

Market Analysis
Program (MAP)

**U.S. Systems
Integration
and Systems
Operations
Markets**

1990-1995

Market Summary

INPUT[®]

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F E B R U A R Y 1 9 9 1

U.S. SYSTEMS INTEGRATION
AND SYSTEMS OPERATIONS
MARKETS
1990-1995

MARKET SUMMARY

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Market Analysis Program (MAP)

***U.S. System Integration and Systems
Operations Markets, 1990-1995***

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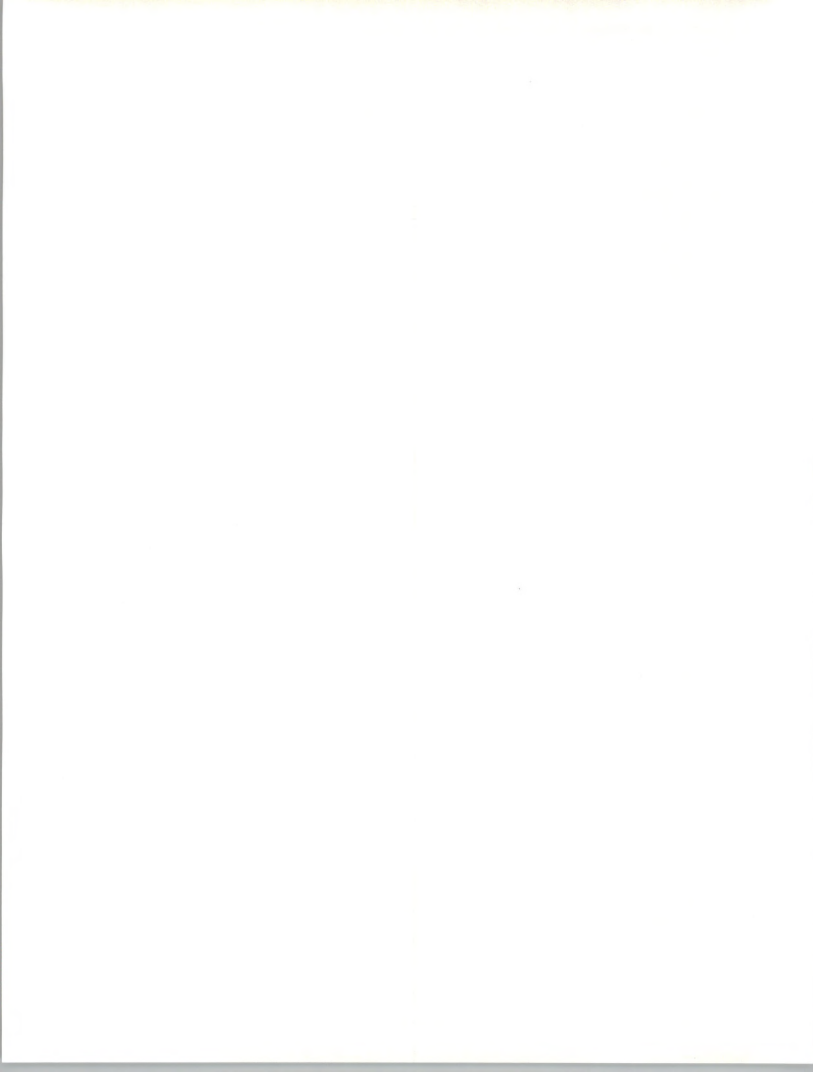


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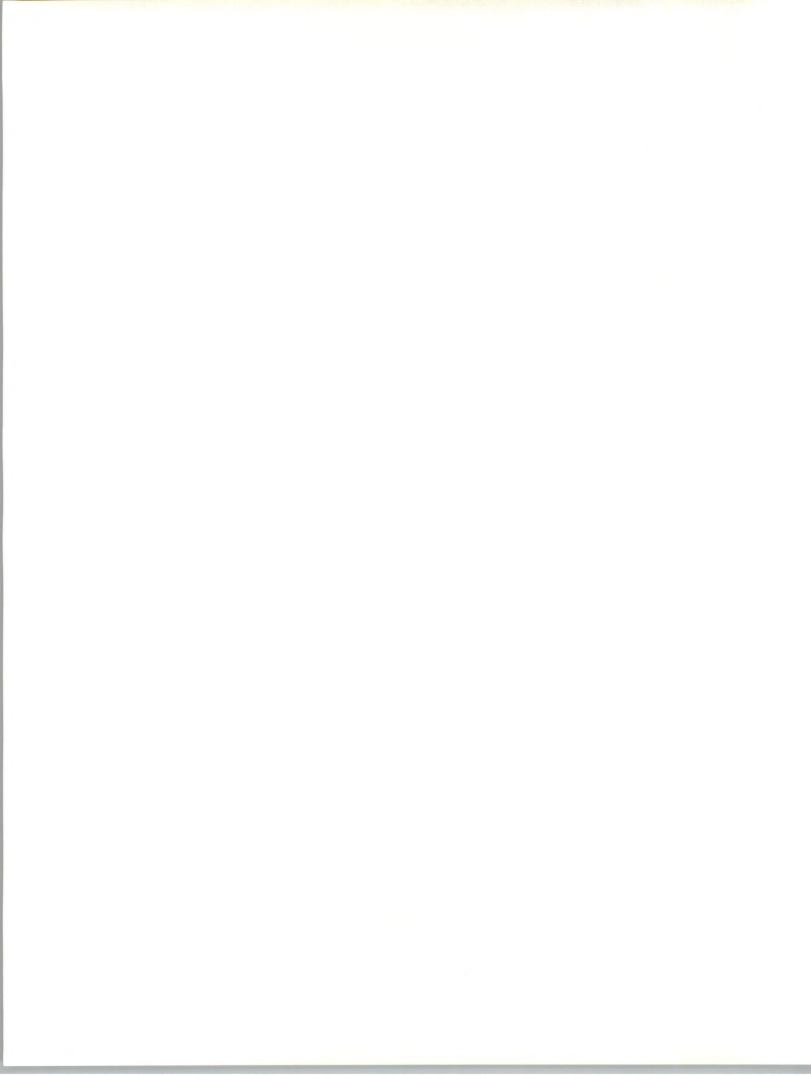
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Introduction

This report is part of a series of market analysis reports written each year by INPUT on the key sectors (delivery modes) of the United States Information Services Market. The delivery modes analyzed during 1990 are as follows:

1. Applications software products
2. Turnkey systems
3. Processing services
4. Systems software products
5. Network services
6. Professional services
7. Systems integration
8. Systems operations

The first six delivery modes are covered in reports included as part of INPUT's Market Analysis Program, a planning service for information services vendors. The other two delivery modes are covered in market analysis reports included in INPUT's Systems Integration and Systems Operations Programs.

A

Purpose and Organization of the Report

1. Purpose

This report, *U.S. Systems Integration and Systems Operations Markets—1990-1995*, provides a summary of the systems integration and systems operations sectors of the U.S. information services market. The report summarizes the trends and events within these sectors to provide the reader with a comprehensive foundation for understanding this market sector and anticipating future directions.

For a complete analysis of these two market sectors, see the following reports:



- *U.S. Systems Integration Market Analysis Report, 1990-1995*
- *U.S. Systems Operations Market Analysis Report, 1990-1995*

2. Report Organization

This report is organized as follows:

- Chapter I, Systems Integration, summarizes the market outlook for systems integration.
- Chapter III, Systems Operations, summarizes the market outlook for systems operations.
- Chapter IV, Summary, provides a brief comparison with the other six market sectors (delivery modes) analyzed by INPUT within the U.S. Information Services Industry.
- Appendix A, Definitions, defines the terms used throughout INPUT's market analysis work.
- Appendix B, Forecast Data Base, summarizes the forecast for these market sectors and reconciles the current forecast with the 1989-1990 forecast.

B

Scope and Methodology

1. Scope

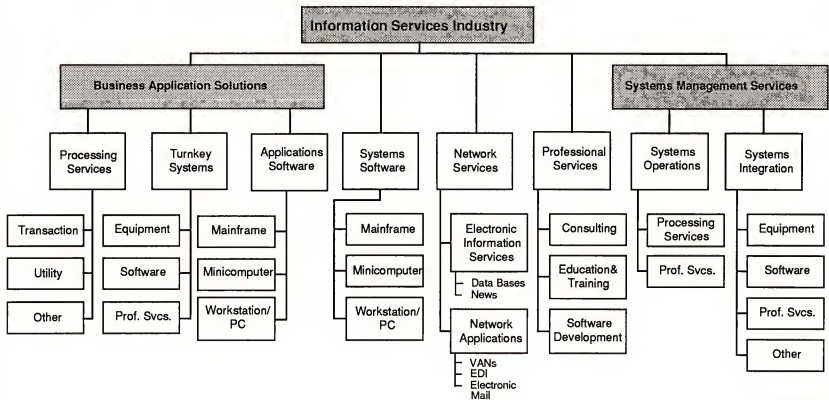
This report addresses the U.S. information services market for the systems integration and systems operations sectors (delivery modes). It includes user expenditures that are noncaptive (generally available to vendors). Many large organizations have portions of their information services requirements 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-1 defines the structure of the information services industry as used by INPUT in its market analysis and forecasts. The market consists of eight delivery modes, each of which contains a number of submodes.

- INPUT develops a five-year forecast for each of the submodes listed.
- The following delivery modes are forecasted on a vertical-industry and cross-industry basis—applications software products, turnkey systems, processing services, professional services, systems integration, and systems operations.

Information Services Industry Structure—1990



Source: INPUT



- The systems software products and network services delivery modes are forecasted for the U.S. market as a whole.

For a more complete discussion of INPUT's information services industry structure and terminology, please refer to Appendix A, *Definitions*.

b. Delivery Mode Description

Exhibits I-2 and I-3 provide definitions of these two delivery modes. Both represent the shift within the information services industry for vendors to offer greater systems management services and to assume greater risk for the services offered. Equally important, both of these delivery modes reflect the growing trend for major organizations to entrust major portions of their information systems programs to outside resources (the trend called outsourcing). Today the relationship between information services vendor and customer is multiyear and often strategic.

EXHIBIT I-2

Systems Integration Market Definition

- Business offering
- Complete solution to complex requirement for:
 - Information systems
 - Networks
 - Automation
- Custom selection and implementation of products and services



EXHIBIT I-3

Systems Operations Definitions

- **Delivery Modes**
 - Processing services—performed on vendor-owned equipment
 - Professional services—performed on client-owned equipment
- **Types of systems operations**
 - Platform operations—vendor operates computer system/network only
 - Application operations—vendor has responsibility for system/network and applications software

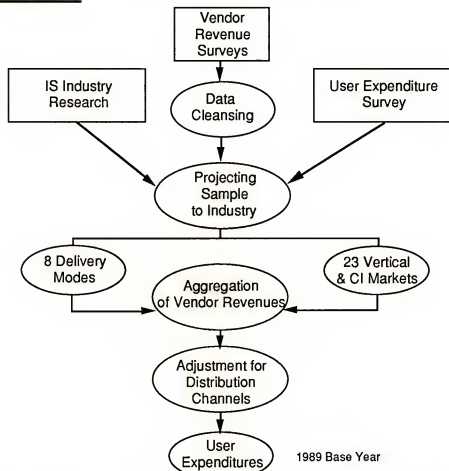
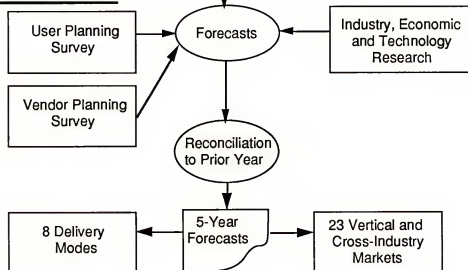
2. Methodology

INPUT's methodology for market analysis and forecasting is summarized in Exhibit I-4. As in past years, INPUT has continued the process of surveying information services vendors to determine their U.S. information services revenues, polling information systems organizations to determine their expenditure and outside services acquisition plans, and interviewing vendors a second time to understand their views of the market opportunities over the short and longer term.

INPUT's annual forecasting process is broken into two major parts: (1) base-year expenditure calculations and (2) market forecasts. Each is briefly described below.



EXHIBIT I-4

INPUT Research MethodologyI. Base YearII. Market Forecasts



a. Base-Year Expenditure Calculations

- INPUT determines previous-year information services revenues for the eight delivery modes and 23 vertical and cross-industry sectors for hundreds of vendors. This determination is accomplished through interviews, use of public data, and INPUT estimates.
- The initial data are projected to represent the entire information services market.
- Adjustments are made to eliminate duplications from distribution channel overlap and to assure that captive information services expenditures are not included.
- The result is a base-year, 1989, user expenditure for each of the 23 vertical and cross-industry sectors and the 8 delivery modes.

b. Market Forecasts

- In the forecasting step, INPUT surveys information systems executives to determine 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 23 vertical and cross-industry sectors and the 8 delivery modes.

To complete the process, INPUT reconciles its new forecasts with those from the previous year. Differences due to market restructuring and other causes are explained and provide the users of these projections with the ability to track INPUT's forecasts from year to year.

C

Economic Assumptions

Forecasts are presented in current dollars (i.e., 1995 market sizes are in 1995 dollars). In developing the five-year forecasts, INPUT has incorporated the following economic assumptions regarding the U.S. economy as a whole.

The GNP and GNP Deflator growth rates used in INPUT's market projections for 1990 are from the CONSENSUS^{STM} forecast from 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.



Exhibit I-5 provides the economic assumptions used by INPUT in the 1989-1994 market analysis reports and those for the 1990-1995 reports. The 1990-1995 assumptions compared to those used for 1989-1994 indicate:

- Significantly lower Real GNP growth for 1990 and 1991
- Stronger Real GNP growth for 1992 and beyond
- Inflation at somewhat lower levels using the 1990-1995 assumptions

The resulting Nominal GNP growth used by INPUT is for much lower growth in 1990 (5.4% versus the projected 7.7% in the 1989 reports) and again in 1991 (5.4% versus 7.8%).

- In 1992 and beyond, the Nominal GNP growth rates are quite comparable.
- For the five-year period 1989-1994, the CAGR Nominal GNP is 6.2% versus the previous 7.1%.

In summary, the economic assumptions used by INPUT reflect significantly reduced growth in the near term, followed by modest steady growth through 1995.

It should be noted that the U.S. economic environment has worsened for the short term since this CONSENSUS forecast was published in October, 1990. There are stronger signs of a recession in the first two to three quarters of 1991. The impact of a recession on the 1991 information services market is discussed in Chapters III and IV.

EXHIBIT I-5

GNP and Inflation Growth Rate Assumptions 1989-1995

1989 Report Assumptions

Overall Economy	1989E	1990E	1991E	1992E	1993E	1994E	1995E	CAGR 89-94 (%)	CAGR 90-95 (%)
Nominal GNP	7.6	7.7	7.8	7.0	6.5	6.5	6.5	7.1	--
GNP Deflator	4.8	5.2	5.5	5.0	4.5	4.5	4.5	4.9	--
Real GNP	2.8	2.5	2.3	2.0	2.0	2.0	2.0	2.2	--

1990 Assumptions (Preliminary Estimate)

Overall Economy	1989A	1990E	1991E	1992E	1993E	1994E	1995E	CAGR 89-94 (%)	CAGR 90-95 (%)
Nominal GNP	6.7	5.4	5.4	6.8	6.8	6.8	6.5	6.2	6.5
GNP Deflator	4.1	4.4	4.6	4.1	4.0	4.0	3.9	4.2	4.1
Real GNP	2.5	1.0	0.8	2.6	2.7	2.7	2.5	1.8	2.2

Note: 1989A based on final figures reported by U.S. Commerce Department.

1990 onward from CONSENSUS™ economic forecast reported by Blue Chip Economic Indicators, Sedona, AZ (Vol 15, No 10, October 10, 1990).

D

Related Reports

Related reports of possible interest to the reader include:

1. U.S. Markets

- *U.S. Applications Solutions Market Analysis Report, 1990-1995*
- *U.S. Processing Services Market Analysis Report, 1990-1995*
- *U.S. Systems Software Products Market Analysis Report, 1990-1995*
- *U.S. Professional Services Market Analysis Report, 1990-1995*
- *U.S. Systems Integration Market Analysis Report, 1990-1995*
- *U.S. Systems Operations Market Analysis Report, 1990-1995*
- *U.S. Processing Services Market Analysis Report, 1990-1995*

- *U.S. Industry Sector Markets, 1990-1995* (16 reports on all major industry sectors, e.g., insurance)
- *U.S. Cross-Industry Sector Markets, 1990-1995* (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, 1990-1995*
- *Systems Software Products—Western European, 1990-1995*
- *Trends in Processing Services—Western European, 1990-1995*
- *Systems Integration Market Forecast—Western European, 1990-1995*
- *Systems Operations Market Forecast—Western European, 1990-1995*
- *Western European Network Services Markets, 1990-1995*

INPUT also analyses the European markets on a vertical basis for discrete and process manufacturing, insurance, banking and finance, and retail and wholesale distribution.





Systems Integration

A

Major Buyer Issues

U.S. businesses, more than ever, are feeling the pressure of competition from domestic and foreign companies. This pressure is forcing organizations to look closely at their core businesses to identify solutions that differentiate their products and services from the competition's. In many cases, the application of technology can make the difference in offering a superior service faster, or reducing the length of product development cycles. These new solutions are becoming increasingly complex as they change traditional business processes and serve new organizational structures that often are required to operate around the clock and throughout the world. Exhibit II-1 identifies the major buyer issues in 1990.

EXHIBIT II-1

Systems Integration Major Buyer Issues—1990

- Competitive demands
- Core business focus
- Users becoming buyers
- Increasingly complex solutions
- New technology application
- Unavailable skills

As INPUT studies information systems budgets, it has become apparent that an increasing amount of information systems expenditures are no longer controlled by internal information systems organizations. This loss of control is because user organizations are in many cases becoming the buyers of solutions and are controlling the solution budgets. Many of



the solutions that users seek include new technologies such as artificial intelligence, image processing, and a variety of advanced telecommunications alternatives such as LANs, WANs, and MANs. Systems integrators with good track records provide an attractive alternative to internal information systems organizations that often lack adequate resources and skills to meet new user requirements. Some internal organizations also lack the new-technology application knowledge and experience required.

B

Market Forecast 1990-1995

During 1990 the domestic economy slowed and domestic industry spent \$534 billion for plants and equipment, an increase of 5.2% over 1989. This increase was less than one-half of the 1988-to-1989 increase of 11.4%. An increase of just 2.4%, to \$546 billion, is projected for 1991. Although industry will continue to invest in new capital equipment, INPUT believes that the recession will reduce the number of new commercial SI projects started in 1991.

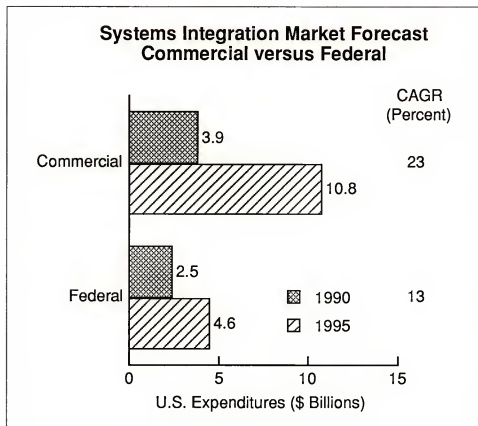
Action by industry to solve problems increased expenditures for commercial systems integration to \$3.9 billion in 1990, despite predictions of a lower GNP. INPUT forecasts that a still-cautious industry will selectively invest in new and expanded information systems in the near term, and that expenditures for vendor-provided SI solutions will reach \$10.8 billion in 1995. This increase represents a CAGR of 23%, down from the 29% predicted last year. Narrowing margins and reluctance to invest in new information systems solutions, and much less use of outside vendors, are expected to continue to hinder demand for systems integration. Exhibit II-2 provides the forecast for the commercial and federal markets.

The growth in demand is focused in a few vertical industries, and is not uniformly spread among those facing increasing competition.

The federal market has not grown as much as predicted. The expected increase in large-system authorizations has been delayed by the Gramm-Rudman-Hollings Act and by defense cuts to reduce the national budget deficit. Expenditures for 1990 are expected to reach \$2.5 billion and are expected to increase to \$4.6 billion in 1995. This projection represents a CAGR of 13%, down from 18% forecasted just a year ago.



EXHIBIT II-2



C

SI Projected Composition Trends

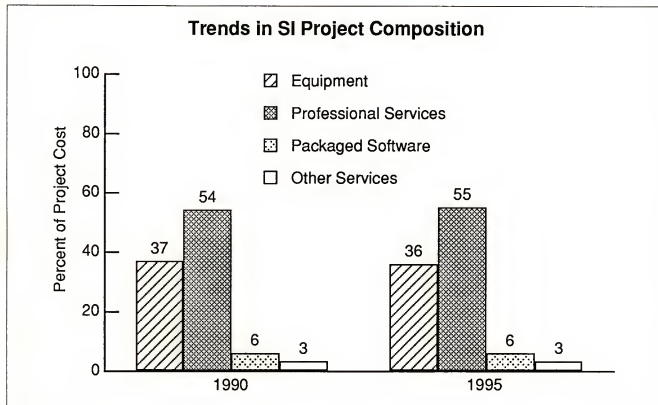
SI expenditures can be broken into four basic components: computing and telecommunications equipment, professional services, packaged software products, and other ancillary expenditures. The distribution of these expenditures in 1990 and 1995 are shown in Exhibit II-3.

Earlier forecasts anticipated that expenditures for equipment would drop—and they have, but not as fast as anticipated. The largest component of expenditures is professional services, which will increase from 54% to 55% of the total expenditures by 1995.

The growth of professional services, at a CAGR of 20%, will be augmented by slightly faster growth of software products (21% CAGR) as vendors continue to build base software products that can be tailored to an individual user's solution requirement. These software products will become increasingly important as they ease the pressure to acquire additional professional services skills while improving the productivity of the professional services already on hand. A further benefit of software products is that they reduce the risk inherent in an approach that requires every new solution to be designed from the ground up.



EXHIBIT II-3



The continuing shortage of qualified personnel, particularly program managers, and the increased workloads of current staffs have caused federal agencies to have greater dependence on SI utilization than does the commercial sector. This market does not offer the same degree of opportunity for software products, however—federal applications often require solutions that are different than those required in the commercial sector.

D

Forecast by Industry Sector

As shown in Exhibit II-4, discrete manufacturing was the largest market for systems integration in 1990, and will continue to be throughout the forecast period. The key business functions continue to be streamlining and integrating the entire product development, manufacturing, and distribution processes. This is a massive undertaking for most companies, but is essential to retain competitiveness and market share. State and local governments will be the second largest SI market over the forecast period. These organizations have many of the same problems of the federal government, and provide integrators with an opportunity to replicate a solution over a sizeable number of governments.

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EXHIBIT II-4

Systems Integration Forecast by Industry Sector

Sector	\$ Billions		CAGR (Percent)
	1990	1995	
Discrete Manufacturing	.98	2.93	25
State and Local Government	.58	1.64	23
Utilities	.47	.92	15
Banking and Finance	.37	1.28	28

The third-largest CSI market in 1990 is utilities. This industry has a special set of applications, generation plant and network management systems, that provide opportunities for a number of industry-focused vendors. Although the utility growth rate is relatively slow (a CAGR of 15%), it will continue to provide opportunities over the five-year forecast but will slip from third to fourth in size by 1995.

The fourth largest CSI market in 1990 is banking and finance, and it will be third largest in 1995. This sector will continue to recover from the impacts of deregulation, the thrift crises, and lower volumes in the brokerage community. There will still be a need for integration of a number of individual services into systems that include all of a customer's activities with the institution. However, the growth of these opportunities (CAGR of 28%) will be slower than forecasted in 1989 (CAGR of 33%).

E

Vendor Goals and Objectives

Most of the vendor goals and objectives identified in Exhibit II-5 are market driven. Systems integration is a very high-level distribution channel for the complete range of information and telecommunications products and services. It provides or limits product access to the largest users in U.S. industry. Vendors that do not have access to this channel fear that they will lose market share and control of existing customers. The information industry has evolved from product to services orientation and from an environment where the customer was totally responsible for implementation to one where vendors are assuming these responsibilities. Customers are seeking one-stop shopping, and vendors are striving to add additional products and services to become full-service providers. User organizations are clearly looking outside for a single point of responsibility. Product and service providers are adding front-end consulting and back-end operations. Some providers are seeking to achieve these goals by building from within or by making acquisitions, and others look to alliances to provide a full-service image.

EXHIBIT II-5

**Systems Integration
Vendor Goals and Objectives**

- Long-term account control
- Decentralized services
- Full-service image and offerings
- Industry knowledge and skills
- Market coverage
- Proprietary products and methodologies
- Market participation

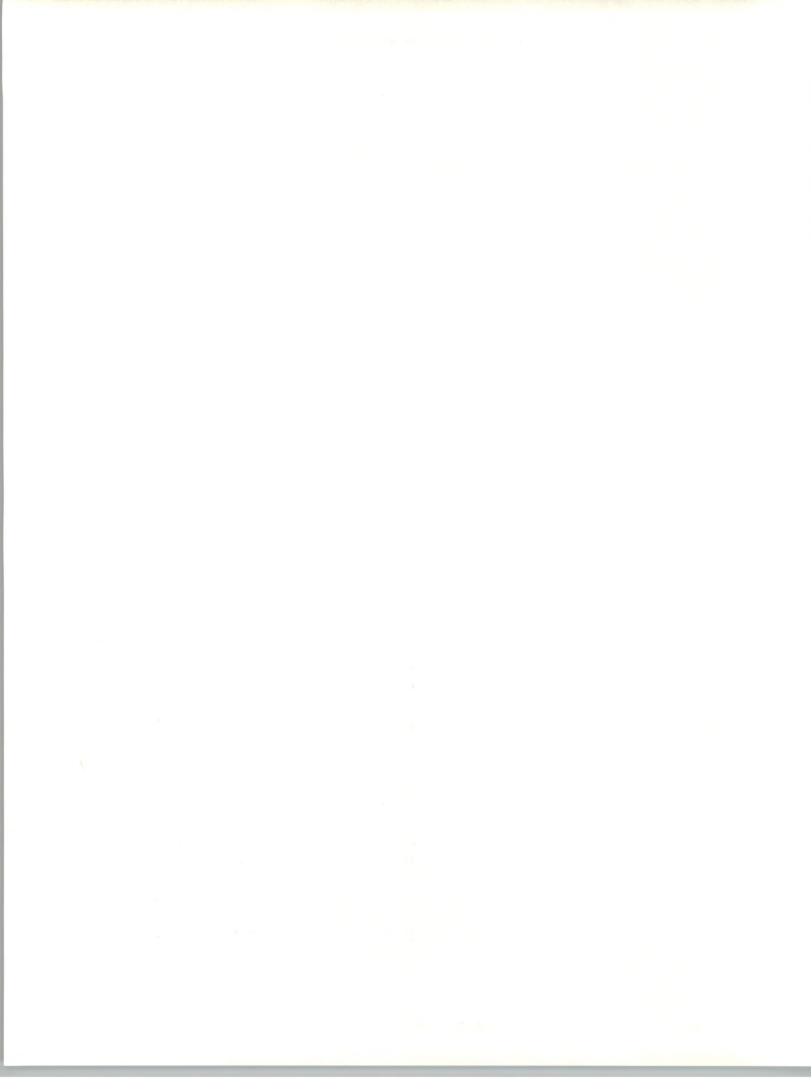
In 1990, vendors recognized that these services needed to be located physically close to the customer. A number of vendors abandoned centralized SI organizations and moved SI resources into their field organizations.

Vendors recognize the importance of understanding the client's business, particularly in an environment where long-term relationships are important. To achieve this goal, vendors are making significant investments in industry architectures and solutions, hiring industry experts, and establishing alliances with consulting firms or professional services firms that already have industry expertise.

The larger vendors that already have product industry coverage have established goals to improve their SI vertical-industry coverage to protect existing customer relationships. Smaller vendors are honing niche skills and gaining market coverage through alliances with the larger vendors that seek vertical-industry skills.

Vendors are building and marketing proprietary products and methodologies. Solid methodologies for requirements analysis, systems design, program management and integration, and implementation improve the odds for program success and reduce the risk of catastrophic failure. The methodologies also build a record of success that can be used for reference selling. Framework products continue to be developed that can be tailored to satisfy a client's specific business needs.

Finally, a growing number of secondary vendors are seeking participation in the market. Many have products that were previously sold as standalone systems, but are now candidates for integration into larger solutions. These products include basic computing equipment, as well as



robots, warehouse storage and retrieval systems, on-board computers, and a variety of communications products. Other vendors seeking SI participation include companies that have developed solutions internally and want to market these skills to others in their industry.

F

Vendor Market Share, 1989

Market shares of the top five vendors in 1989 are presented in Exhibit II-6.

EXHIBIT II-6

Systems Integration Vendor Market Share 1989

Vendor	Revenue (\$ Millions)	Percent
IBM	930	17
Andersen Consulting	650 ¹	12
EDS	545 ²	10
CSC	400	7
Unisys	400	7

1. Excludes equipment revenues.

2. Non-GM business

IBM was the leader in the commercial and government industry sectors of systems integration in 1988. In 1989, it was still the leader in total SI revenues, but had fallen behind Andersen Consulting on the commercial side. IBM has increased its focus on the SI market with the formation of its Applications Systems line of business. This organization goes beyond systems integration and is focused at providing a full range of solutions—from packaged application software through large, tailored integrated solutions. During 1990, IBM moved its tactical commercial SI resources from its former Systems Integration Division directly into the field marketing organization, closer to the customer.

Andersen Consulting, little known in the information services industry just a few years ago, continues to demonstrate dramatic growth in the SI market. Ranked third in 1988, Andersen moved to second in 1989, based almost entirely on commercial SI revenues, where it is now the revenue leader. Andersen has followed a long-term strategy that focuses on its clients' entire business processes. It starts with business consulting to assist in client management of change in organization and business processes, flows into implementation, and in some cases continues with a

long-term systems operations contract. Andersen is vertical-industry-oriented and has skills, technology and/or demonstration centers, and software products to address most industries.

EDS, a subsidiary of General Motors, is the leading processing services/SI vendor, second in SI revenues to IBM in the federal sector, and third overall. One of EDS' strengths is familiarity with vertical markets based on experience in remote data processing and/or systems operations (facilities management) in most industry sectors. EDS also benefits from the manufacturing industry and telecommunications experience of GM. Systems integration is an excellent vehicle for EDS to protect existing systems operations customers and develop new ones. Strong project management and risk management practices have made EDS an aggressive competitor. A major reorganization in 1989 focused on continual and aggressive vertical-market penetration.

CSC made its SI mark in the government sector (both state and federal) by employing extensive experience as a full-service vendor to win contracts. This firm is third in the federal sector and a frequent competitor to EDS/GM. CSC also has broad commercial SI experience and has enlarged this business through an aggressive acquisition program.

Unisys also has a prominent position in the SI market, based primarily on its success in the federal sector. Former Burroughs and Univac federal organizations provided an excellent base for Unisys' participation in the SI market. A recent reorganization moves Unisys CSI resources into the field organization and closer to the customer.

G

Recommendations

Systems integration is one of the services that clients seek as they continue to move toward a broad range of outsourcing alternatives. Clients want services that range from front-end consulting, through SI, to systems operations. INPUT believes that commercial businesses and public sector organizations will continue to choose vendors that can offer the full range of these services. Equally important is the notion that once a vendor is selected to do the front-end consulting, it is in a favored position to win the systems integration and even systems operations contracts. Vendors should strive to present this full-service image, as indicated in Exhibit II-7.



EXHIBIT II-7

**Systems Integration
Recommendations**

- Present full-service image
- Leverage unique capabilities and products
- Establish strategic partnerships (alliances)
- Manage risk containment (program managers)
- Develop focused market strategies

Vendors should assess their current skills and capabilities and build strategies that use them effectively. SI includes too much risk to attempt to provide broad industry coverage if the vendor does not have the necessary skills or experience.

SI is a very complex business. Few vendors have all the products, skills, and capabilities to satisfy the complete requirements of systems integration programs. Teaming, program partners, and alliances are common approaches used to meet a client's integration requirements. Vendors must establish a set of relationships and alliances for long-term success in this market. Partners should be selected carefully and the resulting alliances managed thoughtfully.

Systems integration is a big-stakes game with great potential for failure. Some clients are aware of the gamble and will give higher rewards to the vendor that can demonstrate a good track record of risk management and containment. Vendors must have trained and qualified program managers.

Success and customer acceptance is based on confidence in the vendor's track record in providing solutions in the customer's industry. Therefore, to be successful, vendors must develop focused strategies for each market.







Systems Operations

A

Major Buyer Issues

The buyer issues listed in Exhibit III-1 have been identified by executives in user firms as the motivators for growth in systems operations. Many information services executives are finding that outsourcing to systems operations vendors is a viable alternative to operating information processing with internal personnel resources.

EXHIBIT III-1

Systems Operations Major Buyer Issues 1990

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

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

Firms are constantly seeking to reduce operating costs under tightening economic conditions. They also need to preserve capital and delay major investments.

Internal information systems organizations are unable, in many cases, to keep abreast of rapidly evolving technology and are finding it more difficult to acquire individuals highly skilled in new technologies.



Some industries are finding it difficult to compete for skilled resources. Systems operations offers an alternative that addresses most of these problems but introduces a new one in its place.

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

B

Systems Operations Trends

Several trends are developing in the systems operations market that are outlined in Exhibit III-2. The concept of a partnership is becoming accepted as vendors and users negotiate how contracts will be implemented. As vendors invest in equipment and facilities for the client, and assume responsibility for staff over an extended contract period, mutual respect and trust will be required.

EXHIBIT III-2

Systems Operations Trends 1990

- Client/vendor relationship=partnership
- Vendors assume risk
 - Acquire client hardware
 - Assimilate client staff
- Long-term relationships increasing

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

The relationship between vendor and client is becoming long term. Contracts for more than five years are common already, and ten years is becoming an accepted duration in larger contracts.

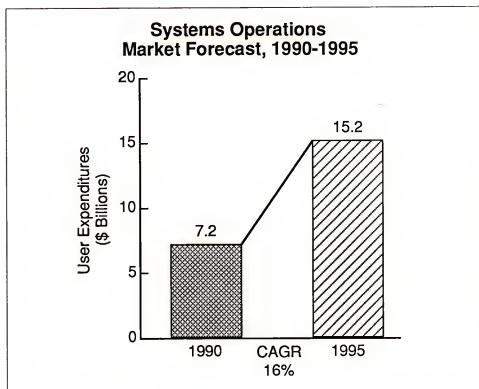
C

Market Forecast, 1990-1995

INPUT forecasts U.S. user expenditures for systems operations for the commercial and federal markets to reach \$7.2 billion in 1990. Growing at a compound annual rate of 16%, expenditures will reach \$15.2 billion in 1995, as illustrated in Exhibit III-3. While growth rate is similar to last year's growth rate, there have been significant changes in the individual vertical-industry sectors.



EXHIBIT III-3

**D****Systems Operations
Submode Forecast,
1990-1995**

Systems operations can be defined as either of two submodes: processing-services- or professional-services-based. Under processing services, the vendor owns the equipment and provides personnel and, at times, facilities. Under professional services, by contrast, the vendor provides the personnel that operates client-owned equipment.

Exhibit III-4 demonstrates the differences in size and growth rates between the processing and professional services systems operations delivery submodes. Systems operations professional services, the market where vendors provide professional services to operate client-owned equipment, reached \$2.1 billion in 1990. Growing at a compound annual rate of 14%, this market will reach \$3.8 billion in 1995.

The processing services systems operations market, where operations are provided on vendor-owned equipment, was more than double the professional services market in 1990 at \$5.1 billion. Growing at a CAGR of 17%, the processing services market will approach three times the professional services market in 1995, at \$11.4 billion.



EXHIBIT III-4

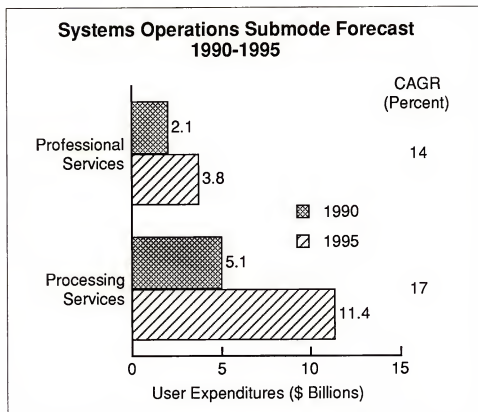
**E****Systems Operations
Forecast,
1990-1995**

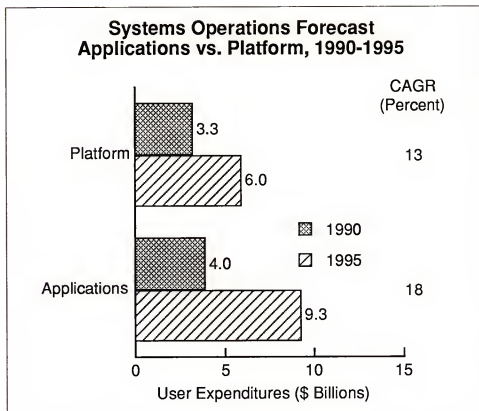
Exhibit III-5 identifies the forecast for platform and applications systems operations. Another look at how services are provided classifies systems operations as either platform or applications operations. Platform operations means the vendor operates the equipment without responsibility for the applications. In applications operations, the vendor takes full responsibility for the complete system, including equipment, applications software, and associated communications. There are many variations on these themes.

INPUT projects that platform systems operations will grow at a compound annual rate of 13%, with revenues increasing from \$3.3 billion in 1990 to \$6.0 billion in 1995. The platform systems operations growth rate varies significantly within each vertical-industry market, however, because of forces in each sector.

Applications systems operations will grow at a compound annual rate of 18%, from \$4.0 billion in 1990 to \$9.3 billion in 1995. The accelerated growth in the applications sector reflects an increasing desire by users to off-load application development and maintenance, and industry specialization by many of the systems operations vendors to meet users' needs. As a result, vendors are developing proprietary software to apply to specific industry problems.



EXHIBIT III-5

**F**

**Leading Vertical-
Industry Market
Forecasts, 1990-1995**

The annual expenditures for systems operations services from 1990 through 1995 for the four leading industry market sectors are included in the table in Exhibit III-6. The industries are ranked based on projected 1995 user expenditures.

EXHIBIT III-6

Systems Operations Leading Vertical-Industry Markets, 1990-1995			
Industry	User Expenditures (\$ Millions)		CAGR (Percent)
	1990	1995	
Banking and finance	1,930	4,055	16
State and local government	955	2,495	21
Federal government	1,270	2,090	10
Health	830	1,825	17
Totals	4,985	10,465	17

Ranked by 1995 user expenditures



As seen in the exhibit, the top four industries—banking and finance, state and local government, federal government, and health—represent 68% of the expenditures in both 1990 and 1995.

G

Leading Systems Operations Vendors, 1989

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

A look at the vendor market share is presented in Exhibit III-7. To be a dominant vendor, it helps to be a multi-industry vendor; but there is opportunity for an industry specialist to capture a significant share of revenue. Both Electronic Data Services (EDS) and Computer Sciences Corporation (CSC) are active across several industries. Boeing Computer Services (BCS) obtains most of its revenues from the federal market, but EDS is much more widely dispersed.

EXHIBIT III-7

Leading Systems Operations Vendors 1989

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

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



H**Recommendations**

The systems operations marketplace is characterized by long-term contracts and a new kind of client-vendor relationship. For these relationships to be successful, vendors need to begin to build relationships prior to contract award and continue growing the partnership through the life of the contract. Exhibit III-8 summarizes recommendations that foster this new partnership.

EXHIBIT III-8

**Systems Operations
Recommendations**

- Before contract award:
 - Demonstrate prior success
 - Establish strong alliances
 - Assume financial risks
- After contract award:
 - Communicate with users/management
 - Participate in strategy/planning

The key points to be made in the presales period are:

- Enhance credibility by demonstrating prior success, either with that prospect or within the prospect's industry.
- Establish strong alliances with partners that can both supplement industry expertise and provide additional cost-effective resources.
- Understand that the business will be won by the one who is willing to assume some financial risk, usually involving a capital investment or assumption of some of the client's assets.

The key elements of the post-sale period need to be considered from the onset of the sales cycle, also. They are:

- Communicate with the users and the client firm's senior management, on a daily basis, if necessary.
- The vendor and client must have joint strategy sessions at which important issues can be discussed and key information shared by both parties.

Vendors that successfully master the development of partnerships will be the major systems operations providers by 1995.







Summary

Systems integration and systems operations represent the two fastest growing sectors in the U.S. information services industry. Exhibit IV-1 positions these two markets against the six other markets used by INPUT to define this industry.

EXHIBIT IV-1

U.S. Information Services Industry Market Comparison

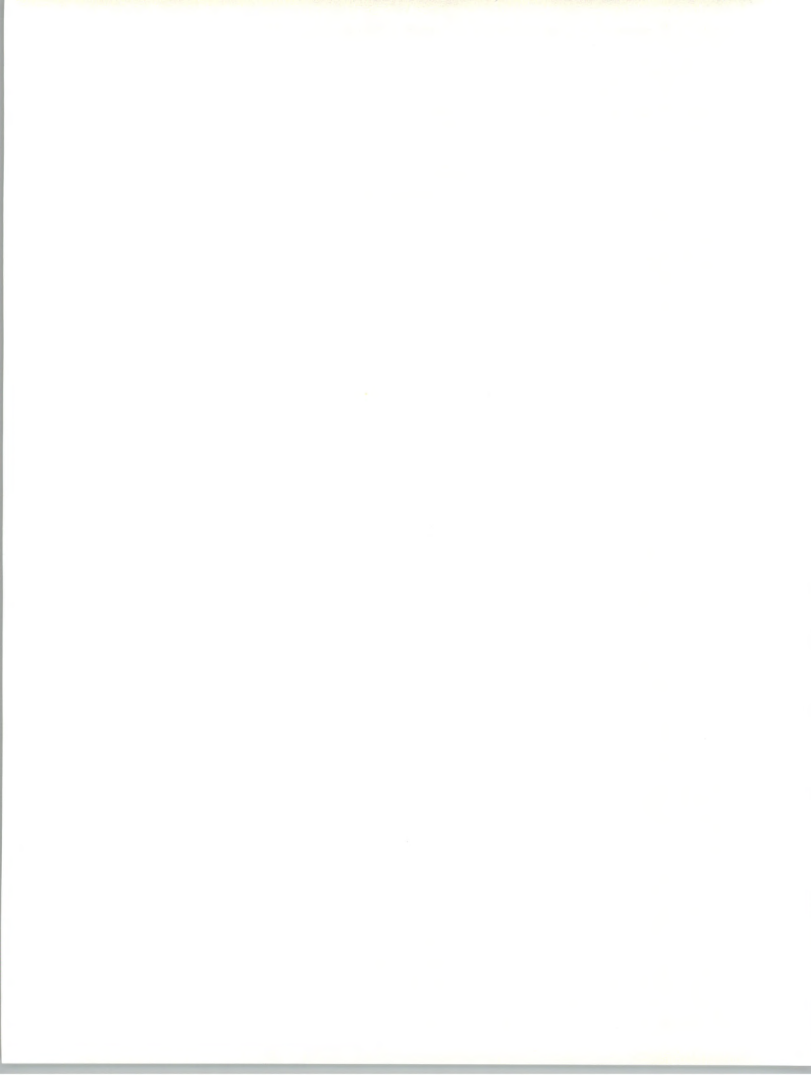
Market Sector	1990 Forecasted User Expenditures (\$ Billions)	1990-1995 CAGR (Percent)
Processing services	17.0	13
Turnkey systems	10.3	8
Application software products	18.1	14
Systems operations	7.3	16
Systems integration	6.4	19
Professional services	16.8	12
Network services	8.1	17
Systems softwareproducts	16.4	14
Total information services market	100.4	13



Both systems integration and systems operations reflect two significant trends within the information systems industry.

- First, the pressure on the information systems organization to provide increased value at a quicker pace through the deployment of information technology
- Second, the willingness for today's information services vendor to assume greater management responsibility and business risk in providing services and products

The overall trend to outsource major information technology projects and the operation of an organization's data center and information network reflects a maturing of the information systems process and industry. Over the next five to ten years, these two types of services are expected to continue to grow at a rate greater than that for the overall industry. The leading vendors will continue to accept increasing breadth of responsibility as both the information systems function and senior management in general look to them to speed the return on the investment in information technology.





Definitions

No industry specific definitions are used in this report.

See the separate volume, *Appendix A: Definitions of Terms*, for general definitions of industry structure and delivery modes used throughout INPUT reports.







Forecast Data Base

A

Systems Integration 1. Forecast Data Base

Exhibit B-1 presents the detailed 1990-1995 forecast for the systems integration market.

EXHIBIT B-1

Systems Integration User Expenditure Forecast by Market Sector 1989-1995

Market Sectors	1989 (\$M)	Growth 89-90 (%)	1990 (\$M)	1991 (\$M)	1992 (\$M)	1993 (\$M)	1994 (\$M)	1995 (\$M)	CAGR 90-95 (%)
Delivery Mode Total	5,392	19	6,411	7,533	8,792	10,401	12,586	15,327	19
Vertical-Industry Markets	5,392	19	6,411	7,533	8,792	10,401	12,586	15,327	19
Discrete Manufacturing	754	30	977	1,222	1,480	1,821	2,306	2,933	25
Process Manufacturing	132	19	157	190	223	272	336	412	21
Transportation	132	19	157	186	221	263	313	372	19
Utilities	428	10	469	527	604	697	802	922	14
Telecommunications	153	19	182	214	248	300	378	480	21
Retail Distribution	189	27	241	306	387	490	633	830	28
Wholesale Distribution	125	12	140	157	175	201	234	278	15
Banking and Finance	289	28	369	463	572	740	978	1,280	28
Insurance	165	21	199	240	297	372	474	614	25
Medical	210	10	231	254	283	317	362	428	13
Education	70	18	83	98	115	136	161	190	18
Business Services	40	28	51	66	84	106	136	173	27
Consumer Services	70	13	79	94	114	138	176	226	23
Federal Government	2,165	15	2,493	2,801	3,107	3,459	3,951	4,573	13
State and Local Government	465	24	576	708	872	1,075	1,328	1,641	23
Miscellaneous Industries	5	13	6	7	10	13	18	26	36

Numbers may not add due to rounding.



2. Forecast Reconciliation

Exhibit B-2 presents the forecast reconciliation for the systems integration market.

EXHIBIT B-2

1990 MAP Data Base Reconciliation Systems Integration Market

Delivery Modes	1989 Market				1994 Market				89-94 CAGR per data 89 rpt (%)	89-94 CAGR per data 90 rpt (%)
	1989 Report (Fcst) (\$M)	1990 Report (Actual) (\$M)	Variance from 1989 Report		1989 Report (Fcst) (\$M)	1990 Report (Fcst) (\$M)	Variance from 1989 Report			
			(\$M)	(%)			(\$M)	(%)		
Total Systems Integration Market	5,797	5,392	-405	-7	17,090	12,506	-4,504	-26	24	18
Discrete Manufacturing	780	754	-26	-3	3,510	2,306	-1,204	-34	35	25
Process Manufacturing	133	132	-1	-1	330	336	6	2	20	21
Transportation	133	132	-1	-1	310	313	3	1	18	19
Utilities	220	428	208	95	785	802	17	2	29	13
Telecommunications	150	153	3	2	385	378	-7	-2	21	20
Retail Distribution	186	189	3	1	930	633	-297	-32	38	27
Wholesale Distribution	132	125	-7	-5	300	234	-66	-22	18	13
Banking and Finance	320	289	-31	-10	1,332	978	-354	-27	33	28
Insurance	165	165	0	0	610	474	-136	-22	30	24
Medical	210	210	0	0	610	362	-248	-41	24	11
Education	72	70	-2	-3	175	161	-14	-8	19	18
Business Services	39	40	1	2	134	136	2	1	28	28
Consumer Services	--	70	70	--	--	176	176	--	--	20
Federal Government	2,710	2,165	-545	-20	6,047	3,951	-2,096	-35	17	13
State and Local	465	465	0	0	1,382	1,328	-54	-4	24	23
Government										
Miscellaneous Industries	82	5	-77	-94	250	18	-232	-93	25	29

B

Systems Operations

1. Forecast Data Base

INPUT introduced systems operations as a new delivery mode in the 1990 MAP Program. It was created by taking the systems operations submode out of both processing services and professional services. No other change has been made to the delivery mode definitions, and the total forecast expenditures for these three delivery modes are identical to the total forecast expenditures of the two original delivery modes before the breakout of systems operations.



Exhibit B-3 presents the detailed 1990-1995 forecast for the systems operations market.

EXHIBIT B-3

Systems Operations User Expenditure Forecast by Market Sector 1989-1995

Market Sectors	1989 (\$M)	Growth 89-90 (%)	1990 (\$M)	1991 (\$M)	1992 (\$M)	1993 (\$M)	1994 (\$M)	1995 (\$M)	CAGR 90-95 (%)
Delivery Mode Total	6,275	16	7,262	8,371	9,647	11,128	12,845	15,248	16
Vertical-Industry Markets	6,275	16	7,262	8,371	9,647	11,128	12,845	15,248	16
Discrete Manufacturing	387	25	482	595	730	890	1,086	1,329	22
Process Manufacturing	446	17	522	604	699	804	931	1,113	16
Transportation	45	14	51	61	69	78	91	106	16
Utilities	40	12	45	51	58	66	76	90	15
Telecommunications	56	16	65	75	86	100	116	134	16
Retail Distribution	62	24	77	94	116	144	180	223	24
Wholesale Distribution	78	18	92	108	127	150	179	215	19
Banking and Finance	1,674	15	1,931	2,213	2,536	2,911	3,342	4,056	16
Insurance	728	10	801	881	963	1,051	1,156	1,301	10
Medical	732	14	833	954	1,098	1,279	1,501	1,825	17
Education	86	10	94	103	113	125	138	165	12
Business Services	15	12	17	18	20	23	25	29	12
Consumer Services	20	27	25	32	40	49	62	77	25
Federal Government	1,109	15	1,271	1,435	1,610	1,783	1,930	2,090	10
State and Local Government	797	20	956	1,148	1,382	1,676	2,032	2,495	21
Miscellaneous Industries	0	N/A	0	0	0	0	0	0	*

Numbers may not add due to rounding.

* Too small to forecast.

2. Forecast Reconciliation

Exhibit B-4 presents the forecast reconciliation for the systems operations market. The variances from the 1989 reports are the result of more precise analysis of this more active delivery mode on an industry sector basis.



The sectors with significant variance are:

- Discrete manufacturing, which was found to be significantly larger
- Retail distribution, which while a small market, was found to be much larger.
- Miscellaneous industries, which given the redefinition to include only construction and agriculture, was found to have no measurable systems operations activity.

EXHIBIT B-4

1990 MAP Data Base Reconciliation Systems Operations Market

Delivery Modes	1989 Market				1994 Market				89-94 CAGR per data 89 rpt (%)	89-94 CAGR per data 90 rpt (%)
	1989 Report (Fcst) (\$M)	1990 Report (Actual) (\$M)	Variance from 1989 Report		1989 Report (Fcst) (\$M)	1990 Report (Fcst) (\$M)	Variance from 1989 Report			
			(\$M)	(%)			(\$M)	(%)		
Total Systems Operations Market	5,940	6,275	336	6	12,828	12,845	17	0	17	15
Discrete Manufacturing	135	387	252	187	319	1,086	767	240	19	23
Process Manufacturing	446	446	0	0	930	931	1	0	16	16
Transportation	56	45	-11	-19	94	91	-2	-2	11	15
Utilities	40	40	0	0	76	76	0	0	14	14
Telecommunications	56	56	0	0	112	116	4	4	15	16
Retail Distribution	19	62	43	224	56	180	124	224	24	24
Wholesale Distribution	79	78	-1	-2	180	179	-1	-1	18	18
Banking and Finance	1,674	1,674	0	0	3,345	3,342	-3	0	15	15
Insurance	728	728	0	0	1,872	1,156	-716	-38	21	10
Medical	754	732	-22	-3	1,441	1,501	59	4	14	15
Education	86	86	0	0	132	138	6	4	9	10
Business Services	15	15	0	1	35	25	-10	-28	19	11
Consumer Services	--	20	20	--	--	62	62	--	--	25
Federal Government	1,109	1,109	0	0	2,243	1,930	-313	-14	15	12
State and Local Government	722	797	75	10	1,933	2,032	99	5	22	21
Miscellaneous Industries	20	0	-20	-100	59	0	-59	-100	24	*

* Too small to forecast



About INPUT

INPUT provides planning information, analysis, and recommendations to managers and executives in the information processing industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions.

Continuous-information advisory services, proprietary research/consulting, merger/acquisition assistance, and multiclient studies are provided to users and vendors of information systems and services (software, processing services, turnkey systems, systems integration, professional services, communications, systems/software maintenance and support).

Many of INPUT's professional staff members have more than 20 years' experience in their areas of specialization. Most have held senior management positions in operations, marketing, or planning. This expertise enables INPUT to supply practical solutions to complex business problems.

Formed as a privately held corporation in 1974, INPUT has become a leading international research and consulting firm. Clients include more than 100 of the world's largest and most technically advanced companies.

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