1990, EDS purchased a 25% equity interest in Thomas Group, Inc (TGI) and jointly will market TGI's Accelerated Business Competitive (ABC) programs through EDS' Manufacturing and Distribution Strategic Business Unit.

. In January 1990, EDS acquired a 30% interest in Infocel, Inc., a Raleigh, NC-based provider of software products for local governments, education, and public safety.

7. Organization

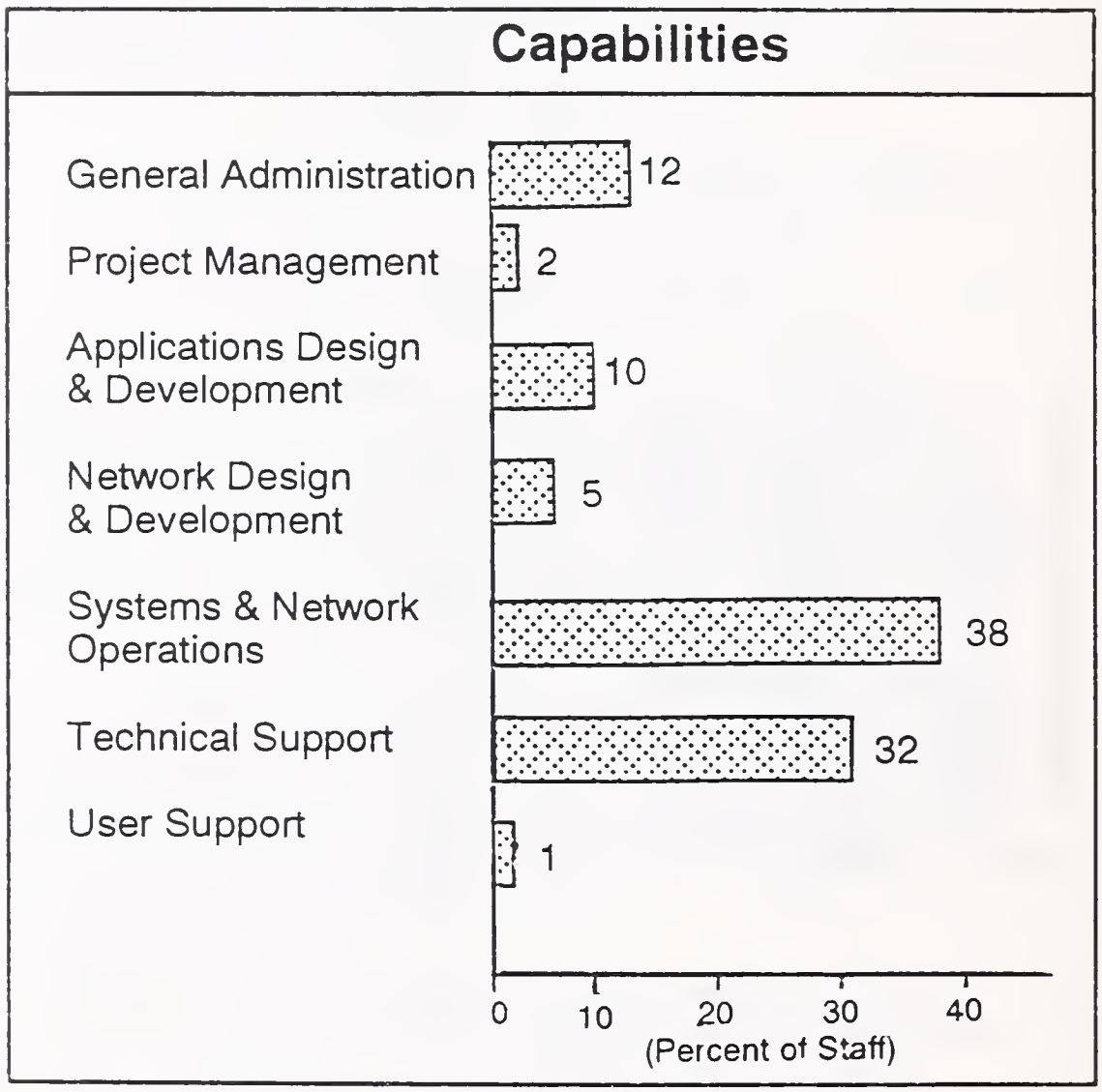
The corporate organization chart is presented in Exhibit EDS-2 (see following page). Highlighted sections represent those operating units that have systems operations activities in the United States. The units with responsibilities for GM business are not highlighted.

Organization Chart



EDS has reported that more than 17,333 of its employees are engaged in systems operations activities. Of this total, 97% are servicing commercial accounts while the remaining 3% work on federal government contracts. Exhibit EDS-3 illustrates how those staff capabilities are distributed.

EDS-3



8. SO Alliances

EDS has a strong, active alliance program for its systems operations business. EDS states that, through a variety of partnership agreements, it is able to provide customers with greater value through enhanced technological and industry knowledge, resources, products and services. Joint development allows EDS to serve as a major influence in the development of vendor hardware and software. These strategic alliances enable EDS to draw on the strength and expertise of other companies and offer a wider range of services and product offerings to meet customer needs.

The company has in place more that 5,000 vendor contracts with support organizations. Typical of these partnerships are the following:

- ASK Computing, Banc One and Norwest will do custom application design and development work for EDS SO clients in their respective fields of manufacturing control, banking and finance, and transportation.

- Earth Observation Satellite Company and Infocel provide their proprietary software to clients through EDS when these specialized products are required.

- Diebold is a provider of maintenance for ATM equipment for banking customers for which EDS does systems operations.

9. SO Marketing Strategy

EDS expects to continue to grow significantly in the systems operations market, both by expanding penetration in current markets and by entering new markets. In the latter case, the selection criteria to identify new markets will include the size of companies in that sector, the changes occurring in that sector and how they will influence the receptivity of prospects to systems operations. In addition, the market sector will have to include enough viable prospects to make entry a profitable venture for the company.

Currently, EDS receives about 86% of its revenue from its existing client base in the commercial sector. New accounts represent 10% of revenue, while the remaining 4% is accounted for through referrals and acquisitions. In the case of new commercial business, twice as much is directly solicited than is obtained through referrals and acquisitions.

Exhibit EDS-4 shows how EDS obtains new business in the two major market sectors. Note that most of the business in the federal government sector is acquired by responding to formal bid solicitations or RFPs, while less than 15% of the commercial contracts are obtained that way. Note also that proactive sales efforts result in about one-half of the new business in the commercial sector, but this avenue is severely restricted in the federal sector because of the competitive bid solicitation system.

EDS-4

Sources of New Business		
	Percent	
	Commercial	Federal
Responding to Solicitations	10	100
New Contracts with Existing Clients	30	0
Proactive Direct Sales	50	0
Other	10	0

EDS has a 29-year history of success in what was then called *facilities management* to establish its credibility in the systems operations industry. It uses this background as well as its known telecommunications expertise to establish its reputation relative to its competitors. It owns one of the largest privately-owned digital networks in the country, which links its 20 Information Processing Centers.

It positions itself as a firm uniquely qualified to provide any of the resources that a particular SO opportunity may need. It has also pioneered the acquisition of client data centers and operations staff to ease the transition to the external systems operations environment and provide an additional financial incentive for the move.

10. SO Customer Base

EDS has 7,400 customers worldwide. Management cannot identify specifically which of these are exclusively systems operations clients. Four typical, major systems operations clients give a good indication of the range of their contracts, however:

- Shell Brazil - EDS operates and manages two VAX computer centers and two communications command centers.

. Army Standard Information Management System (ASIMS)

  - EDS designed, built and developed an information environment consisting of five regional data centers and 17 distributed processing centers with a custom-designed telecommunications network.

. Security Connecticut Life - EDS manages the data center operations and communications, including business analysis, systems maintenance and development, programming and design and project management.

. First Fidelity Bancorporation - EDS will convert a number of applications systems into a unified, companywide single platform and manage the resultant data center.

11. Summary and Future Direction

EDS, the pioneer in facilities management, has broadened its services and is the clear leader in the commercial systems operations business. Its size, experience, and financial resources will continue to make it a very aggressive and capable competitor in this market.

Its broad vertical market focus and extensive early experience has recently been supplemented with an aggressive acquisition policy in which it has obtained not only major processing contracts, but also much expertise in such fields as title insurance and airline reservations systems.

COMPANY PROFILE

The Genix Group

1. Key Systems Operations Contacts

The systems operations activities of The Genix Group are under the direction of Rudy Cifolelli, who is Executive Vice President and Chief Operating Officer. He reports directly to Steven Ewing, President and Chief Executive Officer, MCN Corporation. The executive offices of the company are located at:

5225 Auto Club Drive
Dearborn, MI 48126

2. Description of Principal Business

The Genix Group functions as a wholly owned data processing subsidiary of its parent corporation, MCN Corporation. MCN Corporation is a holding company for Michigan Consolidated Gas and MCN Investment Corporation. The Genix Group consists of two computer outsourcing companies, Genix Corporation and MCN Computer Services, Inc. In the most recent fiscal reporting period, The Genix Group listed 270 full-time employees and sales in excess of $50 million. The Genix Group provides mainframe computer capacity; on-line and off-line data storage and management; systems software support; data telecommunications network management; and high-quality, high-speed laser printing.

3. Systems Operations Service Characteristics and Capabilities

Exhibit GG-1 shows how The Genix Group views the change in its market over the next few years. All of the numbers represent a percentage of total revenues derived from systems operations activities. The first chart pairing indicates that there will be slight change in the next few years in the percentage of equipment which is client owned. The Genix Group will realize a slight increase in the percentage of revenues derived from vendor-owned equipment contracts.

The second pairing shows no expected difference in location of equipment. This suggests that The Genix Group will continue to maintain equipment at its own facilities.

The third pairing in Exhibit GG-1 shows very slight change in Genix's single-client/multiple-client ratio. This suggests that as Genix grows its systems operations business, clients will find it more economical to utilize shared sites.

EXHIBIT GG-1

Market Characteristics

		1989 (Percent)	1992 (Percent)
Equipment Ownership	Genix Group	90	95
Percent of Revenue	Client	10	5
Equipment Location	Genix Group	95	95
Percent of Revenue	Client	5	5
Processing	Shared	95	98
Percent of Revenue	Dedicated	5	2
Applications Software Developed by	Client	50	30
	Genix Group	0	0
	Third Party	50	70

The three pairings, taken together, suggest virtually no change in the way Genix will conduct its systems operations business. Currently, all of Genix's systems operations activities involve third-party or client-developed applications software.

However, as the fourth pairing in Exhibit GG-1 shows, this will change slightly over the next few years. In view of its significant outsourcing services, Genix prefers to build on that expertise rather than expand into software development.

Exhibit GG-2 compares the distribution of systems operations revenue under various pricing alternatives. Genix sees no change in its business base over the next few years.

The bulk (80%) of Genix's systems operations contracts are five to eight years in duration. INPUT asked The Genix Group to characterize the duration of its contracts. The results showed a dominance of long-term contracts:

- 1 to 2 years: 10%
- 3 to 4 years: 10%
- 5 to 8 years: 80%

EXHIBIT GG-2

Distribution of Revenue

Contract Type	1989 (Percent)	1992 (Percent)
Fixed Price	0	0
Transaction Volume	0	0
Resource Utilization	100	100
Cost Plus Predefined Margin	0	0

Exhibit GG-3 compares systems operations capabilities derived from internal sources versus those derived from alliances. The data suggests that Genix has established alliances for most of its systems operations capabilities. It is expected that Genix would make arrangements with an outside company for disaster recovery services. There are several firms specializing in this discipline, which depends highly on advanced technology for cost-effective solutions.

EXHIBIT GG-3

Capabilities

Internal and Alliances	None
Internal Only	• Computer Systems Operations • Network Management
Alliance Only	• Applications Design/Development • Applications Maintenance • Disaster Recovery Service • Equipment Maintenance • Outplacement for Technical Staff
Neither Internal nor Alliance	• Business Consulting • Packaged Applications Software

4. Markets Served

Currently, The Genix Group derives all of its systems operations business from the commercial market. It serves more than 80 commercial customers within a wide range of vertical markets. Genix realizes contracts with revenues averaging $2.5 million annually. It focuses primarily on systems operations business utilizing IBM or compatible mainframe
equipment.

5. Competitive Position

Genix has been providing systems operations support in the commercial marketplace for six years. During 1988, Genix Corporation realized $21 million in revenues from commercial systems operations; in 1989, annual revenues derived from commercial systems operations were $50 million. This dramatic increase is due to the combination of revenues derived from MCN Computer Services Inc., and Genix Corporation.

As The Genix Group grows its systems operations business, it expects its primary competition to come from the large, established firms, including EDS, IBM, Litton, and Arthur Andersen.

6. Recent Events

- September 1990 - MCN Corporation announced the formation of The Genix Group to manage the firm's growth and acquisitions in the computer services industry. The Genix Group now consists of two companies, Pittsburgh-based Genix Corporation and Dearborn-based MCN/CSI.

- June 1990 - MCN Corporation announced an agreement to buy Genix Corporation, Inc., the data processing subsidiary of National Intergroup, Inc. MCN signed a $20 million purchase agreement for Genix.

- May 1990 - Genix Corporation signed Duracell, Inc. for a five-year, $11 million computer operations outsourcing contract. Genix will provide all required mainframe computer capacity, systems software, disk and tape storage, data telecommunications, and technical services necessary to support Duracell's business.

- March 1990 - Ground has been broken for a 37,000 sq. ft. addition to Genix Enterprises' 52,000 sq. ft. computer center in suburban Pittsburgh. The expansion is required to accommodate increased demand for the company's computer outsourcing services.

- February 1990 - Genix Enterprises, Inc. signed a multiyear contract to assume data processing responsibilities for the AM General Division of LTV Corp. Genix will provide the mainframe computer capacity at its Pittsburgh data center to run AM General's software applications.

- February 1990 - Genix Enterprises, Inc. has been awarded a five-year, multimillion dollar computer operations outsourcing contract by Bailey Controls, a Cleveland-based manufacturer of process control equipment. Genix will provide Bailey Control with all required mainframe computer capacity, systems software, disk and tape storage, data telecommunications network management, and technical resources.

- February 1990 - Genix Enterprises won a three-year, $14 million computer operations outsourcing contract from National Steel Corporation. Genix will operate and manage National Steel Corporation-owned mainframe computer and telecommunications equipment, and provide necessary technical support.

7. Organization

As previously indicated, systems operations fall under the purview of The Genix Group, a subsidiary of MCN Corporation. Genix was founded by National Intergroup, Inc., in 1984 to capitalize on the information processing capabilities it had built for NII's metal businesses. Genix then expanded its customer base to include a wide variety of companies in diverse industries. In June 1990, MCN Corporation, which owns MCN Computer Services, Inc., agreed to buy Genix, thus enhancing MCN Corporation's outsourcing strength and competitive edge.

The Genix Group currently has a staff of 270 full-time employees supporting systems operations activities. The staff is engaged in the following areas:

- Network design and development: 30%
- Systems and network operations: 30%
- Technical support: 25%
- Sales: 10%
- General management and administration: 5%

8. Systems Operations Alliances

Although Genix indicated to INPUT that it currently has no formal alliance program for systems operations, it identified companies with which a partnership has been established. The Genix Group utilizes outside companies to help meet customer needs, such as outplacement services for affected technical staff.

Genix has teamed with other companies for systems operations activities, as indicated in Exhibit GG-3.

9. Systems Operations Marketing Strategy

The Genix Group plans to expand within its existing client base as well as enter into new markets. With more than 80 commercial clients, Genix has significant opportunities for expansion within its client base. In fact, Genix estimates that in terms of revenue, 80% of its business comes from its existing client base, with the balance coming from new accounts.

In terms of new business, Genix expects to receive 70% of new contracts from proactive direct sales activity, with the balance coming from existing clients. This response, combined with earlier discussions on revenue projection, suggests that Genix's business will be growing rather steadily over the next few years. Genix expects its competitive edge to arise from its ability to effectively provide customers with outsourcing solutions that can enable the customer to focus on core business aspects.

10. Systems Operations Customer Base

As previously indicated, The Genix Group has more than 80 commercial systems operations customers. Among its listed clients are:

- H. J. Heinz Co. - All mainframe operations services for all North American affiliates
- American Standard, Inc. - Mainframe operation services for all business units in North America, with the exception of Trane
- Duracell, Inc. - All mainframe computer operations
- CompuWare - All mainframe computer operations

11. Summary and Future Directions

In responding to INPUT's survey, The Genix Group estimated that the commercial systems operations business is growing 20% each year with increasing margins. Genix did not offer a response for federal business.

INPUT expects Genix's systems operations business to grow steadily over the next few years. The combination of two outsourcing companies comprising The Genix Group should offer a strong competitive edge. Genix has given no indication of interest in entering the federal marketplace. However, INPUT believes that at some future point, Genix may enter the federal market as a subcontractor to some experienced federal prime vendor.

Since Genix views systems operations as a highly profitable and steadily increasing business, INPUT expects it to increase both sales and marketing efforts in the near future.

COMPANY PROFILE

McDonnell Douglas Systems Integration Company

1. Key Systems Operations Contacts

The Systems Operations activities at McDonnell Douglas are under the direction of Kerry Walbridge, who is Vice President and General Manager of Information Services. He reports directly to Mark Kuhlman, President of McDonnell Douglas Systems Integration Company. The executive offices of the company are located at:

325 McDonnell Boulevard
Mailcode 3061591
Hazelwood, MO 63042

2. Description of Principal Business

McDonnell Douglas Systems Integration Company functions as a wholly owned subsidiary of the parent corporation which does approximately $15 billion in annual revenues.

McDonnell Douglas Systems Integration Company is the remaining U.S.-based information systems business of McDonnell Douglas Corporation. McDonnell Douglas Information Systems Company was officially dissolved January 1, 1990 and several of its diverse units were divested.

The Systems Integration Company is now a more focused business, primarily offering engineering-based products and services to manufacturing, telecommunications, state and local government, insurance, and the federal government. Services include computer-aided software engineering, remote computing, and built environment technologies (architects, engineers and constructors, and infrastructure life cycle management).

In 1989, the Systems Integration Company had revenues of about $300 million with over 2,000 employees. About 70% of the Systems Integration Company's 1989 revenues are a result of SI activities and are divided between the commercial and federal markets.

3. Systems Operations Service Characteristics and Capabilities

Exhibit MD-1 presents graphically how McDonnell Douglas views the change in its market over the next few years. All of the numbers represent a percentage of total revenue derived from systems operations. The first chart pairing indicates that there will be no change (expected in the next few years) in the percentage of revenues generated from client-owned equipment. The 20% figure quoted by McDonnell Douglas is somewhat higher than that provided by most respondents to INPUT's

survey. In general, most systems operations vendors derive greater revenues through their own equipment than through client-owned equipment. To realize 20% of revenues from client-owned equipment, McDonnell Douglas appears to operate as much client-owned equipment as equipment owned by the firm itself.

The second chart pairing in Exhibit MD-1 shows that virtually no systems operations revenues are realized from client-owned sites. Practically all the client-owned equipment is operated on McDonnell Douglas premises. This again differs from most other respondents whose client-owned equipment is largely installed at client-owned sites.

The third chart pairing exactly matches the first. Virtually all its own equipment is shared among multiple clients and all client-owned equipment is dedicated to a single client. The first three pairings of boxes, taken together, suggest that McDonnell Douglas anticipates little change in the operating characteristics of the firm's systems operations business over the next few years.

Similarly, the fourth pairing in the exhibit shows no expected changes in the software mix. Nearly one-third of applications software is developed by McDonnell Douglas, with the remainder coming from the client.

EXHIBIT MD-1

Market Characteristics

	1989 (Percent)	1992 (Percent)
Equipment Ownership		
Client	20	20
Percentage of Revenue	80	80
Equipment Locations		
Client	2	100
Percentage of Revenue	98	
Shared vs. Dedicated Processing		
Dedicated	20	20
Shared	80	80
Applications Software		
Developed by McDonnell Douglas	30	30
Client	70	70

Exhibit MD-2 compares the distribution of systems operations revenue under various pricing alternatives. As with the pairings in Exhibit MD-1, McDonnell Douglas sees no change in its business base over the next few years. The bulk of its contracts will be based on resource utilization, with smaller revenues derived from two other approaches.

The bulk (75%) of McDonnell Douglas' systems operations contracts are only one to two years in duration, with the remaining in the three to four year category.

EXHIBIT MD-2

Distribution of Revenue

Contract Type	1989 (Percent)	1992 (Percent)
Fixed Price	10	10
Transaction Volumes	10	10
Resource Utilization	80	80

Exhibit MD-3 compares systems operations capabilities derived from internal sources with those derived from alliances. McDonnell Douglas does not depend much on alliances in its SO business. It does rely on a variety of vendors for equipment maintenance and disaster recovery services.

On another issue, McDonnell Douglas has identified one proprietary technology which may give it an edge in bidding systems operations contracts. McDonnell Douglas has developed a Claims Management System for insurance companies. This may serve as a key differentiator in bids relating to this vertical industry and provides a basis for an applications SO offering.

EXHIBIT MD-3

Capabilities

Internal only	• Business consulting • Computer systems operations • Network management • Applications design/development • Applications maintenance • Packaged applications software
Alliance only	• Disaster recovery services • Equipment maintenance

4. Markets Served

Currently, McDonnell Douglas derives most of its systems operations business from the commercial market. McDonnell Douglas has one major systems operations client in the federal government, which accounts for nearly $10 million in annual revenue. It also has numerous other federal clients, each contributing smaller revenue amounts. However, given its wide range of other work for the federal government, INPUT expects it to compete for more federal systems operations contracts. It currently has a wide range of commercial contracts, with revenues averaging $3 million annually. It focuses primarily on platform (as opposed to vertical industry applications) systems operations business, and on clients and prospects with DEC, IBM, and compatible equipment.

5. Competitive Position

McDonnell Douglas has been providing systems operations support in the commercial marketplace for 30 years. It also reports five years' experience in the federal market, although as stated earlier, it is deriving limited revenue from this market. It does not break out systems operations revenues separately. However, as already reported, the Systems Integration Company realized $300 million in total 1989 revenue. INPUT estimates systems operations annual revenues to be in the $15 million to $25 million range. As McDonnell Douglas grows its systems operations business, it expects its primary competition to come from established firms, including EDS, Litton and Genix.

The Systems Integration Company has not been active on a large scale in network management and operations since the sale of its Tymnet division. The Systems Integration Company is indirectly involved in networking through its work for telephone companies designing systems to support network engineering.

6. Recent Events

In 1989, McDonnell Douglas sold its network systems business, including the Tymnet public data network, to British Telecom. The price was $355 million. However, as shown in Section 10 below, McDonnell Douglas continues to provide network support to its outsourcing clients. The parent corporation, like many other aerospace companies, is under intense financial pressure as a result of defense spending cutbacks. It initiated several steps in 1990 to reduce spending by more than $700 million annually. Included are:

- An 11% reduction in total employment, with 14,000 to 17,000 jobs being eliminated by the end of 1990
- Reduced capital budgets
- Cuts in travel, consultants, and advertising
- A 50% reduction in company contributions to the salaried savings plan

Since systems operations represents such a small portion of overall revenues, it is not clear how much these cuts will affect this line of business. However, it is likely that systems operations will function on a pay-as-you-go basis since the parent corporation will be unable to invest significant amounts of capital.

7. Organization

As previously indicated, systems operations falls under the purview of McDonnell Douglas Systems Integration Company. This in turn is a wholly owned subsidiary of McDonnell Douglas Aerospace.

8. Systems Operations Alliances

McDonnell Douglas has not identified any formal alliances for its systems operations activities.

The Systems Integration Company has long-term marketing arrangements with most major hardware vendors (e.g., DEC, IBM, HP/Apollo, SUN), as well as selected software vendors of generalized products, such as Oracle. The Systems Integration Company will team on bids with hardware vendors, accounting firms, and other systems integrators when required. The Systems Integration Company will subcontract when specialized skill are required. Since 1988, the Systems Integration Company has been a preferred vendor of General Motors/EDS, working to standardize CAD/CAM systems within GM.

9. Systems Operations Marketing Strategy

The Systems Integration Company's emerging strategy is to tailor solutions for targeted niches in partnership with clients to whom it can bring proven core products and business understanding. Target niches include:

- Manufacturing companies
- AEC and public sector units with infrastructure systems needs (e.g., transportation and environmental agencies)
- Telephone companies
- Insurance companies
- Federal customers

Within the systems operations subset, McDonnell Douglas expects to obtain new contracts through the following means:

- Responding to bid solicitations 30%
- New contracts with existing clients 40%
- Proactive direct sales activity 30%

10. Systems Operations Customer Base

As previously stated, most of McDonnell Douglas' systems operations business currently comes from the commercial market. Clients include the following:

- TRANE: Outsourcing of four primary user group locations as well as providing a backbone network
- MEMC (Formerly Monsanto Electronic Materials Corp.): Outsourcing of MVS/CICS and VM/370, as well as providing a worldwide telecommunications network
- Purina Mills Inc: Processing of MVS/IMS/DB2 systems utilizing an internally developed network and report distribution system
- Gallagher Bassett: Outsourcing of claims processing

11. Summary and Future Directions

As McDonnell Douglas continues to grow its systems operations business, it will encounter a wide range of competitors, each with their own special offerings. McDonnell Douglas will most likely tie its systems operations efforts to its strong systems integration and software capabilities.

COMPANY PROFILE

Mellon Bank

1. Key Systems Operations Contacts

The systems operations activities at Mellon Bank are under the direction of George P. DiNardo, an Executive Vice President. He reports directly to Keith Smith, Vice Chairman of the corporation. The company's executive officers are located at:

Four Mellon Bank Center
Pittsburgh, PA 15259-0001
(412) 234-5841

2. Description of Principal Business

Systems operations activities at Mellon Bank are provided by Mellon Information Services, a division within the overall organization. As a bank holding company, Mellon Bank offers the typically wide range of retail, corporate, and special banking services. In addition, it has significant presence in various technology-related services. It provides these services, primarily to the banking industry, through its Datacenter Division and its Network Services Division. It also provides various non-computer consulting services.

The Datacenter Division was established in 1961 to use the excess capacity of Mellon Bank Corporation's computer equipment and to help offset the bank's sizable computer equipment expense. Datacenter shares the equipment it uses for its processing services with Mellon Bank and provides computer services to Mellon Bank affiliates.

3. Systems Operations Service Characteristics and Capabilities

Exhibit MB-1 presents Mellon's view of the possible changes in its market over the next few years. All of the numbers represent a percentage of total revenue derived from systems operations and processing services. The first chart pairing indicates that there will be little change in the low percentage of equipment which is client owned. Although it is growing slightly, Mellon expects this sector to continue to be a very minor portion of its overall systems operations activities.

The second pairing shows identical percentages as the first for equipment locations. This suggests that Mellon will continue to own all the equipment at its own facilities, while owning none of the equipment at client sites.

The third pairing in Exhibit MB-1, while identical in the 1989 and 1992 estimates, shows an interesting contrast to the first two pairings. Although only 2% of its equipment is dedicated to a single client, this is 2% of the Mellon-owned equipment only. It does not apply to the five client-

MB-1

Market Characteristics

		1989 (Percent)	1992 (Percent)
Equipment Ownership Percent of Revenue	Mellon Client	95 5	92 8
Equipment Location Percent of Revenue	Mellon Client	95 5	92 8
Processing Percent of Revenue	Shared Dedicated	98 2	98 2
Applications Software Developed by	Client Mellon Third Party	2 95 3	10 80 10

MB-2

Distribution of Revenue

Contract Type	1989 (Percent)	1992 (Percent)
Fixed Price	95	90
Transaction Volume	3	5
Resource Utilization	2	5

owned sites. Just as with these sites, Mellon has little interest in growing its dedicated processing business. The shared business represents more profitable work, in the same way that a time-share condominium is potentially more profitable to its seller than a traditional one-owner sale.

The fourth pairing shows that, while most applications software currently in use was developed by Mellon, this percentage will decline slightly over the next few years. As Mellon expands its systems operations business, software not developed by Mellon will be used more often. INPUT does not view this as a reduction in Mellon-provided software. Rather, it merely suggests that Mellon's systems operations business will grow slightly faster than its software penetration.

Currently, Mellon reports work at seven data centers, five of which are owned by clients. However, since 95% of revenues are derived from the two Mellon-owned sites, work at the other sites is currently contributing little to Mellon's bottom line. Mellon's stated intention to increase this business, both absolutely and as a percentage of SO revenues, suggests likely expansion beyond these five sites. However, most of this growth will occur with client-owned terminals and printers, rather than central processors.

Exhibit MB-2 compares the distribution of systems operations contracts under various pricing alternatives. Unlike some other vendors INPUT has profiled, Mellon expects no dramatic change in its pricing approach. However, the high percentages for fixed price include remote job entry (RJE) work based on a fixed unit price with variable volume.

INPUT asked Mellon to characterize the duration of its contracts. The results showed a dominance of mid-length projects:

- 1 to 2 years 15%
- 3 to 4 years 75%
- 5 to 8 years 10%

Currently, Mellon Bank has no federal business.

Exhibit MB-3 compares systems operations capabilities derived from internal sources with those derived from alliances. The data suggest that Mellon has established alliances for most of its systems operations capabilities. It is somewhat surprising that Mellon handles network management and disaster recovery service without any outside teaming arrangements. There are several firms specializing in each of these two disciplines, and each discipline depends highly on advanced technology for cost-effective solutions. The data also indicate that, after developing the clients' application software, Mellon sometimes hands it off to another firm for continuing maintenance, depending on client preference.

MB-3

Capabilities

Internal and Alliances	• Business Consulting • Computer Systems Operations • Applications Design/Development • Packaged Applications Software • ATM Maintenance
Internal Only	• Network Management • Disaster Recovery Service
Alliance Only	• Applications Maintenance
Neither Internal nor Alliance	• Equipment (CPU) Maintenance

On another issue, Mellon reports the use of several proprietary technologies that give it a competitive edge:

- Datamover, supporting CPU-to-CPU data transmission
- Disaster recovery at the Philadelphia location
- Programmers' workbench capabilities, including CASE application development tools
- Network management capabilities

It should be noted that, for all but the third item, Mellon does not rely on external alliances (as listed in Exhibit MB-3).

4. Markets Served

Mellon Bank serves more than 800 commercial processing services and systems operations customers. However, it currently does no federal business in the systems operations area. Mellon Bank has chosen to focus on several vertical markets. In addition to its obvious banking expertise, Mellon is also pursuing customers in the following areas:

- Financial firms
- Health care
- Utilities
- Manufacturing

Mellon is also making limited efforts in other areas.

5. Competitive Position

As previously indicated, Mellon Bank has been providing processing services and systems operations services on a contractual basis for nearly 30 years. All of this has been in the commercial market. It is just now looking into the feasibility of entering the federal market. It does not report its systems operations revenues separately. Overall, it reported $3.269 billion in 1989 sales, which was virtually identical to1988 sales. It reports average revenue of $250,000 for its RJE customers and $1 million for its other systems operations clients, with the majority of revenues coming from processing services clients.

When considering competitors, Mellon listed the following firms:

- EDS
- IBM
- Citicorp
- Litton
- McDonnell Douglas

The inclusion of IBM is significant, since IBM just recently entered the systems operations business, capturing the business at several southern banks, including Bank South and Hibernia Bank.

6. Organization

As previously indicated, Mellon Bank provides systems operations services through Mellon Information Services. It currently has approximately 350 employees engaged in systems operations activities. The bulk of this staff is engaged in three areas:

• Systems and network operations	44%
• Technical support	27%
• User Support	15%

7. Systems Operations Alliances

Despite the teaming activities listed in Exhibit MB-3, Mellon reports a formal alliance program only with Atlantic Research. It has established informal linkages for those items listed in the exhibit. However, for primary systems operations activities, Mellon prefers to go it alone whenever possible. It includes the following companies among its teaming partners:

- Price Waterhouse for systems operations support and application programming

- Atlantic Research Corporation for systems operations support
- Pittsburgh Business Consultants for applications support
- Pacific Corporation and Bell Atlantic for leasing and communications equipment support

8. Systems Operations Marketing Strategy

Mellon Bank seeks to expand within its existing client base as well as to enter into new markets. With more than 800 clients, Mellon has significant opportunities for expansion within its client base. In fact, Mellon estimates that, in terms of revenue, 15% of its business comes from new clients, with the balance coming from its existing client base. This is typical of most firms with a large client base.

In terms of new business, Mellon expects to receive 10% of new contracts from existing clients, with the balance coming from proactive direct sales activity. This response, combined with earlier discussions on revenue projections, suggests that Mellon's business will be growing fairly slowly over the next few years. This probably results from the current sluggishness of the economy as well as the ferocity of the competition. Mellon does intend to participate in formal solicitation activity as the opportunity presents itself. Mellon expects its competitive edge to arise from the following factors:

- Innovative pricing schemes
- Value-added options on telecommunications application economization
- Disaster recovery

9. Systems Operations Customer Base

As previously indicated, Mellon Bank has more than 800 systems operations customers, divided between RJE services and full operational support. Among its listed clients are:

- The Shareholder Services Group (a subsidiary of American Express) for mutual funds processing
- Advest Corporation for financial products
- Dollar Drydock Savings Bank

As the systems operations market continues to evolve, Mellon may choose to enter additional vertical markets.

10. Summary and Future Directions

In responding to INPUT's survey, Mellon Bank estimated that the commercial systems operations business is growing 15% each year, with increasing margins. Mellon further estimated that federal work is growing at only 6% each year, with decreasing margins. This viewpoint explains Mellon's lack of interest in pursuing the federal market, with the exception of Resolution Trust Corporation opportunities.

INPUT expects Mellon's commercial systems operations business to grow slowly but steadily over the next few years, reflecting overall business conditions. At some future point, Mellon may enter the federal market, most likely as a subcontractor to some experienced federal prime vendor.

COMPANY PROFILE

Power Computing Company

1. Key Systems Operations Contacts

The systems operations activities at Power Computing are under the direction of Robert Andrews, who is Vice President and General Manager. He reports directly to John Ruckert, Vice President of the Electronic Information Systems Division of McDermott International, Inc. The executive offices of the company are located at:

1930 Hi Line Drive
Dallas, Texas 75207

2. Description of Principal Business

Power Computing is an information processing services provider. A division of Babcock & Wilcox, Power Computing has been supplying computer information services for more than 28 years. Babcock & Wilcox is a major operating unit and wholly owned subsidiary of McDermott International, Inc., a $3.1 billion worldwide energy services company.

3. Systems Operations Characteristics and Capabilities

Exhibit A presents graphically how Power Computing views the change in its market over the next few years. All of the numbers represent a percentage of total revenue derived from systems operations activities. The first chart pairing indicates that there will be significant change in the next few years in the percentage of equipment which is client owned. Power Computing will realize a reduction in the percentage of revenues from its vendor-owned equipment contracts.

The second pairing shows slightly different percentages from the first for equipment locations. This suggests that Power Computing will continue to maintain a significant percentage of equipment at its own facilities, while realizing a slight increase in revenue from equipment at the client site.

The third pairing in Exhibit PCC-1 shows a significant change in Power Computing's single client/multiple client ratio. This

suggests that as Power Computing converts ownership of vendor equipment, it will begin dedicating equipment to the client.

The first three pairings of boxes, taken together, suggest some significant changes in the way Power Computing will conduct its systems operations business. However, since it currently supports only two centers, some changes would be expected as the business grows.

The fourth pairing shows that while most applications software currently in use was developed by a third party, this percentage will decline significantly over the next few years. As Power Computing expands its systems operations business, software developed by the company will be used more often. However, Power Computing has determined that it also can realize high revenues when applications software is developed by third-party vendors for the clients.

Exhibit PCC-1

Market Characteristics

		1989 (Percent)	*1992 (Percent)*
Equipment Ownership Percent of Revenue	PCC Client	100 0	80 20
Equipment Location Percent of Revenue	PCC Client	100 0	90 10
Processing Percent of Revenue	Shared Dedicated	100 0	50 50
Applications Software Developed by	Client PCC Third Party	25 5 70	40 20 40

Exhibit PCC-2 compares the distribution of systems operations contracts under various pricing alternatives. Unlike some other vendors which INPUT has profiled, Power Computing expects no dramatic change in its pricing approach.

The bulk of its charges will be from resource utilization contracts, although a slight reduction is expected.

The bulk of Power Computing's systems operations contracts are three to five years in duration.

Exhibit PCC-2

Distribution of Revenue

Contract Type	*1989 (Percent)*	*1990 (Percent)*
Fixed Price	0	10
Transaction Volume	0	0
Resource Utilization	80	70
Cost Plus Predefined Margin	10	10
Other - Fixed Price initially, then becomes Resource Utilization	10	10

INPUT asked Power Computing to characterize the duration of its contracts. The results showed a dominance of mid-length projects; however, as might be expected, Federal contracts are generally longer than commercial contracts.

	Commercial	*Federal*
1 to 2 years	10%	10%
3 to 4 years	80%	50%
5 to 8 years	10%	40%

Power Computing indicated that it has all the capabilities identified in Exhibit PCC-3, but still relies on alliances to supplement these internal capabilities, in some cases. Power Computing has established business partnerships with IBM, Novell, and Apple Computer. It has also teamed with other companies in all of the areas identified in Exhibit PCC-3 for outside assistance in systems operations contracts.

Exhibit PCC-3

Capabilities - Power Computing

Internal and Alliances	*None*
Internal and Contract on a Contract-Specific Basis	. Business Consulting . Computer Systems Operations . Network Management . Applications Design/Development . Applications Maintenance . Packaged Applications Software . Disaster Recovery Service . Equipment Maintenance . Local-Area Networks

Power Computing has identified one proprietary technology which may give it an edge in bidding systems operations contracts. Power Computing has developed a Quality Assurance Program that has been accepted by the Nuclear Regulatory Commission. Power Computing identifies this Q.A. program to be the first of its kind. This should serve as a significant differentiator in bids relating to this vertical industry.

4. Markets Served

Currently, Power Computing derives its systems operations business from both the commercial market and the federal government. Its Systems Operations Division currently serves more than ten commercial customers and five federal government clients. Power Computing does not focus on any particular vertical market. Rather, it identifies new target markets based on the size of the business. Power Computing provides processing services to many utilities operating nuclear power plants. In the past, it has focused on functional systems operations businesses, especially those involving IBM, DEC, Cray, and Cyber-based computing services.

5. Competitive Position

The company has been providing systems operations support for more than 28 years in the commercial and federal markets. As Power Computing expands its systems operations business, it expects its primary competition to come from the large and established firms including: Andersen Consulting, IBM, Litton Computer Services, CSC, and Genix.

6. Recent Events

. October 1991 - Power Computing signed an outsourcing agreement with TRW Space and Defense Systems in a move that is expected to save the California-based defense contractor more than one-half million dollars in the first 14 months of the contract. The Electronic Systems Group of TRW plans to eliminate its in-house Control Data Corporation (CDC) Cyber equipment and migrate some of its Cyber applications to other in-house computer systems over the next year.

. July 1991 - Power Computing signed a multimillion dollar outsourcing contract with Apache Corporation, the fourth largest independent oil and gas producer in the nation. Under a five-year agreement, Power Computing will provide IBM mainframe computer services for Apache.

. June 1991 - Power Computing was chosen by Apple Computer to provide demonstration data processing services for selected Apple market centers, training facilities, and field sales offices nationwide. The agreement is part of the expansion and enhancement of Apple's Connectivity Demonstration and Support Network (CDSN), a demonstration and training system that was first introduced four year ago.

. January 1991 - Power Computing signed a $12 million outsourcing agreement with Dallas-based EPIC Healthcare Group. In the five-year contract, EPIC will outsource to Power Computing its corporate IBM mainframe processing, which includes accounting, payroll, human resources, and health care information systems applications.

. November 1990 - Power Computing was awarded a three-year contract by Ocean Drilling and Exploration Company (ODECO) of New Orleans. Under the multimillion dollar agreement, Power Computing will provide payroll and human resources systems as well as furnishing applications support.

- October 1990 - Power Computing signed a three-year agreement for data processing services with Trinity Industries, Inc., a $1.3 billion manufacturer of metal products. The outsourcing contract is expected to save Trinity 25% of the cost of its mainframe-based processing over the term of the agreement.

- August 1990 - Power Computing Company signed a major outsourcing contract with Asea Brown Boveri, Inc. (ABB), a $7 billion supplier of products and services to the power generation industry. Power Computing will provide mainframe services for ABB-Combustion Engineering Nuclear Power, a unit of ABB, on Control Data Corporation (CDC) Cyber computers. The multi-year arrangement provides ABB with full processing support during its transition from a mainframe environment to a complement of mainframes and workstations. This outsourcing contract is Power Computing's second for Cyber processing.

- February 1990 - Two multimillion dollar oursourcing contracts were awarded to Power Computing by Santa Fe Minerals, Inc., and Santa Fe Drilling Company. Under this three-year agreement, Power Computing will provide all IBM mainframe data processing services for the two petroleum industry companies. Data processing for Sphere Supply Company, a subsidiary of Santa Fe Drilling, also will be handled by Power Computing.

- October 1989 - Power Computing was awarded a three-year agreement by Ultramar, Inc., (formerly Beacon Oil Company) to provide data processing services. Power Computing will handle day-to-day computer processing for all of Ultramar's operations. According to Ultramar executives, Power Computing's reliability and processing capabilities were key factors in their decision.

- March 1989 - Loffland Brothers, a subsidiary of Kendavis Holding Company (KHC) is a contract drilling firm. In late 1989, KHC's almost-new corporate data center was shut down completely as part of financial restructuring. All of the computer processing related to Loffland Brothers was migrated to Power Computing.

7. Organization

As previously indicated, systems operations fall under the purview of Power Computing Company, which is a subsidiary of McDermott International. McDermott International, active in

drilling equipment manufacturing, power generation facilities operation, and marine construction, derived $3.1 billion in revenues during 1990.

Power Computing has a large, diverse staff dedicated to systems operations activities. The bulk of this staff is engaged in seven areas:

. Systems and network operations	41%
. User support	16%
. Network design and development	14%
. General management and administration	12%
. Applications design and development	9%
. Sales	4%
. Project management	4%

Power Computing is moving to expand its core outsourcing business into other professional services. The company launched a professional services division that offers data base and software development, as well as software quality assurance services.

8. Systems Operations

Despite the teaming activities listed in Exhibit PCC-3, Power Computing reports no formal alliance programs with other companies. For systems operations activities, Power Computing prefers to go it alone whenever possible. It has established informal partnerships for those items listed in Exhibit PCC-3.

9. Systems Operations Marketing Strategy

Power Computing plans to expand within its existing client base as well as entering into new markets. With more than 15 systems operations customers and 1,000 processing services customers, Power Computing has opportunities for expansion within its client base. However, Power Computing estimates that, in terms of revenues, 80% of its commercial business comes from new clients, with the balance coming from its existing commercial client base.

In terms of business revenues from federal clients, Power Computing derives only 20% from new accounts with the balance coming from its existing federal client base.

Within the systems operations subset, Power Computing expects to obtain new contracts through the following means.

	Commercial	Federal
. Responding to bid solicitations	10%	10%
. New contracts with existing clients	10%	80%
. Proactive direct sales activity	80%	10%

10. Systems Operations Customer Base

As previously stated, Power Computing's outsourcing business comes from the commercial and federal markets. Their outsourcing clients include the following:

. TRW Space and Defense Systems
. Apache Corporation
. Apple Computer
. EPIC Healthcare Group
. ODECO
. Ultramar Inc.
. Asea Brown Boveri, Inc. - Combustion Engineering
. Santa Fe Minerals, Inc.
. Santa Fe Drilling Company
. Trinity Industries, Inc.
. Loffland Brothers Industries
. Duke Power

11. Summary and Future Directions

In responding to INPUT's survey, Power Computing estimated that the commercial systems operations industry is growing 30% each year, with decreasing margins. Power Computing further estimated that federal work is growing at only 10% each year, also with decreasing margins.

As Power Computing continues to grow its systems operations business, it will likely encounter a wide range of competitors, each offering their own special differentiator. Power Computing should succeed by partially tying its software services to its strong systems operation capabilities. As previously indicated, Power Computing's Quality Assurance Program has been accepted by the Nuclear Regulatory Commission. INPUT believes that the relationship will significantly enhance the company's ability to expand within this vertical market.

Power Computing focuses its activities in the energy-related fields of process manufacturing and utilities, as well as oil and gas and health care. Power Computing has a complete range of computers, from minicomputers to supercomputers, which is particularly appropriate for these industries.

To the extent that Power Computing can leverage these advantages to its systems operations business, it will be able to grow both its revenues and its overall market penetration.

COMPANY PROFILE

SAIC

1. Key Systems Operations Contacts

The systems operations organization in SAIC reports to J. Robert Beyster, CEO and Lorenz A. Kull, President. SAIC is located at:

10260 Campus Point Drive
San Diego, California

2. Description of Principal Business

SAIC provides the federal government with a variety of systems integration and system operations services as well as professional services and high technology products in the areas of national security, environment, health and energy. Advanced technology products and services are also sold to commercial clients.

SAIC is one of the country's largest employee-owned companies. A $1 billion company, it has more than 11,000 employees in 200 offices worldwide. SAIC also has one of the most highly educated staffs in the industry. Fifty-three percent hold bachelor's of science or arts degrees; thirty-three percent hold master's degrees, and fourteen percent hold doctorate degrees.

3. Systems Operations Service Characteristics and Capabilities

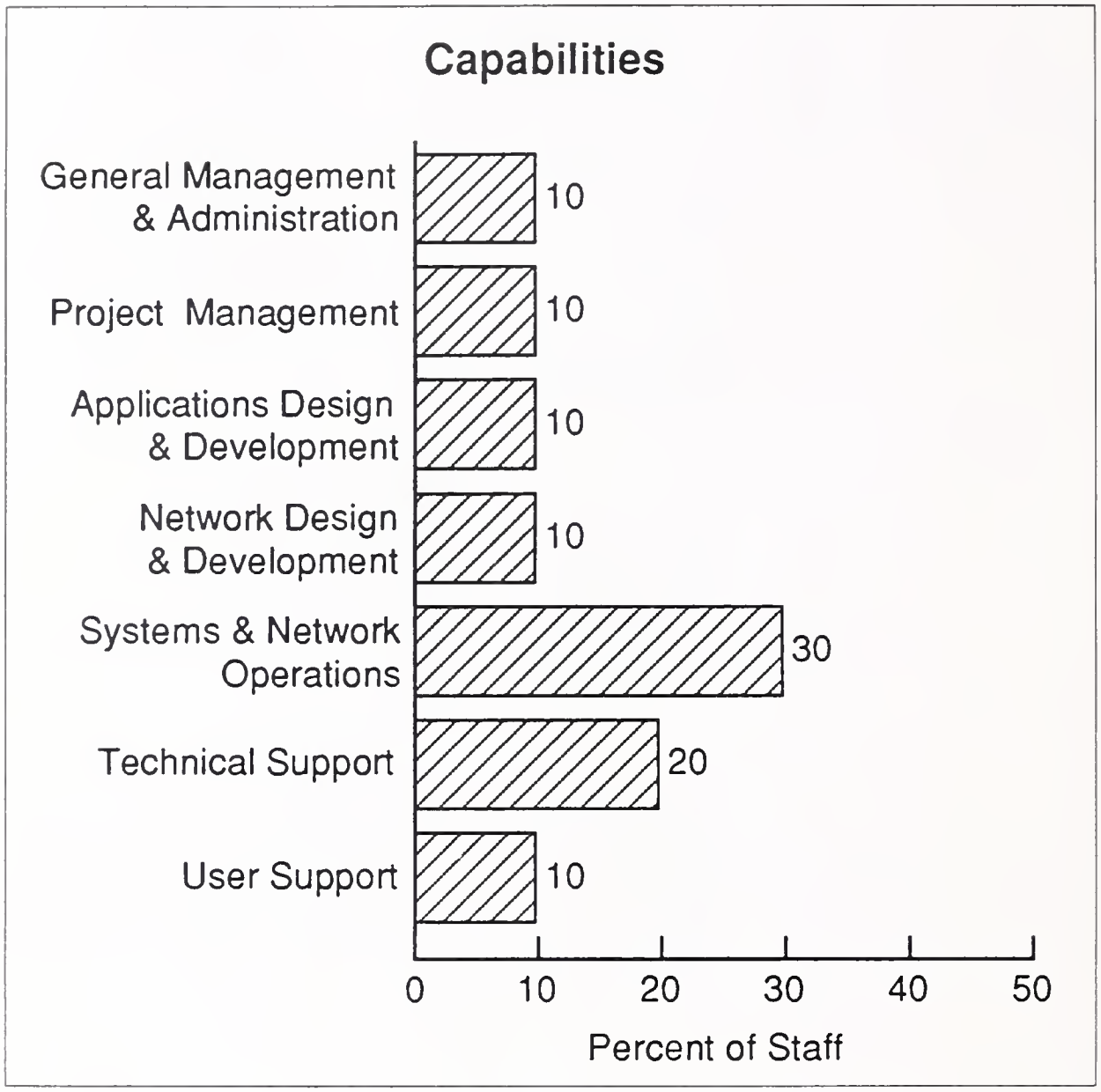
All of the systems operations activities that SAIC performs are done on client premises in which the hardware is owned by the client. In all cases, the equipment is dedicated to the needs of that client. SAIC operates 20 data centers for the federal government in this manner.

Most of the applications software at these centers was developed by SAIC for the client agency. Generally the contracts are of greater than five years' duration and are mostly fixed-price contracts.

The company has the internal capabilities to provide all services to clients, but often teams with other companies in all areas but business consulting and computer operations to supplement the capabilities needed on a given contract. The distribution of SAIC's systems operations capabilities is shown in Exhibit SAIC-1.

SAIC has a particular niche in the area of hospital information systems, based on major contracts with the Department of Veterans Affairs and the Department of Defense. SAIC has won the DoD CHCS and Virginia IHC contracts, and acquired Di-Star Medical Systems Corporation.

SAIC-1



4. Markets Served

SAIC provides systems operations services only to the federal government and has no commercial clients. All of its services are provided to three federal government agencies (DARPA, Veterans Administration and DoD Health Affairs), for which it runs a total of 20 data centers.

5. Competitive Position

The company has been in the systems operations business for the past 10 years. All of its clients have been federal government agencies.

Its estimated 1988 revenue for systems operations was $15 million; SAIC expects 1989 fiscal year revenues to be $35 million. Management considers its principal competition in the federal marketplace to be EDS, Unisys, and the PRC subsidiary of Black and Decker.

6. Recent Events

In March 1989, SAIC won a contract with the Department of Defense to design and implement the medical information system for more than 700 military hospitals and clinics worldwide. The installations will stretch over an 8-year period. The system, now known as CHCS (Composite Health Care System) has been demonstrated in a hospital at Ft. Knox, KY.

In June 1989, SAIC won the contract to provide a new private data network to the Department of Veterans Affairs. The project, valued at $84 million over ten years, is called the Integrated Data Communications Utility (IDCU). SAIC will provide project management, systems integration, and tailored software. Its subcontractor, U.S. Sprint, will provide the network technology, customer premises equipment, transmission manufacturing, and necessary field support. Initial installation is expected to be completed within two years.

In September 1989, SAIC hired Gordon E. Myers to serve as a senior vice president supporting systems integration and software development. Mr. Myers joined SAIC after a distinguished 20-year career at IBM. Most of Mr. Myers' experience has been in the federal area, although in his last position he managed the Commercial Solutions Development (CSD) organization of IBM's Systems Integration Division.

In October 1989, SAIC acquired Di-Star Medical Systems Corporation, its principal subcontractor on CHCS. It had previously acquired the Software Products Division of Control Data Corporation. Using these two groups as well as other internal resources, SAIC developed its own product line for medical information systems, named "SAIC-Care."

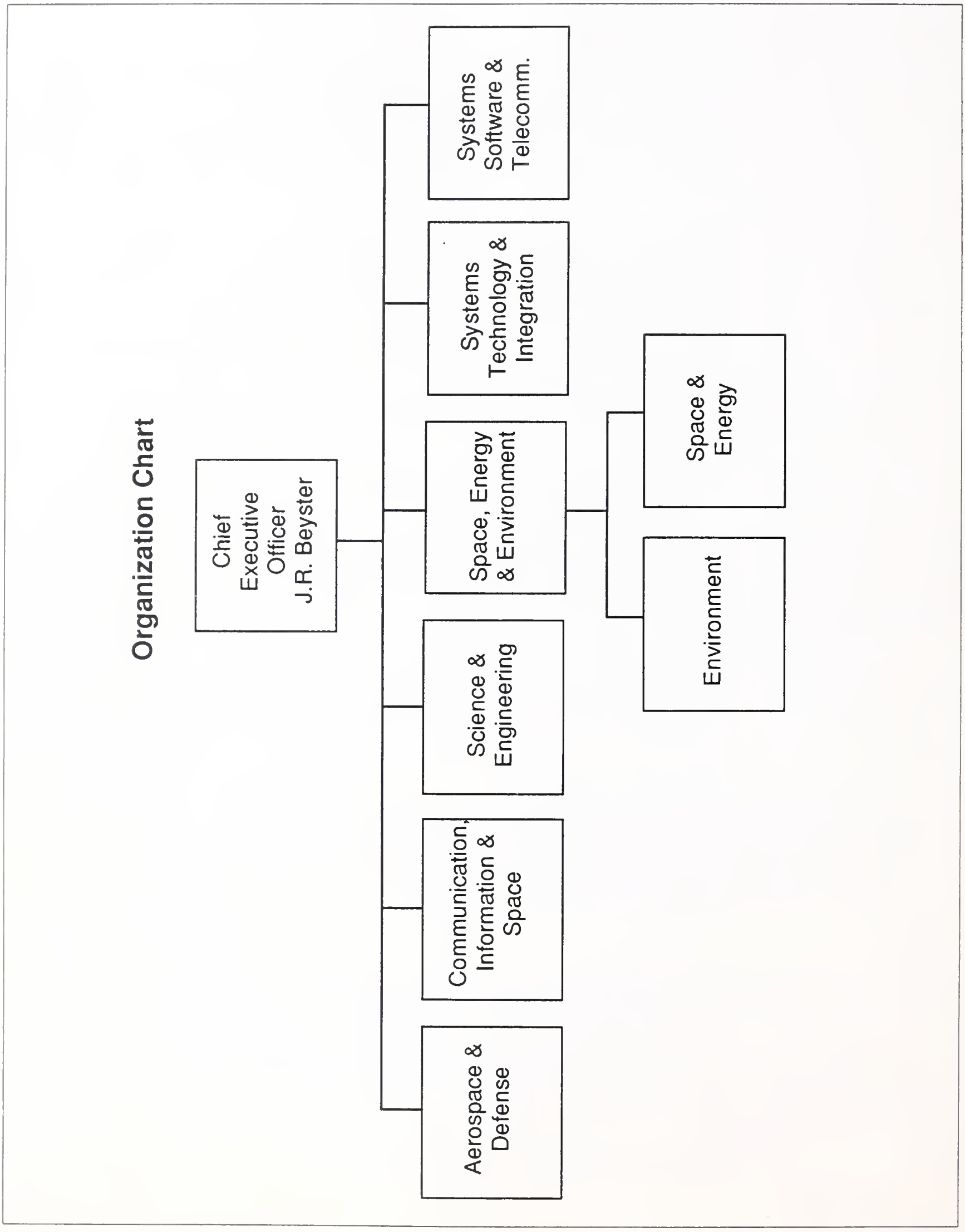
In September 1990, SAIC won a $31 million contract with the Department of Energy (DOE) to provide ADP support services for DOE's Albuquerque data center. Under this five-year contract, SAIC will operate the data center and provide system and application programming and other ADP support services.

7. Organization

Systems operations activities are conducted within several of the operating divisions of SAIC. The organization chart in Exhibit SAIC-2 illustrates those organizations that conduct systems operations activities. SAIC serves its clients through a matrix organization, drawing resources from throughout the company.

There are approximately 150 people in the SAIC organization who are considered full-time systems operations staff.

SAIC-2



8. Systems Operations Alliances

Though SAIC does not have any formal alliance programs in its SO operations, teaming arrangements are used to provide additional capabilities in the areas of marketing, services and specific product areas that supplement SAIC's capabilities.

9. Systems Operations Marketing Strategy

SAIC management plans to increase its existing business by expanding in its current market sector rather than seeking new markets to enter. The decision on which contracts to pursue is based on return on investment criteria, after the risk factors have been evaluated and judged to be manageable. SAIC concentrates its marketing efforts on agencies in which its staff has more functional expertise. This enhances its win ratio substantially.

All of SAIC's new business is a result of responding to bid solicitations or RFPs solicited by the government agencies. SAIC generally gains SO opportunities as an outgrowth of systems integration contracts it has won. Management expects that pattern to continue.

10. Systems Operations Customer Base

As mentioned above, SAIC's customer base currently consists primarily of the CHCS medical centers it operates for the Department of Defense, a DARPA seismic center it operates for worldwide seismic monitoring, the nationwide packet-switching and network control facility for the Veterans Administration, and the Department of Energy data center in Albuquerque.

11. Summary and Future Directions

SAIC has successfully leveraged its professional services experience in the federal government arena to win bids on a number of system integration contracts that have then resulted in systems operations contracts.

SAIC expects to continue expansion of systems operations by focusing on federal agencies where it has demonstrated functional expertise.

INPUT expects the greatest change to occur in SAIC's commercial SO activities. Although SAIC has established a commercial presence through various specialized products and services, it is just now beginning to pursue commercial SO. SAIC will likely succeed in this market also. INPUT expects that, within three to five years, SAIC will be a much more important participant in the commercial SO market.

COMPANY PROFILE

STM Systems Corp.

1. Key Systems Operations Contacts

The systems operations activities at STM Systems Corp. are under the direction of two vice presidents. The commercial systems operations business is under the direction of:

Amnon Zoher
Vice President, Central Region
650 McNichol Avenue
Willowdale, Ontario M2H 2E1
Canada

The federal systems operations activities are under the direction of:

Jim Over
Vice President, Federal Region
2220 Walkley Road
Ottawa, Ontario K1G 5L2
Canada

2. Description of Principal Business

STM Systems Corp. is a Canadian company that provides a range of information services worldwide to private and public sector clients. STM Systems Corp. is a wholly owned subsidiary of International Semi-Tech Microelectronics Inc. (ISTM) headquartered in Markham, Ontario. STM Systems Corp., with systems operations its major line of business, was formed by ISTM in late 1988.

3. Systems Operations Service Characteristics and Capabilities

Exhibit STM-1 presents how STM Systems Corp. views the change that will occur in its market over the next few years. All of the numbers represent a percentage of total revenue derived from systems operations activities. The first chart pairing indicates that there will be moderate change in the next few years in the percentage of equipment that is client owned. STM will realize a reduction in the percentage of revenues from its company-owned equipment contracts.

The second pairing shows a slight difference in equipment locations over the next few years. It suggests that STM will continue to maintain a significant percentage of equipment at its own facilities, while realizing a slight increase in revenues from equipment at the client site. This is very consistent with other vendors that responded to INPUT's survey.

STM-1

Market Characteristics

		1989 (Percent)	1992 (Percent)
Commercial			
Equipment Ownership	STM	97	85
Percent of Revenue	Client	3	15
Equipment Location	STM	98	90
Percent of Revenue	Client	2	10
Processing	Shared	68	50
Percent of Revenue	Dedicated	32	50
Applications Software Developed by	STM	15	30
	Client	81	60
	Third Party	4	10
Federal			
Equipment Ownership	STM	70	65
Percent of Revenue	Client	30	35
Equipment Location	STM	75	30
Percent of Revenue	Client	25	70
Processing	Shared	16	20
Percent of Revenue	Dedicated	84	80
Applications Software Developed by	STM	10	40
	Client	60	20
	Third Party	30	40

The third pairing in Exhibit STM-1 shows a slight change in STM's single-client/multiple-client ratio. This suggests that as STM converts ownership of vendor equipment, it will begin dedicating equipment to the client.

The three pairings of boxes, taken together, suggest some moderate changes in the way STM will conduct its systems operations business. Since it currently supports over 20 data centers, INPUT believes STM's operations will continue to be stable, even as the business grows.

The fourth pairing shows that while most applications software currently in use is developed by the client, this percentage will decline over the next few years, in both the commercial and federal sectors. As STM expands its systems operations business, software developed by the company will be used more often. Further, STM has determined that it can realize an increase in revenues when applications software is developed by a third-party vendor.

Exhibit STM-2 compares the distribution of systems operations contracts under various pricing alternatives. Unlike most other vendors INPUT has profiled, STM Systems Corp. currently has contracts with a combination of pricing approaches.

INPUT asked STM Systems Corp. to characterize the duration of its contracts. STM's systems contracts are of various lengths. Commercial and federal systems operations contracts have durations in the ranges listed below.

	Commercial	Federal
• 1 to 2 years	29%	15%
• 3 to 4 years	37%	40%
• 5 to 8 years	33%	45%
• Over 8 years	1%	-

Exhibit STM-3 compares systems operations capabilities derived from internal sources versus those derived from alliances. The data suggests that STM has made significant use of teaming in its systems operations activities.

4. Markets Served

STM Systems Corp. derives its systems operations business from both the commercial market and the federal government. The company currently serves approximately 123 commercial customers and 35 federal (Canadian) government clients. The company realizes contracts with annual revenues averaging $1.25 million in federal business, and $900,000 in the commercial sector. STM Systems Corp. has chosen to focus on several vertical markets, including:

STM-2

Distribution of Revenue

Contract Type	Commercial		Federal	
	1989 (Percent)	1992 (Percent)	1989 (Percent)	1992 (Percent)
Fixed Price	7	20	84	82
Transaction Volume	5	10	—	—
Resource Utilization	73	50	16	18
Cost Plus Predefined Margin	4	20	—	—
Combinations				
Transaction/Resource	7			
Fixed/Resource	2			
Trans/Fixed/Resource	2			

STM-3

Capabilities

Internal and Alliances	• Applications Design/Development • Applications Maintenance • Packaged Applications Software • Other: Microcomputers
Internal Only	• Disaster Recovery Service • Network Management
Alliance Only	• Business Consulting • Equipment Maintenance

- Financial firms
- Health services
- Provincial government

5. Competitive Position

STM Systems Corp. has been providing systems operations services on a contractual basis for nearly 13 years. During this time, it has built a strong client base in both the commercial and federal marketplaces. With more than 155 systems operations clients, 1989 annual revenues were $110 million from commercial business. In federal business, 1989 annual revenues exceeded $43 million.

When considering competitors, STM Systems Corp. listed, by sector, the following firms:

Commercial
- EDS Canada
- IBM
- Andersen Consulting
- Le Group CGI

Federal
- IST Computer Services Company
- EDS Canada
- IBM

6. Recent Events

- November 1990 - Bell Canada renewed a contract with STM Systems Corp. for management information services in support of several of its systems, including systems for tracking inventory and operations measurement. The contract is worth $2.6 million over three years.

- October 1990 - STM Systems Corp. was awarded a contract by the Personal Insurance Company of Canada for computer processing services, disaster recovery services, and cross-Canada data communication. The three-year contract is worth $2.4 million.

- October 1990 - STM Systems Corp. acquired AIC Computers, Inc., exclusive distributors in Canada of Apricot high-performance micro-computers. The acquisition of the Canadian distributor of Apricot is part of STM's strategy to offer total solutions to clients through an extensive array of information products and services.

- August 1990 - STM Systems Corp. signed final closing documents for the acquisition of shares of Manitoba Data Services (MDS) from the Government of Manitoba in a deal estimated to be in excess of $150 million. In addition to the purchase of the shares, STM will establish a

company called STM Investments (Manitoba) Ltd., to invest in small Manitoba information technology companies.

- June 1990 - STM SunGard Recovery Services, a division of STM Systems Corp., acquired the IBM mainframe computer "hot site" disaster recovery business of Bekeen Computer Corporation. A hot site is a fully equipped computer center providing backup services in the event of a disaster to a client's own computer systems.

- March 1990 - STM Systems Corp. helped the federal government in making the biggest and most complex migration of computer systems ever attempted in Canada. Thirteen mainframes and six minicomputers for more than twenty government departments were moved to a new systems integration center built by STM Systems Corp. Six hundred Ottawa-based employees of STM Systems Corp. are located at the new $12 million center.

- January 1990 - STM Systems Corp. was awarded an $11.1 million contract to provide systems integration services to Finance Canada. STM will create an integrated office computer system linking approximately 700 professionals and support staff in the Finance Canada department. The contract award strengthens the position of STM as the largest supplier of information technology services to the federal government.

7. Organization

STM Systems Corp. currently has approximately 700 employees engaged in systems operations activities. Sixty-five percent of the staff is involved in commercial systems operations activities, and the balance in federal business. STM Systems Corp. serves corporate and government clients through its two regions, as indicated in Section 1.

The following table identifies the percent of STM staff associated with each of the key categories required by systems operations firms:

Capability	Percent
General management and administration	9
Project management	3
Applications design and development	16
Network design and development	2
Systems and network operations	24
Technical support	13
User Support	11
Sales	7
Other: Data entry, clerical, secretarial	15

8. Systems Operations Alliances

STM has established alliances with outside firms to supplement the company's capabilities with industry-specific knowledge. In the past, alliances have been used to support STM during periods of heavy workload. STM identified D&B Software as the company with which it has established an alliance for payroll and personnel software. STM has teamed with other companies for systems operations activities.

9. Systems Operations Marketing Strategy

STM Systems Corp. plans to expand within its existing client base as well as enter into new markets. When considering new target markets, STM identified the following selection criteria:

- Company size and growth rate
- Need for STM services
- Profit potential
- Competition in the market

With more than 155 clients, STM has significant opportunities for expansion within its client base. In fact, STM estimates that, in terms of revenues, 95% of its commercial business will come from existing clients, with the balance coming from new commercial accounts. Similarly, STM estimates that 90% of its federal business will be derived from existing clients, with the balance coming from new federal accounts. This is typical of most firms with a large client base.

In terms of new business, STM expects to receive the bulk of new commercial contracts from existing clients. However, the bulk of new federal contracts are expected from responses to bid solicitations. STM expects to obtain new contracts through the following means:

	Commercial	Federal
• Response to bid solicitation	12%	80%
• New contracts with existing clients	75%	15%
• Proactive direct sales activities	13%	5%

STM believes its competitive edge to be its ability to provide clients with total solutions for better management of their information needs. These solutions include facilities management, systems integration, and application software products. Additionally, the disaster recovery services offered by STM should offer a strong competitive edge.

10. Systems Operations Customer Base

As previously stated, STM's systems operations business comes from the commercial and federal markets. Among its clients are:

- G.E. Canada Limited - STM provides facilities management, project management, systems and network operations, and technical support.

- Province of Ontario Savings Office - STM provides STM's on-line banking system, project management, application design and development, network and systems operations, and technical support.

- Ministry of Housing - Demand processing for production processing, facilities management, network management, and technical support.

11. Summary and Future Directions

In responding to INPUT's survey, STM estimated that the commercial systems operations business is growing 10% each year, with decreasing margins. STM further estimated that federal business is growing at only 5% each year, also with decreasing margins.

STM Systems Corp. is Canada's largest supplier of IBM-based processing services. The company manages data centers in Ottawa, Calgary, Winnipeg, Toronto, and Mississauga. STM Systems Corp. will provide the STM-SunGard disaster recovery service for IBM, DEC, Tandem, and Stratus installations.

STM currently manages mainframe and minicomputer facilities, both on- and off-site, for more than 20 major federal (Canadian) government installations, a steel company, a large retail chain, and a leading financial institution, using a variety of hardware environments including IBM, Amdahl and Tandem.

To the extent that STM can leverage these advantages in its future systems operations business, it will be able to increase both its revenues and its overall market penetration.

COMPANY PROFILE

Systems & Computer Technology

1. Key Systems Operations Contacts

The systems operations activities at Systems & Computer Technology (SCT) are under the direction of Michael J. Emmi, President and Chief Executive officer. The executive offices of the company are located at:

Great Valley Corporate Center
4 Country View Road
Malvern, PA 19355

2. Description of Principal Businesses

SCT has been in the systems operations business for 23 years. Systems operations is its principal business. In 1989, $44 million in annual revenues was derived from information services activities.

SCT provides systems operations, systems integration, and professional services, including custom software development and telecommunications consulting. These services are provided to state and local government agencies and educational institutions.

SCT is currently organized into two operating divisions as follows:

- The Information Resource Management (IRM) division provides systems integration services, including management and staffing operations for the information resources (computing, office automation, telecommunications) of educational institutions and state and local governments. This division also includes SCT's customer software development and technical consulting services.

- The Software and Technology Services division incorporates SCT's packaged application software products and telecommunications consulting services for education and government.

3. Systems Operations Service Characteristics and Capabilities

Exhibit SCT-1 presents graphically how SCT views the change in its market over the next few years. All of the numbers represent a percentage of total revenue derived from systems operations. The first chart pairing indicates that there will be significant change expected in the next few years in the percentage of revenues generated from client-owned equipment. SCT expects vendor-owned equipment contracts to become a more significant portion of its overall systems operations activities. However, the majority of activity will continue to come from client-owned equipment.

The second pairing shows a parallel in percentages to the first for equipment location. This suggests that SCT will continue to maintain equipment at client sites. However, as SCT grows its systems operations business, it will purchase equipment for installation at vendor sites.

EXHIBIT SCT-1

Market Characteristics

		1989 (Percent)	1992 (Percent)
Equipment Ownership	SCT	95	75
Percent of Revenue	Client	5	25
Equipment Location	SCT	95	75
Percent of Revenue	Client	5	25
Processing	Shared	0	25
Percent of Revenue	Dedicated	100	75
Applications Software Developed by	Client	5	5
	SCT	95	95

The third chart pairing shows a significant change in the mix of shared versus dedicated facilities. This suggests that, as SCT converts ownership of client-owned equipment, it will begin using that equipment for other clients.

The three pairings, taken together, suggest some significant changes in the way that SCT will conduct its systems operations business. However, since it currently supports 41 client-owned data centers and only one vendor-owned data center, some changes would be expected as the business grows.

The fourth pairing in Exhibit SCT-1 shows no expected changes in the software mix. Ninety-five percent of applications software is developed by SCT with the remainder coming from the client. This response indicated that SCT is leveraging its software capabilities to grow its systems operations business.

Exhibit SCT-2 compares the distribution of systems operations revenue under various pricing alternatives. As with the pairings in Exhibit SCT-1, SCT sees significant change in its business share over the next few years. SCT's systems operations revenues will shift from predominantly time and materials to an even mix of fixed price and time and materials.

SCT's IRM division contracts typically cover a three- to five-year period, with an option to renew. SCT derives its systems operations revenue largely from colleges, universities, and other educational institutions, in addition to state and local government agencies.

Exhibit SCT-3 compares systems operations capabilities derived from internal sources versus those derived from alliances. The data suggest that SCT has made limited teaming effort for its systems operations activities. SCT has informal alliances with DEC, Sequent, and Hewlett-Packard to leverage its internally developed applications software. It uses SORBUS for equipment maintenance. SCT apparently has no special arrangements for disaster recovery services.

EXHIBIT SCT-2

Distribution of Revenue

Contract Type	1989 (Percent)	1992 (Percent)
Fixed Price	25	50
Time and Materials	75	50

SCT has identified proprietary products that give it an edge in bidding systems operations contracts. SCT has developed 4GL custom application software using Oracle systems software. The products are for the education and state and local government vertical markets, and often are the key differentiators in bids in these industries.

EXHIBIT SCT-3

Capabilities

Internal and Alliances	None
Internal Only	• Business Consulting • Computer Systems Operations • Network Management • Applications Design/Development • Packaged Applications Software
Alliance Only	• Equipment Maintenance
Neither Internal nor Alliance	• Disaster Recovery Service

4. Markets Served

Currently, SCT derives its systems operations business from the education sector, as well as from state and local government clients. SCT has currently a wide range of contracts with revenues averaging around $1 million annually. It focuses primarily on educational institutions, with about 60% of its total revenues derived from colleges, universities, and other educational institutions.

Currently, SCT has no federal systems operations business. Further, there is no indication that it intends to pursue the federal marketplace.

5. Competitive Position

SCT has been providing systems operations support in the educational, and state and local government markets for 21 years. It does not break out systems operations revenues separately. However, as already reported, SCT realized $44 million in 1989 revenues, and INPUT estimates that 85% came from systems operations. As SCT grows its systems operations business, it expects its primary competition to come from the following firms: Maxima, Communications Management Systems, Inc., Information Association, and American Management Systems, Inc.

6. Recent Events

In the past year, SCT has made a substantial investment to position its services business to take advantage of the growing trend toward outsourcing. This investment included a new name—OnSite—and a marketing strategy that positions these services as "the computing management alternative" for higher education and government, as well as related markets. The new positioning established SCT's OnSite services as a solution for the critical challenges in its markets in the 1990s: higher costs, budget constraints, changing demographics, and pressure to provide more services while holding the line on spending.

In its software business, SCT has rounded out its line of administrative applications with the introduction of Financial Aid and Human Resources Systems. Financial Aid is a pivotal product in the higher education market because the issue of financial aid affects nearly every college and university student. These products join SCT's Study, Finance and Alumni/Development systems to form a comprehensive administrative product line. SCT also recently introduced its Finance and Human Resources products into the local government marketplace. The Company has announced IntelliQuest™, a natural language query system that allows its BANNER clients to access information from their administrative data bases using plain English queries.

7. Organization

SCT is currently organized into two operating divisions, as described in Section 2.

In addition to the headquarters office, SCT maintains regional offices in Irvine, and Sacramento, CA; Dallas, TX; Cleveland, OH; and Hato Rey, Puerto Rico. SCT currently has 725 employees engaged in systems operations activities. The bulk of this staff is engaged in four areas:

- Applications Design and Development: 30%
- Project Management: 25%
- User support: 25%
- Technical Support: 20%

8. Systems Operations Alliances

As discussed earlier, SCT has no formal alliance programs for systems operations. However, SCT has used DEC, Hewlett-Packard and Sequent as platforms for SCT software, and Sorbus for equipment maintenance.

INPUT believes that as SCT increases its systems operations activities, alliances with other companies will play an important role.

9. Systems Operations Marketing Strategy

SCT expects to expand its systems operations business from both its existing client base as well as through new accounts. However, this latter thrust is expected to account for only 10% of new business. The balance will come from existing customers.

SCT expects to receive approximately 10% of its new systems operations business through formal solicitation. Sixty percent of new business, as expected by SCT, will come from direct sales activity. Additionally, SCT expects 30% of new business to come from new contracts with existing clients. This is consistent with its overall plans to expand the contracted work within its current client base.

SCT views itself as being a leading supplier of systems operations activities within its focused markets. The company expects this view to give them a competitive edge when competing for systems operations contracts in these markets.

10. Systems Operations Customer Base

SCT currently has 22 commercial clients and 18 state and local government clients for systems operations services. Among its listed clients are:

- Cuyahoga Community College, Ohio
- Temple University, Pennsylvania
- Tulare County, California
- Cal-Tech, California

As the systems operations market continues to evolve, SCT will enter additional vertical markets when it can leverage its current software product investment.

11. Summary and Future Directions

Over its 23 years of providing services to the educational sector and state and local governments, SCT has developed a leadership position, providing systems operations services based on tested applications software packages. INPUT expects SCT's systems operations business to grow slowly but steadily over the next few years, reflecting overall business conditions.

COMPANY PROFILE

Systematics Information Services, Inc.

On May 1, 1991, Systematics, Inc. announced a reorganization of the company into a holding company and two subsidiaries. As part of the reorganization, Systematics, Inc. was renamed Systematics Information Services, Inc.

Systematics Information Services, Inc., a subsidiary of ALLTEL Corporation, is the holding company for two operating subsidiaries, Systematics Financial Services, Inc. and Systematics Telecommunications Services, Inc.

Mr. John E. Steuri is Chairman, President and CEO of the holding company. Drew Kelso was named President of Systematics Telecommunications Services, Inc., and Roger Owens was named President of Systematics Financial Services, Inc.

1. Key Outsourcing Contacts

The outsourcing activities in Systematics Financial Services, Inc. are under the direction of Collins Andrews, President of Operations for the subsidiary. He reports directly to John Steuri.

Drew Kelso directs all activities, including outsourcing, for Systematics Telecommunications Services, Inc.

Corporate headquarters are located at:

4001 Rodney Parham Road
Little Rock, Arkansas 72212

2. Description of Principal Business

Outsourcing services are the major line of business of the corporation. It operates as a subsidiary of ALLTEL Corporation, one of the nation's leading independent telecommunications companies, with subsidiaries or investments in companies that provide cellular telephone, long-distance and information services, communications products, and other related services.

Systematics' products and services are designed exclusively for the financial industry (banks, savings institutions, credit unions, and

mortgage service companies) and telecommunications industry (telephone and cellular companies).

3. Outsourcing Services Characteristics and Capabilities

Systematics currently operates 67 data centers, in which a majority of the equipment is owned by Systematics. In the case of most of these 67 centers, the company leases space from the client to locate its equipment close to the client's operation. In three of the 67 company-owned centers, services are provided for multiple clients in a remote outsourcing arrangement.

Almost 75% of the company's revenue is generated from fixed-price contracts. Most of these are five years or longer in duration.

Systematics has developed a complete set of integrated banking and financial applications software termed Systematics Integrated Financial Software. There are both multinational and domestic versions of the products available. These applications, available through outsourcing/services contracts and separately as software products, include:

- Delivery Systems
  - ATM System
  - Branch Automation System
  - Teller System
  - Transaction System
  - Voice Response System
- Management Systems
  - Customer Management Systems
  - Financial Management Systems
  - Executive Information Systems
- Servicing Systems
  - Loans
    - Advanced Loan System - Consumer
    - Commercial Loan System
    - Loan Origination System
    - Mortgage Servicing System
    - Collection System

- Deposits

  . Demand Deposit System
  . Savings/Time System
  . Certification Tracking System
  . Item Reconciliation System

. International Capabilities

  - Translator Facility
  - Origination and Warehouse System
  - Multicurrency Feature

. Wholesale Banking Software

. Horizon Integrated Financial System (for the IBM AS/400 and Mid-Range Institutions)

. Cellular Administrative Software

  - Virtuoso™

Systematics provides a full range of outsourcing capabilities to its clients, as well as providing disaster recovery, education and training, and management consulting services. Occasionally Systematics supplements these capabilities with informal alliances, particularly in the areas of applications software, voice response systems, and equipment maintenance services.

Exhibit SISI-1 compares outsourcing capabilities internal to Systematics with those acquired through both formal and informal alliances.

Exhibit SISI-1

Capabilities

Internal Only	. Outsourcing - onsite or remote for the financial and tele-communications industries . Management Consulting . Telecommunications Management . Applications Design/Development . Applications Maintenance . Packaged Applications Software . Education and Training . Disaster Recovery Service . Network Operations
Formal Alliance	. Systems Integration
Informal Alliances	. Niche Applications Software . Voice Response Systems . Equipment Maintenance

The company has developed proprietary software for IBM systems that it provides as a part of the outsourcing agreement to reduce the client's investment. It also has proven methods both for data center management and project management that it applies to the conversion and consolidation requirements of its outsourcing contracts.

4. Markets Served

Systematics has concentrated its marketing efforts in the financial sector. In 1991 this market was expanded to telephone and cellular companies. Within the financial sector, some 1,000 clients are in the banking and financial area, with service provided to clients that are commercial banks, savings and loan institutions, credit unions, and mortgage and finance companies.

The majority of revenue is derived from commercial banks with deposits over $250 million.

. Systematics began marketing its services internationally in 1987 and derived approximately 4% of its fiscal 1990 revenue from customers located in Europe, Asia, the Pacific, South America and Canada. Systematics has clients in 24 non-U.S. countries and regional offices in the U.K., Singapore, Hong Kong, and Bombay, handling sales and support in those areas.

. In 1990 Systematics acquired Horizon Financial Software Corporation or Orlando, Florida. The Horizon system is widely regarded as the most functionally complete and fully integrated turnkey financial software available for the AS/400.

. In 1991 Systematics acquired the assets of C-TEC Cellular Services, a subsidiary of C-TEC Corporation based in Dallas, Pennsylvania. Their billing and information management software system, Virtuoso™ , serves the cellular market much in the same way Systematics banking software systems serve the banking market. As a modular system, Virtuoso runs on IBM's AS/400 and mainframe computers and operates in a multiplatform environment. Virtuoso offers the standard capabilities of account management, accounts receivable, ad-hoc report writing, bill processing, collections, commissions, customer care, and dunning.

While some Systematics clients choose to operate Virtuoso software on a stand-along basis, others opt for a service bureau or outsourcing arrangement with Systematics. Systematics currently provides outsourcing services to ALLTEL and C-TEC Corporation.

5.Competitive Position

The company has been providing outsourcing services to the banking and financial community for 23 years. The company is building on this base with its expansion into the telecommunications and cellular industries. Revenues for calendar year 1990 were $255 million with operating income of $34 million.

6. Recent Events/Awards

. On December 17, 1990, Systematics, Inc. announced that it had entered into a ten-year agreement to provide data processing services to City National Bank of Beverly Hills, California. Under the agreement, Systematics will provide application software systems and integration services. In addition, Systematics will operate the bank's processing center exclusively for City National

and nearly 200 independent banks that have contracts for processing services with City National Information Systems (CNIS), a division of the bank.

- On June 14, 1991, Systematics Information Services, Inc. and California Federal Bank, FSB, announced that Systematics will operate and manage the bank's information systems. Under the arrangement, Systematics will provide California Federal Bank with complete data processing and telecommunications services, both voice and data, including Systematics' full line of integrated financial software, upgraded branch delivery systems, hardware and software architecture and conversion training assistance. California Federal Bank, a Federal Savings Bank, has more than $19 billion in assets and operates 193 offices in California, Florida, Arizona, Georgia, and Nevada.

- On June 26, 1991, Systematics Financial Services, Inc. announced that Republic National Bank of New York, the nation's 18th largest bank, had renewed its multiyear outsourcing contract with Systematics Financial Services, Inc. Republic National Bank is a subsidiary of Republic New York Corporation, with assets of more than $29 billion. Republic National Bank of New York originally signed a five-year outsourcing contract with Systematics in 1982, and in 1986, the bank signed an early renewal contract for an additional five years.

- On August 14, 1991, Systematics Information Services, Inc. announced that it had signed a five-year outsourcing agreement with the Federal Home Loan Bank of San Francisco. The agreement is valued at more than $80 million over the next five years. The Federal Home Loan Bank of San Francisco, with $42 billion dollars in assets, is the largest of 12 regional Home Loan Banks and the first of these institutions to outsource its data processing. In addition to managing the Bank's data processing operations, Systematics purchased the Bank's item processing business. The Bank's check processing facilities process over 150 million checks annually for 190 financial institutions.

- On August 18, 1991, Systematics Financial Services, Inc. announced that it had signed a long-term software agreement with OKOBANK, headquartered in Helsinki, Finland. OKOBANK Group, with assets of $36 billion, includes 330 cooperative banks in Finland and serves 30 percent of the retail market with 1,000 branches and 750 ATMs. The first phase of the agreement will include planning and prototyping to fit Systematics' financial applications with OKOBANK's business requirements. Implementation of Systematics Advanced Loan, Customer Information File, General Ledger, and Transaction

Systems will follow in the second phase. A third phase will implement Systematics' deposit systems.

- On October 11, 1991, Systematics Financial Services, Inc. announced it had signed a Charter License Agreement for its integrated financial software with the Central Retail Services Division of Barclays Bank PLC, London, England. The agreement provides Barclays with maintenance, support, and future enhancement for a five-year period. In addition. Systematics is providing education and training.

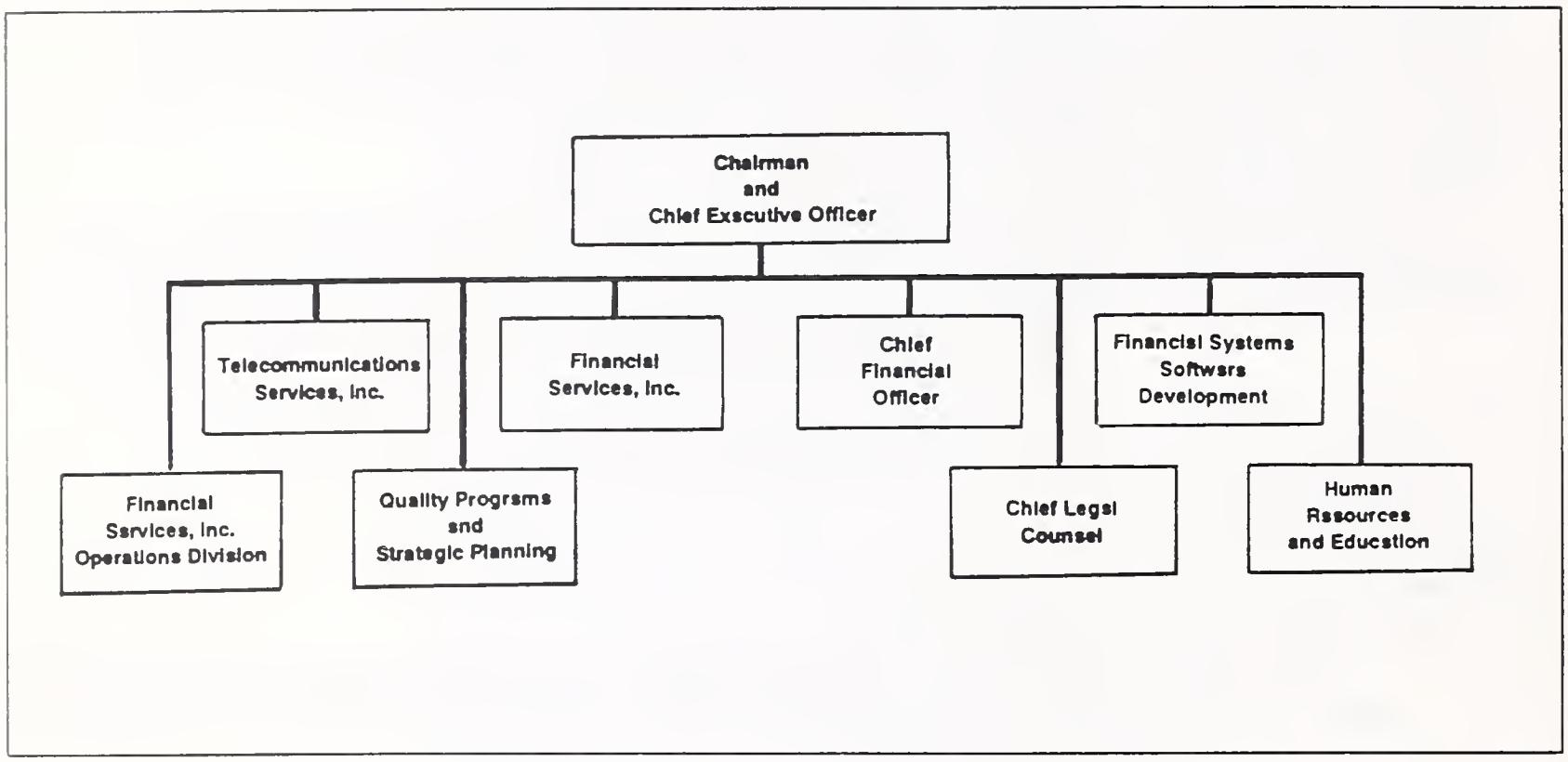
- On October 17, 1991, Systematics Telecommunications Services, Inc. announced it had signed a three-year, $6.7 million agreement to provide Unitel Personal Communications with its Virtuoso™ cellular billing and management information software. Unitel, headquartered in London, England is one of three companies licensed by the U.K. Government to provide a personal communications network (PCN) for the entire country.

7.Organization

Systematics serves the financial and telecommunications industries across the United States. Its organizational structure is presented in Exhibit SISI-2.

Exhibit SISI-2

Systematics Information Services, Inc. Organization Chart



Five divisions in Systematics Financial Services, Inc (Operations Division), each headed by a senior vice president, are responsible for outsourcing activities in their respective geographic areas. Each is self-contained and has the resources to fully meet client needs, but can supplement its staff with members of the Consulting Services Group for functional expertise, a specialized contract programming group for added client customization, and Systematics own Training Division for client-specific training activities. Technical services can be called upon to provide customer support when Systematics' own software is involved.

8. Outsourcing Alliances

On September 17, 1991, in response to current changes in banking, Andersen Consulting and Systematics Financial Services, Inc. formed a strategic business alliance to provide systems integration services and banking software to the nation's financial institutions. The alliance will provide financial institutions a full range of integrated information services, including systems integration, remote processing, facilities management, application software, and other management information services. This is an exclusive

arrangement, whereby Andersen will recommend Systematics software for core banking applications and Systematics will recommend Andersen as systems integrators. However, both parties are free to honor specific client requests for alternatives.

Although Systematics has no formal alliances with any other vendors to provide niche capabilities, it does enter into partnerships with other firms to provide additional capabilities such as equipment maintenance. It also will acquire and install third-party software for clients as the need occurs.

9. Outsourcing Marketing Strategy

The company's strategy is to expand in its chosen markets, the financial and telecommunications industries. Systematics management considers two criteria in its expansion plans:

- whether they can add value to the application area, and
- whether the profit margins are acceptable.

Systematics currently derives approximately 85% of its revenue from its existing customer base and adds 15% from new accounts. Most of its new contracts are garnered through direct sales activity in the marketplace, with only 20% of the contracts resulting from the responses to bid solicitations from prospective clients.

Systematics is a company that provides the complete solution to a client's information processing and telecommunications needs with its state-of-the-art comprehensive software. It provides a company with a broad range of experienced resources. All of this is available from a stable, conservatively-managed company that has 23 years of experience in the operations and management of processing centers for the financial and telecommunications industries.

10. Outsourcing Customer Base

There are approximately 1,000 banks and financial institutions currently being served by Systematics. Typical customers are:

- Republic National Bank of New York
- The Integra Corporation of Pittsburgh
- Team Bank in Bedford, Texas
- City National Bank in California
- Federal Home Loan Bank, San Francisco

11. Summary and Future Direction

Systematics has concentrated its efforts in the banking and financial sector, providing a broad-based product to institutions of all sizes. Over the past five years, its growth rate has been greater than 15% and it expects to continue growing at a similar rate in its selected market segment. It will also continue its move into the telecommunications industry. Its growth strategy includes the acquisition of third-party processing in its market sector, a strategy that will be more achievable since its merger with ALLTEL has provided it with the necessary capital to expand by acquisition. It presents the prospect with a conservative, well-managed company, with more than 23 years experience - a model that would generally appeal to decision makers in the financial and telecommunications industries.

VI

Summary and Recommendations

This report examined the systems operations market from the vendor's viewpoint. It classified vendors in order to better analyze their motivating forces and determine their emerging strategies. A look at their organizations and capabilities helped define what makes a successful systems operations vendor. The emerging trends and issues in the marketplace were also considered, since these will affect how the vendors change to adjust to new market demands.

A

Vendor Classification

Participants in the systems operations market have their origins in a variety of information services markets. Exhibit VI-1 summarizes the four classes of vendors that have emerged. All of them saw the systems operations market as a natural follow-on to their existing business, but not for all the same reasons.

EXHIBIT VI-1

Vendor Classifications

Category	Motivation
Professional Services	Systems integration follow-on
Processing Services	Expansion of remote processing
Equipment Manufacturer	Protection of distribution channels
Others	Leveraging of functional expertise

Professional services firms have naturally entered the market either as a follow-on to consulting, program development, or systems integration activities, or as a natural outgrowth of other professional services engagements where they were providing personnel to operate client-owned and -managed data centers.

Processing services companies began looking for new markets when their traditional timesharing business was rapidly eroded by increased PC usage and increases in departmental computing. While remote processing services supplemented some of these losses, system operations offered opportunities for exciting new growth.

Hardware manufacturers are newer arrivals in the systems operations market who see it as a required strategy to provide a broader range of services to their clients and, in the process, protect their channels of distribution for equipment.

"Other" companies have seen the systems operations market as a means of leveraging their in-house base of expertise and equipment by expanding the services they provide to their own market segment. While the "other" companies included in this initial study are banks, firms with other industry sectors also participate in the systems operations market.

B

Driving Forces

Respondents to INPUT's surveys indicate the market is being shaped by both user requirements and the actions that vendors take in response to these requirements. Users are clearly asking the vendor to share the business risk with the client by not only assuming ownership of the equipment at the client site, but also, in many cases, absorbing the information processing operations staff. The resulting relationships are beginning to be called partnerships by vendors and users alike.

To compete effectively and to maintain favorable operating margins, vendors need substantial financial resources and a management staff that can operate data centers efficiently, taking advantage of technological advances and economies of scale.

Vendors need to supplement their own resources with alliances with other information services vendors that provide services that complement their own capabilities.

All of these forces are further affected by the economic conditions under which the market exists. Currently, the recession is increasing the importance of cost savings and capital preservation and has become an additional motivator for those considering systems operations as an alternative. This comes on the heels of a period of mergers and consolidations that resulted in excess capacity in some companies, and spin-offs without processing capabilities in others.

C

Vendor Organizations

The size and structure of systems operations vendors varies considerably. Companies surveyed ranged in size from 150 to over 16,000 employees. Several reported to INPUT that they are matrixed organizations, a structure that allows them to more effectively transfer the resources to where the need exists.

1. Financial Characteristics

Vendor respondents did indicate that their before-tax margins ranged between 8% and 12%. The majority felt the operating margins were decreasing in the federal market and still increasing in the commercial market.

2. Capabilities and Products

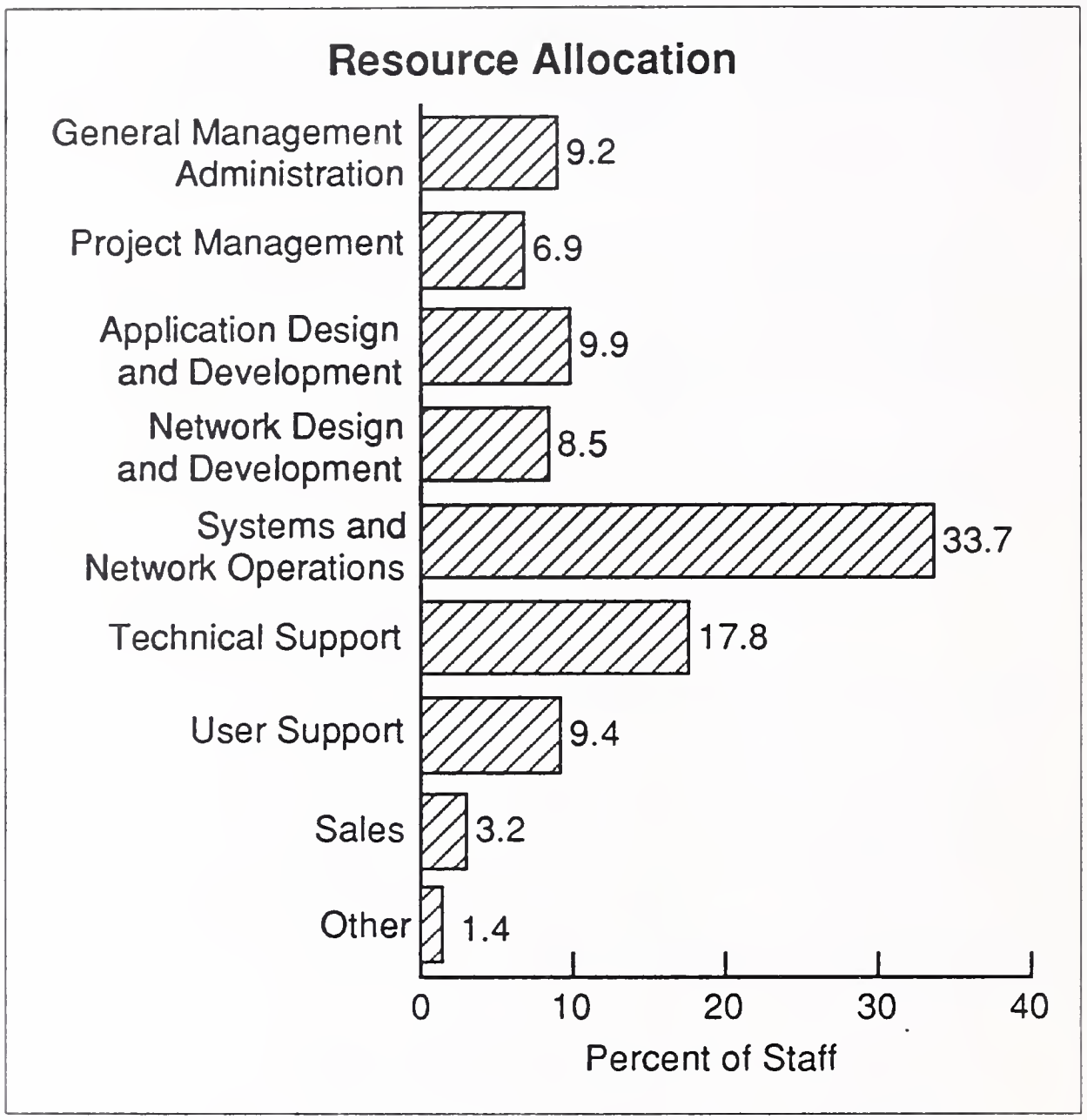
The vendors have the products to meet their prospects' requirements. In a vertical industry setting, that includes either a staff with industry-specific expertise or industry-specific software, or both. All successful vendors must demonstrate a proven capability in the prospect's industry.

In addition, the vendor must deploy his staff to maximize its effectiveness. All of the firms allocated the bulk of their SO resources to supporting systems and network operations. The percentage distribution of personnel for all major systems operations functions is illustrated in Exhibit VI-2.

Technical expertise—including computer systems operations, network management, and technical support—are critical capabilities for vendors who intend to grow in the market. Vendors have a higher probability of success when they have the capability to participate in the implementation already on board.

In terms of products, proprietary products—particularly industry-specific applications software products, and operations management techniques—offer an advantage over the competition. Unique technologies and applications software, and the ability to apply them, are clearly able to be leveraged and offer the vendor the opportunity to penetrate targeted vertical industry markets.

EXHIBIT VI-2



D

Vendor Strategies

A number of vendor strategies, summarized in Exhibit VI-3, have evolved as a result of market conditions and user requirements.

Companies in transition are defined as organizations undergoing major changes. Companies going through change can be:

- Fast-growing companies
- Organizations in divestiture/buy-out deals
- Firms going through consolidations

There are also other prospects being targeted by systems operations vendors, but the above types of companies have requirements that find systems operations attractive.

EXHIBIT VI-3

Vendor Strategies

- Target companies in transition
- Become full-service providers
- Establish alliances
- Invest in client business
- Manage a partnership

To provide full service, vendors have to demonstrate that they have all the capabilities in place or readily available from another allied vendor. They also must frequently demonstrate their track record in the particular vertical market or functional area.

Most vendors cannot afford to be all things to all users. The developing solution, one seen first in the systems integration market, is to form alliances with other vendors. These alliances are used by the prime vendor to supplement capabilities that might be in short supply within the company, but which are key to success with a particular prospect. Exhibit VI-4 presents some typical capabilities that vendors frequently seek from outside firms. Some of these are industry specific, while others require specialized experience or equipment.

EXHIBIT VI-4

Alliances Provide Capabilities

Capability	Percentage of Companies Using Alliances
Equipment Maintenance	70
Disaster Recovery Service	80
Packaged Software Applications	60
Applications Maintenance	50

It is increasingly important that the vendor be willing to take over the equipment and personnel of the client as part of the systems operations contract. Users are anxious to divest themselves of the capital equipment and human resources in order to further reduce operating costs. Beyond the acquisition of the assets, the vendor has to become an integral part of those business decisions that affect the information processing requirements of the client. Both parties to the agreement are best served when this occurs.

The term partnership is used more frequently to describe the relationship. Though it may sound like a nice marketing expression, vendors and users agree that a partnership must happen for the dependence of the user on the vendor to be healthy and free from litigation.

E

Issues and Trends

Several trends are developing in the systems operations market that are outlined in Exhibit VI-5. The concept of a partnership is becoming accepted as vendors and users negotiate how the process will work. As vendors invest in equipment and facilities for the client, and assume responsibilities for staff over an extended contract period, mutual respect and trust will be required.

EXHIBIT VI-5

Major Buyer Issues—1990

- Information systems key to business success
- Need to reduce operating costs/preserve capital
- Challenge to keep abreast of technology
- Lack of skilled personnel
- Concern about dependency on vendor

Corporate management is finding that much of its attention is being diverted to information systems problems rather than more fundamental operational issues. Most executives recognize the importance of information systems to the health of their businesses, yet don't understand how to manage that part of the operation. INPUT believes more managers will decide to entrust systems operations to outside experts as information technology continues to increase in complexity.

Management prefers to rely on vendors to keep current with the state of technology. These vendors have a strong incentive to improve their own operating efficiency and applying the latest processing technology is a good approach to achieving that end.

As business conditions change, companies also need to change rapidly. The rapid downsizing of the oil drilling industry, with its subsequent effect on staff and budgets, is a good example. Many firms in that sector turned to systems operations firms to eliminate large data centers they no longer needed. These same firms found they were able to preserve capital or improve cash flow rapidly in this manner.

Skilled information services personnel are becoming harder to acquire and more difficult to retain. Certain industries, because of their depressed wage structures, are finding it difficult to attract personnel. Others are finding that staff with expertise in certain disciplines are in short supply, particularly those with communications technology expertise. By using outside vendors, existing expertise can be leveraged across several clients.

Outsourcing of systems operations leaves the buying firm dependent on an outside vendor for information that is crucial to the continued successful operation of that firm. If systems operations is to be a viable alternative, vendors must demonstrate genuine interest in clients' business successes, and must demonstrate a willingness to participate as a partner in the client's business.

F

Recommendations

The systems operations market continues to grow at an attractive rate. It has brought success to many of the early participants and is currently attracting new participants as information services firms seek to protect client relationships and leverage their existing resources.

This market will require the vendors to operate in new and creative ways. INPUT's recommendations are shown in Exhibit VI-6.

- Vendors should be prepared to assume more financial risks and invest in their clients. These investments can take the form of equipment and software technology, or even facilities, on or near the clients' sites. In addition, it may be necessary to invest in the prospective clients' businesses. Access to investment capital will be essential to grow with the systems operations market.

- Few vendors have all the resources and capabilities to meet evolving systems operations clients' needs. Vendors should take steps to supplement existing capabilities with alliances that allow them to provide a broad range of competitive services and present a full-service vendor image.

- Prospective clients are looking for more than service suppliers. They are looking for vendors who will enter into a long-term partnership with them, and who are committed to their (the client's) success. Vendors need to learn how to be partners with their clients.

EXHIBIT VI-6

The successful vendor in the next few years will master these changes in operating style and participate fully in this growing information services market segment.