U.S. PROFESSIONAL SERVICES MARKET

1992 - 1997

INPUT

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U.S. Professional Services Market, 1992-1997

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Abstract

This report analyzes the U.S. professional services market from 1992 through 1997 during a period when business is still feeling the impact of the recession but is increasing use of professional services to improve business. New technology, particularly client/server systems and the use of downsized applications, are highlights of the information services industry during this period. Data include user expenditure forecasts, vendor ranking, and merger-and-acquisition activity. Market growth estimates are also provided for 15 industry sectors.

The professional services market is divided into four submodes: consulting, software development/maintenance, application development/maintenance, and education and training.

This report presents the issues, trends, and key events affecting the professional services market and identifies new and emerging strategies and opportunities. The report contains 168 pages and 91 exhibits.

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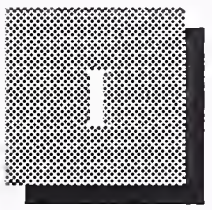


Introduction

This report is part of a series of market analysis reports written each year by INPUT on the key segments (delivery modes) of the U.S. information services industry. The delivery modes analyzed during 1992 are as follows:

- Applications Software Products
- Turnkey Systems
- Processing Services
- Systems Software Products
- Network Services
- Professional Services
- Equipment Services
- Systems Integration
- Systems Operations

The first seven delivery modes are covered in reports included as part of INPUT's Market Analysis Program (MAP), a planning service for information services vendors. The last two delivery modes are covered in market analysis reports included in INPUT's Systems Integration and Systems Operations programs.

A
Purpose and Organization

1. Purpose

This report analyzes the professional services delivery mode of the U.S. information services industry including the outsourcing of application related work, consulting or internal training.

- The report includes five-year forecasts, an assessment of market drivers, analysis of competitive trends, and identification of leading vendors.

- The report assesses trends and events within the U.S. economy, the U.S. information services industry, and the professional services delivery mode to provide the reader with a comprehensive foundation for understanding this market sector and for anticipating future directions.

The report provides readers with insights and information that will help them

- Review the forces shaping and changing the market
- Develop internal corporate financial projections
- Identify new markets and product and services opportunities
- Assess the competitive trends
- Determine potential market directions
- Assist in prioritizing investments

2. Organization

This report is organized as described in Exhibit I-1. Each delivery mode report within the Market Analysis Program follows this format. The industry and cross-industry sector reports, described below, follow a very similar format.

This report is being published in 1992 for subscribers to INPUT's Market Analysis Program.

B
Scope and Methodology

1. Scope

This report addresses the U.S. information services industry for the systems professional service (delivery mode). It includes user expenditures that are noncaptive and generally available to vendors. Many large organizations have portions of their information services requirements satisfied by internal divisions. The resulting expenditure is not available for competitive bid by the general vendor community and is not included in INPUT's projections. The noncaptive distinction is important and is addressed in more detail in Appendix A.

a. Information Services Industry Structure

Exhibit I-2 defines the structure of the information services industry as used by INPUT in its market analysis and forecasts. The industry consists of nine delivery modes, each of which contains a number of submodes.

EXHIBIT I-1

Market Reports Format

I. Introduction
- Introduction and definition of the delivery mode and its substructure or segments.

II. Executive Overview
- Synopsis of the entire report, written at the end of the year.

III. General Business Climate
- An overview of the business climate within the information services industry as a whole and the particular market segment of each report.

IV. Information Systems Environment
- The information systems environment and user perspective as it relates to the specific delivery mode or market.

V. Vendor Issues and Trends
- An assessment of the delivery mode from the vendor point of view.

VI. Information Services Market Forecast
- Presentation of the information services market forecast by delivery mode and submode.

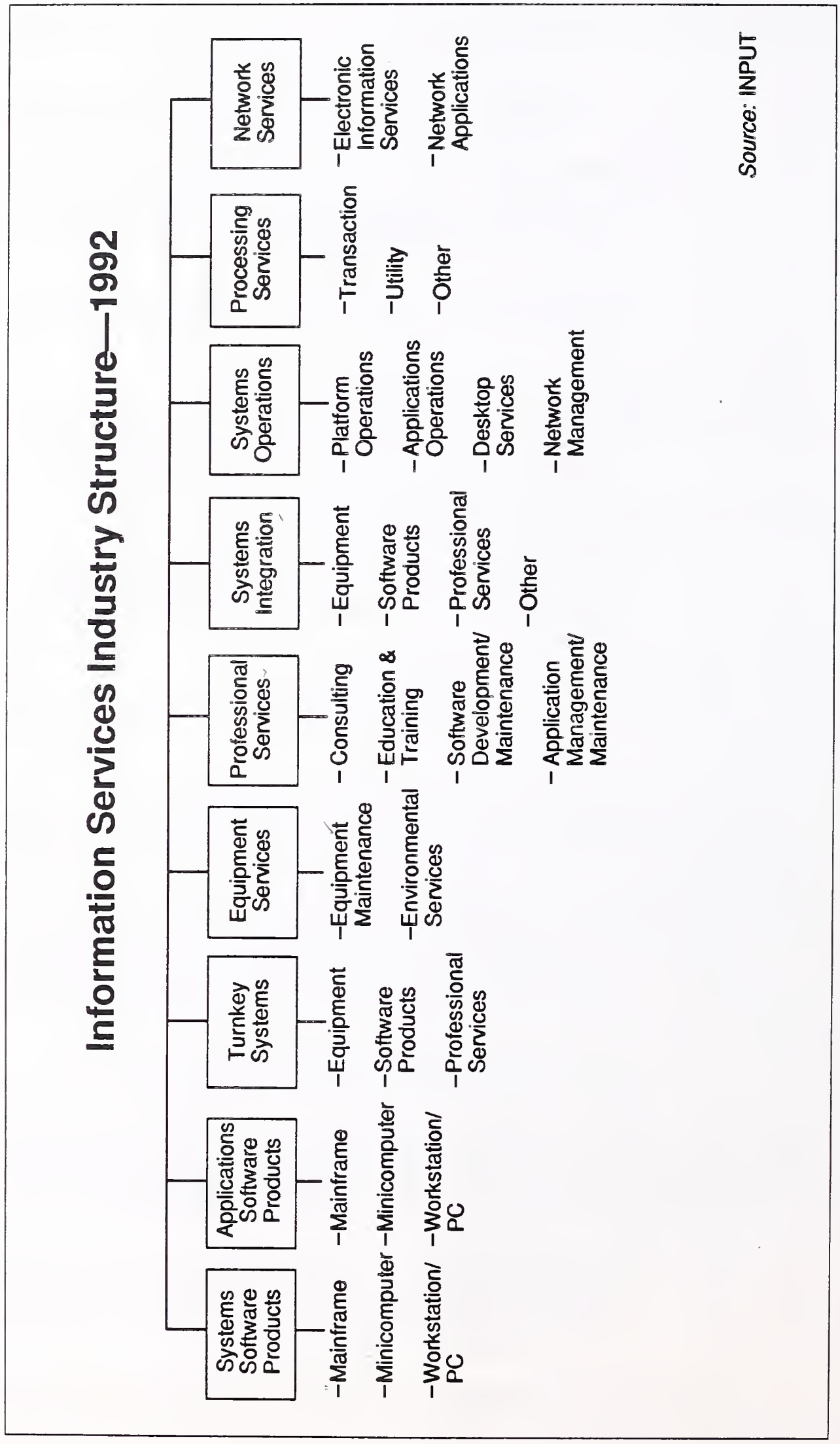
VII. Competitive Environment
- Discussion of the competitive environment for information services within the delivery mode—with market share analysis and vendor profiles.

VIII. Conclusions and Recommendations
- Summary of risks and opportunities.

A. INPUT Definition of Terms
- Definitions and descriptions of market structure and terms used throughout INPUT's reports.

B. Forecast Data Base
- A detailed forecast by delivery mode, submode, and industry/cross-industry sector. Contains a reconciliation to the previous year's Appendix B.

EXHIBIT I-2



- *Delivery modes* are specific products and services that satisfy a given user need. *Market sectors* specify who the buyer is and delivery modes specify what the user is buying.

- INPUT develops a five-year forecast for the professional services delivery mode and each of the submodes.

INPUT also publishes market sector reports analyzing 15 industry and 7 cross-industry market sectors. These reports, published annually by INPUT, analyze the information services opportunities in industry sectors, such as insurance, transportation, and discrete manufacturing, and those in cross-industry sectors, such as accounting, human resources, and office systems

The relationship between delivery mode forecasts and market sector forecasts is shown in Exhibit I-3. (Equipment services will be added as a delivery mode to this chart next year.)

EXHIBIT I-3

Delivery Mode versus Market Sector Forecast Content

Delivery Mode	Submode	Market Sectors		
		Industry Sectors	Cross-Industry Sectors	Other
Processing Services	Transaction Utility Other	X	X	 X X
Turnkey Systems		X	X	
Applications Software Products		X	X	
Systems Operations	Platform Applications	X X		
Systems Integration		X		
Professional Services		X		
Network Services	Network Applications Electronic Information Services	X X		 X
Systems Software Products				X

For a more complete discussion of INPUT's information services industry structure and market sector definitions, please refer to INPUT's *Definition of Terms* in Appendix A.

b. Delivery Mode Description

The structure of the professional services (PS) delivery mode is composed of the consulting, education and training, software development/maintenance, and application management/maintenance submodes. For the purposes of this study, the last two submodes will be combined and referred to as software development/maintenance. Exhibit I-4 shows the professional services market structure.

Professional services vendors market consulting, software development, and education and training services alone and in combinations. There are also vendors that market selected functions only, such as documentation or conversion services, or one of the primary services, such as training.

- The three submodes within the professional services delivery mode—consulting, education and training, and software development—are described in full in Appendix A.

- All professional services activities are considered as purchased by specific industry sectors; that is, they are industry specific. Thus, the forecasts for professional services within the 15 industry sectors adds to the total of the forecasts for the delivery mode as a whole.

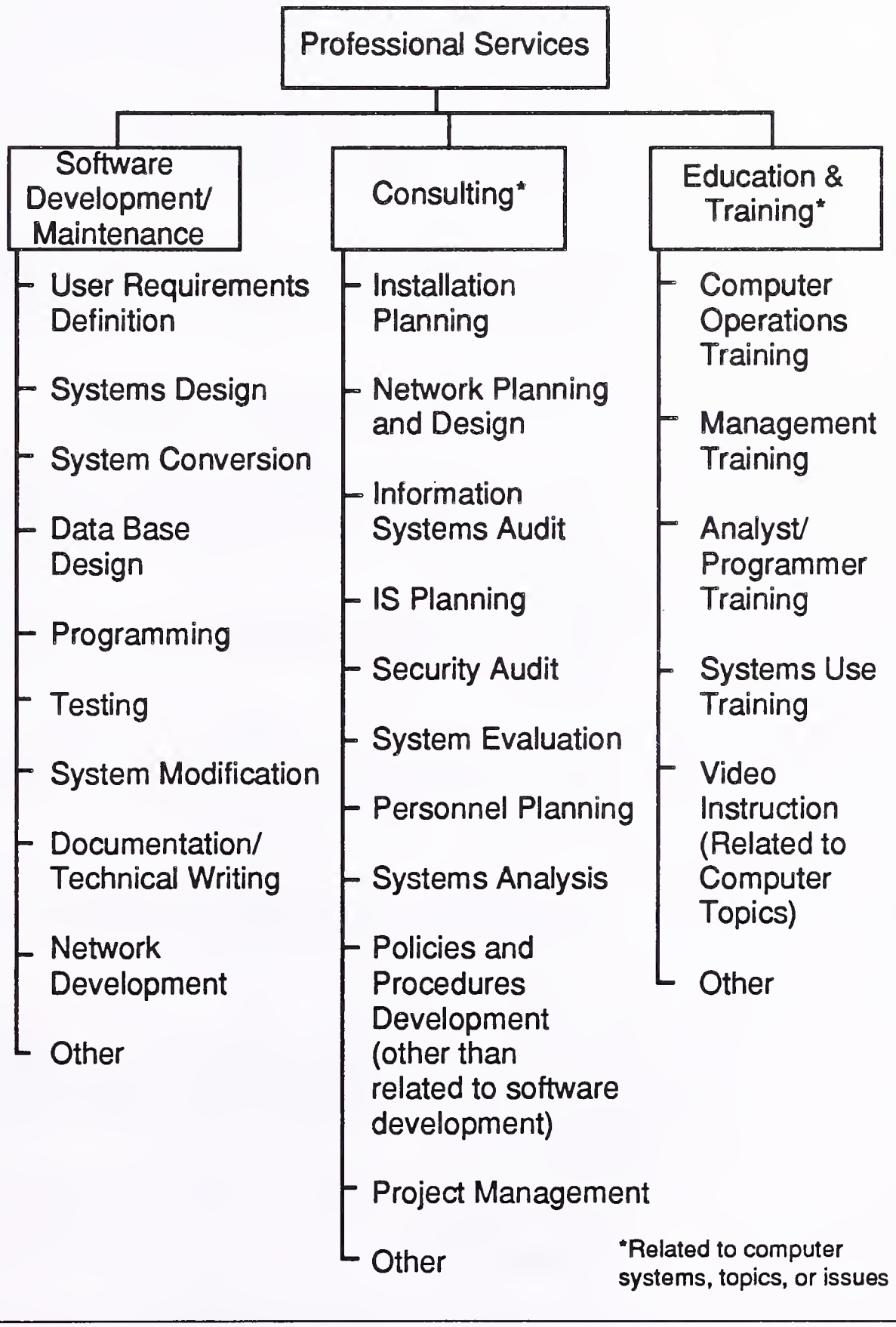
- Professional services may also be delivered as a component of the systems integration or turnkey systems delivery modes. The expenditures for these services are part of a larger expenditure and are not included as part of the professional services delivery mode. Such expenditures are included in the respective systems integration and turnkey systems delivery modes.

- Professional services sold in conjunction with processing services or network services are included in the definition of the professional services sector.

- Professional services sold in conjunction with the licensing of a software product for implementation and training are considered part of the software product sale. Only professional services to customize a software product or services provided after the original sale (and other than maintenance fees) are included in the professional services delivery mode.

EXHIBIT I-4

Professional Services Market Structure



2. Methodology

INPUT's methodology for market analysis and forecasting is summarized in Exhibit I-5. As in past years, INPUT has continued to survey information services vendors to determine their U.S. information services revenues, and to query information systems organizations about expenditures and outside services acquisition plans. INPUT interviewed vendors a second time to understand their views of market opportunities over the short and long terms.

INPUT's annual forecasting process is broken into two major parts: base-year expenditure calculations and market forecasts. Each is briefly described below.

a. Base-Year Expenditure Calculations

- INPUT determines previous-year information services revenues for the 9 delivery modes and 22 industry and cross-industry sectors for hundreds of vendors. Estimates rely upon interviews, public data, and INPUT's own estimates.

- The initial data are projected to represent the entire information services industry.

- Adjustments are made to eliminate duplications due to distribution channel overlap and to assure that captive information services expenditures are not included.

- The result is a base-year (1991) user expenditure for each of the 22 vertical and cross-industry sectors and the 9 delivery modes.

b. Market Forecasts

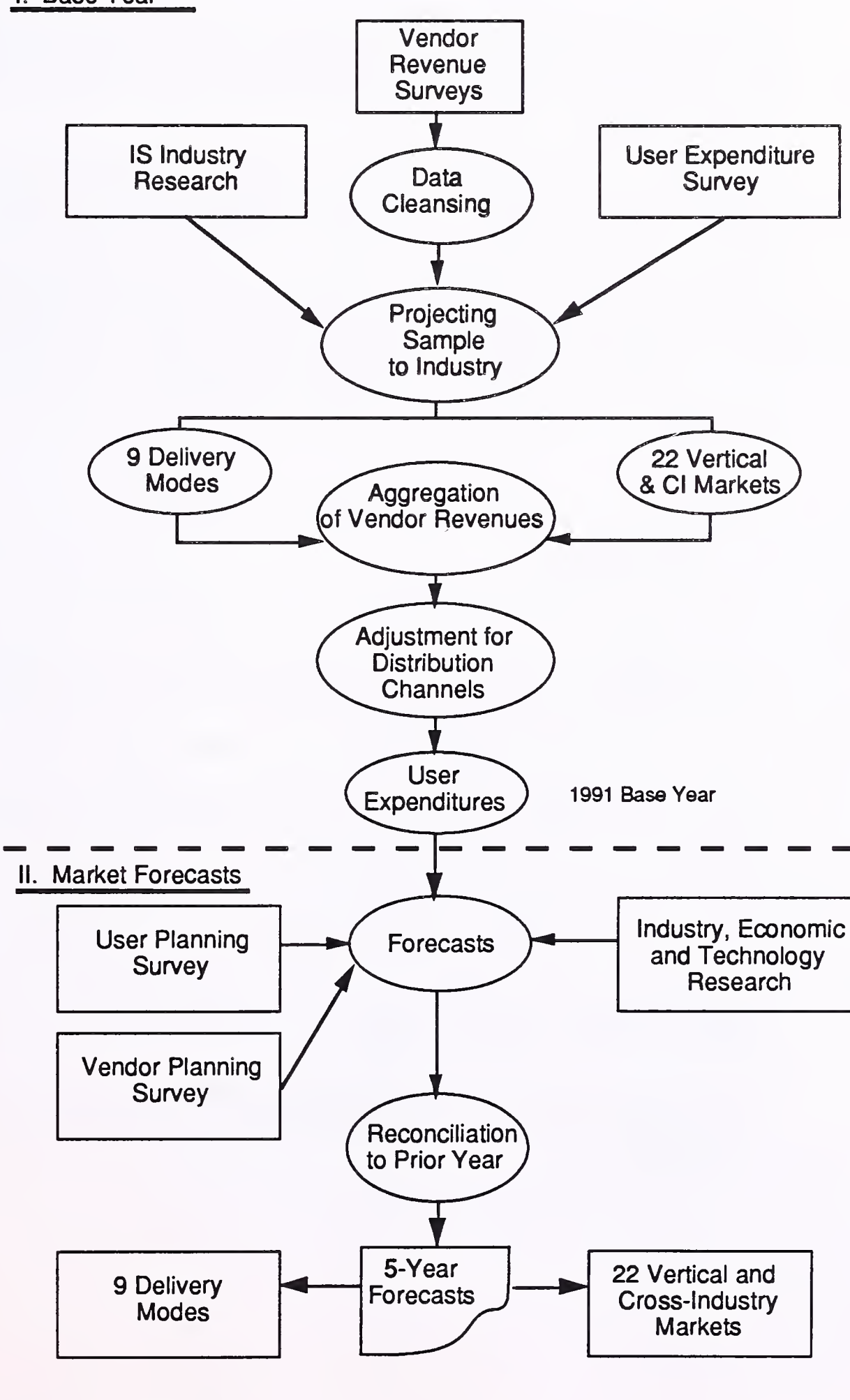
- In the forecasting step, INPUT surveys information systems executives to determine their projected expenditure levels, both in aggregate and for each of the outside information services categories.

- In addition, a second set of vendor interviews is conducted later in the year to obtain an understanding of how key vendors view the market and its opportunities.

- The result is a five-year forecast for each of the 22 vertical and cross-industry sectors and for the 9 delivery modes. The delivery mode and market sector forecasts are correlated according to the diagram in Exhibit I-3.

EXHIBIT I-5

INPUT Research Methodology



To complete the process, INPUT reconciles its new forecasts with those from the previous year. Differences due to market restructuring and other factors are explained. One may use these projections to track INPUT's forecasts from year to year.

INPUT forecasts are presented in current dollars (i.e., 1997 market sizes are in 1997 dollars, including inflationary forecasts). In developing the five-year forecasts, INPUT has incorporated economic assumptions for the U.S. economy as a whole.

The GDP and GDP Deflator growth rates used in INPUT's market projections for 1992 through 1997 are from the CONSENSUS™ forecast, a product of Blue Chip Economic Indicators of Sedona, Arizona. The Blue Chip CONSENSUS forecast is derived from a leading panel of economists representing leading financial, industrial, and research firms across the U.S. and has a 13-year track record of balanced and accurate projections.

The 1992–1997 assumptions are contained in Chapter VI, Market Forecast.

Related reports of interest to the reader are as follows:

1. U.S. Markets

- *Pricing and Marketing Professional Services, 1992*
- *U.S. Application Solutions Market Analysis Report, 1992–1997*
- *U.S. Processing Services Market Analysis Report, 1992–1997*
- *U.S. Systems Software Products Market Analysis Report, 1992–1997*
- *U.S. Systems Integration Market Analysis Report, 1992–1997*
- *U.S. Systems Operations Market Analysis Report, 1992–1997*
- *U.S. Industry Sector Markets, 1992–1997* (15 reports on all major industry sectors, e.g., insurance)
- *U.S. Cross-Industry Sector Markets, 1992–1997* (7 reports on information services markets that serve all vertical industry sectors, e.g., accounting)

2. European Markets

- *The Western European Market for Computer Software and Services, 1992–1997*
- *Systems Software Products-Western Europe, 1992–1997*
- *Trends in Processing Services-Western Europe, 1992–1997*
- *Systems Integration Market Forecast-Western Europe, 1992–1997*
- *Systems Operations Market Forecast-Western Europe, 1992–1997*
- *Western European Network Services Markets, 1992–1997*

The European markets are also analyzed on a vertical basis for discrete and process manufacturing, insurance, banking and finance, and retail and wholesale distribution.

II

Executive Overview

A
Market Change and User Issues

The professional services market began to pick up in 1992 as indicated in the overview shown in Exhibit II-1.

EXHIBIT II-1

Professional Services Market Overview ($ Billions)

1991 Outlook		1992 Outlook
1991 Forecast - 17.8	versus	1991 Actual - 17.8
1992 Forecast - 19.4	versus	1992 Forecast - 19.5
1991-1996 Forecast Growth Rate - 9% (CAGR)	versus	1992-1997 Forecast Growth Rate - 10% (CAGR)

- This overview indicates that the forecast of the 1991 market was on target with actual results, and that the forecast of the 1992 market size and the five-year forecast of professional services business has been raised from the estimate made in 1991.

- The increase of 1% in the forecast growth rate raises the five-year growth rate to 10% which would translate into an additional $1 billion of expenditures in this market in 1997.

One notable aspect of the current market is the increasing use of client/server technology, which is reflected in the distribution of user expenditures for professional services by technology platform shown in Exhibit II-2. This distribution will shift so that workstation-client/server platforms will be responsible for the major share (75%) of expenditures by 1997.

EXHIBIT II-2

Percentage of Professional Services Expenditures Related to Hardware Platforms

Platform	Percentage of Expenditures
Mainframe and super	52
Client/server, workstation/PC	25
Midrange—including IBM AS/400 and most DEC equipment	21
Open systems	2
Total	100

- This indicates a considerable decrease in expenditures that are mainframe related during the last few years, as well as a noticeable increase for workstation- and client/server-related professional services work, particularly work involved in supporting downsized application systems.
- This increase is directly related to the increasing interest of users in becoming more involved in developing and operating the systems handling their business functions, a major user issue as noted in Exhibit II-3. The migration of systems responsibility to users will encourage the outsourcing of application support functions to professional services firms to save central IS (information services) expenditures.

EXHIBIT II-3

User Issues

Issues	Average Importance of Issue Reported by Respondents*
Improvement of product/service quality	4.2
Improvement of sales effectivness	4.1
Improved connectivity of functions	4.0
User systems responsibility	3.8
Restructuring business	3.7
Reducing/outsourcing functions	3.2

*Note: Where 5 = high and 1 = low

The major issue users are concerned with is gaining revenues through improvements in product and customer service quality and by increasing sales effectiveness. Means of improving business or reducing costs through restructuring and outsourcing functions also rank as important user issues.

- These issues appear to be most intense in manufacturing firms such as chemical and customer goods firms in the Middle Atlantic States and discrete manufacturers in the Middle West.

- Respondents note that these issues are also felt in telecommunications, state and local government, and financial organizations.

B
Driving Forces

The need for technical skills and the industry/application knowledge necessary to achieve user objectives is a driving force in the market at present, as indicated in Exhibit II-4.

EXHIBIT II-4

Professional Services Market
Driving Forces

- Need for technical skills/industry knowledge
- Need for improved business performance
- Use of client/server technology
- User role in planning/using systems
- Vendor bidding/pricing tactics
- Budget pressures
- Use of consulting services
- Growing interest in application support

In order by average importance to respondents.

- This is partially due to the need to modify application systems to improve quality and expand sales, as noted above.

- It has also come about as a result of the growing role of users in planning and decision making and their activities related to implementing client/server systems and downsized application systems.

Both the user role in systems activities and new hardware technology are major driving forces.

User activities which may have been conducted with the aid of small vendors and computer stores have reached points of development (or problems) where user or user management has felt it necessary to bring in vendors with recognized capabilities to help new technology meet objectives. The customer services and sales offices of computer manufacturers have been major points of contact for this aid.

- IBM has benefited from this burgeoning use of client/server technology and LANs.

- Other computer manufacturers, EDS, Andersen, and some RBOCs (Regional Bell Operating Companies) have also received additional business as a result of increased user responsibilities and the use of client/server technology and downsized application systems.

Other driving forces that are having an impact in the marketplace are pressures on user budgets and pricing sensitivity—two related forces. These forces are felt most by professional services vendors engaged primarily in contract services work.

- There is a wide range of prices and discount alternatives (Exhibit II-5) offered by firms.

- There are also foreign firms with offices in the U.S. (such as Tata and temporary agency firms) that offer foreign sources of skill and laid-off domestic personnel that will work for fees below current market rates. It is estimated that work performed by foreign personnel in the U.S. who are not citizens or work performed at offshore locations and sold in the U.S. amounts to over $400 million annually.

The largest firms in the industry, who also grow at a faster rate, on the average, than the layer of firms just below them, tend to bid "jobs" rather than just contract services. They may take on contract assignments from a client or in relation to the accomplishment of a job, but they are not usually found among the vendors competing to supply a small number of personnel for a small contract.

The larger firms will also use the agency type of vendors to supply personnel for certain jobs. Both IBM and Coopers & Lybrand have used these sources to locate technical expertise at reasonable prices to meet user cost constraints.

The use of consulting services is also a driving force that should be examined.

- Consulting provides a higher fee and profit margin as well as an opportunity to gain additional work in certain circumstances. Some Big Six firms use it as the first step of a project.

- However, consulting may not lead to projects in some circumstances since clients will want to guarantee the disinterested analysis and recommendation of a consultant by not using the same firm for implementation.

- Nevertheless, McKinsey and Booz-Allen have both recently acted to gain additional information services work as the result of consulting, and IBM, Digital Equipment Corporation (DEC), and CSC have all strengthened their ability to supply consulting services.

EXHIBIT II-5

Circumstances Warranting Discounts and Range of Discounts Offered

Discounts Offered for	Percentage of PS Firms Offering...	Range of Discounts (Percent)
Geographic location	21	10 to 20
Use of retainers	14	5 to 50
Billing volumes	34	8 to 30
Total project responsibility	24	10 to 20
Length of contract	38	10 to 50
Specific customers	28	10 to 30
Repeat business	17	10 to 15
Specific markets	16	10 to 40
Specific PS grades	17	10 to 40
Government work	21	(not stated)

Source: INPUT, 1992

There is also a trend toward greater use of professional services to support application maintenance, enhancement, and management that is a significant driving force.

- Although the trend is not significant as yet, larger firms are performing this type of work in conjunction with systems operations services for clients.

- Firms are also starting to sell these services as a means of generating continuing business. Some of the arrangements for such work may not be visible in the marketplace, according to vendors and users since vendors are still developing these services and not advertising them strongly.

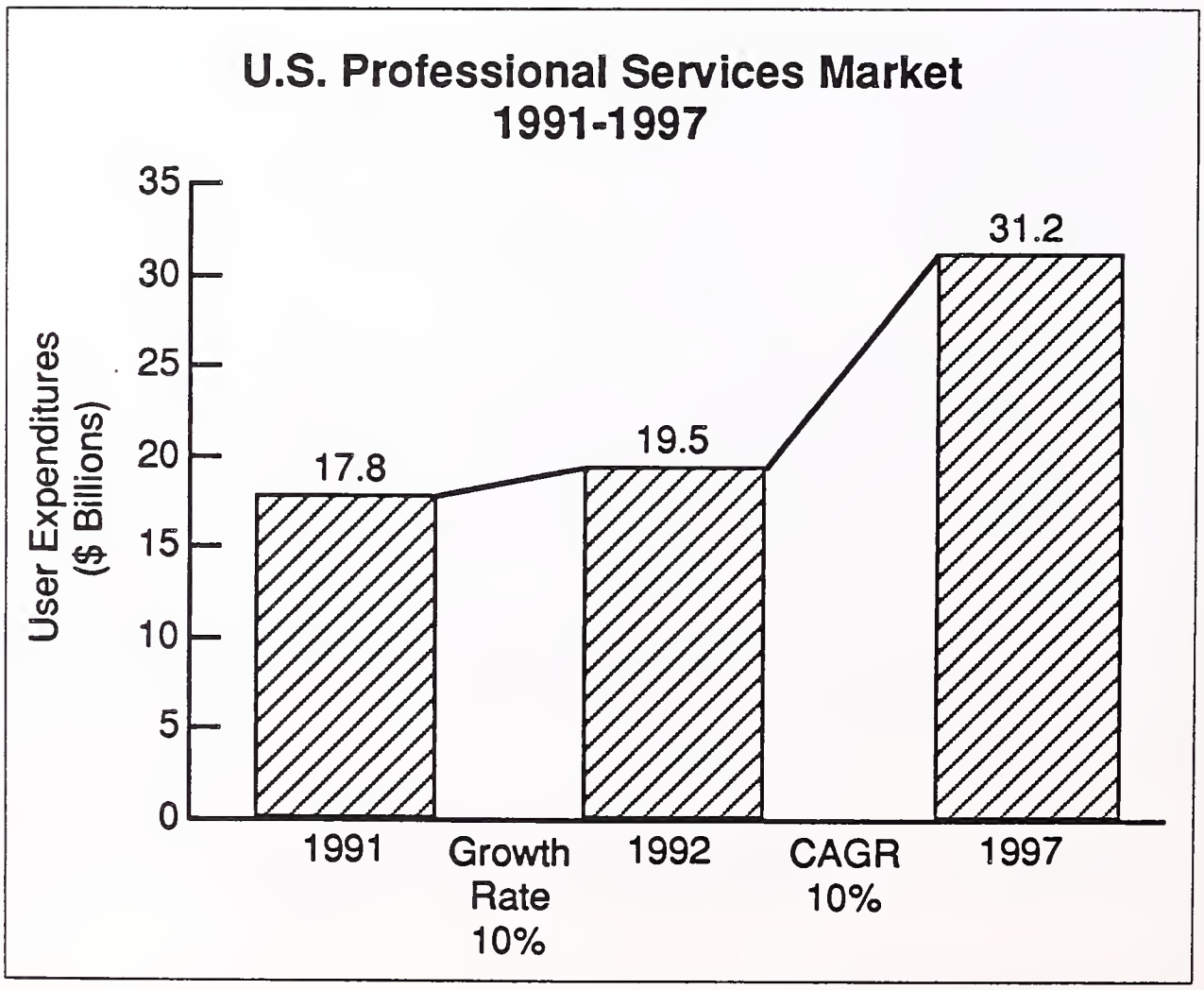
C
User Expenditures

Exhibit II-6 indicates the growth of user expenditures for professional services over the planning period.

- Starting at a level of $17.8 billion in 1991, expenditures will reach $31.2 billion in 1997. Growth will occur at a CAGR of 10% between 1992 and 1997.

- The total spent for professional services in 1997 will make it the third largest market for information services behind the markets for applications and systems software products.

EXHIBIT II-6



D

Vendor Competition

The leading seven vendors in professional services revenues are listed in Exhibit II-7.

EXHIBIT II-7

Leading U.S. Professional Services Vendors, 1991

Rank	Vendor	Professional Services Revenues ($ Millions)
1	IBM	560
2	CSC	550
3	EDS	520
4	Andersen Consulting	340
5	Logicon	240
6	DEC	218
7	PRC	215

- Five of the seven vendors will stay at the top if systems integration (SI) revenues are combined with professional services revenues.

- The fifth largest vendor, Logicon, which is a specialized vendor serving the government market, will move down ten places in overall ranking if SI revenues are counted.

Among these large vendors of professional services, the four that are least dependent on the uncertain federal government market are IBM, EDS, Andersen, and DEC. These vendors, particularly IBM and DEC, also offer a wide array of information services and sell to most major markets.

The largest vendors are also dominant in marketplace subsegments.

- All the vendors listed in Exhibit II-5 are among the leading vendors of software development, the largest submode of professional services. IBM, CSC, EDS, and Andersen are the largest suppliers of this resource.

- The leaders in consulting services, another submode of professional services, include the top three vendors listed plus McKinsey and Booz-Allen.

- The four leading vendors are also among the leading vendors in revenues for education and training services, the third largest submode of professional services. They are led by National Education Training Group (NETG), a specialist in education and training.

All seven vendors are also active in systems operations services. EDS and IBM are the largest suppliers of that service mode, and the others rank in the top ten vendors.

There are differences between the top seven vendors.

- Two are computer manufacturers (IBM and DEC).
- One, Andersen Consulting, is part of a public accounting firm, one of the Big Six.
- EDS, CSC, and Logicon had their genesis in the information services industry. EDS has specialized more in processing and systems operations services than the other two, but they have a greater percentage of their business with the federal government. Logicon is most dedicated to that market.

One interesting similarity among all but one of the top vendors (Logicon) is that they all have strengthened their high-level consulting services through hiring and restructuring to differentiate their services from low-cost competitors.

E
Conclusions and Recommendations

1. Conclusions

The conclusions of this study (listed in Exhibit II-8) stress the fact that an upturn is taking place in the professional services market, but that it is uneven and requires careful analysis by vendors in relation to their objectives.

- The markets where increases in user expenditures are taking place most strongly include discrete manufacturing, telecommunications, and state and local government, as shown in Exhibit VI-5. In discrete manufacturing, upward pressure was strongly felt during the first half of 1992.
- Increases appear to be uneven, favoring certain regions such as the Midwest and some mid-Atlantic States. Most of New England and the Far West, as well as much of New York, is not faring as well as those geographies, according to respondents.

- The need for high levels of technical expertise is even more of a factor now than it has been in the past, due to the increasing amount of user presence in systems activity. *Both* user and IS groups seeking aid with current application systems and networks as well as with client/server systems are in contact with professional services vendors.

- Seven CIOs that were contacted during this study stressed the need to stay aware of contacts being made by users, to make sure that the consultants being used were technically able and knowledgeable in industry applications.

EXHIBIT II-8

Conclusions and Recommendations

- Conclusions
  - An upturn started in 1992
  - Effects of upturn are uneven
  - Increased need for technical expertise
  - Increased end user role
  - Strong impact from client/server technology and downsizing
  - Budget pressures on vendor pricing
  - Interest in application management/maintenance
- Recommendations
  - Analyze marketplace more intently
  - Gain more knowledge of pricing, discounting
  - Review opportunities in other service modes
  - Develop sources for skills in short supply

The sensitivity to pricing that is encountered is indicative of budget and financial pressures in the market.

- Users report that pricing is an important consideration, even if it is overweighed by other factors, including the availability of technical skills and industry knowledge. Pricing has more of an impact on the supply of contract services where agencies have placed foreign and laid-off technical people in jobs.

- Large vendors report that they focus on projects or jobs rather than on the placement of people in order to avoid competition with low-priced suppliers. They also make an effort to stay aware of competitive pricing and will use techniques such as performing work offshore or obtaining technical people from selected agency vendors to meet client needs.

There is growing interest in application management and support, although it is not a significant market factor at this time. However, large and small vendors, as well as some corporations, mention interest and note activity in this type of outsourcing.

2. Recommendations

This is a time for vendors offering professional services to spend more time in analyzing the marketplace.

- The use of pricing and discounting in the professional services market and their relation to other factors affecting client "buy" decisions should be explored and considered in key sales situations.

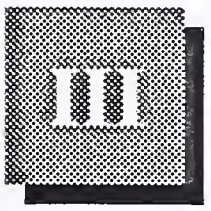
- The markets and regions where sales are occurring and the capabilities (including consulting services) are in demand should be reviewed. Vendors should take advantage of their capabilities in situations where they are specifically of value rather than seek business in weak, highly competitive niches. Several vendors report that they are taking such initiatives.

Business in other service modes should also be considered. The most successful professional services firms have SI, software products, systems operations, or other information services business and serve multiple markets including one or more of the largest, fastest growing markets.

Since certain technical skills are in short supply, vendors should develop sources for obtaining them. IBM and Coopers & Lybrand, as well as other larger vendors, use small agency vendors to obtain critical skills.

More knowledge of competitors should also be gained in order to emulate successes as well as to react to their prices or strategies.

An expansion of consulting, particularly in information systems strategic planning, systems analysis, and network planning, services should be considered since these services are growing in use and involve higher fees and profit margins and may lead to other professional services business. This expansion will provide opportunities in many situations even though some prospects, particularly large financial institutions, may select different vendors for consulting and implementation.



General Business Climate

This chapter provides the INPUT overview of the current business climate for the U.S. information services industry and for the professional services delivery mode.

A Overview

Despite concern about the painfully slow growth rate in the US economy in 1992, information services industry vendors report that the environment offers significant opportunities together with challenges as indicated in Exhibit III-1.

EXHIBIT III-1

Impact of the Economic Environment

Factor	Impact on the Information Services Industry
Low level of growth in U.S. economy	Increasing need for application systems that can improve revenues and restructure business
Slower growth rate for U.S. information services industry	Likelihood of slower growth rates for vendors who pursue business as usual
Annual increase in information services business of over $10 billion	Significant target for aggressive vendors
Foreign market opportunities and competition from foreign vendors in the U.S. economy	Need for information technology to increase quality in products and customer services

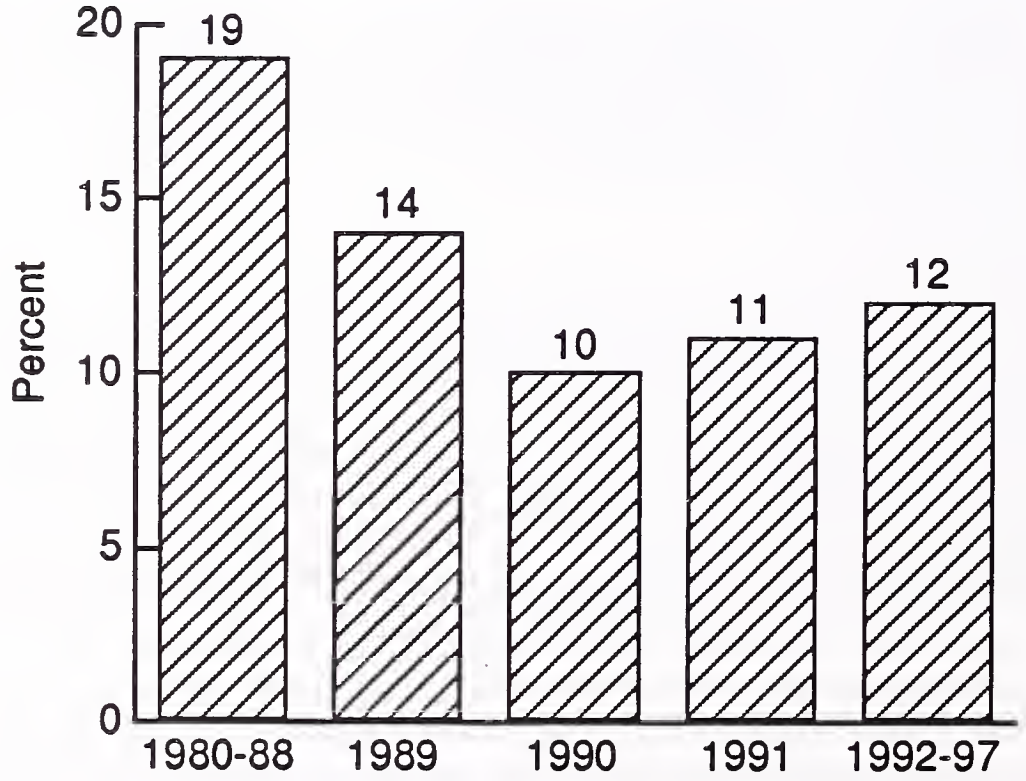
- The annual increase of business in the industry of over $10 billion makes it one of the more attractive areas of opportunity in the economy.

- Demands to address the low level of economic growth has led to vendor projects that have been reported to increase revenues through improved geographical analysis of sales coverage and to improve service and product quality through client/server systems that enable users to communicate between functions more effectively.

The U.S. information services industry is growing at a slower rate in the 1990s than it did in the prior decade as shown in Exhibit III-2. Although the industry is rebounding slightly from the recession, it is not likely to return to the growth rates of the early 1980s. Vendors cannot rely upon a favorable growth climate to help many of their product and service initiatives.

EXHIBIT III-2

U.S. Information Services Industry Annual Growth Rates

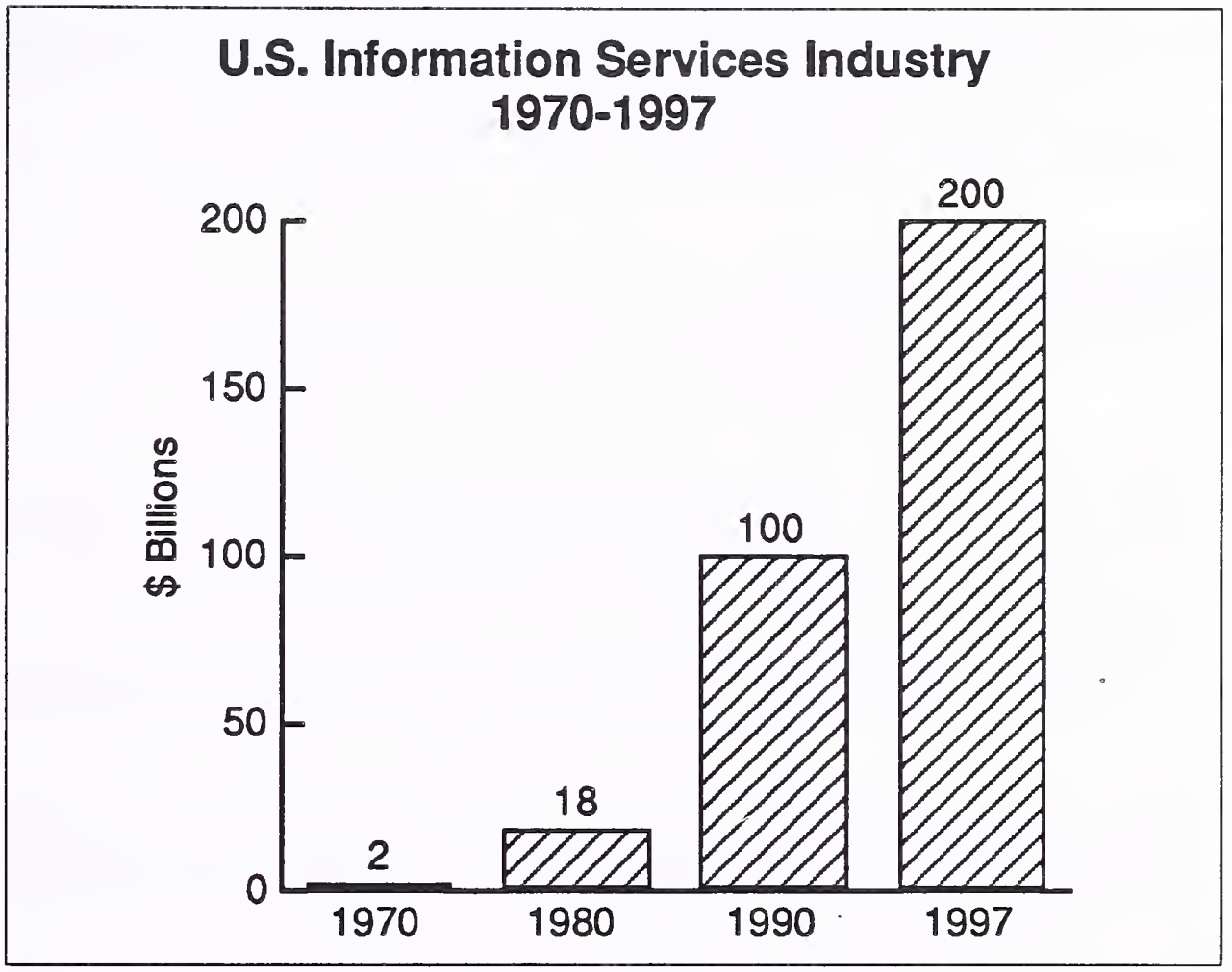


The industry did reach a milestone during 1990, advancing beyond a level of $100 billion in size.

- As Exhibit III-3 shows, the industry increased in size over five times during the 1980s and is 50 times larger than it was in 1970, when the industry represented $2 billion in user expenditures.

- By 1997, the U.S. information services industry will reach a size of $200 billion, and the annual increase in absolute terms will be in the $20–25 billion range.

EXHIBIT III-3



High rates of growth for the sale of software products and professional services provided the engine for growth during most of the last decade. As rates for increases in sales of these delivery modes declined, there were concerns about continuing vigor in the information services industry.

- Growth of U.S. information services expenditures has been reinvigorated, however, by interest in outsourcing, restructuring, and downsizing business application systems and by an increasing use of network services as well as by a continuing vigorous growth in systems integration.

- In effect, the information services industry has been shifting from sales of products and services for new application systems to sales that will upgrade, manage, and outsource the use of information technology. This shift will continue to increase, driven by needs to restructure business to achieve greater effectiveness and revenues as well as greater productivity.

On a worldwide basis, the industry continues to experience higher growth rates—close to 20%—and many U.S. vendors are experiencing growth overseas that exceeds that of the U.S. industry as a whole.

- This growth is primarily due to the relative stage of automation in many foreign markets, but the focus on specific industry markets in some countries is also a strong factor.

- Inflation rates and somewhat stronger economies have also helped to drive the global use of information services in the last few years, but these factors may have less of an impact at this time.

B

1991 Results for the U.S.

1991 results in the U.S. are analyzed below on a delivery mode basis:

- Although systems integration, systems operations, and network services are not among the top three delivery modes in size, their rapid rates of growth (16% to 19% CAGR) are a major factor in maintaining and increasing the rate of growth in the industry as a whole.

- The software products sectors are maintaining a rate of growth near or slightly above the industry average (about 12% CAGR).

- The industry averages are pulled down by the slower rates of growth in the large professional services and processing services sectors, as well as by the smaller turnkey systems sector (7% to 9% CAGR).

Overall 1991 results in the U.S. information services industry are summarized in Exhibit III-4.

EXHIBIT III-4

U.S. Information Services Industry
1991 Results Summary

- Reached $110 billion in 1991
- Growth 2 to 3 times that of the economy continues
- Growth of 11% in 1991; forecast to return to 12% in 1993
- Extremely slow economic growth is complicating user plans

Growth in professional services, which was mired at a rate of 6% in 1990 when projects were delayed or dropped, rose to 9% in 1991 and 1992, which was still lower than the growth during any year in the past decade. In some vertical markets, growth of professional services in 1990 through 1992 was more than 50% less than growth during 1988.

Although the economic recession was the principal factor causing the drop in the rate of growth for the use of professional and other information services during the past two years, it did not have an equal impact on the use of professional services in various markets or on the vendors offering these services.

- Some major vendors as well as smaller ones had growth rates for professional services that were over 10% above the average results while other vendors, had less favorable impacts on revenue and earnings.

- A number of vendors of information services such as IBM, EDS, and DEC, as well as Ask and American Software, have offered professional services as a step toward the use of other products or services such as SI or outsourcing or as a support for other services and products such as software products or network services. Many of these vendors tend to have growth rates for the use of professional services that are above industry averages.

Many professional services vendors have been evaluating changes in their objectives, target markets, types of assignments, and use of technological and other skills as a result of the impact of the economy on business markets during the past two years.

C

Market Forces

The set of market forces noted in Exhibit III-5 will have an impact on the information services industry in the 1992–1993 timeframe and will also have measurable effects on the overall growth rate for the 1992–1997 five-year period covered by this market analysis report. Each force will affect the industry as a whole, as well as each of the nine delivery mode sectors used by INPUT to analyze the industry and its key trends.

EXHIBIT III-5

U.S. Information Services Industry
Primary Driving Forces, 1992-1997

- Slower economic growth
- Globalization
- Growing influence of large vendors
- Outsourcing (buy versus make)
- Shift in technology
- The changing buyer

Slower growth—The first of these forces, the interaction of the economy with the overall size of the industry, is a significant factor in user expenditure levels for information services, including software products.

- Since economic growth is slow and inflation remains low, there is less increase in industry sales due to pressure on prices.

- Real economic growth, which had been modest over the past few years prior to the recession that started in late 1990, will continue to be low during the forecast period. Consequently, it can continue to cause plans for the expanded use of information services to be deferred or canceled in many industry sectors.

- The shift of information processing to smaller computers, which has been encouraged by the economy as well as by the current level of the technology, has lowered the software products investment, based on current pricing practices. Quantities of software products sold will increase, but revenue levels will grow at more modest rates unless software products are sold together with professional or systems integration services where their price might be increased in line with actual value.

1991 tended to follow the pattern of 1990. While there was little or no real growth in the overall economy and modest inflationary growth in the range of 5%, the information services industry grew at an annual rate of about 11%.

- While INPUT's 1990 and 1991 economic assumptions were for nominal GDP growth of 5.4%, real GDP growth was substantially less.

- At this point in 1992 as the third quarter gets underway, the ecnomy remains in a low level of growth, although a recovery—a slow moving or "sloth of a recovery" as *Business Week* has described it—is underway. At the same time, inflationary pressures are modest. INPUT anticipates another year of modest growth in 1992 together with a slight rebound in information technology (IT) expenditures.

The expected slow upturn will have the following positive and negative impacts on the U.S. information services industry in the near term:

- Positive impacts:

  - Increased motivation to buy rather than make, in particular for larger systems requirements. Response time and impact on business operations are the key criteria supporting use of outside services.

  - The interest in outsourcing, which permits organizations to redeploy capital investments and lower direct head count, is being encouraged by slow economic conditions and the desire to lower costs.

- A tight economy is helping develop interest in lower-cost solutions that come from client/server-based applications software products.

- Possible negative impacts:

  - Continuing delays in decision processes, although not as severe as in 1990 and 1991 will cause some delays or deferrals of major information systems projects.

  - With tight constraints on external information services expenditures at some companies, management may decide to burden the internal IS staff with application maintenance, enhancement, and development assignments rather than use contracted professional services vendors; this would have a negative affect on a major segment of the industry.

Globalization—The second major market force, which INPUT has stressed for the past three years, is globalization. During that time more markets have opened, vendors have expanded their international focus, and users have begun to expect global capabilities.

- The European market is making progress towards becoming a single entity. 1992 has arrived and many changes are apparent. In addition, the European market is showing that it has the size and strength to become a major economic force in relation to the U.S. and Japanese markets, although all are suffering current economic problems.

- U.S. vendors are reporting new ventures in Europe that are being stimulated by the single European market, such as data base application systems that are aggregating data and providing views of results in multiple currencies.

- The worldwide orientation of the larger services vendors has been confirmed by the investments in Europe of Computer Sciences Corporation, DEC, and other vendors as well as by the ever-expanding interest of Japanese vendors in the U.S. information services industry.

The primary positive impact of globalization is that it enables the larger vendors to balance their businesses in multiple markets, which are less affected by market downturns.

The primary negative impact from globalization is that it may make it harder for smaller vendors to grow and/or maintain independence.

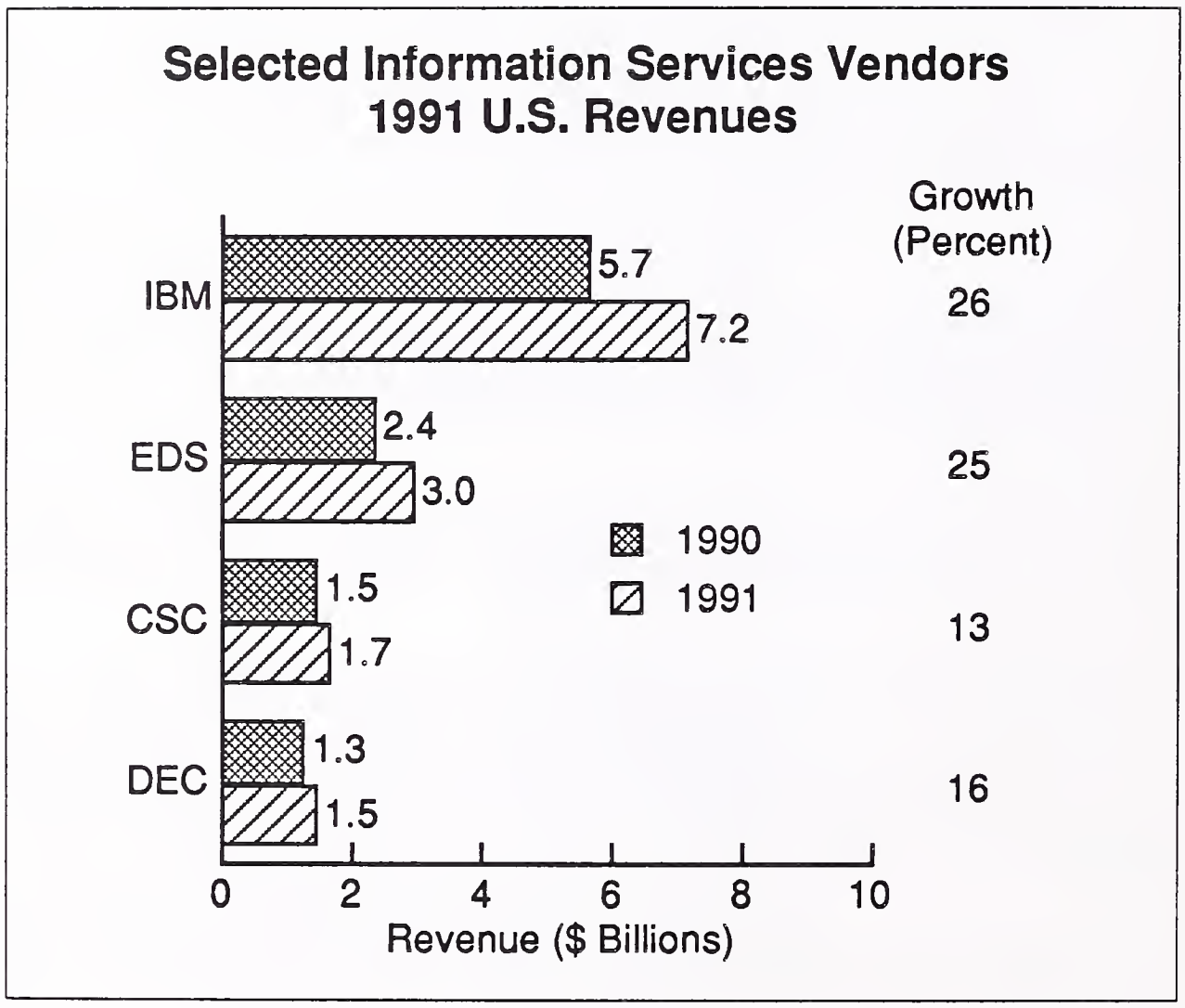
Large Vendors—The third market force is the influence of larger information services vendors, which has increased significantly over the past three years.

- The newer systems integration and systems operations sectors, although smaller than more traditional sectors such as professional services and processing services, are growing faster than the traditional sectors and are dominated by the larger vendors.

- A number of the larger vendors such as IBM, EDS, CSC, and DEC are growing faster than the overall market, as shown in Exhibit III-6. These vendors have more opportunity, based on their resources, to enter (or acquire vendors in) desirable foreign markets.

- There are also numerous smaller firms that are growing faster than the general market, but larger vendors have a disproportionate opportunity for obtaining bigger jobs and continuing to add large amounts of revenue to their bottom line each year.

EXHIBIT III-6



The influence of larger vendors is also increasing in other ways. Starting with IBM, many large services vendors are making minority and majority investments in IT firms to gain influence on technology, access to software products for re-marketing, and market share.

The increasing use of business consulting linked to professional services has provided a means for the large accounting and consulting firms, as well as some large information services firms, to gain a greater share of the industry. INPUT expects this trend to continue over the next few years.

The opportunity for the smaller, more specialized software product or services vendors is not disappearing, but it is changing in character.

- Alliances with larger vendors will be essential, at least as secondary sales and support channels.

- Specialization, in terms of the technology used or the industry served or both, will become more important and common.

The continuing increase in the strength and impact of the larger vendors will have the following positive impacts:

- The larger vendors have the financial strength to mobilize resources for very large jobs.

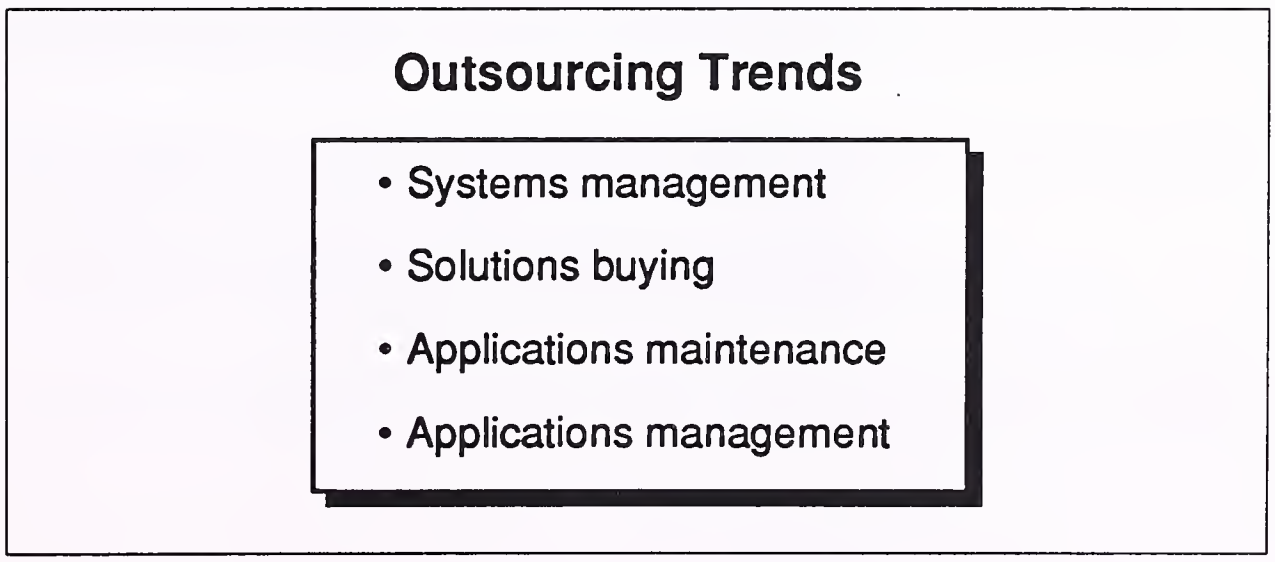
- The size of the vendors can help to minimize the risk of losing large contracts.

- The larger vendors have financial resources available to invest in new technologies, often through investment in smaller and specialized firms.

Smaller technology firms may need to form alliances in order to gain the same advantages larger firms have, as discussed above, and survive. Larger firms, however, tend to move more slowly, which will hamper development and acceptance of new technology. This slowness will provide opportunity to small vendors that seize technology initiatives.

Outsourcing—The fourth market force to be reviewed is outsourcing. The recession has encouraged more companies to consider outsourcing, and interest in it has grown from the outsourcing of the management of information systems (systems management) to other types of activity such as solutions buying, applications maintenance, and application management (Exhibit III-7).

EXHIBIT III-7



- Applications maintenance, the-around-the-clock support of applications systems, and application management, contractual arrangements to manage the development and support of application systems, are new means for utilizing support from professional services vendors that provide more defined relationships and pricing.

- "Solutions" buying is support for client/server technology where a vendor will provide software products and customization to satisfy the needs of a distributed environment.

Technological Shift—The fifth market force is the shifting technology foundation (see Exhibit III-8). This force concerns developments that are adding complexity to or shifting the technological basis for the use of information systems and includes the following:

- The international standards that must be considered when developing or buying software products in today's market.

- Graphical user interfaces, which are expected in software products delivered to users.

- The client/server architecture, which is providing the technology to meet user needs. This is the vehicle for downsizing application systems or portions of them for user environments.

- Networking and integration, which provide the means for distributing application systems as well as linking the functions of a company.

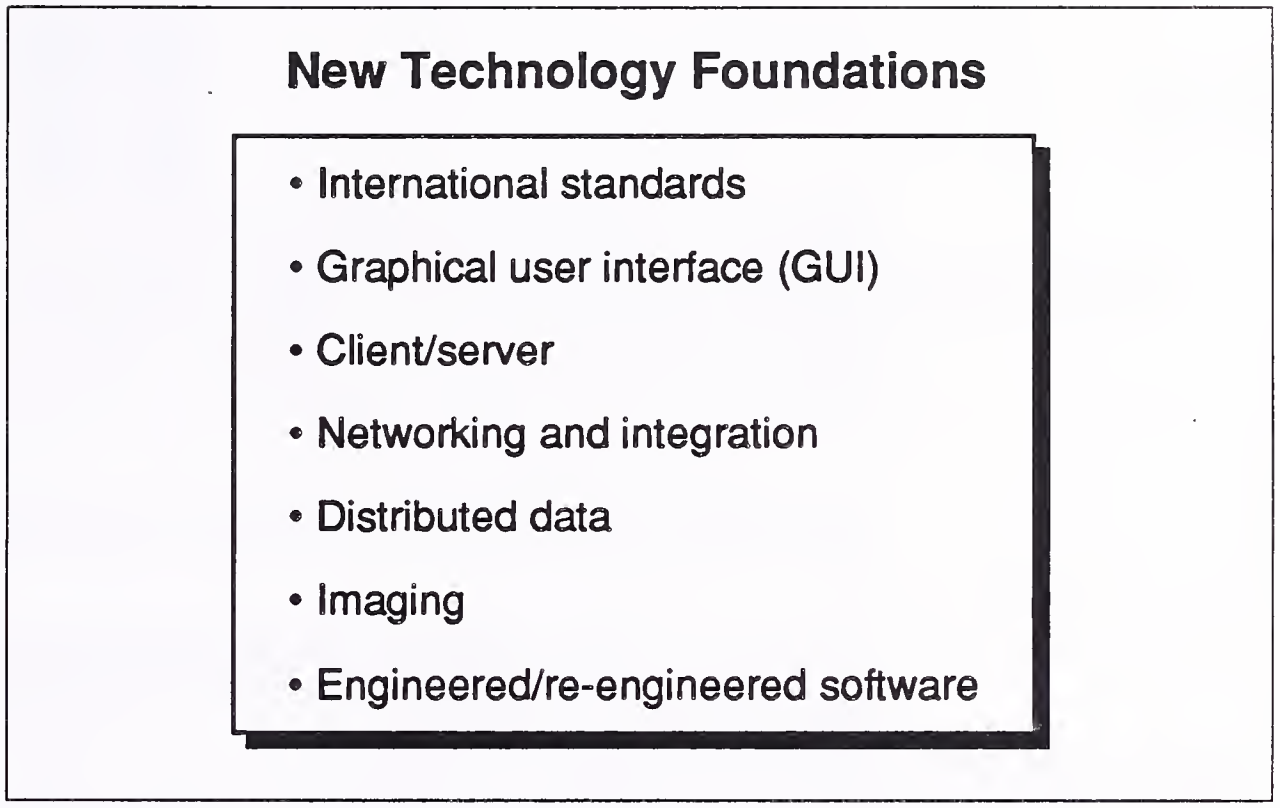
- Distributed data, providing the ability to use data in distributed user environments.

- Imaging, the inclusion of the entire source document in the information systems application.

- Engineered/re-engineered software products that will change the entire approach to the maintenance and enhancement of application systems.

These shifts will make it possible for solutions to be more tailored to user environments and company situations, although they will be accompanied with confusion and hesitation as they are introduced. These shifts will also create a number of opportunities for vendors.

EXHIBIT III-8



Changing Buyer—The final market force to consider is the changing nature of the buyer.

- The decision maker for the purchase of information services remained relatively constant until the late 1980s.
- The information systems executive and key staff (systems development and data center operations managers) decided when to go outside and whom to contract with.

This role has changed significantly in the past few years and promises to change even more. As the information services vendor moves to provide a long-term service or a full solution, the executive (in user functional areas) is becoming the buyer. The results are significant:

- Technology becomes less important and the business or operational impact becomes more important.
- The impact of the information systems function becomes more consultative and less direct.
- The ability to try new ideas and approaches is increased.
- Time to completion is controlled by the organization's ability to afford, not the constraints on the information systems group's ability to develop.

D
Summary

1991 and 1992 have been a period of significant changes from the 1980s. The changes suggest more modest rates of growth, but a sizable amount of growth in absolute terms. In addition, a number of opportunities and challenges could have a positive effect on vendors who opt to play a proactive role in the changes taking place. For example,

- A market of $110 billion that is growing at 11% annually and 12% over the next five years (CAGR) offers major opportunities.
- The increasing tendency of larger organizations to turn to vendors for services that include significant elements of systems management and have a solutions orientation will lead to larger, longer term decisions for vendor business.
- The shift in the underlying technology foundation will create more valuable and productive applications solutions, but this shift will also bring re-engineering, reinvestment, and retraining, and require time and money.

The role of the executive (in user functional areas) concerning the deployment of information technology continues to increase and will become more important in regard to vendor selection over the planning period.

IV

Information Systems Environment

A

Needs Influencing Use of Professional Services

After a year of slower growth, at a rate of 6% in 1990, user expenditures for professional services are reported to be growing more rapidly. This increase in growth rate occurred as forecast in last year's report despite the continuing problems in the economy—reflecting the outlook of business that changes are needed to meet global competition and take advantage of new opportunities.

The growth has also been stimulated by the increasing role that users have been exercising in the use of information technology and by developments in technology, as indicated in Exhibit IV-1.

EXHIBIT IV-1

Major Environmental Impacts on the Professional Services Market

Impact	Average Importance Reported by Respondents*
User role in use of IT	4.2
Economy and corporate budgets	4.1
Need for rapid business change	3.9
New information technology	3.9
Business restructuring	3.6
Changing use of vendors	3.3

*Note: Where 5 = high and 1 = low

- The user role in the use of IT is the major environmental impact in the professional services market.

- IS management also recognizes the increasing role that users are playing, and some are expressing concern about the impact this is having on plans for systems growth or evolution as well as on IT architecture.

In addition to the influence of users, financial conditions, and business restructuring, users also report that changes in the way vendors want to do business are having an impact on the professional services market.

- A number of vendors who had previously engaged mainly in development assignments have become more aggressive, during the last few years, in attempting to obtain assignments with users to help them plan business steps to meet new opportunities or solve problems as well as to outsource IS work.

- Major vendors have also shown much more willingness to become involved in small assignments or problems in order to maintain a presence in large projects or with sizable prospects.

In order to understand the factors involved in the increased growth of professional services during 1991 more fully, material from several hundred recent user interviews was reviewed and a set of surveys involving over 50 organizations was conducted to obtain additional material that would contribute to this study.

- Financial organizations, discrete and process manufacturers, distributors, transportation companies, medical organizations, accounting and consulting firms, and government organizations were among those contacted during these surveys.

- These organizations included firms with budgets or revenues in excess of $1 billion as well as small companies.

Based on these interviews, exhibits have been developed to indicate the rankings respondents gave to driving forces, types of service, decision-making criteria, service expectations, and other information associated with the use of professional services.

The specific business needs that are driving the use of professional services focus upon increasing the business strength of a firm in regard to quality of products and services, the effectiveness of sales activities, and the efficiency of business functions as shown in Exhibit IV-2.

EXHIBIT IV-2

Business Needs and Issues Driving Use of Professional Services

Needs and Issues	Average Importance of Issue Reported by Respondents*
Improving product and service quality	4.2
Increasing sales effectiveness	4.1
Improved connectivity of functions	4.0
User systems responsibility	3.8
Restructuring business	3.7
Reducing or outsourcing functions	3.2
Cost-cutting alternatives	3.1

*Note: Where 5 = high and 1 = low

- These needs are leading to steps to upgrade or replace application systems in use or to incorporate new techniques in existing application systems.

- Several users reported that they are making use of GIS (geographic information systems) in their sales administration in order to gain more balanced coverage of accounts and analyze sales on a more precise basis. Improvements in order entry are also being sought to aid sales efforts.

In addition to the needs noted above, steps that can improve the IT capabilities of users (empowering users) or reduce the costs of supporting business functions are also forces that can affect the use of professional services. For instance, vendors are aiding in downsizing applications or segments of them to assist with restructuring functions. Activities of vendors in support of downsizing are reported to be increasing.

The needs that are driving the use of professional services are having a strong impact on the application systems and software products currently in use, as shown in the foregoing discussion. Exhibit IV-3 indicates that this has increased the need for aid to enhance, upgrade, or manage application systems.

EXHIBIT IV-3

Type of Aid Sought from Professional Services Vendors

Type of Aid	Average Interest Reported by Respondents*
Application upgrading, enhancing	4.0
Network consulting, development	3.9
Aid with downsizing, client/server	3.8
Other technical skills	3.7
Planning for SI and outsourcing	3.0
Project management	2.9

*Note: Where 5 = high and 1 = low

- Users are also seeking aid with network activities as noted in Exhibit IV-3, reflecting the increasing use, proliferation, and integration of networks that has been taking place.

- Users also feel a strong need for aid with the use of downsizing and client/server technology.

- Users also feel a need for aid with technical skills in general, from the network area to data base implementation/integration and the use of UNIX, AI (artificial intelligence), and other facilities.

- In addition to the need for technical aid, users report needs for business planning and IT-related planning to evaluate the use of SI or outsourcing.

Although users may focus on specific needs when selecting professional services vendors for projects, they also tend to think of the capabilities that they are trying to gain access to when they begin to consider vendors. The capabilities that users report they are most interested in having vendors demonstrate are listed in Exhibit IV-4.

EXHIBIT IV-4

Professional Services Capabilities of Interest in Relation to Projects

Capability	Average Level of Interest Reported by Respondents*
Industry/application knowledge	4.1
Network, including LAN experience	3.9
Downsizing experience	3.7
Application development skills	3.2
Project management	3.0
Consulting skills	3.0
Open systems experience	2.7
CASE experience	2.5

*Note: Where 5 = high and 1 = low

- The capability of greatest interest, industry and application knowledge, is one of the reasons why IBM, EDS, CSC, and Andersen Consulting have continued to dominant professional services vendors. Other computer manufacturers, such as DEC and Unisys, can also demonstrate broad industry and application knowledge.

- These vendors make an effort to constantly improve and upgrade their industry expertise.

- One user stated that industry/application knowledge is a precondition for qualifying vendors, even if needs are only for contract personnel with certain skills. Vendors who know the industry and applications are more apt to supply people who will know how to use their skills best in relation to application problems or needs.

Other capabilities of high interest to respondents are telecommunications, client/server, and downsizing experience.

- Some interest is also expressed in project management, consulting, open systems and CASE (including re-engineering).

- One respondent noted that specific CASE (computer-aided software engineering) skills, such as application generation, are being tried as a matter of course, but that use of CASE has not yet become a major factor in projects.

Consulting skills were noted as capabilities of interest by a number of users. Although users tend to focus on technical skills when considering what professional services they need, the expenditures that they tend to make in relation to larger needs, such as the evaluation of SI or outsourcing or the audit and analysis of business needs, has helped to make consulting the fastest growing submode of professional services.

When indicating that vendor acquaintance with new technology was a necessary capability, some respondents emphasized that they felt professional services capabilities should include the ability to aid with client/server systems.

Despite the need for professional services skills, the present market is sensitive to factors that can deter or delay the use of these services, as indicated in Exhibit IV-5.

EXHIBIT IV-5

Business Factors That Can Deter Use of Professional Services Vendors

Business Factor That Can Deter Use	Average Impact of Factor Reported by Respondents*
Financial conditions/budgets	3.6
Reorganizations/mergers	3.2
Plans for outsourcing	2.8
Controls on use of vendors	2.5

*Note: Where 5 = high and 1 = low

- The financial conditions of a firm or budget restrictions can be the major deterrents to the use of professional services, as can be reorganizations and mergers.

- Plans for outsourcing were reported as a possible deterrent by some users, although professional services vendors were playing key roles in outsourcing elsewhere.

B

Increasing Influence of Users

Reflecting the increased role of users, the initial contact with vendors tends to be made more often by users, or by users together with IS professionals, as indicated by Exhibit IV-6.

EXHIBIT IV-6

Initial Contact

Function Seeking Vendor Aid	Average Likelihood of Contact with Vendor*
User	3.5
User and IS	2.7
IS staff	2.3
CIO or IS manager	1.7
Other planning personnel **	1.3

*Note: Where 5 = high and 1 = low
**Role of vendor should be noted

- Some of the users may have started their career in IS or have had considerable exposure to the use of computers during college or their working careers.

- Users or users with departmental IS personnel report that they have no problem in reviewing new technology and are apt to be annoyed if vendors assume that they have to be given low-level introductory material.

In regard to initial contact, a number of user respondents felt that vendors should be identified as the initiator of a contact rather than saying that the user made the original contact, as noted in Exhibit IV-6. These users feel that some vendors have developed efficient and effective means of getting to them with a demonstration or presentation and that they find it hard not to listen to what the vendor has to say. Given the increased role of users, vendors are making an effort to develop this type of presentation.

Users by themselves or users together with IS are also playing a more important role in making the decision to utilize professional services, as illustrated in Exhibit IV-7.

EXHIBIT IV-7

Present and Future Decision Makers in Relation to Projects

Decision Maker	Average Likelihood of Decision Making*	
	Now	Future
User alone	3.5	Greater
User and IS	3.0	Greater
Top mgmt. or CEO	2.5	Less
CIO	1.9	Less
IS manager (not CIO)	1.4	Less

*Note: Where 5 = high and 1 = low

- Top management still makes the final decision in some cases, particularly where the total cost of systems related activities will amount to over $500,000 (or $1 million in some very large companies).

- A group of users noted that the costs for exploring systems alternatives or for implementing an alternative would be absorbed by their own budgets, so they felt they could take the responsibility for signing a contract unless the cost would exceed a certain level where they felt management should be notified.

Respondents reported that further migration of responsibility to users will occur in the future, as indicated in Exhibit IV-7.

The use of criteria to select a vendor has also gone through change as users have become more active and better informed regarding information technology and services.

- In some cases, criteria are used as a guide or support to decisions rather than as the basis for decisions.

- Criteria are also used as a checklist to aid in decision making; if a vendor has a low score in size or stability, the user may explore what resources are available from other sources to support a vendor that seems appealing for other reasons.

The list of criteria that were used by respondents to select vendors are shown in Exhibit IV-8. Pricing, proposal quality, industry/application knowledge and technical skills are among the criteria ranked highly by respondents, but the acceptability of solutions to users was also ranked very highly.

EXHIBIT IV-8

Major Criteria for Evaluating Project Bids

Selection Criteria	Average Response*
Pricing	4.1
Acceptability of solution to users	4.1
Industry/application understanding	4.0
Proposal quality	3.7
Technical skills of vendor	3.4
Experience of vendor in industry	3.2
Reputation	3.1
Size/stability	3.0
Project management skills	2.4
Contacts/relations	2.1

*Note: Where 5 = high and 1 = low

- Pricing and technical capabilities can be most important in evaluating the use of contract personnel for a job according to respondents. Even then, several respondents noted that they made a decision based on price and capability needed provided that the firm was accepted as a qualified bidder based on their acquaintance with the industry and type of application.

- The acceptability of a solution, particularly to users, and industry and application knowledge have become more important in regard to decisions involving application development/modification assignments.

The increasing involvement of users in professional services activity can be characterized as a strong, vocal presence. Users are interested in trying out and investigating application demonstrations or systems that a vendor has developed for other clients.

Users will also react very strongly to problems today. As Exhibit IV-9 illustrates, users are apt to feel that they encountered problems in projects, and they are concerned about documentation, user education, and coordination of tasks as well as exceeding cost and time estimates.

EXHIBIT IV-9

Problems Encountered by Clients of Professional Services Vendors

Situation	Average Response*
Costs exceeded estimates	3.4
Documentation problems	3.3
Project time exceeded estimates	3.2
Problems in coordinating tasks	3.2
Encountered minor or no problems	2.3
Problems in user education	2.2

*Note: Where 5 = high and 1 = low

C

New Technology and Other Factors Impacting Professional Services

Users and IS staffs are often looking for vendors who have made use of new technology. The areas of technology that are reported to be of greatest interest are indicated in Exhibit IV-10.

- The use of downsizing and client/servers are ranked highly, together with developments in network technology. Users in many industries are reporting consideration or use of client/server technology and downsizing, and they are looking for aid in adapting these systems to their corporate situations or in solving problems that have arisen.

- Handling distributed data bases is also noted as a moderately strong technological factor driven by the increasing use of LAN and client/server technology.

- The use of open systems, CASE, and imaging systems is mentioned by users and IS as areas for which they might consider using professional services vendors. One large corporation noted that a search for vendors with specialized technical knowledge and experience had delayed work on a large project involving expanded use of open systems.

EXHIBIT IV-10

Technology-Related Knowledge That Could Encourage Use of Professional Services Vendors

Factor	Average Rating of User Interest*
Downsizing, client/server	4.1
Network technology	4.1
Distributed data bases	3.4
Open systems	2.8
CASE and/or re-engineering	2.7
Imaging	2.4

*Note: Where 5 = high and 1 = low

Although newer technology can be a factor in generating professional services work, users tend to focus more on other factors when they are asked what they expect from professional service vendors, as illustrated by Exhibit IV-11.

- Some users tend to think of professional services firms as sources of contract personnel, technical skills, or systems integration strengths, but most users also expect to find knowledge of application systems and industries.

- Users also expect to find aid in supporting and managing applications and in managing projects and producing quality work.

EXHIBIT IV-11

What Is Expected from Professional Services Vendors

Expectation	Average Response*
Application/industry knowledge	4.7
Source of technical skills	4.4
Systems integration strengths	4.3
Source of contract personnel	4.2
Quality professional services work	4.1
Project management strengths	4.0
Application support/management	4.0

*Note: Where 5 = high and 1 = low

Most of the users interviewed noted that they felt that there was a dichotomy in their expectations of vendors.

- Sometimes, they were contacting firms that dealt mostly in contract personnel and searching for people with certain technical skills including, generally, knowledge of the application systems that were involved. At other times, they were in contact with firms that could help them study business problems, analyze possible solutions and/or develop systems to address business opportunities.

- In many cases, users contact vendors only in relation to one of these objectives. This leaves some vendors with the challenge of finding out when they are not being contacted and what capabilities that they need to develop to be considered for more jobs.

Even if professional services work is increasing, as anticipated by users, competition is intense and is also increasing, making it necessary for vendors to make sure that they are considered for all opportunities in companies where they have some level of recognition.

The average increase in usage anticipated by users is from 9% to 10% in 1992 but will move up to 10% in the period from 1992 to 1997, as indicated in Exhibit IV-12.

EXHIBIT IV-12

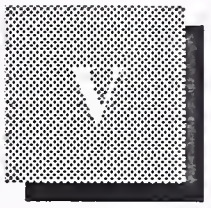
Anticipated Increase in Usage of Professional Services

Period	Average Increase Expected (Percent)
1992	9 to 10
1992-1997	10

Although this expectation is mostly in regard to the commercial market, the federal government market also anticipates an increase in projects that enhance or add to existing systems, just as other vertical markets do.

- The market for professional services in the federal government tends to favor contractor assistance in system development due to the declining availability of programming skills in the federal government. Government staffing levels and the backlog of software maintenance tasks at most government data centers also contribute to the demand for vendor assistance.

- However, there is congressional pressure on agencies to minimize or eliminate entirely the use of outsiders (and ex-government employees) in functions perceived as management, which has caused the growth of vendor design and consulting work to drop.



Issues and Trends

A Introduction

Why are some types of professional services vendors having more success than others in this period of economic difficulty and change? This question can be analyzed by noting issues and trends that have arisen in the market recently and examining differences in vendor responses to these factors.

- The economy has had a depressing effect on the information services industry during the last two years, as discussed in Chapter III, causing it to grow at a much lower rate than at any time in the last decade.

- The economy, however, has played a strong role in promoting business and technological changes that have emerged as the trends and issues that are currently affecting information systems buyers.

These issues and trends, which will be discussed in the following section, have an impact on the overall information services market in the U.S., although some have more of an effect on the use of professional services.

1. Key Issues and Trends in Information Systems

a. Impact of the Economy

The weak economy and the resulting impact on growth in some areas of information services, particularly professional services, led to an increase in pricing sensitivity in the marketplace as noted in Exhibit V-1. INPUT's research on professional services pricing has shown that pricing is an important consideration in obtaining services to over two-thirds of users at this time.

EXHIBIT V-1

Information Systems—Major Buyer Issues

- User role in planning and decision making
- Use of client/server technology
- Budget pressures and pricing sensitivity
- Pressures to increase quality and effectiveness
- Restructuring of business activity
- Downsizing business functions and systems
- Need for networking aid and expertise
- Shortage of high-level technical expertise
- Possibility of outsourcing work

In order by average importance to respondents.

A group of vendors who supply systems and programming personnel on a temporary basis (like personnel agencies) have used this sensitivity to pricing to increase work at a number of major companies who are interested in lowering costs.

- Some of these vendors have made arrangements with personnel that have been laid off or foreign suppliers which enable them to offer individuals with high levels of skills at low rates.

- Major banks, brokerages, and manufacturers contacted during this study admit that they use personnel from these types of firms.

Two major professional services vendors (IBM and Coopers & Lybrand) noted that they use agency types of firms to find personnel with scarce skills for jobs that they were bidding to prospects. They have used the present competitive situation to their advantage.

Several other major vendors have reacted to competition from agency types of vendors as well as past competitors by bidding to do certain jobs at locations outside of the U.S. or with personnel that can be priced at lower rates. Andersen Consulting is one of the firms that has the capability to bid development work that can be done offshore

- Since there may be only one opportunity to submit prices for a job, vendors have to analyze opportunities at prospects very carefully before submitting bids.

- Some vendors submit bids, however, that have several alternatives for accomplishing development at different cost levels.

The continuing weakness in the general economy through 1991 and into 1992, as well as foreign competition, has also encouraged or initiated a trend to improve performance in many corporations. As noted in Exhibit V-1, this trend has led to major concerns for information systems users regarding improving quality and effectiveness as well as restructuring business activity to achieve more productivity and cost reductions.

- The quality that users wish to improve refers to both the quality of products and of the services provided to prospects and customers in support of sales.

- Users, including departments of GE, have reported a number of projects that will help to improve product quality—including client/server systems that allow customer service units to have direct contact with statistical quality control and engineering when investigating problems. Vendors have been active in supplying consulting aid and software development for these types of projects.

- Several users, including Mobil Oil, report that they have recently improved quality through providing on-line product information and more sophisticated automatic means of helping to answer customer questions. Vendors were also called upon for assistance with these systems.

- Vendors of information services have also been active developing or supplying systems that improve the effectiveness of sales staffs, for example, by improving order entry systems or by analyzing and assigning coverage to accounts with the aid of geographic information systems, as the textile wholesaler and distributor Damon has done.

Pressure to improve quality and effectiveness as well as to generate savings has also helped to increase interest in restructuring business activities and, in a number of cases, to downsizing functions. Downsizing can reduce costs as well as allow users to be more involved in the systems that have an impact on their performance.

- Issues about restructuring and downsizing business have led to increasing interest in vendors with experience in accomplishing these goals as well as knowledge of the industry and applications that are involved. Big Six vendors, as well as other firms, have combined their knowledge of business functions with strength in client/server technology in order to profit from these developments.

- The issue of downsizing functions to run in a client/server environment is of particular interest to a number of firms. Deloitte & Touche, for instance, has concluded that this will be one of the major informations services activities in the near future.

b. Impact of Client/Server Technology and Downsizing

The use of client/server technology, in itself, is a major issue to information systems buyers, as noted in Exhibit V-1. In addition to planning what work will be done on the technology involved, questions involving the source of data, development or downsizing of application software products, network configuration, and operation of the unit must also be answered.

- Several users participating in this study noted that the use of client/server technology and downsizing forced them to become far more involved with information systems than previous experience as mainframe users had required.

- Users also noted that some major professional services vendors (including IBM, DEC, Unisys, and Andersen Consulting) had provided considerable assistance with consulting and/or training on client/server technology. A number of smaller firms such as MicroDatanet were also mentioned in regard to aid with client/server technology and downsizing.

- Users reported, however, that some vendors had reacted as though interest in client/server technology and downsizing meant that they might not be prospects for services. These vendors appeared wedded to their current sets of mainframe or mini products and services, which is inhibiting their ability to gain business.

The issue that has been reported as most important in regard to acquiring information systems and services is the expanding role of users, as illustrated in Exhibit V-1. The increased role of users can be seen in planning activities as well as in steps to move IS capabilities into their departmental functions.

- Users report that they initiate studies and engage consultants such as McKinsey and Booz-Allen, as well as small firms that they have contacts with, to plan responses to business problems, market opportunities, or changes in business functions. This work can give rise to the acquisition of equipment as well as professional services and other information services work.

- Users are also more active in evaluating and making decisions for the use of particular vendors and vendor products for development and implementation assignments. Many of these decisions are resulting in moves to client/server environments and downsized applications.

- Several information systems managers reported that they would not want to make a decision in favor of using equipment, information services, or vendors that users were opposed to.

In reaction to the increasing activity of users, major professional services vendors noted they are now studying how users make decisions in order to increase their chances of winning work.

c. Other Buyer Issues

Other issues of information systems buyers, shown in Exhibit V-1, are the need for network and other technical skills and the emergence of new arrangements for services with vendors, including outsourcing in order to reduce expenditures and/or address shortages of technical personnel.

- A top information services vendor reported that they use their ability to locate needed technical skills as a means of getting a foothold in multiclient projects, even when they have lost the competition to be the lead vendor. They let users know that they can be counted on to locate needed skills.

- Other vendors report that the most effective means of being considered for a role in many projects is to have network expertise available.

- Several vendors noted that the ability to step into situations involving networks or client/server systems had provided multiple opportunities recently. These opportunities involved network consulting as well as professional services assignments to modify software products and supply training services.

- Information systems users also report that outsourcing arrangements had been or were being considered to reduce costs over time as well as ensure aid in obtaining needed skills. In addition to outsourcing systems operations, several major financial institutions and a few large manufacturers reported that they had outsourced application maintenance and/or management.

A group of companies including Chase and Chemical banks, however, have tried to reduce the demand to use external vendors by providing new forms of internal information services (or in-house outsourcing) that will be less expensive and more able to guarantee that plans will be in concert with internal IS plans.

Partially in reaction to strategies to cut costs through the use of in-house services, several major outsourcing vendors who also offer professional services, including EDS, report that they emphasize how outsourcing can help to achieve additional revenues rather than just emphasize cost savings.

Some smaller vendors, such as Comtex, Inc. in New York and Cybertek Corp. in California, have started to market contract services to outsource application maintenance and enhancement work or to manage an application system as an approach to reduce expenditures over time rather than use low-cost suppliers of contract personnel. They point out that this would also guarantee the availability of scarce skills and a continuing high level of quality.

2. Professional Services Vendor Issues

a. Competition

As illustrated in the discussion of agency-type contract service firms in the previous section, one of the major vendor issues is the intensity of competition, as noted in Exhibit V-2.

EXHIBIT V-2

Professional Services—Major Vendor Issues

- Intensity of competition
- Impact of client/servers and downsizing
- Role of users and IS in buying
- The sale of additional services
- Shortages of high-level technical skills
- Relative importance of industry/application knowledge
- Application support and management

In order by average importance to respondents.

- Vendors are anxious to discover the prices, variations in product services, and methods of selling that are used by competitors, according to respondents.
- Vendors are also anxious to know who will be bidding against them on specific jobs so that they can adjust their bidding tactics.
- A sales executive at one professional services vendor stated that one reason he enjoyed working on accounts outside the U.S. is that the intensity of competition is definitely less.

Vendor issues listed in Exhibit V-2 that are related to the intense competition are steps to lock up continuing work by offering application maintenance, enhancement, or management services or by attempting to use consulting services to gain follow-on work.

Some vendors are responding to competition by developing strategies for obtaining continuing work through supplying management, maintenance and application services for the systems that they have knowledge of.

- This can be a means of obtaining ongoing work that is not subject to constant competition.

- Users, including companies in the banking and finance, insurance, manufacturing and distribution markets, report that they have been offered or contracted for such services recently.

Consulting services are also being used as a means of obtaining continuing business. As Exhibit V-2 indicates, major vendors have been concerned with expanding the emphasis they give to the sale of consulting services.

- IBM and DEC are now marketing strategic consulting services that address business issues which can lead to the use of information services.

- Through the acquisition of Index, CSC has also been offering strategic consulting services, and Big Six firms, particularly Andersen Consulting, have offered this type of service for some time.

- All the firms mentioned above have also offered information technology consulting services concerned with projects and IT planning.

Consulting services are more profitable than other professional services submodes, involving a higher fee and mark up. They may also lead to a sizable amount of other professional services work, but this may not be true in all cases.

- A group of vendors, including Big Six firms, have sold consulting as a first step toward other services or have sold a consulting phase as a first step in a job.

- Some vendors have found, however, that the use of consulting as a first step made it very difficult to get additional project work since the consulting client wanted to use different vendors for consulting and implementation in order to ensure that the consulting advice is disinterested or that consulting services did not always lead to the types of jobs that the consultant wanted.

b. Increased Role of Users and Downsizing

The role of users and IS in the selection process is one of the other major issues of vendors, as indicated in Exhibit V-2. Information systems buyers are more often users today, or are much more sensitive to user wishes.

- As a result, vendors have become aware of the greater impact that users have in purchasing decisions.

- In some cases, it is necessary for vendors to sell both user management and IS managers or the CIO. In other circumstances the user staff may be the party making the purchase, as pointed out in Exhibit IV-7.

- Despite the changing role of users and IS, some vendors do not assess the situation correctly and spend too little time selling users versus the IS staff and management.

The changing role of users and IS is also reflected in the interest of users in client/server technology and downsizing. In one user situation that was explored during this study, users in a banking environment favored a client/server solution from the moment that they began to review problems being encountered.

- The IS staff working with this user group made sure that the situation was studied adequately, but they reported that they were reluctant to consider any other choice since the client/server system would be sufficient to meet objectives.

- In a large brokerage, a CIO said that he would try to steer users toward client/server solutions that were compatible with presently installed capabilities. He said he would go eyeball to eyeball with users over that issue, but he would not try to oppose a user who wanted to go to a client/server and downsized solution by trying to prove that a mainframe solution was superior. He said he would point out the relative benefits and costs and let the users choose.

On the basis of examining the trends and issues affecting buyers and vendors, it can be seen that the question that opened this chapter, what types of vendors are succeeding in this period of economic difficulty and business and technological change, can be partially addressed:

- Vendors such as IBM, EDS, CSC, DEC, and Andersen Consulting, who reported good performance for professional services in 1991, had characteristics supported the user trends and issues discussed in this section.

- These companies made an effort in their marketing to assess user strength and decision-making powers.

- They offered capabilities to meet needs for upgrading business functions to improve quality and effectiveness and made efforts to meet needs for network and other critical technical skills.

- These competitors also were in a position to respond to interests in outsourcing and restructuring business (where their consulting skills and industry/application knowledge could be used) as well as to aid the use of client/server technology and downsizing.

B

Key Information Systems Trends for the 1990s

1. Successful Roles for Professional Services Vendors

The role of professional services changed significantly in the 1980s and is changing again at this time.

- In the 1960s and 1970s, professional services work was primarily based on developing new applications software systems for users and supporting the sale of computing equipment by developing and modifying applications software products so that they would more closely meet the needs of customers of hardware vendors.

- By the mid-1970s, professional services vendors were also supplying personnel to users and computer manufacturers to help them develop and modify software products.

In the 1980s, the role of professional services vendors changed as the use of applications software products increased in importance due both to the improvement of these products and the consideration given to application software products by users who were acquiring computing equipment.

- Computer manufacturers began to make arrangements with vendors of software application products that would enhance the use of the software products with their computers.

- Computer manufacturers and users began to show increasing interest in vendors who understood popular application products and could modify them to meet unique user needs. This capability is becoming of even more interest in the current market.

In the 1980s, application vendors like IBM, DEC, Unisys, and ATT, as well as American Software and Systems Software, increased their ability to offer professional services to customize their products. At a later point in the decade, Oracle saw the opportunity to use professional services and software products to leverage each other.

In this environment, a group of major professional services vendors developed and expanded services that would integrate and modify software products to work with hardware products and other services.

- This initiative moved the focus from the software products to an integrated solution.

- The increasing complexity of the software products helped to promote interest in systems integrators who could discuss and work with complex software, hardware, and communications products and integrate them into systems through the use of professional services.

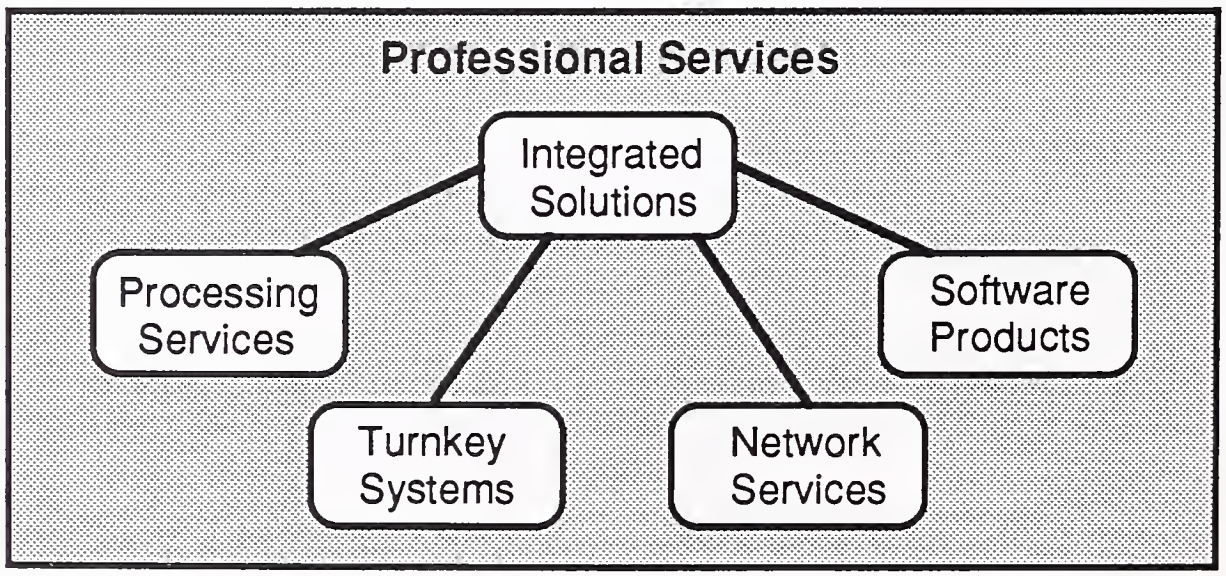
Due to the growth of this type of activity, the area of professional services devoted to systems integration was recognized as a separate mode of service in the 1980s by INPUT and other information services industry experts.

- The central role in the information services market has changed from software vendors in the 1980s to one in which the central role is being played by vendors of integrated solutions who have application and industry knowledge and the professional services capability to tie products and services together as shown in Exhibit V-3.

- Recent changes that expanded the use of networks and promoted the use of new technology, particularly client/server products, heightened interest in vendors who can help to integrate this technology with software products.

EXHIBIT V-3

Current Information Services Market Structure



By providing services to integrate the products of multiple vendors, vendors can gain the opportunity to be recognized as integrators, obtain larger contracts, and control the use of other vendors in information services work.

- This type of work encourages vendors with professional services capabilities to sell products and services from other delivery modes, much as AMS and Andersen Consulting sell software products.

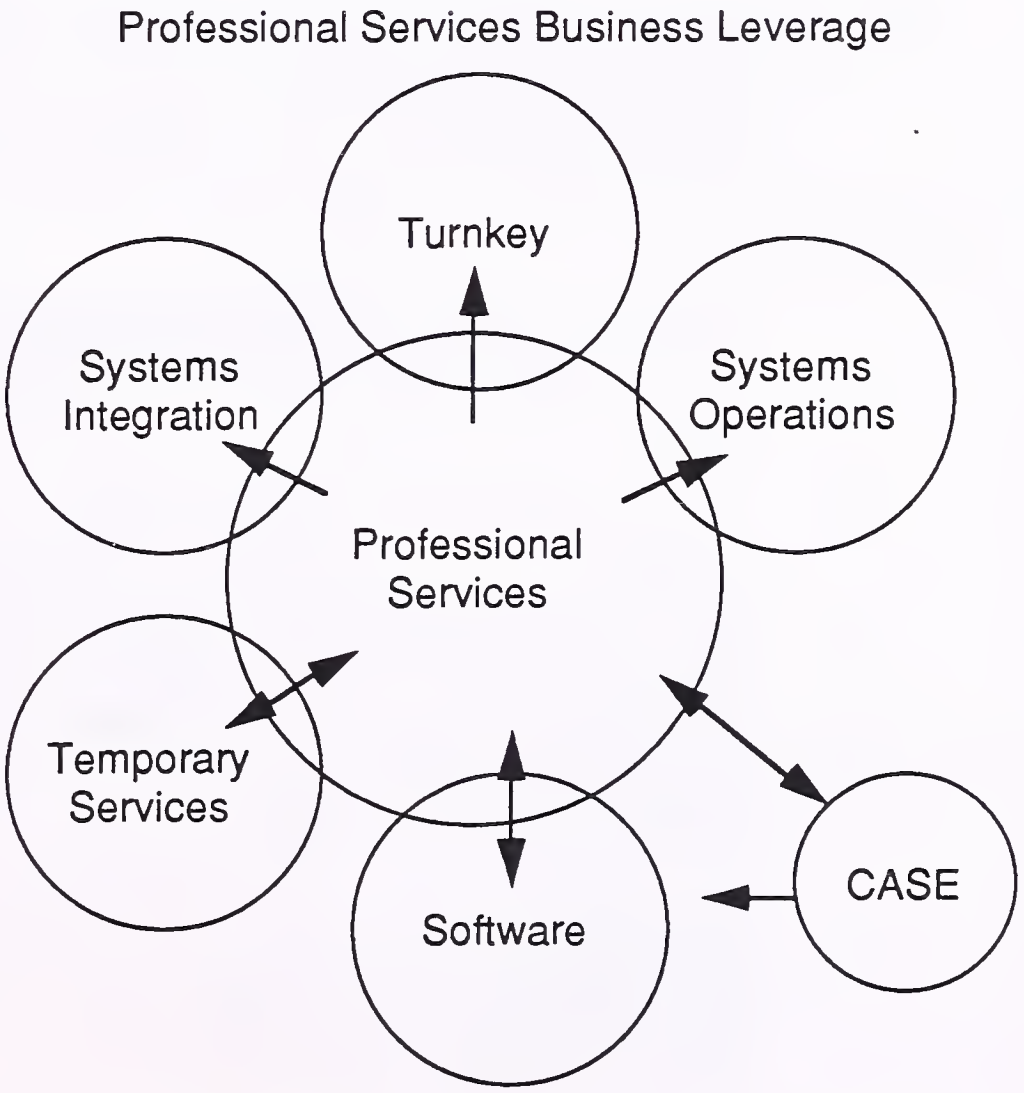
- The environment also allows vendors with software products (such as Oracle or JYACC) or network services vendors such as GEIS to find opportunities to market professional services or systems integration.

- The resulting movement from professional services into other delivery modes, or from those other delivery modes into professional services, has happened frequently in the last few years, as illustrated in Exhibit V-4.

- Big Six firms have been particularly active in expanding from professional services work into SI, software products, and even network services and systems operations. Large information services industry firms such as Computer Task Group (CTG), NYNEX, and CGA have also expanded into multiple services in the recent past.

EXHIBIT V-4

Movement Between Information Services Delivery Modes



The question that is raised from this historical review is, What types of firms have been most successful in each of these periods?

- In the period through the earlier part of the 1970s, the largest and most successful professional services vendors were those who could handle contract programming assignments like CSC and GEISCO. There are no very large firms today who just perform contract programming work.

- In the late 1980s and early 1990s, many of the largest professional services vendors provided experienced personnel to work for vendors and users as well as contract programming services. There are still large firms that confine themselves chiefly to these areas, but the largest firms do more.

- The largest professional services firms today are ones that perform a variety of work including SI. This includes EDS, Andersen Consulting, CSC, IBM, and DEC and most of the top 20 vendors in the professional services delivery mode.

- The median annual revenue of firms that deliver just professional services is substantially less than the comparable figure of firms offering the variety of work discussed above.

In addition to the technological changes that have led vendors in new directions, it should also be noted that it is difficult to remain in the same mode of service and continue to be a leading vendor. This industry has been marked by the entrance of vendors that lower the cost of successful services through the use of new technology or by trying to perform them on a low cost or commodity basis.

- A number of firms, including Mobil and several large banks, report that they have used CASE techniques and software products to reduce the amount of work that contract personnel would have been used to perform.

- There are many small and some medium scale firms that have concentrated on supplying temporary or longer term personnel in a commodity-like way at low fees by using personnel who are being brought in from foreign locations or who were laid off during the economic difficulties of the past few years. Very little added value (or no services) are included with the supply of personnel, but many of these firms do try to evaluate candidates carefully.

Several of the vendors who have been specializing in supplying personnel on a temporary basis report that are thinking of expanding their range of services since they are aware that it will be difficult to expand or improve their profitability while just relying on a low markup of personnel services.

- These vendors report that they have started to offer consulting and education/training services to expand their range of capabilities. One has started to make an effort to participate in integration assignments.

- These vendors are also considering or offering application management and enhancement and maintenance support for user application systems.

Application management and related services is also an area of opportunity that some firms are exploring, since it responds to the desire of many users to overcome ongoing backlogs and problems by outsourcing them to competent vendors.

2. Current Trend for Services in Support of Client/Server and Downsizing

A very strong trend of the 1990s that professional services vendors must consider is the changing demand for services for different platforms or technologies. The percentage of user expenditures devoted to mainframe systems is considerably less than it was five years ago. The current distribution of user expenditures by platforms at this time is shown in Exhibit V-5.

EXHIBIT V-5

Percentage of Professional Services Expenditures Related to Various Technological Platforms

Platform	Percentage of Expenditures
Hardware Platform	
Mainframe and super	52
Midrange including IBM AS/400 and most DEC equipment	21
Client/server, Workstation/PC	25
Open systems	2
Total	100
Network Related	
Percentage that is LAN, WAN or other network related (overlaps hardware platforms; only includes incremental professional services)	6

- The percentage has increased somewhat for midrange systems and dramatically for the category including client/server, workstation, and PCs in the recent past.

- Respondents report that they anticipate the percentage for client/server systems and workstations will increase to at least 75% in five years, but that they cannot predict how the remainder of platform support will be divided.

The aid reported by vendors in support of client/server technology and downsizing includes aid in developing, analyzing, or correcting problems with LANs, communication software products, and application systems.

- When analyzing the opportunities available in developing or downsizing application software products, some vendor respondents raised questions about the percentage of software development work that could be called developing or modifying downsized products because the work had been originally running on a larger platform.

- Other vendors stated that software development or modifications of applications for workstations and client/server systems should be considered downsizing since the alternative for these application systems was to develop them for larger platforms.

Vendor respondents report that they expect user expenditures to expand in line with historical experience, if not more rapidly, as the use of client/server systems and downsizing grows in user areas.

- Some of the expansion will result from the development and customization of downsized application systems.

- Other expenditures will result from the need for planning and restructuring, including the need to plan and achieve more effective networking and data management among users.

In relation to the expectations of vendors, some users stated that they would use application and other professional services support from vendors in place of IS support as the responsibility for systems use moved to their areas.

- This will enable savings to be gained in systems support as well as in equipment and software products.

- Outside expenditures for professional services could be more easily controlled in their opinion.

3. Continuing International Expansion of the IS Market

The market for information services outside the U.S. is expanding rapidly in Europe as well as in most areas of the world.

- The market is expanding rapidly in Europe due to the common market as well as to growth of business Germany, France, England, and Italy.
- There is also significant growth in the sale and use of information services on a multinational basis where systems are serving multiple countries and areas of the world. This business offers opportunities for new and faster growing sources of revenue, but also requires recognition of the challenges and costs required, as noted in Exhibit V-6.

EXHIBIT V-6

Impact of International Opportunities

- Higher growth rates for information services in foreign markets
- Acquisitions to enter market
- Costs of international business
- Need for time-sensitive solutions
- More emphasis on support

In order by average importance to respondents.

The experience of large vendors in the U.S. has proven of value in these international market opportunities. Andersen Consulting, EDS, Ernst & Young, IBM, and DEC have all capitalized on their experience in large projects in the U.S. to enter these markets.

- A number of international prospects and clients are multinationals with offices in the U.S.
- Trends in the U.S. market, such as increasing need for support, greater participation of users in systems design and use, and expanding use of networks and client/server technology, are also present in the international environment.

Most of the large information services firms now have international business, and for many of these firms, such as Andersen Consulting, foreign business is growing more rapidly than domestic business.

The large information services firms have a considerable advantage over smaller firms in seeking international business.

- They are able to support the travel and investment required for international work.
- They have more opportunities to spread systems costs and work over a number of customers which is important since the inclusion of international specifications and support for international communications facilities and protocols is involved as well as differences in business conventions and time differences between countries.

C
Professional Services Market-Driving Forces

Based on information from users and vendors of professional services, the list of driving forces shown in Exhibit V-7 was developed.

EXHIBIT V-7

Professional Services Market Driving Forces

- Need for technical skills and industry application knowledge
- Client/server technology
- Need for improved business performance
- User role in planning/using systems
- Vendor bidding/pricing tactics
- Budget pressures
- Use of consulting services
- Growing interest in application support

In order by average importance to respondents.

The force that is felt most at the present time is that of obtaining critical skills to meet system needs for improving performance or achieving business objectives rapidly.

- This can involve application system enhancements or upgrades or the implementation of an application software product.

- The objectives that are most often mentioned in relation to this work concern product or service quality or sales performance as discussed in Chapter IV.

The critical skills that are needed include network, client/server, database, open system, and project management skills as well as industry and application knowledge.

The role users are now playing in defining what will be done with information technology and who will do it is a major driving force in the use of professional services as indicated in Exhibit V-7.

- Users are taking greater initiative in determining what steps should be taken to improve product and service quality; management in companies as different as GE Nuclear, Mobil and Shearson Lehman report this initiative.

- Users are interested in technology that can enable them to play a more active role in making strides in business.

The technology that is providing many users with this opportunity, client/server products, is another major driving forces in the professional services market.

- Users at financial as well as several pharmaceutical companies used similar language in reporting that they needed to either downsize or carve out functions in large application systems and bring them to workstations at their desks in order to improve performance at their companies.

CIOs at two of these financial companies said that they knew their users were going to outside vendors for consulting advice on how to accomplish these user objectives.

The increased role of the user has expanded the need for high-level consulting services combined with industrial knowledge. It is also a driving force in the professional services market.

- Major vendors feel that this is a very real need, and it favors use of larger vendors that can afford to maintain up-to-date knowledge of the use of information technology in a number of industry markets.

- The increasing complexity of technology, particularly in the use of networks, is one of the major reasons for considering the use of vendor consulting according to users.

The growth of network use continues to be a driving force in the professional services market.

- Many application system upgrades involve changes in network use, and most new systems including, LANs, have major network issues to consider.

- Connections between distributed company functions have become a major consideration, according to a large energy company.

Exhibit V-7 also indicates that the expanding vendor role in application management is a driving force.

- For some companies, the vendor role is part of an outsourcing agreement involving systems operation.

- For others, the vendor role is evolving from support of application systems through contract services to a contractual arrangement for managing application system maintenance and enhancement.

D

Professional Services Market-Growth Inhibitors

The inhibitors discussed in Exhibit V-8 reflect user concerns discussed in Chapter IV as well as issues raised by vendors. The major growth inhibitor in 1992, according to both users and vendors, was the economic environment just as it was in 1991.

EXHIBIT V-8

Professional Services Market Growth Inhibitors

- Weak economic recovery
- Tight budgets
- Competition from other types of vendors
- Shortages of critical technical skills
- Internal consulting organizations

In order by average importance to respondents.

- Although a recovery started in 1992, it was not strong enough to generate the increase in business that would have returned professional services expenditures to the levels of the last decade.

- However, there was a small increase in the growth rate of professional services due to the pressure to increase business performance.

In most companies, tight budgets continued to be an inhibiting factor when considering the use of professional services vendors. Users report that in-house alternatives and vendor software products were used in situations where professional services vendors might have been engaged.

- One large financial company reported that it had reduced the cost of a development effort by putting pressure on a large software products company to modify some of its accounting products to meet in-house goals.

- The CIO of the financial company said that he would have used a professional services firm if the financial situation had been different since the effort that was undertaken required a considerable amount of his time.

Professional services vendors also lost business opportunities to SI, SO (systems operations), and turnkey vendors as well as management consulting firms who bid for professional services assignments at sites where they had contracts. The increase in competition from vendors in other information delivery modes or businesses has been having a noticeable inhibiting effect on professional services vendors.

The use of internal consulting organizations or user support groups to reduce the costs of outside vendors has also had an impact on professional services business as noted in Exhibit V-8. Several users report that these staffs do not always have the technical expertise or industry/application knowledge that they could have acquired from vendors.

Both users and vendors noted that shortages of technical skills could be an inhibitor to business.

- Projects could be delayed, canceled, or not awarded to vendors if resources could not be found to address certain problems.

- Examples that were given included airline transaction processing and specialized database applications where vendors could not supply the specific skills desired.

The increased power of application development tools that are used by in-house development staffs or by vendors can inhibit growth as well.

- Several software product vendors have begun to promote the use of CASE tools as a means of modifying or enhancing their products to meet user needs instead of having professional services vendors do it.
- Users report that they have also used CASE tools to accomplish work that might have been performed by professional services vendors.
- Major corporations have used CASE tools to replace development or modification work that would have been done by vendors, although several of these companies note that they have used professional services vendors to aid them in the use of these products.

E
Information Services That Use Professional Services

Professional services are a component of systems integration and turnkey systems work, as shown in Exhibit V-9, as well as of the professional services delivery mode. Professional services work may also be supplied with outsourcing of operational work, customer services, and management consulting.

EXHIBIT V-9

Current Relation Between Professional Services and Other Delivery Modes

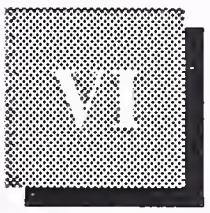
Category	Professional Services	Systems Integration	Turnkey
Project duration	Can be continuous or very short term	Limited	Limited
Project management responsibility	Usually customer: User, IS or joint	Prime contractor	Vendor
Computer equipment selection	Customer User, IS or joint	Prime contractor for customer	Vendor for customer, usually
Services provided	Often a single service (e.g., software development)	Usually multiservice, including hardware/ software integration	Multiservice, but usually hardware, software and prof. service
Pricing	Time and materials	Fixed-price	Fixed-price
Item purchased	Resources	A solution	A solution

- The professional services content of systems integration includes planning, managing, and implementing a solution on the equipment or facilities required.

- A turnkey systems solution may require software development and education and training.

Professional services may be required in outsourcing of systems operations to enable customer work to run on upgraded equipment, different networks, or on an upgraded or different application and/or systems software product. Professional services work may not always be reported separately from systems operations.

Customer services work of a professional services nature includes planning, consulting, training, coordination, and management activities. This work will generally not be reported separately from customer services.



Market Forecast

A
Market Overview

The performance of the professional services market has been improving slightly in 1992, particularly for certain types of vendors.

- The slow recovery has not been a vehicle for growth across the board, but it has provided the opportunity for vendors active in certain areas.

- The slight increase in the 1992 growth rate from the growth rate in 1991 is due mostly to business pressures to improve performance. This has led to a slight increase in user expenditures in 1992 over the projection made last year, and an increase in the five-year forecast for growth in professional services.

The changes in outlook in mid-1992 compared to the outlook in 1991 are shown in Exhibit VI-1.

EXHIBIT VI-1

Professional Services Market Overview ($ Billions)

1991 Outlook		1992 Outlook
1991 Forecast - 17.8	versus	1991 Actual - 17.8
1992 Forecast - 19.4	versus	1992 Forecast - 19.5
1991-1996 Forecast Growth Rate - 9% (CAGR)	versus	1992-1997 Forecast Growth Rate - 10% (CAGR)

- The actual expenditures for 1991 of $17.8 billion are in agreement with the forecast made in 1991.
- The forecast for 1992 being made at this time is $19.5 billion, slightly above the forecast for 1992, made in 1991.
- The five-year forecast for growth in user expenditures made for 1992–1997 is 10% versus the forecast of 9% made in 1991 for the 1991–1996 period.

When analyzing the growth rate for professional services, consideration should be given to the fact that the removal of some systems operation work (facility management) from professional services and the reclassification of some systems development work as systems integration in the recent past has had a depressing effect on professional services results.

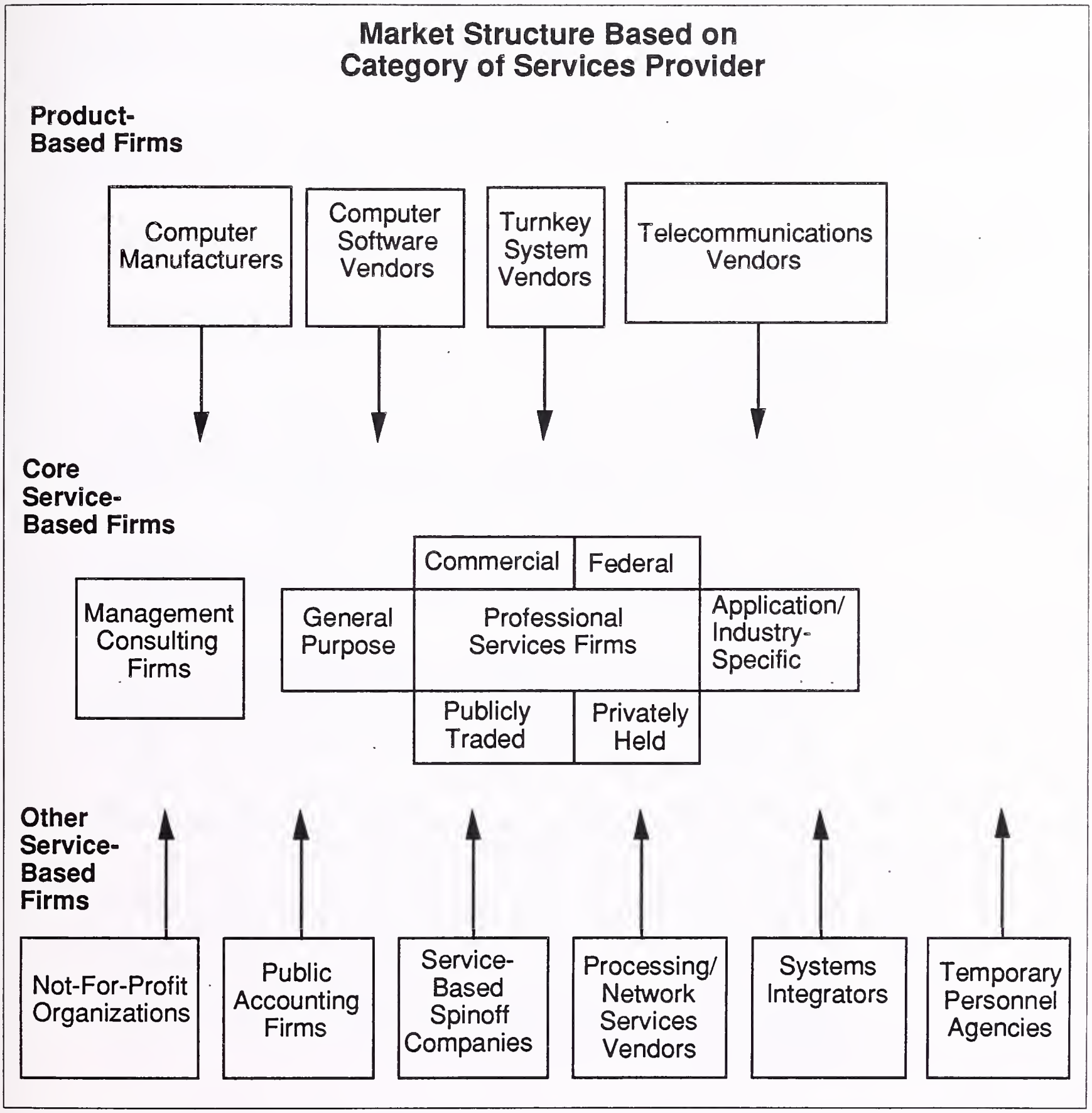
B
Market Structure

INPUT analyzes the information services industry by examining the 9 delivery modes for services and the 15 industry sectors and 7 cross-industry sectors where services are delivered. The delivery modes areas follows:

- Processing services
- Network services
- Turnkey systems
- Systems software products
- Application software products
- Systems integration
- Professional services
- Systems operations
- Equipment services

Vendors providing professional services can be divided into firms that offer products such as hardware, software, or other products as well as professional services; those that are involved with professional services as their core service; and newer types of service-based firms that offer professional services as well as other services (Exhibit VI-2).

EXHIBIT VI-2



INPUT recognizes a firm as a professional services vendor if it provides one or more of four submodes of services:

- Consulting
- Education and training
- Software development and maintenance
- Application management/maintenance

These services are understood to be in support of the use of the information systems industry rather than generic services.

- For the purpose of this study, the last two submodes will be combined and referred to as software development and maintenance.

- Education and training refers to services such as computer operations training, management training, and video instruction related to computer usage.

- In a like manner, consulting services are specific to the information systems needs of customers.

It is difficult to place boundaries around professional services business. For instance,

- Education and training firms and schools active in other areas market courses that should be included in professional services, and professional services firms who offer education and training include courses that address general business and technical subjects.

- Some professional services firms market management consulting services not related to information services. CSC designates this work as management consulting.

- Moreover, general management consulting firms have added professional services consulting, education and training, and even software development. Several consulting firms have established professional services departments or subsidiaries.

Users report receiving bids for professional services tasks from McKinsey and Booz-Allen as well as other management consultants.

INPUT's definition of the professional services delivery used to include systems integration (SI) and systems operations (SO), or facilities management). SI was made a separate delivery mode in the 1980s, and in 1990 INPUT made systems operations a separate delivery mode, combining the systems operations (facilities management) segments from professional services and processing services.

C
Professional Services Market

1. Market Analysis

There are marked differences in performance among submodes of professional services as well as among different types of vendors.

- Research by INPUT reveals that the average margin on consulting work has been about 23%, whereas the margin for software development has been about 14% and the margin for education and training about 10%.

- The larger vendors who offer a number of information services, including professional services, tend to grow more rapidly and be more profitable than midsized or smaller vendors who sell almost entirely professional services.

- Vendors who market to a group of industries including manufacturing, banking and finance, and telecommunications seem to be performing better than vendors serving only other groups of vertical markets.

Professional services are also more sensitive to economic conditions than other information services since they can be delayed or reduced after start up; whereas the use of other information services such as software or turnkey products cannot be reduced as rapidly once initiated. It is also harder to reduce processing services or systems operations once started. Consequently, the GDP and inflation assumptions used by INPUT, which are shown in Exhibit VI-3, suggest that the near future could be one with a certain degree of risk.

EXHIBIT VI-3

U.S. GDP and Inflation Growth Assumptions 1991-1997

1992 Assumptions (As of March 1992 *Blue Chip* Report)

Overall Economy	1991A	1992E	1993E	1994E	1995E	1996E	1997E
Nominal GDP	3.4	5.3	6.2	6.7	6.1	6.1	5.9
GDP Deflator	3.0	2.9	3.2	3.6	3.7	3.6	3.6
Real GDP	0.4	2.4	3.0	3.0	2.3	2.4	2.2

1993 Assumptions (Preliminary estimate using March 1992 *Blue Chip* Report)

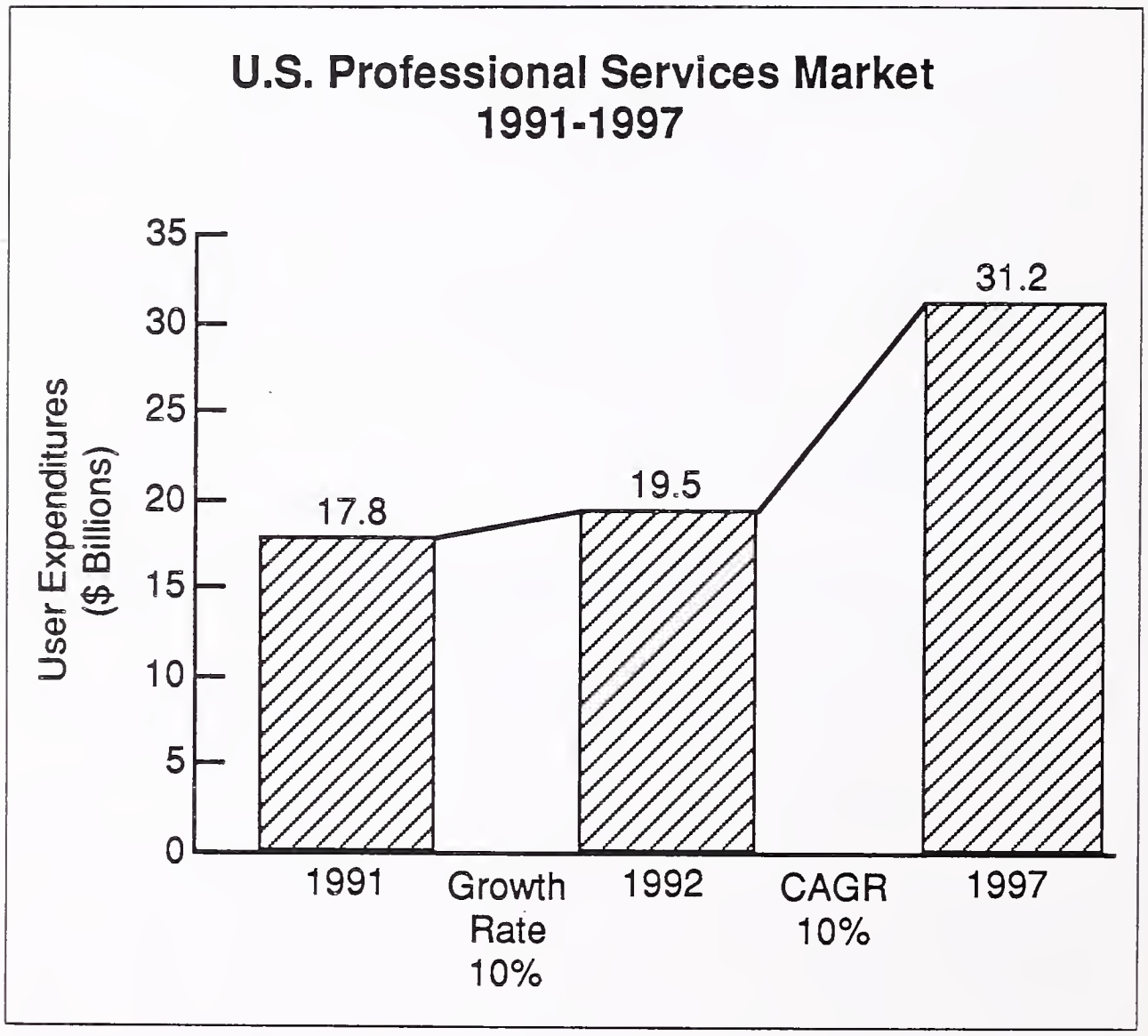
Overall Economy	1992E	1993E	1994E	1995E	1996E	1997E	1998E
Nominal GDP	5.3	6.2	6.7	6.1	6.1	5.9	6.1
GDP Deflator	2.9	3.2	3.6	3.7	3.6	3.6	3.5
Real GDP	2.4	3.0	3.0	2.3	2.4	2.2	2.5

Source: CONSENSUS™ forecast, Blue Chip Economic Indicators, March 1992

Due to the impact of the economic downturn, the professional services market grew at a drastically slower rate in 1990 and 1991 than in previous years, but the growth rate has turned up slightly in 1992 as shown in Exhibit VI-4.

- User expenditures are forecast to grow at a rate of 10% in 1992 increasing from $17.8 to $19.5 billion.
- Over the five-year forecast period, expenditures will increase from $19.5 billion in 1992 to $31.2 billion in 1997 at a CAGR of 10%.

EXHIBIT VI-4



As INPUT had anticipated in 1991, there was a slightly slower CAGR of 9% between 1991 and 1996, due to the impact of the recession and the outlook of users.

- This recession led to delays and cutbacks in systems development projects in 1991 and to questions about what business strategies to use to counter the impacts of the economic downturn.
- The business for contract systems personnel fell sharply as a result, becoming almost flat during the first quarter of 1991 in the Northeast.

The current pickup in growth is due to the pressure in firms to increase business performance. Although it should continue during the planning period, it could fall off if the recovery falters.

Continuing growth in professional services has also been encouraged in recent years by the tendency of organizations to maintain a work force below the levels needed to implement and enhance applications and to rely on professional services firms to supplement the work force during peak periods.

- This is being done less at present, but is still a factor supporting professional services growth.

- This tendency is also increasing interest in outsourcing application management, a trend which could add to professional services work.

The increasing complexity of technology and the demand to restructure business functions also creates additional demands for professional services.

- Professional services vendors have scarce technical skills and the industry knowledge and experience necessary for efficient problem solving.

- Professional services consulting can also help users select from the many applications software products, computers, and turnkey systems available to satisfy user needs.

- Professional services firms have been used to make impartial recommendations in the selection process since computer manufacturers or consultants from software product or turnkey system companies may attempt to promote their products. However, professional services, used as consultants, often find that it is difficult to move from the role of consultant to supplier of services for project implementation.

2. User Expenditures by Industry

Users will have spent about $19.5 billion for professional services, spread across 15 industry sectors in 1992. These expenditures are shown, by industry, in Exhibit VI-5.

Spending for professional services by the six leading industries accounted for about 84% of total user expenditures, in 1992. The top six industries are, in order:

- Discrete manufacturing
- State and local government
- Process manufacturing
- Banking and finance
- Federal government
- Insurance

EXHIBIT VI-5

Professional Services User Expenditures by Industry, 1992-1997

Industry Sector	User Expenditures ($ Millions) 1992	1997	1992-1997 CAGR (Percent)
Discrete Manufacturing	4,879	7,676	9
State and Local Government	2,942	5,556	14
Process Manufacturing	2,405	3,820	10
Banking and Finance	2,397	3,465	8
Federal Government	2,098	3,040	8
Insurance	1,592	2,287	8
Telecommunications	1,210	2,485	15
Wholesale Distribution	380	542	7
Business Services	326	465	7
Medical	295	460	9
Utilities	270	388	8
Transportation	252	355	7
Retail Distribution	238	340	7
Miscellaneous Industries	132	191	8
Education	89	146	10
Total	19,505	31,216	10

A number of factors contributed to the current spending levels in the key industries:

- Driven by the need to improve performance, discrete manufacturers are using professional services to improve product and service quality, production processes, management/distribution functions, the network infrastructure, and order entry processes.

- State and local governments expanded network and computing capabilities and implemented new eligibility and emergency response applications as well as other accounting, revenue collection, and health and human services applications. Professional services firms were also hired to upgrade existing applications systems.

- In banking and finance, new trading systems as well as consolidation, deregulation, and internationalization are creating opportunities for professional services firms offering software development and consulting services, although systems integration and outsourcing by systems operations firms took advantage of some of these opportunities. Steps to reduce operational costs have also led to ongoing use of professional services in the banking and finance industry.

- Professional services use in process manufacturing has been driven by the desire to integrate production and operational and production systems as well as by ongoing needs to reduce costs. Process manufacturers are also improving their information systems to yield more information on customers and markets to use in sales and product programs.

- There is still a significant amount of work in the federal government to replace or upgrade older computer systems in accounting and finance, logistics, and personnel systems, although work has slowed due to reductions in Defense Department and other expenditures. Systems integration, as well as professional services contracts, have been used to upgrade applications to achieve improved effectiveness. The use of consulting has decreased in relation to software development due to the bias of Congress against this type of work, which often uses the expertise of ex-employees.

3. Expenditures by Functional Area

An analysis of users' professional services expenditures as of the end of 1991 revealed some changes from 1990. They were still concentrated in the following four functional areas:

- Manufacturing/business operations

- Accounting/administration (including order entry, customer services, office systems)

- IS/telecommunications

- Logistics/physical distribution

However, the expenditures for professional services in manufacturing/operations and accounting/administration, as shown in Exhibit VI-6, account for about 50% of the 1991 total, slightly less than the total in 1990.

- The expenditures for IS/telecommunications are growing faster than either of these areas.
- Expenditures in human resources are also increasing more rapidly although from a much smaller base.

EXHIBIT VI-6

Professional Services Expenditures by Functional Area, 1991

Functional Area	Expenditures ($ Billions)	Percent of Total
Manufacturing/ Business Operations	5.0	28
Accounting/ Administration/ Office Operations	3.9	22
IS/Telecommunications	3.0	17
Logistics/Distribution	2.5	14
Research and Development	1.5	8
Sales and Marketing	1.3	7
Human Resources	0.3	2
Other	0.4	2
Total	17.8	100

In the manufacturing and operations area, there are a wide range of professional services activities such as upgrading or developing MRPI and MRPII, computer-integrated manufacturing, just-in-time inventory, airline reservation, railroad management, and utility operation systems.

Accounting and administration expenditures for professional services result from activities such as more detailed analysis of costs, new accounting requirements, and the increasing use of electronic data interchange (EDI) services and electronic commerce. INPUT divides EDI-related professional services into two categories: front-end and back-end.

- Front-end EDI professional services include the consulting and software modification necessary to implement EDI services.
- Back-end EDI professional services, chiefly software modification, result from the need to modify existing software products or to purchase

and modify new accounting and finance software products to utilize EDI capabilities fully.

4. Expenditures by Customer Size

User expenditures for 1991 are divided in Exhibit VI-7 by the size of customer. Customer sizing information is influenced by data published in *The U.S. Industrial Outlook and Sales and Marketing Management* magazine.

EXHIBIT VI-7

U.S. Professional Services Expenditures by Organization Size, 1991

Industry Sector	1991 User Expenditures ($ Millions)			
	Small	Medium	Large	Total
Discrete Manufacturing	532	1,113	2,814	4,459
Process Manufacturing	274	693	1,152	2,119
Transportation	47	60	126	233
Utilities	39	90	120	249
Telecommunications	576	NA*	522	1,098
Retail Distribution	18	42	160	220
Wholesale Distribution	75	136	140	351
Banking and Finance	299	1,200	685	2,184
Insurance	298	522	712	1,532
Medical	32	90	150	272
Education	8	25	49	82
Business Services	44	71	189	304
Federal Government	276	645	979	1,900
State and Local Government	203	403	2,032	2,638
Miscellaneous Industries	23	33	60	116
Total	2,744	5,123	9,890	17,757

*INPUT divides telecommunications into large (RBOCs, MCI, Sprint, AT&T) and small local telco carriers

Large users controlled 55% of 1991 information systems expenditures for professional services, compared to 55% in 1990 and 54% in 1989. Larger organizations are increasing expenditures on a relative basis. Midsized organizations, however, are making relatively significant expenditures in the federal government, discrete manufacturing, and processing manufacturing sectors. Midsized banks control a greater share of professional services than large banks. Please refer to INPUT's *Definition of Terms* (Appendix A) for definitions of industry sectors.

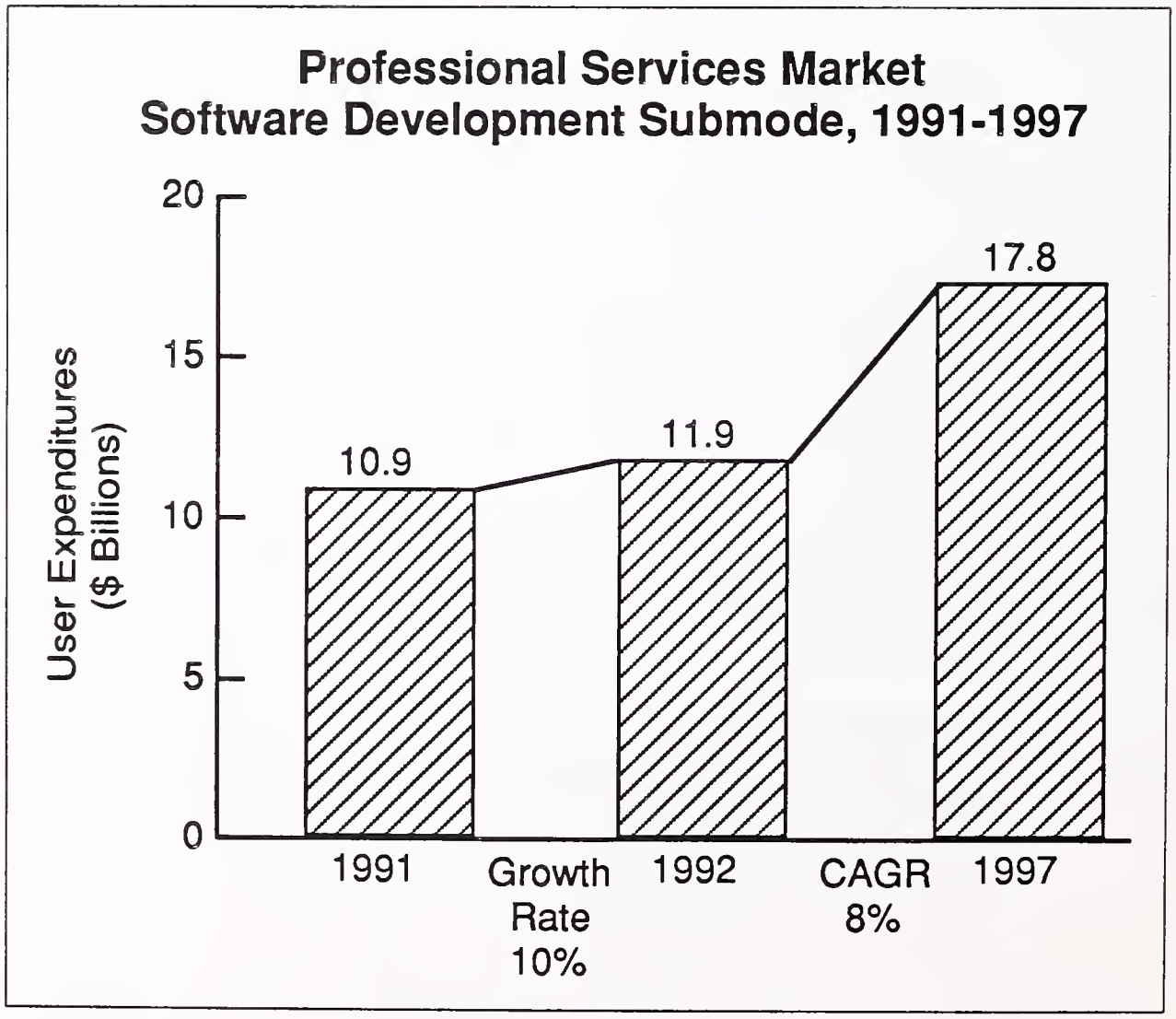
D

Forecast by Submode

1. Software Development Submode

User expenditures for software development in 1991, were $10.9 billion, making this segment the largest of the three professional services submodes. As shown in Exhibit VI-8, it is expected to grow 10% in 1992 to $11.9 billion and will increase at a CAGR of 8% through 1997 when user expenditures will reach $17.8 billion.

EXHIBIT VI-8



Growth rates have increased above last year's forecasts, but are not as high as those for consulting services or education and training submodes.

- The growth rate increased due to the pressures in business to improve performance. Enhancements, upgrades, and new systems are being sought to improve the quality of products and services as well as revenues and earnings.

- Many of the improvements being sought are being implemented with downsized applications on client/server systems; so many vendors and users associate the increase in software development work with the use of client/server systems.

The slight increase in expenditures in 1992 is occurring despite the pressure on prices in the software development mode from the increased competition in professional services and other factors.

- There is competition from other information services firms for professional services work (the software maintenance work that is being performed by software vendors or the add-on assignments picked up by SI vendors).

- There has also been a growth in the number of low-priced agency providers of contract personnel, which has been reducing the revenues that result from software development.

- The accomplishment of software modification and enhancement work by in-house staffs through the use of CASE and 4GL tools is also reducing the amount of software development work available to a small but increasing extent.

The following services are included in INPUT's definition of software development.

- User requirements definition
- Systems design
- Data base design
- Programming
- Testing
- System modification and maintenance
- Documentation/technical writing
- System conversion
- Network development
- Other services

In general, software development work is driven by ongoing need to make application systems more responsive to business needs, to utilize new technologies in hardware and telecommunications and to take advantage of new generations of software products.

- This work is also driven by increasing purchases of information systems capabilities in organizations of all sizes.

- In addition, it is strongly driven by the growing need to integrate networks, applications, and data bases.

The introduction and upgrading of computers and associated equipment mean more business for professional services firms.

- A series of product introductions—such as IBM's AS/400, RS6000, and ESA; DEC's Alpha; and VAX hardware—leads to software conversion business as users develop new applications or modify existing software.

- New workstations and client/server products from a number of vendors are also adding to professional services business.

- A number of smaller vendors provide professional services expertise to customize software products and set up operations for PCs to meet the needs of smaller businesses.

The IS vendors that develop software products do not always use the benefits of new technologies such as higher density disk and tape storage drives, relational data base management software, 4GLs, optical disks, optical scanners, integrated voice/data products, and CASE.

- Professional services vendors tend to support these technologies as well as convert existing user application systems in order to use these technologies.

- However, some software product vendors are now taking more advantage of opportunities to supply professional services to enhance use of their products. This should continue and make more use of CASE methodology in the future.

The management of application systems is providing a new initiative for software development work.

- The large body of existing application systems is in increasing need of services to aid with enhancements, maintenance, and upgrades as well as documentation.

- Vendors are now beginning to offer and provide services to provide this application management outsourcing service.

Manufacturing, state and local government, banking and finance, and insurance are the industries most heavily utilizing software development services.

- Increasing international business is one of the factors providing increases in business in all of these industries, except state and local government, as well as other industries, including telecommunications and transportation.

- U.S. manufacturing companies and services vendors report adding specific software features such as the ability to handle exchange rates and different currency denominations for foreign purchases and sales.

An additional driving force for software development is the trend toward greater use of standards, particularly in network operations.

- Despite the promulgation of numerous sets of standards, standards enforcement is largely missing in software development.

- Hardware and software vendors imbed proprietary hooks in their products at levels requiring sophisticated knowledge. Custom software development expertise is needed to overcome this situation.

2. Consulting Submode

Consulting had 1991 user expenditures of $4.2 billion and is forecast to grow 11% in 1992 to $4.7 billion as illustrated in Exhibit VI-9. The growth rate increased by 22% over 1991.

- The recession in the economy caused a drop in the growth rate in 1990, but the demand for consulting services caused a sharp recovery in 1991.

- The growth of consulting at a CAGR of 13% to $8.6 billion in 1997 is also depicted in Exhibit VI-9.

- Exhibit VI-10 illustrates that consulting is the submode that most users of professional services feel a need to use, in the immediate future.

EXHIBIT VI-9

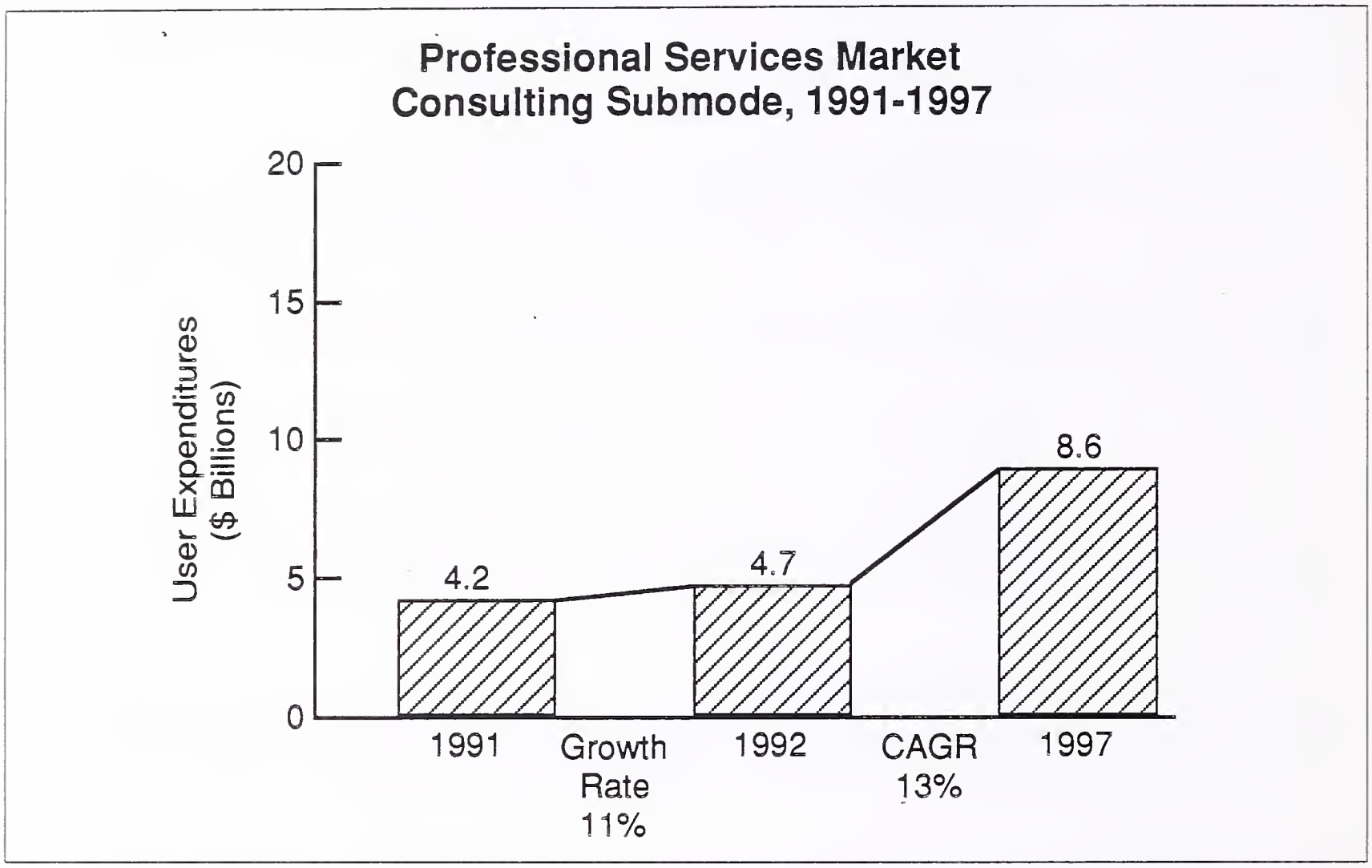


EXHIBIT VI-10

Near-Term Needs for Submode Users of Professional Services

Submodes	Percentage of Respondents Indicating a Need
Consulting	36
Software Development	34
Training and Education	30

The consulting segment of professional services, according to INPUT's definition, includes the following:

- Software installation planning
- Information systems audit
- Personnel planning
- Policies and procedures development
- Network planning and design
- Information systems strategic planning
- Systems analysis
- Other

A number of vendors have recently increased their professional services consulting work since it is growing more rapidly than other professional services submodes, has a higher mark up, and may influence the use of other services.

- Big Six accounting firms, and particularly Andersen, have increased consulting as part of their approach to the market. In many cases, they tend to sell consulting work as a first step before initiating a project.

- CSC acquired consulting strength with Index and now offers consulting as a service in itself as well as a means of initiating large jobs.

- IBM, DEC, and others have increased their services in order to use consulting as a means of learning about and becoming involved in new projects at an earlier point.

McKinsey and Booz-Allen continue to increase their consulting business, particularly strategic planning in support of meeting business objectives. Both these firms have attempted recently to use consulting assignments to gain add-on project work and have had some success according to clients.

- In many cases, particularly in banking and finance, professional services or SI firms that attempt to leverage consulting work into project assignments have found that prospects feel that it would not allow them to have an objective, disinterested outlook in regard to consulting.

- Several vendors have noted that they don't want to obtain consulting assignments in cases where this might preclude them from bidding for large projects. Other vendors are developing or have approaches for work development that would allow them to perform both consulting and follow-up project work.

Although it would seem that the mounting competition for shares of the growing and profitable consulting market should tend to result in lower prices, users are more willing to accept high prices for consulting than for other services. Users tend to associate the most effective consulting with high-cost suppliers.

The revenues for current consulting services for a group of firms were broken down by professional services component and averaged (Exhibit VI-11). This illustrates that most consulting is involved with project management and procedures, although systems analysis, network planning, and strategic planning are growing in size.

EXHIBIT VI-11

Components of Professional Services Consulting

Component	Percentage of Consulting Expenditures
Planning and Auditing	8
Systems Analysis	15
Network Planning, Design and Implementation	10
Project Mgmt., Procedure Development, and Other	67

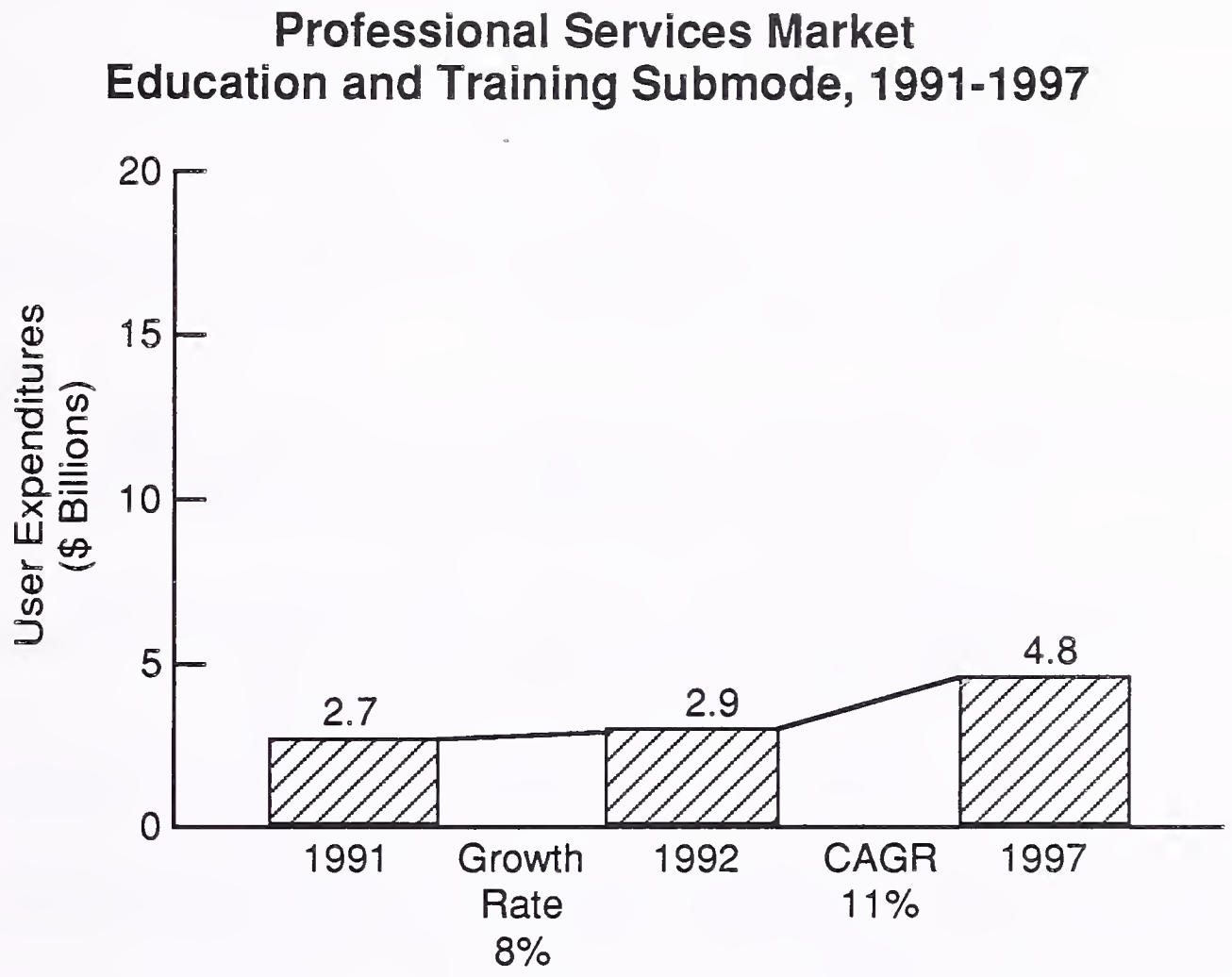
Consulting services are being used more in practically all vertical markets except for the federal government, but particularly in manufacturing, banking and finance, insurance, telecommunications, and state and local government.

3. Education and Training Submode

In 1991, education and training reached a level of $2.7 billion for external user expenditures for such services; funds spent for internal training are not reflected in the figures.

- As illustrated in Exhibit VI-12, the education and training submode will grow 8% in 1992 and reach a total of $2.9 billion.
- This submode will also grow at a CAGR of 11% between 1992 and 1997, reaching $4.8 billion in 1997 as indicated in Exhibit VI-12.

EXHIBIT VI-12



As a result of the recession, the growth rate was down through 1992.

- It picked up late in 1992 and will increase through 1997 due to the continuing changes in application systems and technology use, particularly the introduction of client/server technology and downsized systems.

- Vendors are giving education and training more importance. Several have noted that it is the foundation upon which they base plans for continuing work and the means that large commercial, government, and services customers use to upgrade their expertise.

Education and training includes the following subjects:

- Methodology and software engineering
- Systems software products
- Hardware platforms
- Technology
- Information systems management
- Application software products
- Operations functions
- Office systems

For software products, education and training covers CASE tools, UNIX and open systems, and parallel architecture, as well as vendor products such as CICS, DB2, and Digital's and Oracle's data base management systems.

Education and training is also needed for new hardware platforms and technology.

- Users and software developers must learn the technical ins and outs of products from the IBM AS/400 midrange system and RS6000 to the DEC Alpha and Sun workstation.

- Information systems managers, as well as non-IS managers, need high-level information on emerging technologies such as imaging systems, robotics, industrial automation, AI, LANs, telecommunications, data communications, and voice/data integration.

In addition, information systems managers require exposure to new methodologies for running the IS department.

- Education and training is required in order to keep up with changes in project management and software development methodologies.

- Higher level training classes once offered only to vendor personnel may now be attended by user personnel as well as vendor personnel.

Newer techniques for training such as the use of hypertext and multimedia are also enabling training courses to ensure much more success in the use of information systems.

Additional emphases and new initiatives in education and training are being introduced by a number of vendors including Andersen (client/server use), IBM (extending its wide range of offerings), and Computer Associates (PowerBench).

E
Analysis of the Market

The professional services market is a mature market that has shown a trend toward increasing intensity of competition. Other trends are as noted below:

- User-driven market segmentation of vendors during the evaluation process, which is occurring more frequently

- Differentiation of vendors that offer a range of products or proprietary products or services

- Use of specialized alliances between professional services and other vendors

These trends can be seen in relation to types of professional services projects:

- For large professional services or SI projects, users select vendors who are large enough to offer project management and a wide range of technical skills as well as industry/application knowledge and experience in similar applications. These are the vendors favored in most cases.

- For contract services work, the availability of technical skills with sufficient industry/application knowledge at an attractive price defines the users' primary interest.

- For specialized needs in communications or software engineering, for example, vendors may be sought who differentiate themselves in those specialties. However, some vendors try to differentiate themselves in terms of their ability to provide a wide range of services or meet any need that clients or prospects may have.

IBM attempts to do this though internal capabilities and alliances and by locating people with expertise that may be needed at any time through the use of agency contract service firms. Andersen and several other Big Six firms meet specialized client and prospect needs through alliances with software, hardware, or professional services firms.

Firms have differentiated themselves by technical expertise in areas such as telecommunications, data management, proprietary software for computer-aided software engineering, and certain application software products. They often attempt to maintain this differentiation by not selling their products directly to users, but by delivering them as part of an assignment.

The D. Appleton Co. and Oracle are known for expertise in data management; Bachman and Andersen are known for expertise in software engineering; Bolt Beranek and Newman, EDS, and DEC are known for expertise in network support and development. These examples illustrate that many large vendors have made an effort to become known for specialties as well as general capabilities.

Vendors such as AMS, Andersen, and EDS have also developed industry software products which are not sold directly to customers but are used to differentiate professional and SI services.

An expanding current characteristic of the professional services business is the development of flexible relationships between professional services vendors and other information services and hardware vendors. These relationships help to expand the capabilities that vendors can offer to clients and prospects as well as to expand marketing opportunities.

This marketing approach partially results from the increasing level of specialized knowledge required and from smaller services vendors' inability to make a substantial investment in training an internal staff on hardware, systems software products, and other new technology.

F

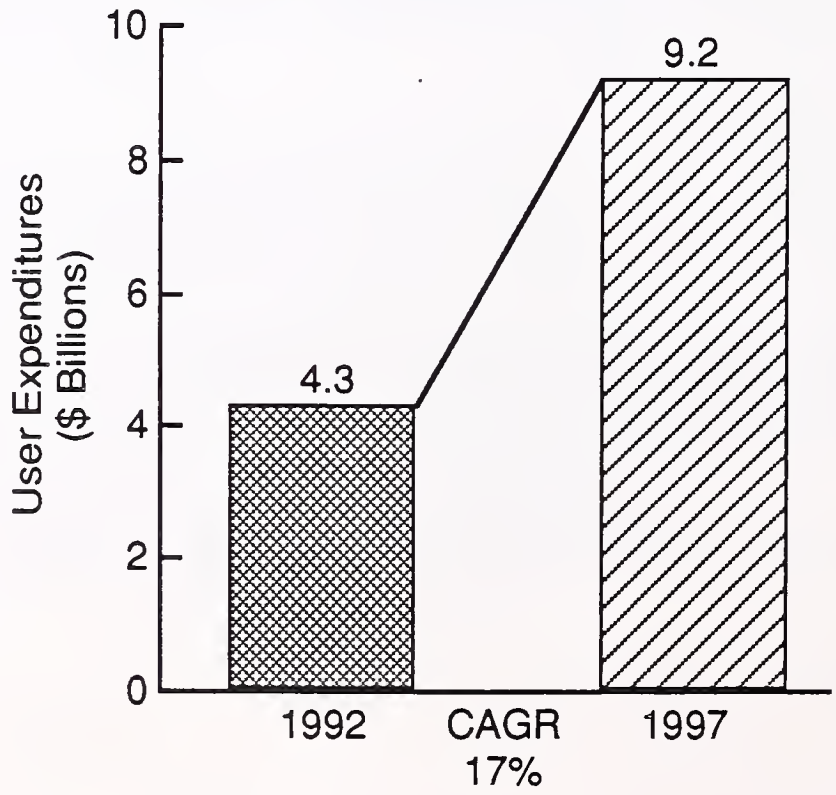
The Contribution of Professional Services to Systems Integration

Professional services consulting is often a first phase of an SI project, and the project can often include all three submodes of professional services together with the selection of computer equipment, telecommunications equipment, packaged software, and other services.

- The extent to which professional services activities such as consulting, implementation, project management, and education and training can be associated with SI projects is illustrated in Exhibit VI-13.
- SI vendors, particularly larger ones, develop capabilities in all areas of professional services, either in-house or through alliances with third-party vendors.

EXHIBIT VI-13

Professional Services Portion of Systems Integration Market, 1992-1997



As indicated in Exhibit VI-13 expenditures for professional services in systems integration will grow at a 17% compound annual growth rate from 1992 through 1997, reaching $9.2 billion.

- This will amount to about 22% of the total professional services market in 1997.

- Professional services in systems integration and standalone professional services will be a $40 billion combined market in information services in 1997, without including the professional services work involved in customization of software products for turnkey systems, which is a third source of professional services as defined by INPUT.

Due to its high value-added characteristic, professional services is the largest and fastest growing component of SI.

- Consulting services are often the first step or the precursors of systems integration projects.

- Overall planning assistance, strategic consulting, feasibility studies, and cost effectiveness trade-off studies help the client to plan for the desired solution.

Professional services are also involved when an integrator plans, schedules, and controls the materials and human resources for a project. It also involves project management tasks such as project monitoring and status reporting to the client, and risk assumption by the vendor.

Key professional services in SI include customization of software products, development of new software modules and the conversion of existing software, or the modification of commercial software packages.

Professional services involved in "walking through" proposed as well as developed systems, providing demonstrations of proposed systems and providing education and training of client staff on the operation of the system (and the complete documentation for the project) are also critical to the success of an SI project.

Additional services that are not professional services in nature can also be required.

- Some major projects require that the vendor operate and maintain the developed system for a specified time. This is vendor-staffed, on-site support of the system, or systems operations.

- Under some contracts, maintenance is required under warranty for a defined period, while under other contracts, operations and maintenance is a specifically negotiated arrangement marking the transition of the system from the "prime contractor" vendor to the client.

The level of professional services sold with SI varies by market. The leading users in the past have included, discrete manufacturing, state and local government, and banking and finance.

G

Professional Services Initiatives Through Customer Services

INPUT's Customer Service Program, which tracks maintenance and support activities by computer systems manufacturers, software vendors, and independent maintenance vendors, has uncovered professional services initiatives in professional services.

- Many service organizations have identified professional services as an important growth market.

- Slowing growth rates in computer hardware maintenance revenues because of improving product reliability, increased competition, and increased pressure from users to reduce prices have, led vendors to seek new service opportunities.

- Specific activities and offerings vary among different vendors.

The basic concept defining professional services in this market is that customer services-based professional services is any service performed for a fee that improves the performance of a computer system. INPUT qualifies this definition to include only those services that are appropriately managed or performed by the service organization that affect the system's support requirements or ability to be serviced. The professional services activities include

- Planning (environmental, site, and installation)

- Consulting (performance optimization, network planning and design, network implementation, or cabling)

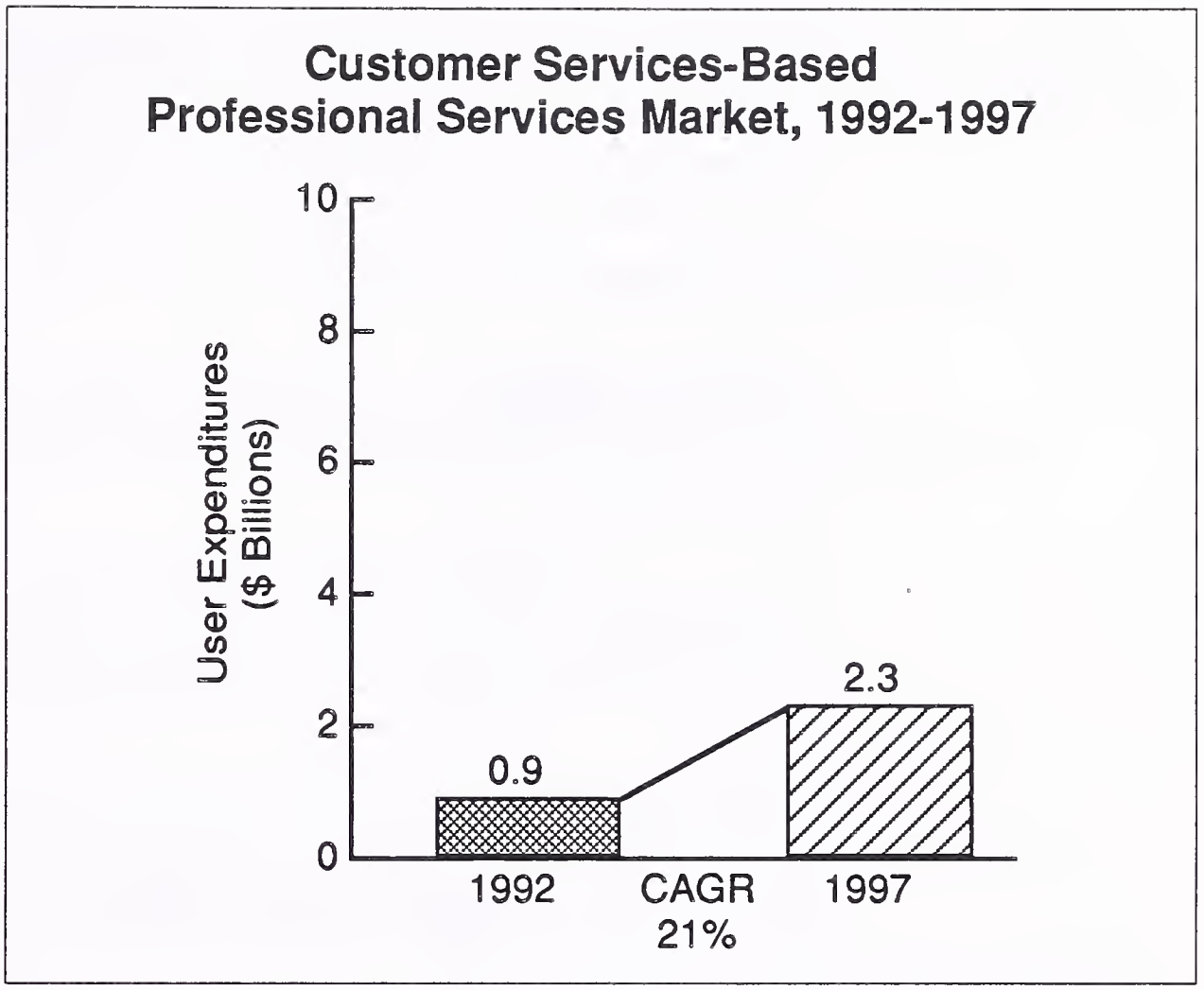
- Training (on the maintenance of the system)

- Relocation and reinstallation

- Site management or multivendor service coordination

INPUT's forecast for customer services-related professional services is shown in Exhibit VI-14. These relatively high growth rates are reasonable, given growing user demand for increased system reliability and availability and increasing user activity in these support areas.

EXHIBIT VI-14



As an illustration of these types of services, three IBM and two DEC offerings should be reviewed.

- One offering of IBM, Customized Operational Services (COS), is a series of site management and planning services that include the following:

  - Site readiness services
  - Contractor services
  - Installation management
  - Cabling
  - Data center evaluation and design consulting
  - Relocation planning and management services

In keeping with the customized nature of professional services, IBM prices COS on a case-by-case basis.

- Another major IBM professional services offering in this category is its Technical Services Management (TSM) program under which IBM provides multivendor support for users, either subcontracting the service or, at IBM's discretion, offering the third-party service itself.

- The third major offering of this type by IBM is Telecommunications Services Network Support. This offering provides TSM-like multivendor support on a wide range of telecommunications and data communications products. Services range from network problem identification to fix verification from IBM's Network Support Center.

DEC's offerings are categorized as two multivendor services:

- The first, Enterprise-Wide Services, is a comprehensive package of planning, program management, and integrated support services drawing from selected service alliances that Digital expects to sign with leading service vendors.

- The second, DEC's Network Enterprise Management Program, serves as a platform for existing network planning and support services, and adds new services resulting from alliances with leading telecommunications vendors.

In addition to IBM and DEC, Hewlett-Packard has also entered the world of multivendor service through its Multivendor Support Operation and a Strategic Partners Program, which is designed to attract original-equipment manufacturers (OEMs) with little or no service presence.

The need to compete in the professional services market has also been recognized by independent maintenance organizations. Ceridian's organization introduced an operating system software, maintenance planning, and management service called Total Operating Performance Package (TOPP).

H

Overall View of Professional Services

An overview of the sources of professional services revenues and an overall summary of combined professional services revenues in the customer services, turnkey, SI, and professional services markets are shown in Exhibits VI-15 and VI-16.

- The overview notes the relative revenue contribution of each revenue source for the years 1992 and 1997.

- The summary indicates that total use of professional services will grow from $26.7 billion in 1992 to $46.6 billion in 1997 at a CAGR of 12%. This rate is greater than the CAGR of 10% for the standalone professional services market.

- The standalone professional services market accounts for about 73% of professional services business. This fact should encourage firms with professional services capabilities to explore other uses for these capabilities.

EXHIBIT VI-15

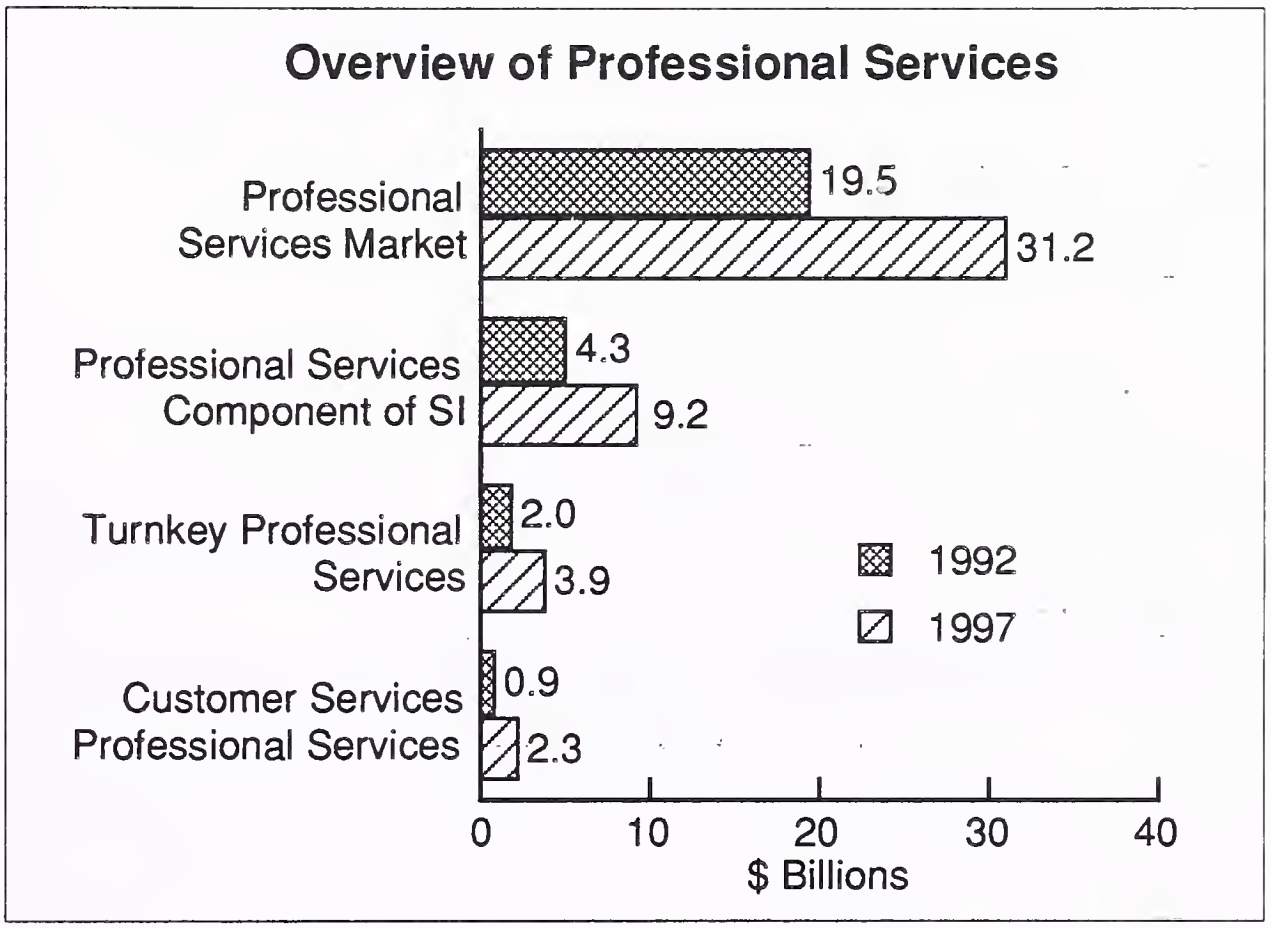
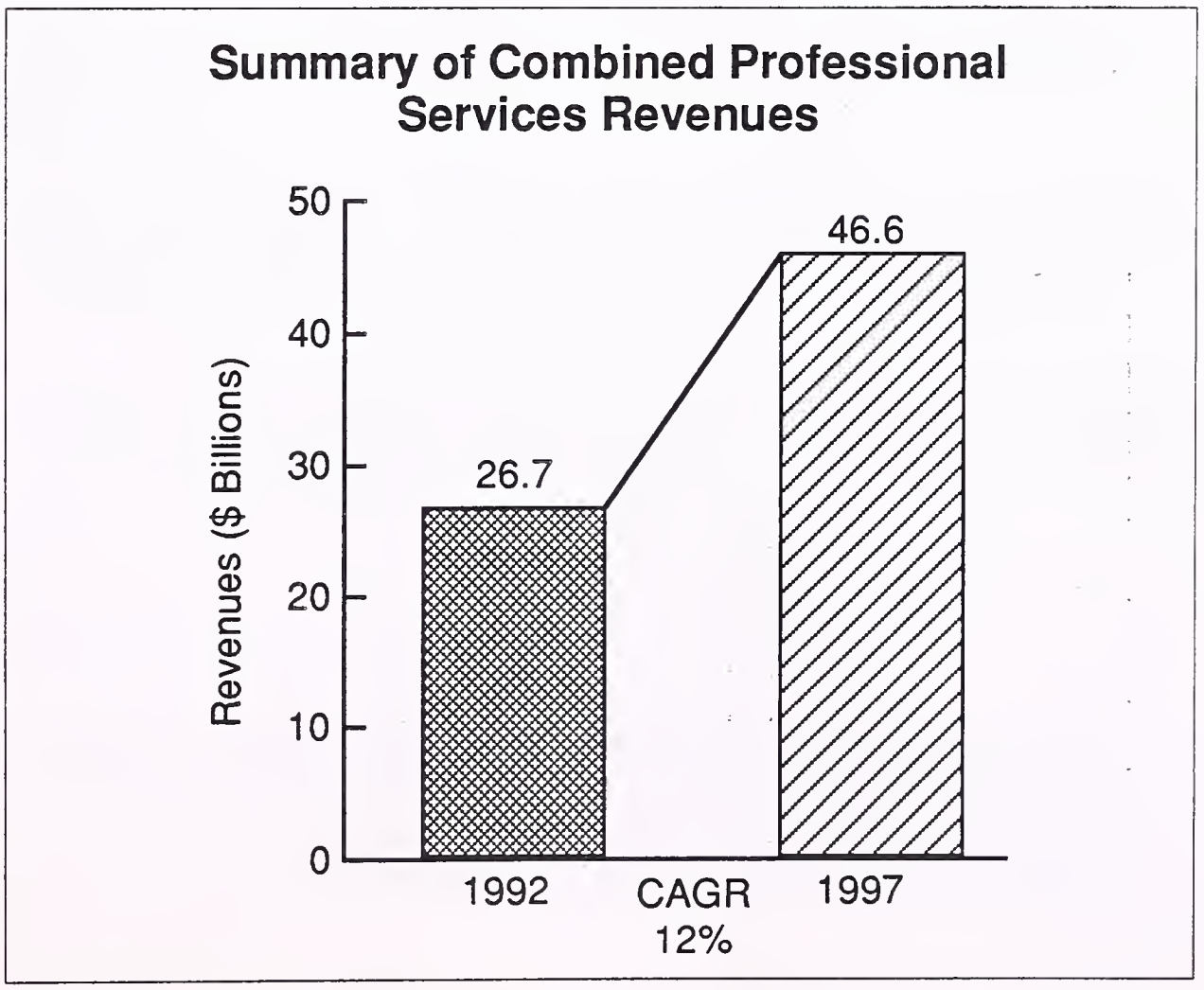
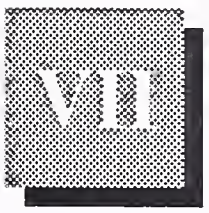


EXHIBIT VI-16





Competition

A
Introduction

In this chapter the major vendors of professional services in the U.S. are identified and analyzed.

- The leaders in terms of total revenues and revenues in each of the submodes (software development, consulting, and education and training) are identified.

- Differences between leading and other vendors are analyzed.

- Vendors that serve various submarkets are also noted.

The presence of leading vendors in both professional services and SI markets will also be explored since it is a major characteristic of this marketplace.

- Systems integration (SI) was separated from professional services (PS) as a separate delivery mode when it became distinguishable from professional services in its focus on delivering solution services and in its different growth rate and marketing methods.

- Facilities management was also separated from professional services in the recent past and is now reported as part of systems operations (SO) since it involves operational processes.

B
Market Leaders

The largest vendors of professional services in the U.S. include many companies devoted principally to other products and services as shown in Exhibit VII-1. Computer, aerospace, and other manufacturers; public accountants; and a phone company subsidiary are included among the leading vendors.

EXHIBIT VII-1

Largest U.S. Professional Services Vendors, 1991

Rank	Vendor	Professional Services Revenues ($ Millions)
1	IBM	560
2	CSC	550
3	EDS	520
4	Andersen Consulting	340
5	Logicon	240
6	DEC	218
7	PRC	215
8	CTG	212
9	NYNEX/AGS	208
10	Unisys	196
11	Ernst & Young	183
12	CGA	181
13	ATT	175
14	A.D. Little	170
15	Hewlett-Packard	168
16	Coopers & Lybrand	150
17	BDM International	137
18	Grumman	135
19	NETG	125
20	McKinsey	114
21	Martin Marietta	112
22	KPMG	107
23	Computer Data Systems	92
24	Deloitte & Touche	97
25	Keane	90

- Less than 40% of the top firms listed in Exhibit VII-1 are devoted primarily to professional services.

- Computer manufacturers, public accounting, and auditing services, and firms associated with federal government contracts stand out as groups among the top 25 professional services vendors.

- In particular, computer manufacturers, including IBM, DEC, ATT, Unisys, and Hewlett-Packard are notable as the leading group among the top 25 vendors.

- The top 25 firms also include Andersen Consulting and three other members of the Big Six—Ernst & Young, Coopers & Lybrand, and KPMG. The remaining 2 members of the Big Six, Price Waterhouse and Deloitte & Touche, fall into the next tier below the top 25 but have significant amounts of professional services and SI revenue.

Revenues of the top four firms (IBM, CSC, EDS, and Andersen) grew at an average rate of 13% between 1990 and 1991, which was above the average rate of other vendors in the top 25. These firms have remained entrenched in the top four positions for the last few years.

- The top four firms did not grow as fast as they did between 1989 and 1990 in professional services. Their average growth in systems integration and systems operations was greater, however.

- The aggregate revenues of the top 25 vendors grew faster in 1991 than they did in 1990, at a rate of over 10%.

There were higher rates of growth for professional services among vendors below the top 25 vendors. Companies such as Computer Generated Solutions and Comtex grew at rates above 15%, but from a smaller base.

Some software firms such as American Software, System Software Associates, Computer Associates, and Oracle have also been expanding their professional services business at rates above those of most of the top 25 vendors.

One of the reasons for slower growth among larger vendors is that most of the top professional services vendors have directed much of their marketing and sales work to attempting to gain SI contracts since they usually are larger jobs and can offer larger margins for professional services skills.

- Almost all the top professional services vendors have substantial amounts of SI work, as shown in Exhibit VII-2.

- The aggregate amounts of SI revenues for the ten leading vendors is greater than their total professional services revenues.

EXHIBIT VII-2

U.S. Professional Services Vendors, 1991
Professional Services and
Systems Integration Revenues

Vendor	$ Millions	
	Professional Services Revenues	Systems Integration Revenues
IBM	560	1,750
CSC	550	514
EDS	520	770
Andersen Consulting	340	745
DEC	218	565
PRC	215	239
CTG	212	44
NYNEX/AGS	208	153
Unisys	196	375
Ernst & Young	183	55
CGA	181	23
ATT	175	75
Coopers & Lybrand	150	120
BDM International	137	135
Grumman	135	207
Martin Marietta	112	376
KPMG	107	61
Deloitte & Touche	98	135
SAIC	60	470

The total amount of user expenditures for the professional services delivery mode is larger than expenditures for SI, but there are far fewer SI vendors.

- There are approximately 3,500 professional services vendors that have a staff of more than one or two professional consultants. Most of these firms try to offer low-cost personnel or services in their local areas.

- The small firms, however, offer and obtain work and assignments with most of the top banking and financial institutions, leading manufacturers, and other members of the Fortune 500, according to research performed for this study. One of the reasons that larger firms may find it harder to locate people with skills that are scarce is that it is much easier for people with scarce skills to obtain work directly from large companies by incorporating themselves or working through other firms with which they have a relationship.

- Although many larger professional services firms will attempt to pick up small as well as large assignments, most will concentrate their attention on larger, more complex jobs that often are SI projects. Larger vendors who do not follow this strategy are subject to pressures on contract service prices from the multitude of small vendors.

To fully compare leading professional services vendors, it is necessary to compare the sums of their professional services and systems integration revenues, as shown in Exhibits VII-2 and VII-3.

- The top four vendors of standalone professional services remain at the head of the list of combined revenues, although a number of others have marked changes in their relative positions.

- An aerospace firm (Martin Marietta), a computer manufacturer (Unisys), and a public accounting firm (Coopers & Lybrand) have substantially higher rankings using the sums of systems integration and professional services business than they did in the ranking of professional services business alone. DEC also moves up to a position just behind the top four vendors.

EXHIBIT VII-3

Ranking of Selected U.S. Professional Services Vendors (SI and Professional Services)

Vendor	Rank in Professional Services	Rank in Professional Services + SI
IBM	1	1
CSC	2	4
EDS	3	2
Andersen Consulting	4	3
Logicon	5	15
DEC	6	5
PRC	7	9
CTG	8	13
NYNEX/AGS	9	10
Unisys	10	6
Ernst & Young	11	16
CGA	12	18
ATT	13	14
Coopers & Lybrand	16	12
Grumman	18	11
Martin Marietta	21	8
KPMG	22	20
Deloitte & Touche	24	17
SAIC	>25	7

In addition to supplying professional services with SI work, some information services firms are also supplying professional services as part of their turnkey systems or customer services offerings.

- Almost a quarter of the total amount of professional services work being supplied is not part of the professional services delivery mode, as shown in Exhibit VII-4.

- There are substantial opportunities for offering professional services outside the professional services delivery mode.

Some of the top professional services vendors are also using professional services to gain or support systems operations work. Much of this work, such as modifying software products, providing education and training and handling various types of support, should be counted as professional services revenue—although this does not always take place.

EXHIBIT VII-4

Percentages of Total Professional Services Revenues in Other Delivery Modes

Delivery Mode	1992 (Percent)	1997 (Percent)
Professional Services	73	67
Systems Integration	16	20
Turnkey Systems	8	8
Customer Services	3	5
Total	100	100

C
Segment Leaders

1. Professional Services Submodes

a. Overview

Lists of the leading vendors in each of the three market submodes have been developed and included in the exhibits that follow.

- One former submode of professional services, facility management, has been reclassified as systems operations since it was operational in nature.

- A list of leading vendors in this service submode is also included at the end of this section as an aid in market analysis.

b. Software Development

There is a strong correlation between the leading vendors (for 1991) in the software development submode, listed in Exhibit VII-5, with vendors that were among the leaders in the list shown in Exhibit VII-1.

EXHIBIT VII-5

Leading U.S. Professional Services Vendors
Software Development Submode, 1991

Rank	Vendor	Estimated Vendor Revenue ($ Millions)
1	CSC	325
2	IBM	320
3	EDS	293
4	Andersen Consulting	200
5	NYNEX/AGS	152
6	CTG	151
7	DEC	140
8	Logicon	142
9	Unisys	132
10	CGA	130
11	Ernst & Young	125
12	ATT	125
13	Hewlett-Packard	118
14	PRC	115
15	Coopers & Lybrand	109

- Almost all leading professional services vendors tend to have a substantial base of services in software development except for firms like McKinsey or Booz-Allen, which specialize in consulting, or National Education Training Group (NETG), which specializes in education and training.

- Vendors such as CSC, CTG, and ATT show greater relative strength in this submode than in professional services (overall), based on their historical patterns of work. CSC has taken steps to modify this pattern and increase its strength in the consulting mode, however.

c. Consulting Services

The leading vendors in the consulting services submode shown in Exhibit VII-6 include one firm, Booz-Allen, that was not among the leading vendors listed in Exhibit VII-1.

- Booz-Allen and McKinsey have concentrated on offering both management consulting services and information services consulting. They both have been involved in the initial phases of professional services and systems integration projects where they perform high-level information technology and systems planning tasks.

- However, both McKinsey and Booz-Allen are now attempting to expand into the other submodes of professional services, since these assignments would enable them to increase revenues from accounts they have penetrated through consulting work.

EXHIBIT VII-6

Leading U.S. Professional Services Vendors Consulting Submode, 1991

Rank	Vendor	Estimated Vendor Revenue ($ Millions)
1	IBM	150
2	EDS	140
3	CSC	138
4	McKinsey	110
5	Booz Allen	105
6	A.D. Little	98
7	Andersen Consulting	80
8	PRC	69
9	Logicon	54
10	DEC	48

At this time, consulting services are being marketed more vigorously for several reasons:

- This type of service is growing at a faster rate than software development.
- Consulting tends to have a higher profit margin than other professional services.
- It can provide the opportunity to develop a foothold for follow-on services, although some clients, particularly large financial institutions, may wish to use a different vendor for consulting services than the one they use for implementation to ensure objectivity.

DEC, IBM, and CSC are among the vendors who have strengthened their ability to offer these services during the last few years. Newer companies such as Technical Solutions Company (TSC) have used consulting services as a means of making a successful entry into the information services business as well.

Some vendors, particularly members of the Big Six, make a greater effort to utilize their consulting skills during the sales process. They may incorporate their skills with demonstrations or presentations in ways that steer prospects or clients toward the use of their capabilities without going through a full bidding process.

d. Education and Training

The education and training submode was led in 1991 by NETG, which specializes in this submode, as shown in Exhibit VII-7.

- A number of computer manufacturers are in top revenue positions in this submode, due to the need for training in relation to new technology and systems software as well in relation to systems development or modification.
- Major professional services/SI vendors such as EDS and Andersen also are strong in this submode.

EXHIBIT VII-7

Leading U.S. Professional Services Vendors Education and Training Submode, 1991

Rank	Vendor	Estimated Vendor Revenue ($ Millions)
1	NETG	100
2	IBM	90
3	EDS	87
4	CSC	79
5	Andersen Consulting	60
6	Sra/Crwth	55
7	Logicon	47
8	Legent/Goal	36
9	ATT	34
10	PRC	32
11	DEC	30
11	Learning Tree	30
11	Unisys	30

A group of vendors, including Andersen, EDS, Deloitte & Touche, and IBM, have indicated that they think education and training will increase in importance because of the greater participation of users in systems development and operations through client/server systems and downsizing.

The vendor revenues that have been identified in the last three exhibits do not reflect the total amount of vendor activity in these submodes since many vendors are performing the same services in systems integration projects.

e. Systems Operations

Some of the leading vendors of professional services, such as EDS and CSC, are among the leaders in supplying systems operations services, as indicated in Exhibit VII-8.

EXHIBIT VII-8

Leading Systems Operations Vendors, 1991

Vendor	Revenue ($ Millions)
EDS	1,300
CSC	502
AMEX	400
IBM	290
Affiliated Computing Services	202
Systematics	185
Shared Medical Systems	161
DEC	150
SEI	138

- Professional services capabilities can help in the delivery of systems operations services, as discussed previously.

- Systems operations is classified as a separate services submode since it is operational in nature. Further information on this submode can be found in the reports and program on systems operations provided by INPUT.

2. Federal Government Professional Services Market

The list of leading vendors of professional services to the federal government, shown in Exhibit VII-9, reveals that a number of the top vendors receive a large percentage of their professional services revenues from the federal government. This is a concern to many vendors since government work is decreasing in many areas.

- Vendors such as BDM, Planning Resources Corporation (PRC), Martin Marietta, and Centel depend on the federal government to a much greater extent than other top vendors.

- Vendors such as EDS, IBM, and CSC are major vendors in the federal market as well as in the non-federal market.

Many large vendors such as Andersen Consulting, CTG, and CGA do not appear on the list of leading federal vendors of professional services since they are inactive, or not nearly as active, in the federal market.

EXHIBIT VII-9

Leading Professional Services Vendors to the Federal Government, 1991

Vendor	Revenue ($ Millions)
CSC	365
Logicon	235
EDS	130
Grumman Data Systems	109
Unisys	112
BDM	104
PRC	109
Computer Data Systems Inc.	88
Martin Marietta	102
Centel Federal Systems	90
IBM	100
BBN	85
CACI	58
Syscon	62
Oracle	60

3. Non-Federal Professional Services Market

A comparison of the leading vendors in the federal government market with those that are leaders in the non-federal market, as shown in Exhibit VII-10, reveals that there are some large vendors of professional services—such as Logicon, Syscon, and Centel—which disappear when only commercial revenues are examined.

EXHIBIT VII-10

Leading Professional Services Vendors Non-Federal Government Sector, 1991

Rank	Vendor	Estimated Vendor Revenue ($ Millions)
1	IBM	460
2	EDS	390
3	Andersen Consulting	314
4	CTG	212
5	NYNEX/AGS	208
6	CSC	185
7	Ernst & Young	183
8	CGA	181
9	DEC	180
10	Hewlett-Packard	160
11	ATT	159
12	Coopers & Lybrand	143
13	NETG	125
14	A.D. Little	114
15	KPMG	107
16	PRC	106

- Only IBM, CSC, EDS, and PRC are in both exhibits. Eight of the top 10 vendors in the two exhibits are different.

- Only Exhibit VII-10 has members of the Big Six. Several of these firms have begun to address the federal market since it *is* a large market—even if it is not growing as rapidly as other vertical markets.

- The list of leading vendors in the non-federal market contains more manufacturers of computing equipment than the list of leading federal vendors. Computer manufacturers make an effort to penetrate more vertical markets in order to expand sales of equipment and services.

- Due to their involvement in federal procurement, firms with an aerospace background tend to become involved in federal professional systems business. They are less likely to be on the list of leading vendors in non-federal markets, although some of these firms have attempted to expand services in commercial markets in the recent past.

4. Software Products Vendors

Exhibit VII-11 presents a list of software product vendors that generate revenue from professional services.

- Few software product vendors manage to generate meaningful revenue from professional services as compared to public accounting firms, for example, because they do not have as much experience in marketing and selling a service (as opposed to a product).

- There is some continuing interest in providing professional services today, although most software vendors are still unlikely to offer it since pricing, selling, and performing professional services assignments is different from handling software products.

EXHIBIT VII-11

Independent Software Products Vendors Offering Professional Services, 1991

Rank	Vendor	Estimated Vendor Revenue ($ Millions)
1	Oracle	110
2	CAI	55
3	American Software	52
4	Cadence	42
5	Compuware	40
6	System Software Assoc.	30

5. Public Accounting Firms

Exhibit VII-12 illustrates that Big Six firms have had considerable success in the professional services market. Most of these firms also have meaningful revenues from SI business as well.

EXHIBIT VII-12

Leading Public Accounting Firms in Professional Services, 1991

Rank	Vendor	Estimated Vendor Revenue ($ Millions)
1	Andersen Consulting	340
2	Ernst & Young	187
3	Coopers & Lybrand	150
4	KPMG Peat Marwick	107
5	Deloitte & Touche	97
6	Price Waterhouse	34

- They have gained business through past contacts and relationships in auditing and accounting business (as well as their experience in selling services) to gain professional services work.
- They have also used their industry knowledge and experience, two major decision factors for clients in vendor selection, to gain business.

6. Computer Manufacturers

Computer manufacturers have used professional services to help sell computing equipment and software products for some time. A list of the leading vendors among computer manufacturers is shown in Exhibit VII-13.

EXHIBIT VII-13

Leading Computer Manufacturers in Professional Services, 1991

Rank	Vendor
1	IBM
2	DEC
3	Unisys
4	ATT
5	Hewlett-Packard

- In response to the increasing interest of users in buying solutions to business problems rather than just purchasing computing equipment and software products, computer manufacturers have used professional services to analyze problems more fully, modify or supplement software products to satisfy user needs, and train user personnel to ensure that operations activities are successful.

- Computer manufacturers have also made arrangements with other providers of professional services and software products who can help them solve a wider range of industrial problems and thereby market a greater volume of equipment systems. IBM uses Hogan, AMS, and CTG, among other firms, and DEC benefits from relations with Andersen, Ross, and Comtex.

7. Telecommunications Vendors

Vendors in the telecommunications market, such as NYNEX, ATT, Ameritech, Bell South, Bell Atlantic, and Pacific Telesis, have been active in or explored opportunities in the professional services market.

- NYNEX has been the most active and is the largest vendor of this group in the professional services market, with considerable penetration in the U.S. and overseas financial industry.

- Other vendors in this market have offered processing and network services as well as software products, professional services, and SI. Bell Atlantic has made an alliance with AMS to further their business aims in information services.

D
Mergers and Acquisitions

Professional services vendors have attempted to become more competitive through mergers, joint ventures, and alliances. A number of these recent arrangements by vendors are shown in Exhibits VII-14 and VII-15.

- Many of these arrangements have recently been made to fill gaps in or expand product lines.

- These arrangements with other firms are also made to help penetrate new industries, leverage sales contacts, and expand the range of industries that can be approached for sales.

Of interest to users is the fact that vendors who work together may improve the solution that can be offered by combining their products and services.

EXHIBIT VII-14

Examples of Acquisitions/Investments

Acquirer	Company or Service	Comment/Strengths
AGS Info. Services	Decision Resources	Management consulting and EIS
Aion	AI Corp.	Application modification tools
AMS	Invested in Advantage KBS	Consulting re: knowledge-based systems
Bull HN Info. Sys.	Honeywell Federal Systems	Strengthens federal marketing and skills
Ceridian	Barrios Technology	UNIX integrator
CA	Newtrend	Expand information services opportunities in banking
Coopers & Lybrand	Joint venture with IBM through Meritus	To address manufacturing market
CAP Sogeti	United Research	Consulting capabilities
Computer Task Group	Connolly Data Systems	Strengthens data communications
Computer Sciences Corp.	Paragon	Consumer products market
CSK, Japan	Micrognosis	Global penetration of financial services markets
C3	Telos	Broaden market coverage
EDS	SD Scicon	Business in U.K. and Europe
EDS	McDonnell Douglas Systems Integration	Strengthens CAD/CAM and manufacturing business
IBM	Versant	Object-oriented capabilities
Ernst & Young	CASE Research	Strengthens CASE capabilities
Oracle	Net Frame	Parallel technology
Ross Systems	Pioneer Computer Ltd.	Process manufacturing knowledge and European market presence
SHL Systemhouse	Strifler Group	Open systems expertise
Titan	Stonehouse	Expand government penetration

EXHIBIT VII-15

Examples of Alliances/Joint Arrangements

Firm	Alliance	Comments/Strengths of Ally
AMS	NYNEX	Cellular billing
Andersen	Ungermann-Bass	Network integration
Andersen	Microsoft	Services for client/server applications
Apple	CGI and Bell Atlantic	Tie Macintosh computers to IBM environments
CGA	D&B Software	Re-engineering to support new software products
Coopers & Lybrand	JD Edwards	Accounting software products
Coopers & Lybrand	NMI	Network management
Coopers & Lybrand	Software 2000	AS/400 inventory, warehouse, financial application products
DCA	Ernst & Young	Network integration
DEC	Andersen Consulting	Distribution and logistics industries
DEC	CSC	CIM and distribution/logistics
DEC	Deloitte & Touche	CIM
EDS	Business Systems Group	Client/server capabilities
EDS	Creative Software	Cable television
EDS	ASK	To market ASK manufacturing application products to EDS clients
Ernst & Young	Xerox	Imaging
Ernst & Young	DEC	Health care
Ernst & Young	Software 2000	AS/400 financial, warehouse, inventory application products

EXHIBIT VII-15 (CONT)

Examples of Alliances/Joint Arrangements

Firm	Alliance	Comments/Strengths of Ally
KPMG	XA Systems	Software engineering
KPMG	Brightbill Roberts	Object-oriented software
KPMG	IBM	AS/400 and SI
KPMG	Unisys	Open systems architecture, CASE, image processing
Price Waterhouse	PeopleSoft	Human resource software products
Price Waterhouse	Software 2000	AS/400 inventory/warehouse/ financial software products
Price Waterhouse	Tesseract	Human resource software
Price Waterhouse	CASE vendors	Re-engineering activities
Ungermann-Bass	BBN	Asynch. transfer mode support

E

Vendor Profiles

The strategies, products, and/or markets of eight professional services vendors are profiled in this section in order to illustrate the diversity of competition in this service mode. They include the following:

- American Management Systems
- American Software
- Analysts International
- Andersen Computing
- Computer Task Group
- Ernst & Young
- IBM
- Logicon

Each profile contains information on company strategies, background, and key products and services. Additional information can be found in INPUT's Vendor Analysis Program (VAP) profiles.

1. American Management Systems, Inc., 1777 North Kent Street, Arlington, VA 22209

a. Company Strategy

AMS used its professional services capability chiefly in the expansion of its SI business in 1991. In one of its target markets, telecommunications, revenue more than doubled in 1991. AMS chiefly uses its proprietary software and strength in modifying IT together with its strength in professional services and productivity tools to address complex user needs in financial services, government, education, energy, and telecommunications companies. This work has involved systems integration as well as professional services assignments.

b. Company Background

American Management Systems , Inc. (AMS), founded in 1970, offers professional services, systems integration, and systems operation services. Applications software owned by the company is used in these assignments and is not sold separately. Revenues for 1991 were $262 million. AMS is one of the vendors in which IBM has invested.

c. Key Products and Services

The proprietary software that AMS uses in professional services and systems integration assignments includes credit management, letter of credit, collection, corporate account management, and funds transfer systems for banking; accounting and financial systems for government and education; financial and information systems for energy companies; and billing, service management, and message processing systems for the telecommunications systems industry. AMS also has a number of productivity tools and data management and other systems software available to aid professional services work.

2. American Software, Inc., 470 East Paces Ferry Road, N.E., Atlanta, GA 30305

a. Company Strategy

American Software derives both applications software and professional services revenue from an integrated line of standard application products for IBM mainframe and AS/400 platforms. These products can be sold separately or in combination. A substantial portion of its revenue (about 37%) is gained from the sale of education and training, consulting, and software modification and development. The software products that are sold have been selected to support multiple types of applications in the manufacturing, distribution, public utilities, transportation, and financial industries. The use of its applications software products also ensures repeat business for professional services.

b. Company Background

American Software, founded in 1970, provides application products for IBM mainframes, minis, and PCs. Half of its revenue comes from the maintenance of software and sale of professional services. Revenues for 1991 were about $114 million, a growth of 15 % from 1990.

c. Key Products and Services

The applications software products of American Software include forecasting and inventory management, purchasing and materials control, order processing and receivables, MRP (manufacturing resource planning), DRP (distribution resource planning), financial application products that can be integrated with MRP or DRP, and application systems for the utilities and health care industries. These products are provided together with application maintenance and professional services to analyze client problems and tailor solutions to meet client needs.

3. Analysts International Corporation, 7615 Metro Boulevard, Minneapolis, MN 55435

a. Company Strategy

AIC attempts to gain repeat assignments of professional services work requiring a high level of technical capability as well as contract services work. The technical capabilities used to gain assignments include telecommunications, open systems, and software engineering work that is often carried on at the company research facility.

b. Company Background

Analysts International Corporation (AIC) was formed in 1966 as a publicly held corporation to provide professional services to a wide variety of industries. U.S. revenue has reached about $113 million, a 16% increase over 1990.

c. Key Products and Services

Almost 90% of revenue was from professional services during the past two years. The company has extensive experience in designing large-scale and small-scale systems, including systems for funds transfer networks, workstations for manufacturing processes, and EDI applications. Some of AIC's recent assignments have included complex systems integration projects, an area of planned expansion. The company has also gained a small amount of revenue from three financial application software products.

4. Andersen Consulting, Arthur Andersen & Co., 69 West Washington Street, Chicago, IL 60602

a. Company Strategy

Andersen supported its reputation in manufacturing as well as in supporting important new IT technology by announcing one of the largest client/server projects undertaken for a manufacturer in 1992 as well as by announcing a major training initiative in client/server technology for potential users of these systems.

Andersen uses its reputation and demonstrations of working solutions to manufacturing and distribution problems as a means of appealing to and obtaining business with prospects. Attention is foremost on manufacturing, but Andersen also addresses needs in retail and wholesale distribution, banking, utilities, and other markets.

Andersen emphasizes its knowledge of industries and applications to make presentations and conduct consulting studies that can lead to large SI and professional services contracts. In addition to these services, Andersen offers software products that support manufacturing and application development methodology including the use of software engineering. (The former are also sold through a value-added reseller.) Andersen has also introduced downsized products for manufacturing and distribution and introduced education and training to support client/server use.

By studying the performance and problems of companies in its areas of interest, Andersen has been able to suggest opportunities to improve revenues and earnings to prospects. The firm also uses acquisitions and alliances to gain knowledge and additional resources to address prospects in its areas of interest.

b. Company Background

Andersen Consulting was set up by Arthur Andersen & Co. in 1988 as a separate business to address its rapidly growing volume of information services business. Estimated U.S. revenues for professional services revenues in 1991 were $340 million, about 10% above revenues for 1991. Worldwide revenues advanced at a faster rate than domestic revenues in 1991.

c. Key Products and Services

Over half of its 1991 revenue came from SI, and professional services revenue accounted for about one-third. Revenue was also obtained from systems operations, software products, and network services.

Areas of manufacturing expertise include CIM, CAD/CAM, MRPI and MRPII, robotics, material handling, numerical control, bar code data collection, and change control management.

5. Computer Task Group, Inc., 800 Delaware Avenue, Buffalo, NY 14209

a. Company Strategy

CTG has recently set up practice groups that will help to transfer technical and industry skills to branch offices. They will emphasize communications, database consulting, image systems, industrial systems integration, information engineering, information media, and migration. Migration services could involve moving mainframe applications to client/server environments. These practices will be in support of the chief strength of CTG, its experience in delivering professional services resources to meet a range of problems. CTG can bring its capabilities to bear on a wide range of industries, including discrete and process manufacturing, business services, banking and finance, insurance, and state and local government.

b. Company Background

Computer Task Group, founded in 1966, is one of the largest vendors of professional services concentrating on the non-federal government marketplace. It provides systems integration and a small amount of systems operations services as well as professional services. Its U.S. revenues in 1991 were about $270 million, which included $44 million in SI, about $5 million in SO, and $217 million in professional services.

c. Key Products and Services

About 80% of 1991 revenue was from professional services, with the balance made up of systems integration services and a small amount of systems operations work. Most of the professional services work is for contract services. CTG provides consultants who are experienced in industry problems as well as in technology. CTG's staff can augment the client's staff and become part of the project team on a specific application or project, or CTG can manage and staff an entire project. CTG has experience in supporting large clients (85 of the Fortune 100) with projects involving a single office or multiple sites.

6. Ernst & Young, 277 Park Avenue, New York, NY 10172

a. Company Strategy

In relation to its professional services and SI business, Ernst & Young uses in-depth knowledge of certain industries, including finance, distribution, and manufacturing; contacts in those industries from auditing work; and corporate need to automate or reautomate major applications as the

means for obtaining large contracts. In support of that objective, Ernst & Young has acquired and developed technical knowledge in support of the use of methodology for large projects, information engineering, and CASE as well as strategic consulting capabilities that can be used in planning systems activities. Ernst & Young has recently emphasized its capabilities in aiding organizations to help manage systems development.

b. Company Background

Ernst & Young is one of the Big Six auditing firms. It was created through a merger of Ernst & Whinney and Arthur Young. Each of these predecessors had systems activities. Ernst & Young now has over 100 worldwide locations that can provide systems work as well as two technology centers that can bid on and handle special jobs related to their areas of expertise. One center in Massachusetts is devoted chiefly to IT strategy and CASE and the other in Texas to IT delivery. Worldwide professional services and SI revenues were up 12% to $551 million in 1991.

c. Key Products and Services

The information services business of Ernst & Young is involved chiefly with professional services and SI. It also has a small amount of revenue from software products and SO. Some of the consulting work included in professional services revenue is more concerned with business consulting regarding the business functions that will be involved in automation. Technical specialties of Ernst & Young include CASE, database organization and use, methodology, and quality improvement. Alliances such as the arrangement with Dun & Bradstreet as a preferred installer aid its business.

7. International Business Machines, Armonk, NY 10504

a. Company Strategy

IBM has a set of objectives for professional services concerned with meeting revenue goals for staff performing this work at company offices as well as supporting efforts to obtain hardware, software, and project contracts. IBM is promoting an image as a source of expertise for large projects by noting its ability to meet needs for critical technical skills and industry/application knowledge. IBM will use other vendors to obtain any skills that are not present or are being used elsewhere. IBM has strengthened its capability to provide client/server support and profited from the need throughout the country for aid in overcoming problems that have accompanied the relatively unplanned use of this technology by many large and small companies.

b. Company Background

IBM is the leading supplier of professional services, with revenues of $560 million in 1991. IBM is also the leading vendor of SI and software products as well as information services on an overall basis. IBM is not the leading vendor in every service mode, however, being led by other vendors in SO, processing services, network services, and turnkey systems (where as a computer manufacturer, IBM is not credited with having turnkey revenue).

c. Key Products and Services

IBM provides professional services and SI in support of projects that use or will use its computer and software products although the products of other vendors may compose part of the system. In some cases, it will perform this work with other vendors, particularly those it has an alliance with or an investment in. It will also perform contracts with other vendors or accept assignments from other vendors. IBM is able to support almost any type of information services work and will obtain support from other vendors when needed. It has or can obtain expertise in many technological areas including imaging systems, software engineering, business re-engineering, multimedia, or artificial intelligence.

8. Logicon, Inc., 3701 Skypark Drive, Torrance, CA 90505-4794

a. Company Strategy

Logicon continues to be a leader in professional services revenues from the federal government, relying primarily on its knowledge and experience in military applications involving command, control, communications, and intelligence systems. The company has bolstered its business by offering non-information services research related to science and technology. In view of changes in government expenditures, Logicon is exploring products that can take advantage of its technological capabilities that would appeal to both government and commercial customers.

b. Company Background

Logicon, incorporated in 1961, has developed and regularly acquired companies with knowledge and experience in the areas of defense-related applications in which Logicon is interested. A small percentage of these activities could be useful in civil government or commercial applications, including scientific analysis and engineering, and civil government intelligence. Revenues of $286 million in 1991 were 12% above revenues in 1990.

c. Key Products and Services

Over 85% of Logicon's revenues are from professional services. The company also provides non-information services concerning science and technology. The chief capability of the firm is its set of technological capabilities, which it is now reviewing with the objective of extending its business beyond the military applications of the federal government.

VIII

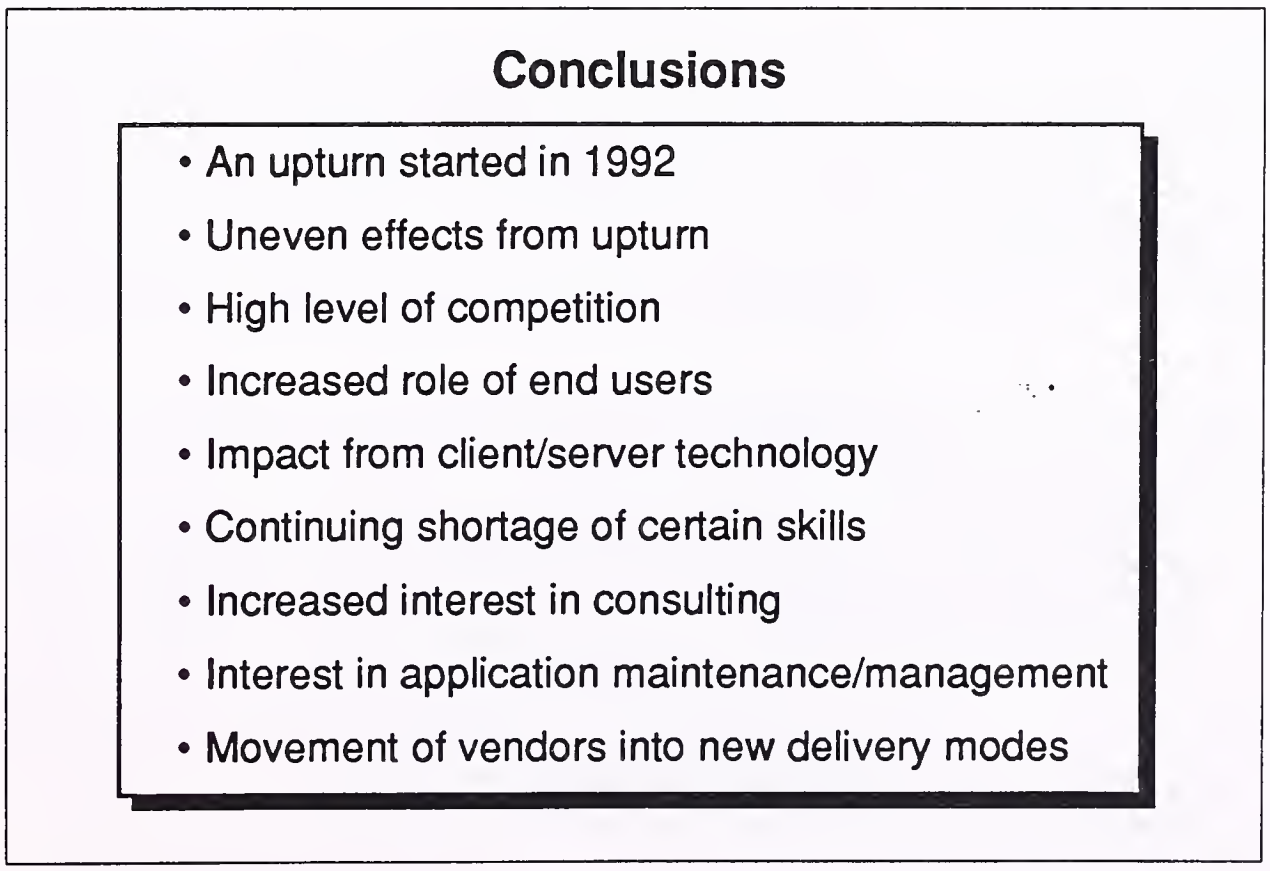
Conclusions and Recommendations

A
Conclusions

The professional services market had a small upturn in the first half of 1992 as noted in Exhibit VIII-1.

- The growth rate of the market moved up to 10%, and it is now forecasted to grow at a CAGR of 10% between 1992 and 1997, which will result in an additional $1 billion of user expenditures in 1997.
- The upturn is uneven and has more of an impact on manufacturing, telecommunications, and state and local government than on other vertical markets. The upturn is more pronounced in some Midwest and Middle Atlantic states than in New England or the Far West.

EXHIBIT VIII-1



However, some vendors have had success in industries and regions where growth is lower either due to emphasis on client/server technology (several large banks in New York City mentioned increasing the use of JYACC and Comtex for this reason) or through the use of a consultative approach to selling. TSC has successfully used such a consultative approach to gain business in the Midwest.

The forces driving this market are a desire to improve product and customer services quality and the increased role of users in developing and operating systems. These forces are felt most in manufacturing companies.

- Both of these forces and (particularly the latter) have had a strong impact on encouraging the use of client/server systems. The increased importance of client/server and workstation systems, including downsized application systems, is demonstrated by the fact that about 25% of professional services expenditures can be attributed to this platform size. About 52% of the expenditures are in support of mainframe environments, and midframe solutions have the balance (23%).

- Within five years, the percentage of expenditures devoted to client/servers and workstations will triple as the price/performance ratios of this equipment continue to improve.

- These forces have provided an opportunity for IBM (and other hardware and communications vendors with customer services facilities and many offices) to gain business by solving problems and improving client/server application systems.

The market also offers an opportunity to vendors who can meet the need for technical skills that application upgrades or downsizing requires. Of particular interest are personnel with technical skills and experience in the industry and application systems used by prospects.

Professional services continues to show a high level of competition and particularly more price competition.

- Tight budgets resulting from the recession have produced a sensitivity to prices, particularly for contract services.

- Foreign firms who use personnel from outside the U.S., and agency types of firms, can offer personnel at lower fees.

An increased interest in consulting has arisen as a result of recognition of the knowledge that vendors have gained regarding the use of information technology in specific industries.

- This recognition has resulted in increased expenditures for consulting services (which have a higher profit margin than other professional services) as well as the ability, in some cases, to generate additional work.

- Many of the leading professional services vendors have strengthened their consulting capabilities by adding staff with knowledge and experience in order to gain more projects. But this has not always been successful since some consulting clients want to use a different firm for implementation to ensure the objectivity of the vendor providing consulting.

- Several major vendors report that consulting services may not result in assignments that are in the industries or applications that are areas of emphasis or specialization for that firm.

For the reasons noted above, in some cases the use of consulting services are being re-evaluated. However, there are vendors which are pleased with the financial return from consulting services and/or know the industries and situations where they can be used as a step to begin or obtain longer term projects..

Due to the increasing competition for professional services jobs, vendors are expanding services in new delivery modes and submodes, such as systems operations and application management.

B

Recommendations

In view of the difference in growth rates in various vertical markets and the intense competition that can be encountered, professional services vendors should make more of an effort to analyze the marketplace as recommended in Exhibit VIII-2. The pricing and discounting practices currently in use must be re-evaluated in general and in relation to specific industries and accounts.

- When temporary or agency vendors are bidding (and their bids *will* be considered because they have good candidates and a good record with the prospect or elsewhere), different approaches to the job should be considered by traditional professional services firms. Some vendors noted that they respond by bidding a more comprehensive job, or by using different pricing techniques such as off-shore development or other sources of lower cost personnel.

- Users and IS managers have reported that several Big Six vendors, as well as other major vendors, use these techniques to counter bids from "agency" firms.

EXHIBIT VIII-2

Recommendations

- Analyze market more intently
- Gain more knowledge of pricing and discounting in use
- Consider new approaches for seeking work
- Evaluate new modes or submodes of service
- Consider the use of consulting services
- Develop sources of critical technical skills
- Develop capabilities to support client/server technology

Consulting capabilities can also be strengthened and used to sell larger project concepts, according to major vendors, that will result in meaningful projects for vendors rather than in just contract personnel jobs.

- Both EDS and Andersen report using this approach.

- These vendors, as well as other smaller vendors, approach clients and prospects with well-thought-out ideas for projects that can lead to additional revenues or cost savings.

- Where a prospect has the inclination to go further, the vendor can establish itself as the logical choice for the job.

Additional types of work and other modes or submodes of services should also be considered:

- There can be opportunities to supply ongoing services to operate installations that will run application systems, or to manage the maintenance and enhancement of the application systems in the future.

- Opportunities to utilize experience gained in certain industries and applications can also be used by offering systems integration services or applications software products that can be sold in the future in conjunction with professional services.

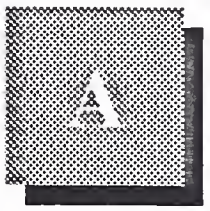
As suggested in Exhibit VIII-2, sources of critical high-level technical skills should be sought in order to respond to, as well as to obtain, assignments. Several of the top vendors have developed relationships with agency vendors in order to have ready access to scarce skills.

One of the technical capabilities that professional services firms must consider developing, or having available through alliances or other means, is the ability to support client/server technology and downsizing.

- Many users are seeking aid with this technology and are downsizing older applications or segments of them to run on client/server systems.

- A group of large professional services vendors, including IBM and DEC, have profited from the situations that users have found themselves in after attempting to implement client/server technology with inadequate experience or assistance.

- Most of the largest vendors have developed initiatives to take advantage of the growing interest in this technology. EDS has just recently announced strengthened capabilities in client/server support and Andersen has an educational program for organizations that are planning or starting to use the technology.



Definition of Terms

A
Introduction

INPUT's *Definition of Terms* provides the framework for all of INPUT's market analyses and forecasts of the information services industry. It is used for all U.S. programs. The structure defined in Exhibit A-1 is also used in Europe and for the worldwide forecast.

One of the strengths of INPUT's market analysis services is the consistency of the underlying market sizing and forecast data. Each year INPUT reviews its industry structure and makes changes if they are required. When changes are made they are carefully documented and the new definitions and forecasts reconciled to the prior definitions and forecasts. INPUT clients have the benefit of being able to track market forecast data from year to year against a proven and consistent foundation of definitions.

For 1992 INPUT has added one delivery mode and defined three new submodes to its Information Services Industry Structure:

- *Equipment Services* has been added as the ninth delivery mode. INPUT has forecasted the equipment maintenance, support and related services market through its Customer Services Programs for a number or years. Starting in 1992, the equipment services portion of the customer services market will be included in the total information services industry as defined by INPUT. Other portions of this market (such as software support) are already included.

- Two new submodes have been defined in the *Systems Operations* delivery mode - *desktop services* and *network management*. They are defined on pages 5 and 6.

- A fourth submode has been defined within the Professional Services delivery mode—*applications management*. This change reflects a shift in the way some software development and maintenance services are purchased. A complete definition is provided on page 6.

A series of definitions for computer equipment have also been added.

Changes from the 1991 INPUT *Definition of Terms* are indicated with a ☆.

B

Overall Definitions and Analytical Framework

1. Information Services

Information Services are computer/telecommunications-related products and services that are oriented toward the development or use of information systems. Information services typically involve one or more of the following:

- Use of vendor-provided computer processing services to develop or run applications or provide services such as disaster recovery or data entry (called *Processing Services*)
- A combination of computer equipment, packaged software and associated support services which will meet an application systems need (called *Turnkey Systems*)
- Packaged software products, including systems software or applications software products (called *Software Products*)
- People services that support users in developing and operating their own information systems (called *Professional Services*)
- The combination of products (software and equipment) and services where the vendor assumes total responsibility for the development of a custom integrated solution to an information systems need (called *Systems Integration*)
- Services that provide operation and management of all or a significant part of a user's information systems functions under a long-term contract (called *Systems Operations*)
- Services that support the delivery of information in electronic form—typically network-oriented services such as value-added networks, electronic mail and document interchange (called *Network Applications*)
- Services that support the access and use of public and proprietary information such as on-line data bases and news services (called *Electronic Information Services*)
- Services that support the operation of computer and digital communication equipment (called *Equipment Services*)

In general, the market for information services does not involve providing equipment to users. The exception is where the equipment is part of an overall service offering such as a turnkey system, a systems operations contract, or a systems integration project.

The information services market also excludes pure data transport services (i.e., data or voice communications circuits). However, where information transport is associated with a network-based service (e.g., electronic data interchange services), or cannot be feasibly separated from other bundled services (e.g., some systems operations contracts), the transport costs are included as part of the services market.

The analytical framework of the information services industry consists of the following interacting factors: overall and industry-specific business environment (trends, events and issues); technology environment; user information system requirements; size and structure of information services markets; vendors and their products, services and revenues; distribution channels; and competitive issues.

2. Market Forecasts/User Expenditures

All information services market forecasts are estimates of *User Expenditures* for information services. When questions arise about the proper place to count these expenditures, INPUT addresses them from the user's viewpoint: expenditures are categorized according to what users perceive they are buying.

By focusing on user expenditures, INPUT avoids two problems which are related to the distribution channels for various categories of services:

- Double counting, which can occur by estimating total vendor revenues when there is significant reselling within the industry (e.g., software sales to turnkey vendors for repackaging and resale to end users)

- Missed counting, which can occur when sales to end users go through indirect channels such as mail order retailers

Captive Information Services User Expenditures are expenditures for products and services provided by a vendor that is part of the same parent corporation as the user. These expenditures are not included in INPUT forecasts.

Non-captive Information Services User Expenditures are expenditures that go to vendors that have a different parent corporation than the user. It is these expenditures which constitute the information services market analyzed by INPUT and that are included in INPUT forecasts.

3. Delivery Modes

Delivery Modes are defined as specific products and services that satisfy a given user need. While *Market Sectors* specify *who* the buyer is, *Delivery Modes* specify *what* the user is buying.

Of the nine delivery modes defined by INPUT, six are considered primary products or services:

- *Processing Services*
- *Network Services*
- *Professional Services*
- *Applications Software Products*
- *Systems Software Products*
- *Equipment Services*

The remaining three delivery modes represent combinations of these products and services, combined with equipment, management and/or other services:

- *Turnkey Systems*
- *Systems Operations*
- *Systems Integration*

Section C describes the delivery modes and their structure in more detail.

4. Market Sectors

Market Sectors or markets are groupings or categories of the buyers of information services. There are three types of user markets:

- *Vertical Industry* markets, such as Banking, Transportation, Utilities, etc. These are called "industry-specific" markets.

- *Functional Application* markets, such as Human Resources, Accounting, etc. These are called "cross-industry" markets.

- *Other* markets, which are neither industry- nor application-specific, such as the market for systems software products and much of the on-line data base market.

Specific market sectors used by INPUT are defined in Section E, below.

5. Trading Communities

Information technology is playing a major role in re-engineering, not just companies but the value chain or *Trading Communities* in which these companies operate. This re-engineering is resulting in electronic commerce emerging where interorganizational electronic systems facilitate the business processes of the trading community.

- A trading community is the group or organizations—commercial and non-commercial—involved in producing a good or services.

- Electronic commerce and trading communities are addressed in INPUT's EDI and Electronic Commerce Program.

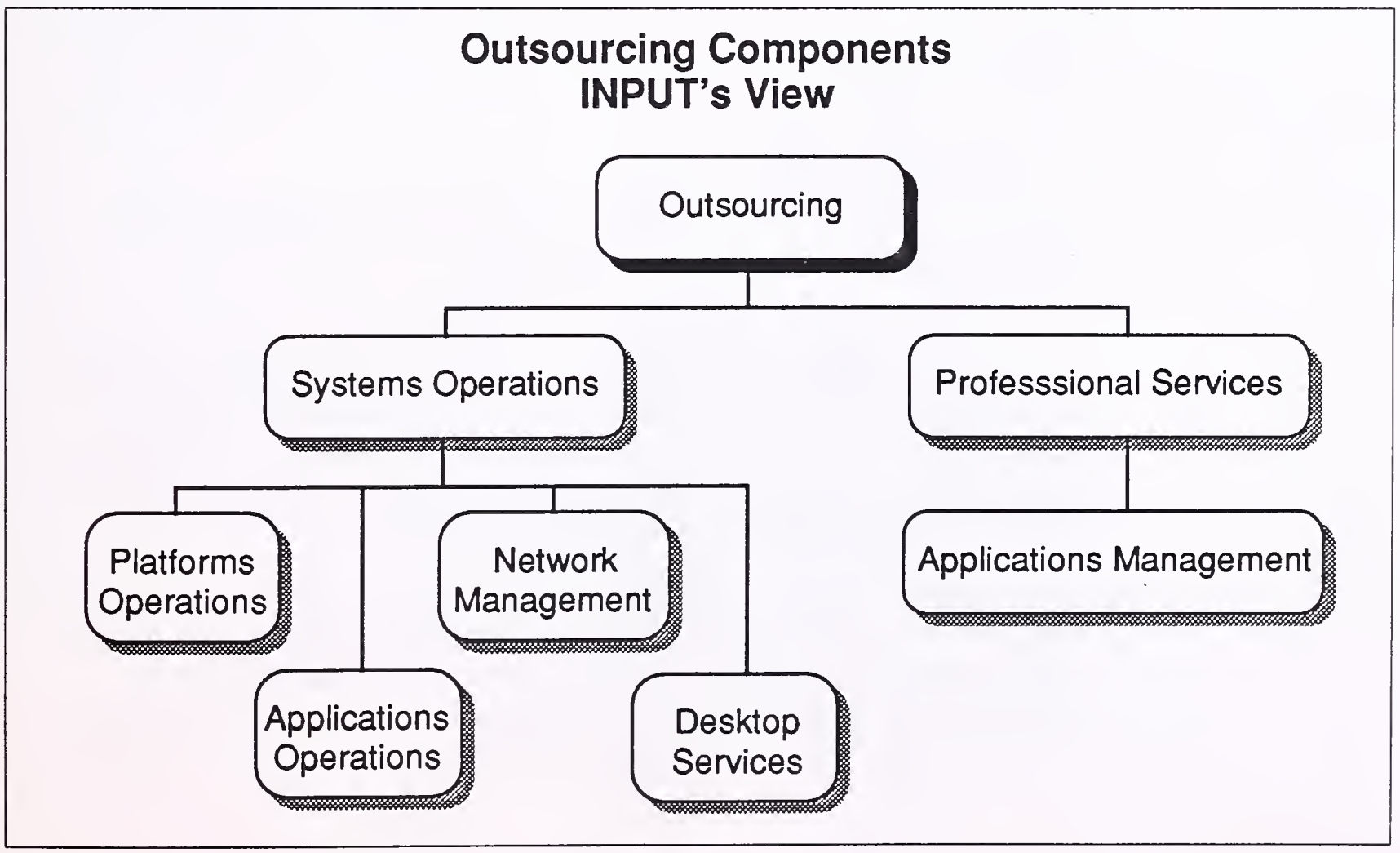
6. Outsourcing

Over the past few years a major change has occurred in the way clients are buying some information services. The shift has been labeled *outsourcing*.

INPUT views outsourcing as a change in the form of the client/vendor relationship. Under an outsourcing relationship, all or a major portion of the information systems function is contracted to a vendor in a long-term relationship. The vendor is responsible for the performance of the function.

INPUT considers the following submodes to be outsourcing-type relationships and in aggregate to represent the outsourcing market. See Exhibit A-1. Complete definitions are provided in Section C of this document. INPUT provides these forecasts as part of the corresponding delivery modes.

EXHIBIT A-1



- *Platform Systems Operations* - The vendor is responsible for managing and operating the client's computer systems.

- *Applications System Operations* - The vendor is responsible for developing and/or maintaining a client's applications as well as operating the computer systems.

☆*Network Management* - The vendor assumes full responsibility for operating and managing the client's data communications systems. This may also include the voice communications of the client.

☆*Applications Management/Maintenance* - The professional services vendor has full responsibility for developing and/or maintaining some or all of the applications systems that a client uses to support business operations. The services are provided on a long-term contractual basis.

☆*Desktop Services* - The vendor assumes responsibility for the deployment, maintenance, and connectivity between the personal computers and/or intelligent workstations in the client organization. The services may also include performing the help-desk function. The services are provided on a long-term contractual basis.

C

Delivery Modes and Submodes

Exhibit A-2 provides the overall structure of the information services industry as defined and used by INPUT. This section of *Definition of Terms* provides definitions for each of the delivery modes and their submodes or components.

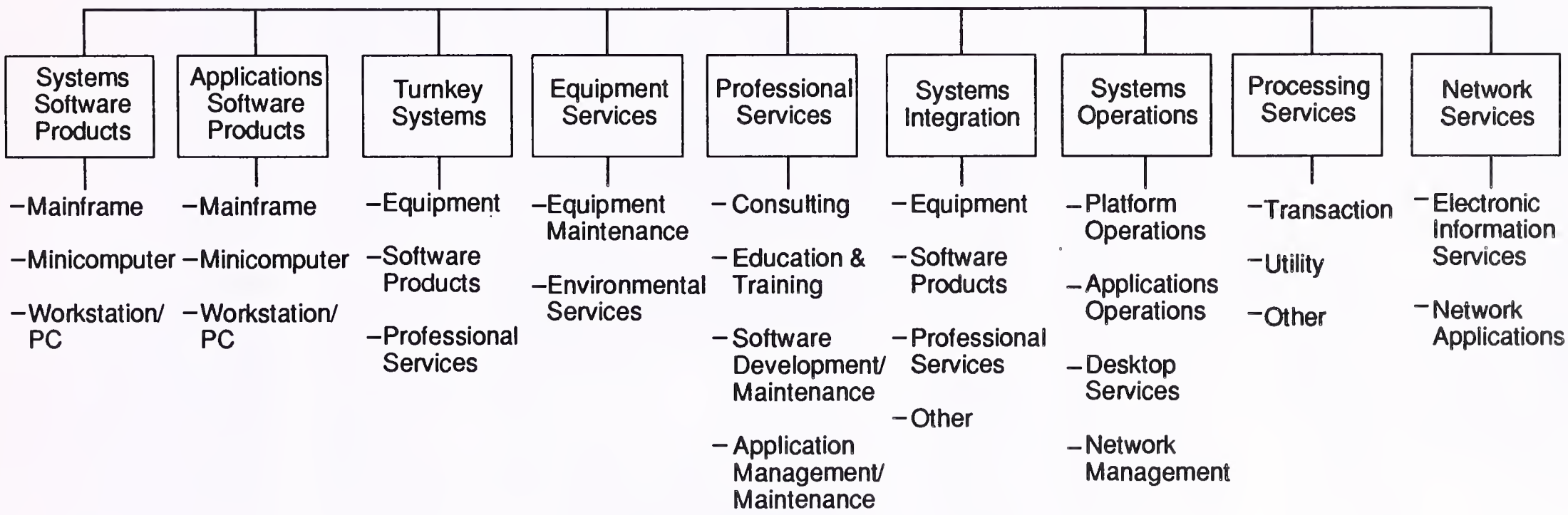
1. Software Products

INPUT divides the software products market into two delivery modes: systems software and applications software.

The two delivery modes have many similarities. Both involve purchases of software packages for in-house computer systems. Included are both lease and purchase expenditures, as well as expenditures for work performed by the vendor to implement or maintain the package at the user's sites. Vendor-provided training or support in operation and use of the package, if part of the software pricing, is also included here.

Expenditures for work performed by organizations other than the package vendor are counted in the professional services delivery mode. Fees for work related to education, consulting, and/or custom modification of software products are also counted as professional services, provided such fees are charged separately from the price of the software product itself.

Information Services Industry Structure—1992

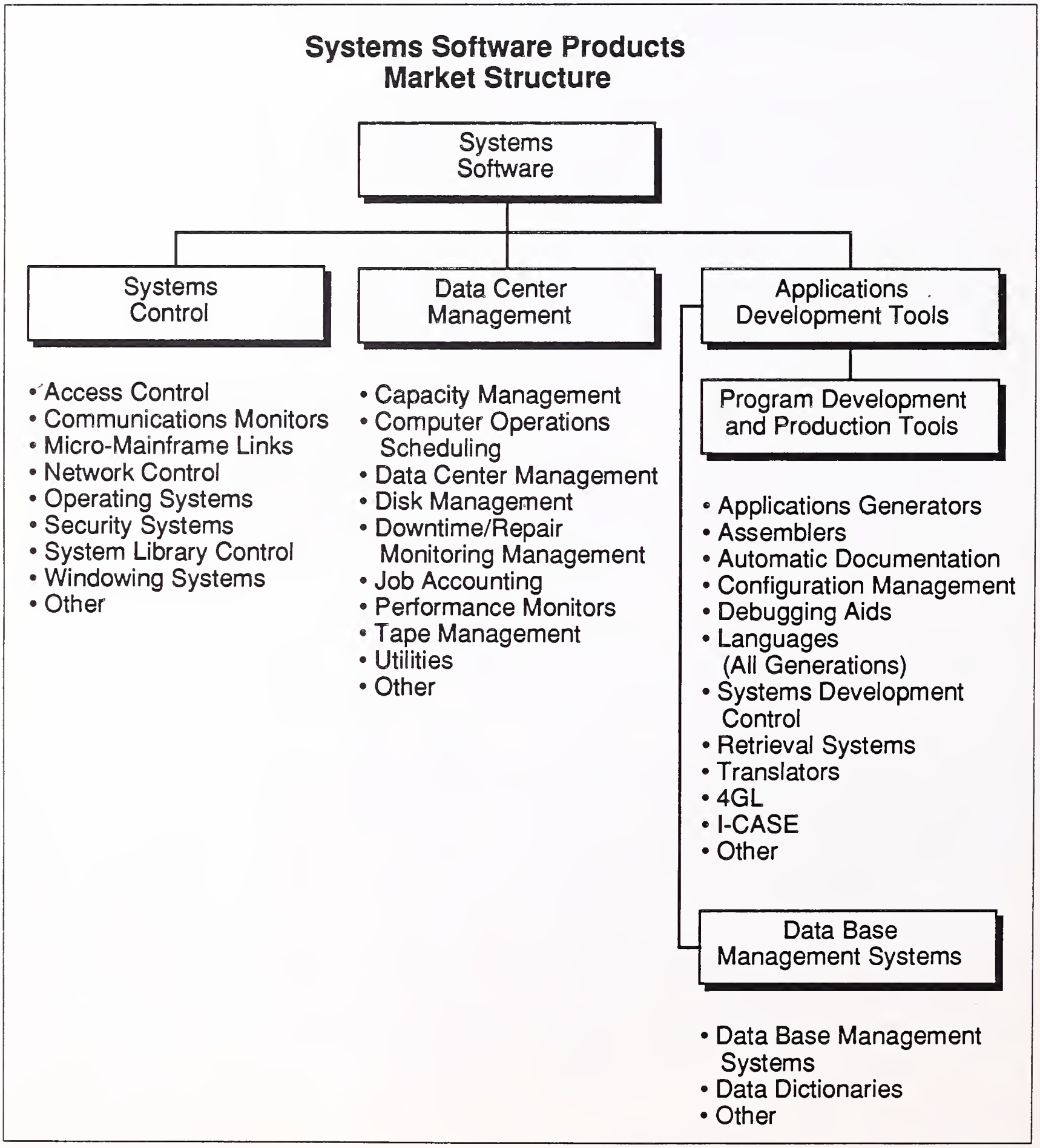


Source: INPUT

a. Systems Software Products

Systems software products enable the computer/communications system to perform basic machine-oriented or user interface functions. INPUT divides systems software products into three submodes. See Exhibit A-3.

EXHIBIT A-3



- *Systems Control Products* - Software programs that manage computer system resources and control the execution of programs. These products include operating systems, emulators, network control, library control, windowing, access control, and spoolers.

- *Operations Management Tools* - Software programs used by operations personnel to manage the computer system and/or network resources and personnel more effectively. Included are performance measurement, job accounting, computer operation scheduling, disk management utilities, and capacity management.

- *Applications Development Tools* - Software programs used to prepare applications for execution by assisting in designing, programming, testing, and related functions. Included are traditional programming languages, 4GLs, data dictionaries, data base management systems, report writers, project control systems, CASE systems and other development productivity aids.

INPUT also forecasts the systems software products delivery mode by platform level: mainframe, minicomputer and workstation/PC.

b. Applications Software Products

Applications software products enable a user or group of users to support an operational or administrative process within an organization. Examples include accounts payable, order entry, project management and office systems. INPUT categorizes applications software products into two groups of market sectors. (See Exhibit A-4.)

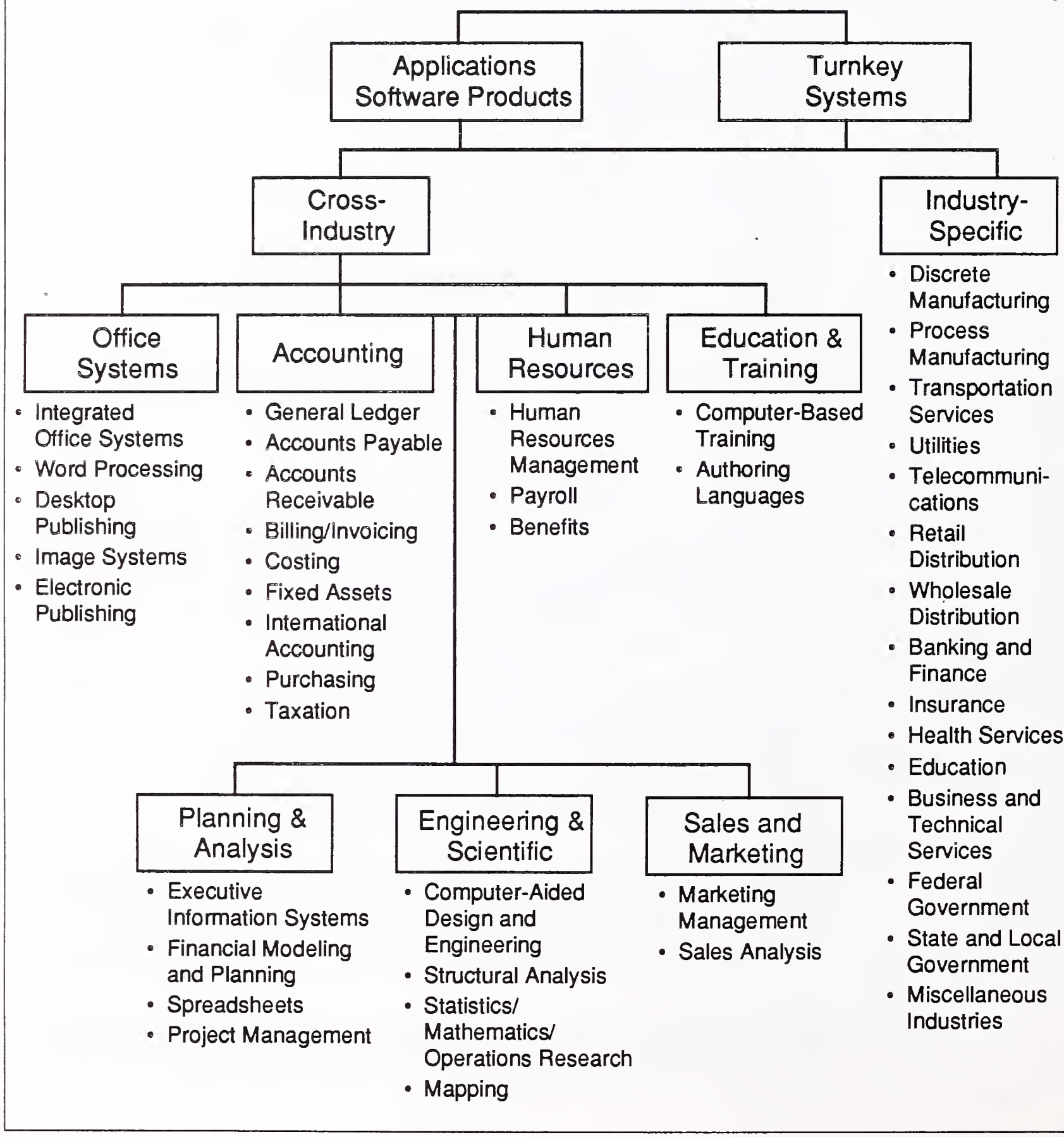
- *Industry Applications Software Products* - Software products that perform functions related to fulfilling business or organizational needs unique to a specific industry (vertical) market and sold to that market only. Examples include demand deposit accounting, MRPII, medical record keeping, automobile dealer parts inventory, etc.

- *Cross-Industry Applications Software Products* - Software products that perform a specific function that is applicable to a wide range of industry sectors. Examples include payroll and human resource systems, accounting systems, word processing and graphics systems, spreadsheets, etc.

INPUT also forecasts the applications software products delivery mode by platform level: mainframe, minicomputer and workstation/PC.

EXHIBIT A-4

Application Products and Turnkey Systems



2. Turnkey Systems

A turnkey system is an integration of equipment (CPU, peripherals, etc.), systems software, and packaged applications software into a single product developed to meet a specific set of user requirements. Value added by the turnkey system vendor is primarily in the software and professional services provided. INPUT categorizes turnkey systems into two groups of market sectors as it does for applications software products. (See Exhibit A-4.)

Most CAD/CAM systems and many small business systems are turnkey systems. Turnkey systems utilize standard computers and do not include specialized hardware such as word processors, cash registers, process control systems, or embedded computer systems for military applications.

Computer manufacturers (e.g., IBM or DEC) that combine software with their own general-purpose hardware are not classified by INPUT as turnkey vendors. Their software revenues are included in the appropriate software category.

Most turnkey systems are sold through channels known as value-added resellers.

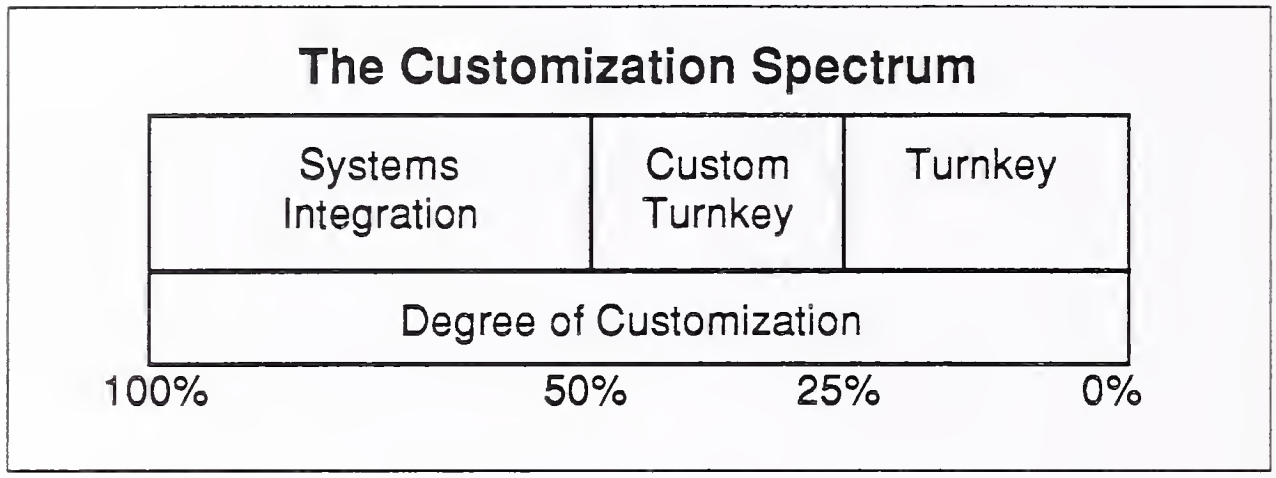
- *Value-Added Reseller (VAR):* A VAR adds value to computer hardware and/or software and then resells it to an end user. The major value added is usually applications software for a vertical or cross-industry market, but also includes many of the other components of a turnkey systems solution, such as professional services, software support, and applications upgrades.

Turnkey systems have three components:

- Equipment - computer hardware supplied as part of the turnkey system
- Software products - prepackaged systems and applications software products
- Professional services - services to install or customize the system or train the user, provided as part of the turnkey system sale

Exhibit A-5 contrasts turnkey systems with systems integration. Turnkey systems are based on available software products that a vendor may modify to a modest degree.

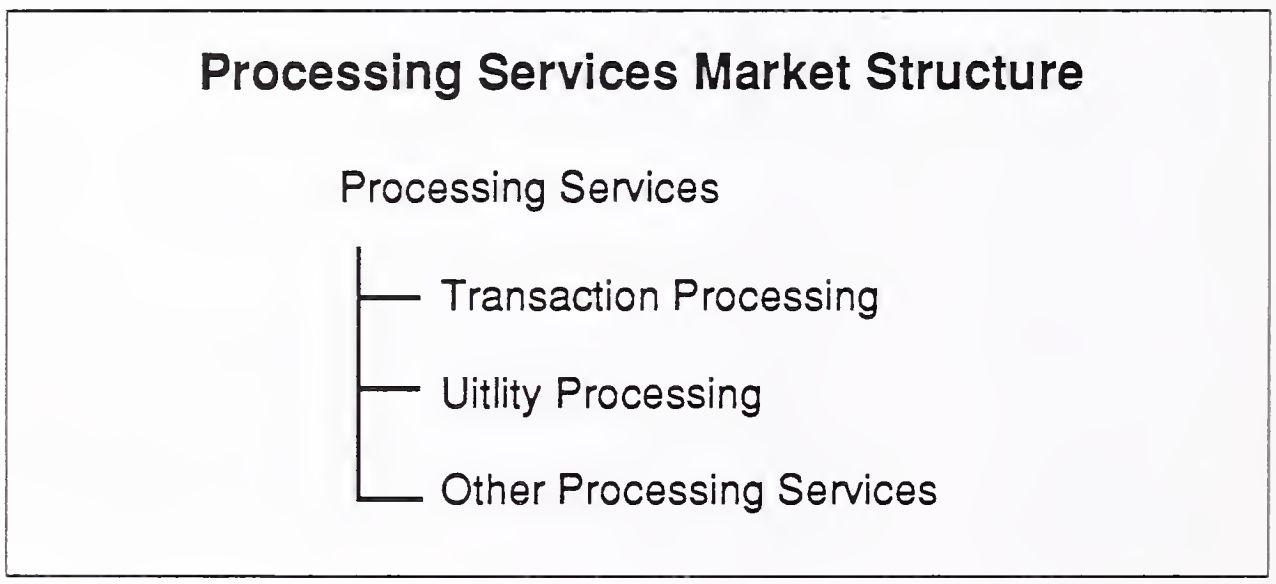
EXHIBIT A-5



3. Processing Services

This delivery mode includes three submodes: transaction processing, utility processing, and "other" processing services. See Exhibit A-6.

EXHIBIT A-6



- *Transaction Processing* - Client uses vendor-provided information systems—including hardware, software and/or data networks—at the vendor site or customer site to process specific applications and update client data bases. The application software is typically provided by the vendor.

- *Utility Processing* - Vendor provides basic software tools (language compilers, assemblers, DBMSs, graphics packages, mathematical models, scientific library routines, etc.), enabling clients to develop and/or operate their own programs or process data on the vendor's system.

- *Other Processing Services* - Vendor provides service—usually at the vendor site—such as scanning and other data entry services, laser printing, computer output microfilm (COM), CD preparation and other data output services, backup and disaster recovery, etc.

4. Systems Operations

Systems operations as a delivery mode was introduced in the 1990 Market Analysis and Systems Operations programs. Previously called Facilities Management, this delivery mode was created by taking the Systems Operations submode out of both Processing Services and Professional Services. For 1992 the submodes have been defined as follows.

Systems operations involves the operation and management of all or a significant part of the client's information systems functions under a long-term contract. These services can be provided in either of two distinct submodes where the difference is whether the support of applications, as well as data center operations, is included.

- *Platform systems operations* - The vendor manages and operates the computer systems, to perform the client's business functions, without taking responsibility for the client's application systems.

- *Applications systems operations* - The vendor manages and operates the computer systems to perform the client's business functions, and is also responsible for maintaining, or developing and maintaining, the client's application systems.

☆*Network Management* - The vendor assumes responsibility for operating and managing the client's data communications systems. This may also include the voice communications of the client. A network management outsourcing contract may include only the management services or the full costs of the communications services and equipment plus the management services.

☆*Desktop Services* - The vendor assumes responsibility for the deployment, maintenance, and connectivity among the personal computers and/or workstations in the client organization. The services may also include performing the help-desk function. Equipment as well as services can be part of a desktop services outsourcing contract.

Note: This type of client service can also be provided through traditional professional services where the contractual criteria of outsourcing are not present.

Systems operations vendors now provide a wide variety of services in support of existing information systems. The vendor can plan, control, provide, operate, maintain and manage any or all components of the client's information systems environment (equipment, networks, applications systems), either at the client's site or the vendor's site.

Note: In the federal government market, systems operation services are also defined by equipment ownership with the terms "COCO" (Contractor-Owned, Contractor-Operated), and "GOCO" (Government-Owned, Contractor-Operated).

5. Systems Integration (SI)

Systems integration is a vendor service that provides a complete solution to an information system, networking or automation development requirement through the custom selection and implementation of a variety of information system products and services. A systems integrator is responsible for the overall management of a systems integration contract and is the single point of contact and responsibility to the buyer for the delivery of the specified system function, on schedule and at the contracted price. (Refer to Exhibit A-7.)

The components of a systems integration project are the following:

- *Equipment* - information processing and communications equipment required to build the systems solution. This component may include custom as well as off-the-shelf equipment to meet the unique needs of the project. The systems integration equipment category excludes turnkey systems by definition.

- *Software products* - prepackaged applications and systems software products.

- *Professional services* - the value-added component that adapts the equipment and develops, assembles, or modifies the software and hardware to meet the system's requirements. It includes all of the professional services activities required to develop, implement, and if included in the contract, operate an information system, including consulting, program/project management, design and integration, software development, education and training, documentation, and systems operations and maintenance.

- *Other services* - most systems integration contracts include other services and product expenditures that are not classified elsewhere. This category includes miscellaneous items such as engineering services, automation equipment, computer supplies, business support services and supplies, and other items required for a smooth development effort.

EXHIBIT A-7

Products/Services in Systems Integration Projects

Equipment

- Information systems
- Communications

Software Products

- Systems software
- Applications software

Professional Services

- Consulting
  - Feasibility and trade-off studies
  - Selection of equipment, network and software
- Program/project management
- Design/integration
  - Systems design
  - Installation of equipment, network, and software
  - Demonstration and testing
- Software development
  - Modification of software packages
  - Modification of existing software
  - Custom development of software
- Education/training and documentation
- Systems operations/maintenance

Other Miscellaneous Products/Services

- Site preparation
- Data processing supplies
- Processing/network services
- Data/voice communication services

6. Professional Services

This category includes four submodes: consulting, education and training, software development, and applications management. Exhibit A-8 provides additional detail.

- *Consulting:* Services include management consulting (related to information systems), information systems re-engineering, information systems consulting, feasibility analysis and cost-effectiveness studies, and project management assistance. Services may be related to any aspect of the information system, including equipment, software, networks and systems operations.

- *Education and Training:* Services that provide training and education or the development of training materials related to information systems and services for the information systems professional and the user, including computer-aided instruction, computer-based education, and vendor instruction of user personnel in operations, design, programming, and documentation. Education and training provided by school systems are not included. General education and training products are included as a cross-industry market sector.

- *Software Development:* Services include user requirements definition, systems design, contract programming, documentation, and implementation of software performed on a custom basis. Conversion and maintenance services are also included.

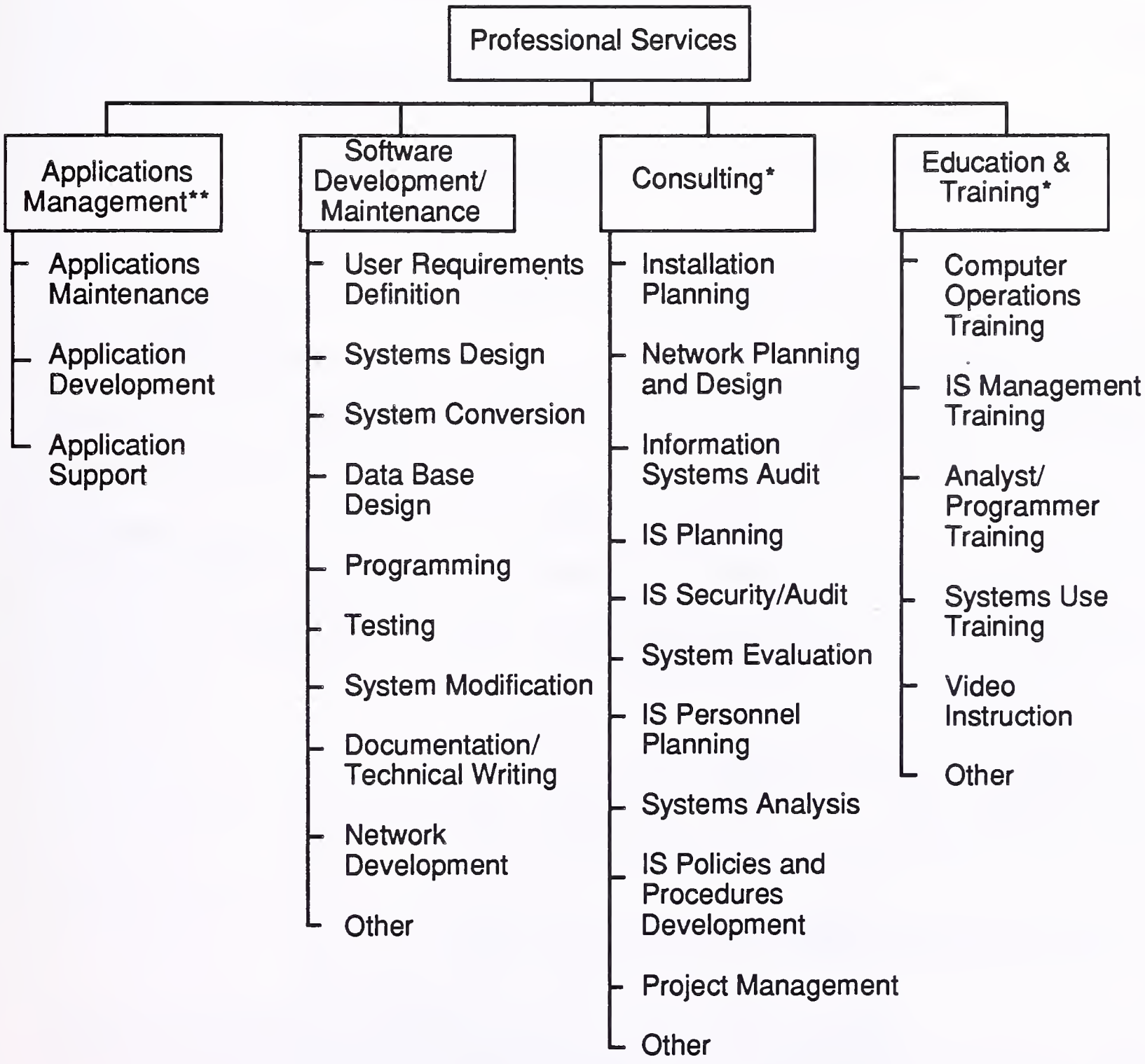
☆*Applications Management*: The vendor has full responsibility for maintaining and upgrading some or all of the application systems that a client uses to support business operations and may develop and implement new application systems for the client.

An applications management contract differs from traditional software development in the form of the client/vendor relationship. Under traditional software development services the relationship is project based. Under applications management it is time and function based.

These services may be provided in combination or separately from platform systems operations.

EXHIBIT A-8

Professional Services Market Structure



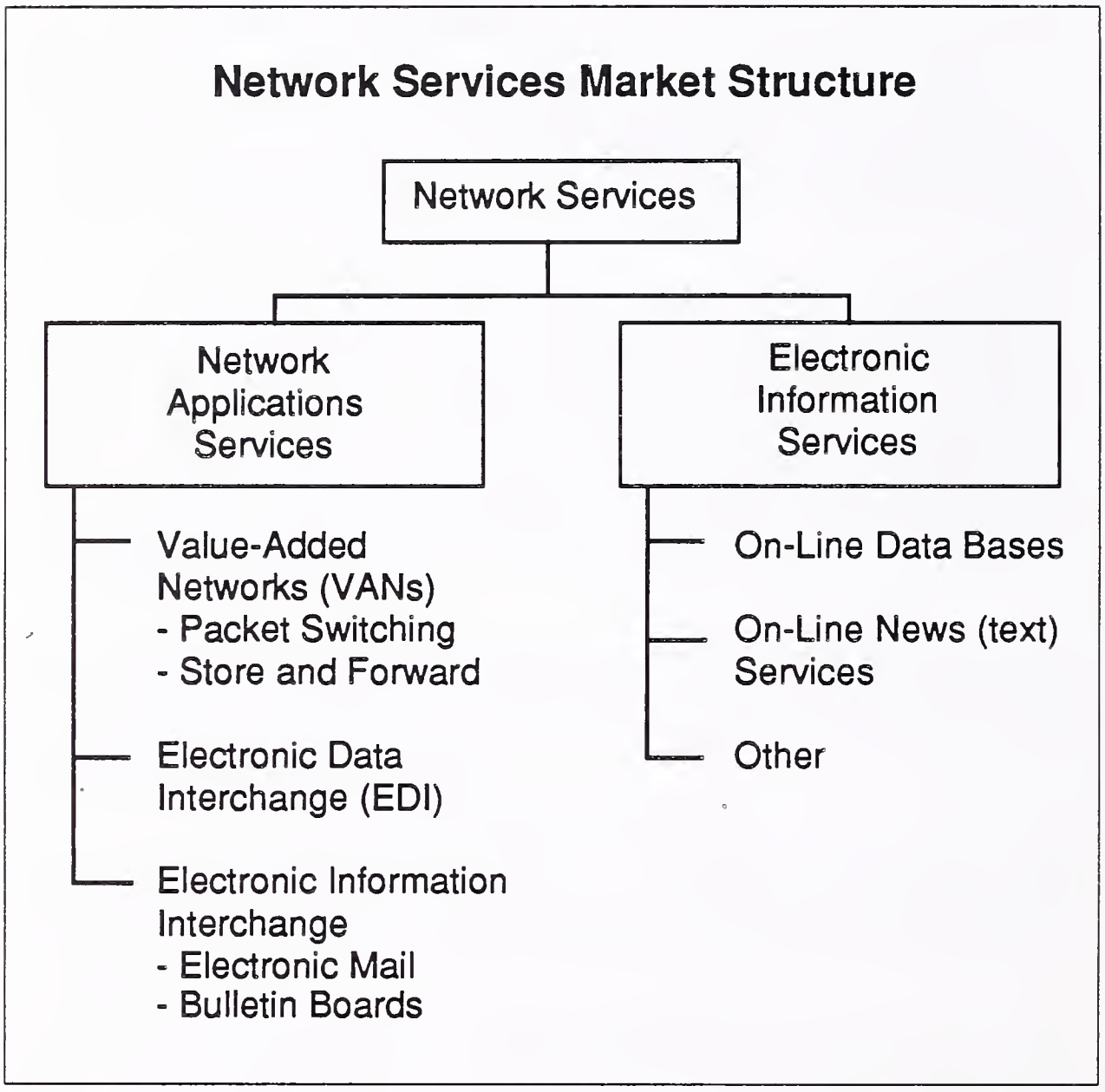
*Related to computer systems, topics, or issues

**Vendor assumes full responsibility on contracted longer term basis

7. Network Services

Network services are a variety of telecommunications-based functions and operations. Network service includes two submodes, as shown in Exhibit A-9.

EXHIBIT A-9



a. Electronic Information Services

Electronic information services are data bases that provide specific information via terminal- or computer-based inquiry, including items such as stock prices, legal precedents, economic indicators, periodical literature, medical diagnosis, airline schedules, automobile valuations, etc. The terminals used may be computers themselves, such as communications servers or personal computers.

Users inquire into and extract information from the data bases. They may load extracted data into their own computer systems; the vendor does not provide data processing or manipulation capability as part of the electronic information service and users cannot update the vendor's data bases. However, the vendor may offer other services (network applications or processing services) that do offer processing or manipulation capability.

The two kinds of electronic information services are:

- *On-line Data Bases* - Structured, primarily numerical data on economic and demographic trends, financial instruments, companies, products, materials, etc.

- Unstructured, primarily textual information on people, companies, events, etc. These are often news services.

While electronic information services have traditionally been delivered via networks, there is a growing trend toward the use of CD ROM optical disks to support or supplant on-line services, and these optical disk-based systems are included in the definition of this delivery mode.

b. Network Applications

Value-Added Network Services (VAN Services) - VAN services are enhanced transport services which involve adding such functions as automatic error detection and correction, protocol conversion, and store-and-forward message switching to the provision of basic network circuits.

While VAN services were originally provided only by specialized VAN carriers (Tymnet, Telenet, etc.), today these services are also offered by traditional common carriers (AT&T, Sprint, etc.). Meanwhile, the VAN carriers have also branched into the traditional common carriers' markets and are offering unenhanced basic network circuits as well.

Electronic Data Interchange (EDI) - Application-to-application electronic exchange of business data between trade partners or facilitators using a telecommunications network.

Electronic Information Interchange- The transmission of messages across an electronic network managed by a services vendor, including electronic mail, voice mail, voice messaging, and access to Telex, TWX, and other messaging services. This also includes bulletin board services.

8. Equipment Services

☆The equipment services delivery mode includes two submodes. Both deal with the support and maintenance of computer equipment.

☆*Equipment Maintenance* - Services provided to repair, diagnose problems and provide preventive maintenance both on-site and off-site for computer equipment. The costs of parts, media and other supplies are excluded. These services are typically provided on a contract basis.

☆*Environmental Services* - Composed of equipment and data center related special services such as cabling, air conditioning and power supply, equipment relocation and similar services.

D
Computer Equipment

☆These definitions have been included to provide the basis for market segmentation in the software products markets.

☆*Computer Equipment* - Includes all computer and telecommunications equipment that can be separately acquired with or without installation by the vendor and not acquired as part of an integrated system. Unless otherwise noted in an INPUT forecast, computer equipment is only included where it is part of the purchase of services or software products (e.g., turnkey systems and systems integration).

☆*Peripherals* - Includes all input, output, communications, and storage devices (other than main memory) that can be channel connected to a processor, and generally cannot be included in other categories such as terminals.

☆*Input Devices* - Includes keyboards, numeric pads, card readers, light pens and track balls, tape readers, position and motion sensors, and analog-to-digital converters.

☆*Output Devices* - Includes printers, CRTs, projection television screens, micrographics processors, digital graphics, and plotters

☆*Communication Devices* - Includes modem, encryption equipment, special interfaces, and error control

☆*Storage Devices* - Includes magnetic tape (reel, cartridge, and cassette), floppy and hard disks, solid state (integrated circuits), and bubble and optical memories

☆*Computer Systems* - Includes all processors from personal computers to supercomputers. Computer systems may require type- or model-unique operating software to be functional, but this category excludes applications software and peripheral devices and processors or CPUs not provided as part of an integrated (turnkey) system.

☆*Personal computers* - Smaller computers using 8-, 16-, or 32-bit computer technology. Generally designed to sit on a desktop and are portable for individual use. Price generally less than $5,000.

☆*Workstations* - High-performance, desktop, single-user computers often employing Reduced Instruction Set Computing (RISC). Workstations provide integrated, high-speed, local network-based services such as data base access, file storage and back-up, remote communications, and peripheral support. These products usually cost from $5,000 to $15,000.

☆*Minicomputer or midsize computers* - Minicomputers are generally priced from $15,000 to $350,000. Many of the emerging client/server computers are in this category.

☆*Mainframe or large computers* - Traditional mainframe and supercomputers costing more than $350,000.

E

Sector Definitions

1. Industry Sector Definitions

INPUT structures the information services market into industry sectors such as process manufacturing, insurance, transportation, etc. The definitions of these sectors are based on the 1987 revision of the Standard Industrial Classification (SIC) code system. The specific industries (and their SIC codes) included under these industry sectors are detailed in Exhibit A-10.

INPUT includes all delivery modes except systems software products and equipment services in industry market sectors. See Exhibit A-9 and section E-3 (Delivery Mode Reporting by Sector).

Note: SIC code 88 is Personal Households. INPUT does not currently analyze or forecast information services in this market sector.

EXHIBIT A-10

Industry Sector Definitions

Industry Sector	SIC Code	Description
Discrete Manufacturing	23xx	Apparel and other finished products
	25xx	Furniture and fixtures
	27xx	Printing, publishing and allied industries
	31xx	Leather and leather products
	34xx	Fabricated metal products, except machinery and transportation equipment
	35xx	Industrial and commercial machinery and computer equipment
	36xx	Electronic and other electrical equipment and components, except computer equipment
	37xx	Transportation equipment
	38xx	Instruments; photo/med/optical goods; watches/clocks
	39xx	Miscellaneous manufacturing industry
Process Manufacturing	10xx	Metal mining
	12xx	Coal mining
	13xx	Oil and gas extraction
	14xx	Mining/quarrying nonmetalic minerals
	20xx	Food and kindred products
	21xx	Tobacco products
	22xx	Textile mill products
	24xx	Lumber and wood products, except furniture
	26xx	Paper and allied products
	28xx	Chemicals and allied products
	29xx	Petroleum refining and related industries
	30xx	Rubber and miscellaneous plastic products
	32xx	Stone, clay, glass and concrete products
	33xx	Primary metal industries
Transportation Services	40xx	Railroad transport
	41xx	Public transit/transport
	42xx	Motor freight transport/warehousing
	43xx	U.S. Postal Service
	44xx	Water transportation
	45xx	Air transportation (including airline reservation services in 4512)
	46xx	Pipelines, except natural gas
	47xx	Transportation services (including 472x, arrangement of passenger transportation)

EXHIBIT A-10 (CONT.)

Industry Sector Definitions

Industry Sector	SIC Code	Description
Telecommunications	48xx	Communications
Utilities	49xx	Electric, gas and sanitary services
Retail Distribution	52xx 53xx 54xx 55xx 56xx 57xx 58xx 59xx	Building materials General merchandise stores Food stores Automotive dealers, gas stations Apparel and accessory stores Home furniture, furnishings and accessory stores Eating and drinking places Miscellaneous retail
Wholesale Distribution	50xx 51xx	Wholesale trade - durable goods Wholesale trade - nondurable goods
Banking and Finance	60xx 61xx 62xx 67xx	Depositary institutions Nondepositary institutions Security and commodity brokers, dealers, exchanges and services Holding and other investment offices
Insurance	63xx 64xx	Insurance carriers Insurance agents, brokers and services
Health Services	80xx	Health services
Education	82xx	Educational services

EXHIBIT A-10 (CONT.)

Industry Sector Definitions

Industry Sector	SIC Code	Description
Business Services	65xx	Real estate
	70xx	Hotels, rooming houses, camps, and other lodging places
	72xx	Personal services
	73xx	Business services (except hotel reservation services in 7389)
	7389x	Hotel reservation services
	75xx	Automotive repair, services and parking
	76xx	Miscellaneous repair services
	78xx	Motion pictures
	79xx	Amusement and recreation services
	81xx	Legal services
	83xx	Social services
	84xx	Museums, art galleries, and botanical/zoological gardens
	86xx	Membership organizations
	87xx	Engineering, accounting, research, management, and related services
	89xx	Miscellaneous services
Federal Government	9xxx	
State and Local Government	9xxx	
Miscellaneous Industries	01xx	Agricultural production - crops
	02xx	Agricultural production - livestock/animals
	07xx	Agricultural services
	08xx	Forestry
	09xx	Fishing, hunting and trapping
	15xx	Building construction - general contractors, operative builders
	16xx	Heavy construction - contractors
	17xx	Construction - special trade contractors

2. Cross-Industry Sector Definitions

INPUT has identified seven cross-industry market sectors. These sectors or markets involve multi-industry applications such as human resource systems, accounting systems, etc.

- In order to be included in an industry sector, the service or product delivered must be specific to that sector only. If a service or product is used in more than one industry sector, it is counted as cross-industry.

- INPUT only includes the turnkey systems, applications software products, and transaction processing services in the cross-industry sectors.

The seven cross-industry markets are:

Accounting - consists of applications software products and information services that serve such functions as:

- General ledger
- Financial management
- Accounts payable
- Accounts receivable
- Billing/invoicing
- Fixed assets
- International accounting
- Purchasing
- Taxation
- Financial consolidation

- Excluded are accounting products and services directed to a specific industry, such as tax processing services for CPAs and accountants within the business services industry sector.

Human Resources - consists of application solutions purchased by multiple industry sectors to serve the functions of human resources management and payroll. Examples of specific applications within these two major functions are:

- Employee relations
- Benefits administration
- Government compliance
- Manpower planning
- Compensation administration
- Applicant tracking
- Position control
- Payroll processing

Education and Training - consists of education and training for information systems professionals and users of information systems delivered as a software product, turnkey system or through processing services. The market for computer-based training tools for the training of any employee on any subject is also included.

Office Systems consists of the following:

- Integrated office systems (IOS)
- Word processing
- Desktop publishing
- Electronic publishing
- Image systems

- IOSs—such as IBM's OfficeVision, HP's NewWave Office and DEC's All-In-1—typically include the following core functions, all of which are accessed from the same desktop: electronic mail, decision support systems, time management and filing systems.

- Office systems graphics include presentation graphics (which represent the bulk of office systems graphics), paint and line art, page description languages, and electronic form programs.

- The fundamental difference between electronic publishing and desktop publishing (within the office systems sector) is that electronic publishing encompasses a method of document management and control from a single point—regardless of how many authors/locations work on a document—whereas desktop publishing is a personal productivity tool and is generally a lower end product residing on a personal computer.

- Electronic or computer publishing systems that are sold strictly and specifically to commercial publishers, printers, and typesetters are excluded from cross-industry consideration and are included in the discrete manufacturing industry.

Engineering and Scientific encompasses the following applications:

- Computer-aided design and engineering (CAD and CAE)
- Structural analysis
- Statistics/mathematics/operations research
- Mapping/GIS

- Computer-aided manufacturing (CAM) or CAD that is integrated with CAM is excluded from the cross-industry sector as it is specific to the manufacturing industries. CAD or CAE that is dedicated to integrated circuit design is also excluded because it is specific to the semiconductor industry.

Planning and Analysis consists of software products and information services in four application areas:

- Executive Information Systems (EIS)
- Financial modeling or planning systems
- Spreadsheets
- Project management

Sales and Marketing encompasses marketing management and sales analysis application solutions.

- Sales and marketing includes:

  - Sales analysis
  - Marketing management
  - Demographic market planning models

3. Delivery Mode Reporting by Sector

This section describes how the delivery mode forecasts relate to the market sector forecasts. Exhibit A-11 summarizes the relationships.

- *Processing services* - The transaction processing services submode is forecasted for each industry and cross-industry market sector. The utility and other processing services submodes are forecasted in total market in the general market sector.

- *Turnkey systems* - Turnkey systems is forecasted for the 15 industry and 7 cross-industry sectors. Each component of turnkey systems is forecasted in each sector.

- *Applications software products* - The applications software products delivery mode is forecasted for the 15 industry and 7 cross-industry sectors. In addition, each forecast is broken down by platform level: mainframe, minicomputer and workstation/PC.

- *Systems operations* - Each of the systems operations submodes is forecasted for each of the 15 industry sectors.

- *Systems integration* - Systems integration and each of the components of systems integration are forecasted for each of the 15 industry sectors.

- *Professional services* - Professional services and each of the submodes is forecasted for each of the 15 industry sectors.

EXHIBIT A-11

Delivery Mode versus Market Sector Forecast Content

Delivery Mode	Submode	Market Sectors		
		Industry Sectors	Cross-Industry Sectors	General
Processing Services	Transaction Utility Other	X	X	 X X
Turnkey Systems		X	X	
Applications Software Products		X	X	
Systems Operations	Platform Applications	X X		
Systems Integration		X		
Professional Services		X		
Network Services	Network Applications Electronic Information Services	X X		 X
Systems Software Products				X
Equipment Services				X

- *Network services* - The network applications submode of network services forecasted for each of the 15 industry sectors.

  Industry and cross-industry electronic information services are forecast in relevant market sectors. The remainder of electronic information services is forecasted in total for the general market sector.

- *Systems software products* - Systems software products and its submodes are forecasted in total for the general market sector. Each submode forecast is broken down by platform level: mainframe, minicomputer and workstation/PC.

- *Equipment services* - Equipment services and its submodes are forecasted in total in the general market sectors.

F

Vendor Revenue and User Expenditure Conversion

The size of the information services market may be viewed from two perspectives: vendor (producer) revenues and user expenditures. INPUT defines and forecasts the information services market in terms of user expenditures. User expenditures reflect the markup in producer sales when a product such as software is delivered through indirect distribution channels (such as original equipment manufacturers (OEMs), retailers and distributors). The focus on user expenditure also eliminates the double counting of revenues that would occur if sales were tabulated for both producer (e.g., Lotus) and distributor (e.g., ComputerLand).

For most delivery modes, vendor revenues and user expenditures are fairly close. However, there are some areas of significant difference. Many microcomputer software products, for example, are marketed through distribution channels. To capture the valued added through these distribution channels, adjustment factors are used to convert estimated information services vendor revenues to user expenditures.

For some delivery modes, including software products, systems integration and turnkey systems, there is a significant volume of intra-industry sales. For example, systems integrators purchase software and subcontract the services of other professional services vendors. Turnkey vendors incorporate purchased software into the systems they sell to users.

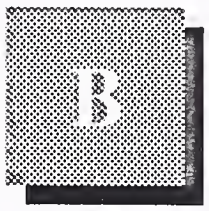
To account for such intra-industry transactions, INPUT uses conversion ratios to derive the estimate of end-user expenditures.

Exhibit A-12 summarizes the net effect of the various ratios used by INPUT to convert vendor revenues to user expenditure (market size) figures for each delivery mode.

EXHIBIT A-12

Vendor Revenue to User Expenditure Conversion

Delivery Mode	Vendor Revenue Multiplier
Applications Software Products	1.18
Systems Software Products	1.10
Systems Operations	0.95
Systems Integration	0.95
Professional Services	0.99
Network Services	0.99
Processing Services	0.99
Turnkey Systems	0.95
Equipment Services	0.99



Data Base Reconciliation

A

Reconciliation of Professional Services Industry

The 1991 report forecast a 1991 professional services industry of $17,757 million. The actual 1991 professional services industry size was $17,757 million. (See Exhibits B-1 and B-2.)

EXHIBIT B-1

Professional Services User Expenditure Forecast by Delivery Mode, 1991-1997 ($ Millions)

Delivery Mode	1991 ($M)	Growth 91-92 (%)	1992 ($M)	1993 ($M)	1994 ($M)	1995 ($M)	1996 ($M)	1997 ($M)	CAGR 92-97 (%)
Professional Services Total	17,757	10	19,505	21,438	23,537	25,861	28,442	31,216	10
Consulting	4,234	11	4,706	5,337	6,007	6,768	7,627	8,598	13
Software Development	10,872	10	11,929	12,805	13,937	15,163	16,462	17,805	8
Education and Training	2,651	8	2,870	3,296	3,593	3,930	4,353	4,813	11

The five-year growth rate changed from 9% to 10%, reflecting the following trends:

- An upturn in professional services business.
- An increase in use by end users.

B

Reconciliation by Delivery Mode

The data discussed in this section can be found in Exhibit B-2.

EXHIBIT B-2

Professional Services
1992 Data Base Reconciliation by Delivery Mode
($ Millions)

Delivery Mode	1991 Market				1996 Market				91-96 CAGR per data 91 rpt (%)	91-96 CAGR per data 92 rpt (%)
	1991 Report (Fcst) ($M)	1992 Report (Fcst) ($M)	Variance from 1991 Report ($M)	Variance from 1991 Report (%)	1991 Report (Fcst) ($M)	1992 Report (Fcst) ($M)	Variance from 1991 Report ($M)	Variance from 1991 Report (%)		
Professional Services Total	17,757	17,757	0	0	27,892	28,442	550	2	9	10
Consulting	4,234	4,234	0	0	7,848	7,627	(221)	(3)	13	12
Software Development	10,872	10,872	0	0	15,525	16,462	937	6	7	9
Education/Training	2,651	2,651	0	0	4,519	4,353	(166)	(4)	11	10

1. Consulting

In 1991, INPUT forecast the size of the 1991 consulting submode at $4,234 million. The actual figure was $4,234 million.

The five-year forecast growth rate for consulting decreased from 13% to 12% but still remains the fastest growing submode of professional services due to the continuing demand for consulting.

2. Education and Training

In 1991, the education and training submode was forecast to have user expenditures of $2,651. The actual figure was $2,651.

The five-year forecast for education and training decreased from 11% to 10%, indicating a slight falling off in demand in the short term.

3. Software Development

The actual figure for software development in 1991 did not change from the forecast figure of $10,872 million.

The five-year forecast figure for software development increased from 7% to 9% for the following reasons:

- The need to improve application systems to improve product and service quality and increase business revenues caused by an upturn in demand
- An increase in systems activities by users

C
Reconciliation by Industry Sector

1. Reported Industry Sector Expenditures in 1991

Exhibit B-3 contains the forecast by industry sector for the planning period.

EXHIBIT B-3

Professional Services
User Expenditure Forecast by Market Sector, 1991-1997
($ Millions)

Market Sector	1991 ($M)	Growth 91-92 (%)	1992 ($M)	1993 ($M)	1994 ($M)	1995 ($M)	1996 ($M)	1997 ($M)	CAGR 92-97 (%)
Vertical Industry Markets	17,757	10	19,505	21,438	23,537	25,861	28,442	31,216	10
Discrete Manufacturing	4,459	9	4,879	5,343	5,851	6,403	7,011	7,676	9
Process Manufacturing	2,119	13	2,405	2,652	2,904	3,180	3,485	3,820	10
Transportation	233	8	252	271	291	312	331	355	7
Utilities	249	8	270	291	314	338	364	388	8
Telecommunications	1,098	10	1,210	1,397	1,614	1,864	2,153	2,485	15
Retail Distribution	220	8	238	255	275	295	316	340	7
Wholesale Distribution	351	8	380	409	439	472	505	542	7
Banking & Finance	2,184	10	2,397	2,600	2,785	2,991	3,220	3,465	8
Insurance	1,532	4	1,592	1,705	1,837	1,976	2,126	2,287	8
Medical	272	8	295	322	354	387	420	460	9
Education	82	9	89	97	107	118	131	146	10
Business Services	304	7	326	350	376	404	434	465	7
Federal Government	1,900	10	2,098	2,349	2,494	2,661	2,850	3,040	8
State & Local Govt.	2,638	12	2,942	3,252	3,744	4,295	4,919	5,556	14
Miscellaneous Industries	116	14	132	145	152	165	177	191	8

Differences between this forecast and the previous year's forecast are analyzed by the reconciliation shown in Exhibit B-4.

EXHIBIT B-4

Professional Services
1991 Data Base Reconciliation by Industry
($ Millions)

Market Sector	1991 Market				1996 Market				91-96 CAGR per data 91 rpt (%)	91-96 CAGR per data 92 rpt (%)
	1991 Report (Fcst) ($M)	1992 Report (Fcst) ($M)	Variance from 1991 Report ($M)	Variance from 1991 Report (%)	1991 Report (Fcst) ($M)	1992 Report (Fcst) ($M)	Variance from 1991 Report ($M)	Variance from 1991 Report (%)		
Vert. Indus. Mkts.	17,757	17,757	0	0	27,892	28,442	550	2	9	10
Discrete Mfg.	4,459	4,459	0	0	6,705	7,011	306	5	9	9
Process Mfg.	2,119	2,119	0	0	3,336	3,485	149	4	10	10
Transportation	233	233	0	0	333	331	-2	-1	7	7
Utilities	249	249	0	0	359	364	5	1	8	8
Telecom.	1,098	1,098	0	0	2,226	2,153	-73	-3	15	15
Retail Distr.	220	220	0	0	292	316	24	8	6	8
Wholesale Distr.	351	351	0	0	465	505	40	9	6	7
Banking & Finance	2,184	2,184	0	0	2,880	3,220	340	12	6	8
Insurance	1,532	1,532	0	0	2,305	2,126	-179	-8	9	7
Medical	272	272	0	0	411	420	9	2	9	9
Education	82	82	0	0	128	131	3	2	10	10
Business Services	304	304	0	0	417	434	17	4	7	7
Federal Govt.	1,900	1,900	0	0	2,700	2,850	150	6	7	8
State & Local Govt.	2,638	2,638	0	0	5,167	4,919	-248	-5	14	13
Misc. Industries	116	116	0	0	168	177	9	5	8	8

2. Industry Sector Forecasts

There were no differences between the 1991 forecast of the 1991 market and the actual results for the 1991 market. The 1996 forecast growth rates decreased for 2 of the 15 industry sectors and increased for 5 sectors, illustrating that there will be a generally positive change in the market.

Factors that will have an impact on industry sectors are discussed in the following sections for a group of industries where change is occurring.

a. Discrete and Process Manufacturing

- The forecast CAGR was increased due to the upturn in work generated by efforts to improve quality and sales.

- The use of client/server technology has also generated professional services work.

b. Retail Distribution

The growth rate for retail distribution was increased from 6% to 8% indicating an upturn in professional services use that is due to restructuring and new types of retail systems rather than to sales upturns.

c. Wholesale Distribution

The CAGR for this industry was raised from 6% to 7% by the following factors:

- Restructuring and changes in the industry
- Greater use of new technology including EDI and client/servers

d. Banking and Finance

The CAGR for banking and finance was raised from 6% to 8% for the following reasons:

- Restructuring and mergers that require changes to existing application systems
- Product and service changes that require modification.

e. Government

- Expenditure levels are forecast to rise slightly in the federal government to support changes in budgets and new public work programs.
- State and local government expenditures will remain high in view of needs but will increase at a slightly lower CAGR because of budget pressures.

VIII

Conclusions and Recommendations

A
Conclusions

The professional services market had a small upturn in the first half of 1992 as noted in Exhibit VIII-1.

- The growth rate of the market moved up to 10%, and it is now forecasted to grow at a CAGR of 10% between 1992 and 1997, which will result in an additional $1 billion of user expenditures in 1997.
- The upturn is uneven and has more of an impact on manufacturing, telecommunications, and state and local government than on other vertical markets. The upturn is more pronounced in some Midwest and Middle Atlantic states than in New England or the Far West.

EXHIBIT VIII-1

Conclusions

- An upturn started in 1992
- Uneven effects from upturn
- High level of competition
- Increased role of end users
- Impact from client/server technology
- Continuing shortage of certain skills
- Increased interest in consulting
- Interest in application maintenance/management
- Movement of vendors into new delivery modes

However, some vendors have had success in industries and regions where growth is lower either due to emphasis on client/server technology (several large banks in New York City mentioned increasing the use of JYACC and Comtex for this reason) or through the use of a consultative approach to selling. TSC has successfully used such a consultative approach to gain business in the Midwest.

The forces driving this market are a desire to improve product and customer services quality and the increased role of users in developing and operating systems. These forces are felt most in manufacturing companies.

- Both of these forces and (particularly the latter) have had a strong impact on encouraging the use of client/server systems. The increased importance of client/server and workstation systems, including downsized application systems, is demonstrated by the fact that about 25% of professional services expenditures can be attributed to this platform size. About 52% of the expenditures are in support of mainframe environments, and midframe solutions have the balance (23%).

- Within five years, the percentage of expenditures devoted to client/servers and workstations will triple as the price/performance ratios of this equipment continue to improve.

- These forces have provided an opportunity for IBM (and other hardware and communications vendors with customer services facilities and many offices) to gain business by solving problems and improving client/server application systems.

The market also offers an opportunity to vendors who can meet the need for technical skills that application upgrades or downsizing requires. Of particular interest are personnel with technical skills and experience in the industry and application systems used by prospects.

Professional services continues to show a high level of competition and particularly more price competition.

- Tight budgets resulting from the recession have produced a sensitivity to prices, particularly for contract services.

- Foreign firms who use personnel from outside the U.S., and agency types of firms, can offer personnel at lower fees.

An increased interest in consulting has arisen as a result of recognition of the knowledge that vendors have gained regarding the use of information technology in specific industries.

- This recognition has resulted in increased expenditures for consulting services (which have a higher profit margin than other professional services) as well as the ability, in some cases, to generate additional work.

- Many of the leading professional services vendors have strengthened their consulting capabilities by adding staff with knowledge and experience in order to gain more projects. But this has not always been successful since some consulting clients want to use a different firm for implementation to ensure the objectivity of the vendor providing consulting.

- Several major vendors report that consulting services may not result in assignments that are in the industries or applications that are areas of emphasis or specialization for that firm.

For the reasons noted above, in some cases the use of consulting services are being re-evaluated. However, there are vendors which are pleased with the financial return from consulting services and/or know the industries and situations where they can be used as a step to begin or obtain longer term projects..

Due to the increasing competition for professional services jobs, vendors are expanding services in new delivery modes and submodes, such as systems operations and application management.

B

Recommendations

In view of the difference in growth rates in various vertical markets and the intense competition that can be encountered, professional services vendors should make more of an effort to analyze the marketplace as recommended in Exhibit VIII-2. The pricing and discounting practices currently in use must be re-evaluated in general and in relation to specific industries and accounts.

- When temporary or agency vendors are bidding (and their bids *will* be considered because they have good candidates and a good record with the prospect or elsewhere), different approaches to the job should be considered by traditional professional services firms. Some vendors noted that they respond by bidding a more comprehensive job, or by using different pricing techniques such as off-shore development or other sources of lower cost personnel.

- Users and IS managers have reported that several Big Six vendors, as well as other major vendors, use these techniques to counter bids from "agency" firms.

EXHIBIT VIII-2

Recommendations

- Analyze market more intently
- Gain more knowledge of pricing and discounting in use
- Consider new approaches for seeking work
- Evaluate new modes or submodes of service
- Consider the use of consulting services
- Develop sources of critical technical skills
- Develop capabilities to support client/server technology

Consulting capabilities can also be strengthened and used to sell larger project concepts, according to major vendors, that will result in meaningful projects for vendors rather than in just contract personnel jobs.

- Both EDS and Andersen report using this approach.

- These vendors, as well as other smaller vendors, approach clients and prospects with well-thought-out ideas for projects that can lead to additional revenues or cost savings.

- Where a prospect has the inclination to go further, the vendor can establish itself as the logical choice for the job.

Additional types of work and other modes or submodes of services should also be considered:

- There can be opportunities to supply ongoing services to operate installations that will run application systems, or to manage the maintenance and enhancement of the application systems in the future.

- Opportunities to utilize experience gained in certain industries and applications can also be used by offering systems integration services or applications software products that can be sold in the future in conjunction with professional services.

As suggested in Exhibit VIII-2, sources of critical high-level technical skills should be sought in order to respond to, as well as to obtain, assignments. Several of the top vendors have developed relationships with agency vendors in order to have ready access to scarce skills.

One of the technical capabilities that professional services firms must consider developing, or having available through alliances or other means, is the ability to support client/server technology and downsizing.

- Many users are seeking aid with this technology and are downsizing older applications or segments of them to run on client/server systems.

- A group of large professional services vendors, including IBM and DEC, have profited from the situations that users have found themselves in after attempting to implement client/server technology with inadequate experience or assistance.

- Most of the largest vendors have developed initiatives to take advantage of the growing interest in this technology. EDS has just recently announced strengthened capabilities in client/server support and Andersen has an educational program for organizations that are planning or starting to use the technology.