# Report Quality Evaluation

1.  Report title: ***U.S. Processing Services Market, 1990-1995***   (MAPRO)

2.  Please indicate your reason for reading this report:
    - ☐ Required reading
    - ☐ Area of high interest
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    - ☐ New product development
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3.  Please indicate extent report used and overall usefulness:

    | | Extent | | Usefulness (1=Low, 5=High) | | | | |
    |---|---|---|---|---|---|---|---|
    | | Read | Skimmed | 1 | 2 | 3 | 4 | 5 |
    | Executive Overview | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
    | Complete report | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
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    |---|---|---|---|---|---|
    | Data presented | ☐ | ☐ | ☐ | ☐ | ☐ |
    | Analyses | ☐ | ☐ | ☐ | ☐ | ☐ |
    | Recommendations | ☐ | ☐ | ☐ | ☐ | ☐ |

5.  How useful was the report in these areas:

    | | 1 | 2 | 3 | 4 | 5 |
    |---|---|---|---|---|---|
    | Alert you to new opportunities or approaches | ☐ | ☐ | ☐ | ☐ | ☐ |
    | Cover new areas not covered elsewhere | ☐ | ☐ | ☐ | ☐ | ☐ |
    | Confirm existing ideas | ☐ | ☐ | ☐ | ☐ | ☐ |
    | Meet expectations | ☐ | ☐ | ☐ | ☐ | ☐ |
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6.  Which topics in the report were the most useful? Why?_____
    _____

7.  In what ways could the report have been improved? _____
    _____

8.  Other comments or suggestions: _____
    _____

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# U.S. PROCESSING SERVICES MARKET

# 1990-1995

# Abstract

This INPUT report, *U.S. Processing Services Market, 1990-1995*, pro-
vides forecasts and analysis for the transaction processing, utility process-
ing, and other processing services submarkets. The five-year forecasts
cover sixteen industry-specific and seven cross-industry markets. Lead-
ing vendors are identified, market share indicated, and strategies profiled.

The report discusses issues and trends and provides recommendations on
how vendors can take advantage of the key forces driving the market.

The report contains 117 pages and 44 exhibits.

# Table of Contents

# Table of Contents (Continued)

# Table of Contents (Continued)

# Table of Contents (Continued)

# Table of Contents (Continued)

# Exhibits

# Exhibits (Continued)

# I

# Introduction

I

# Introduction

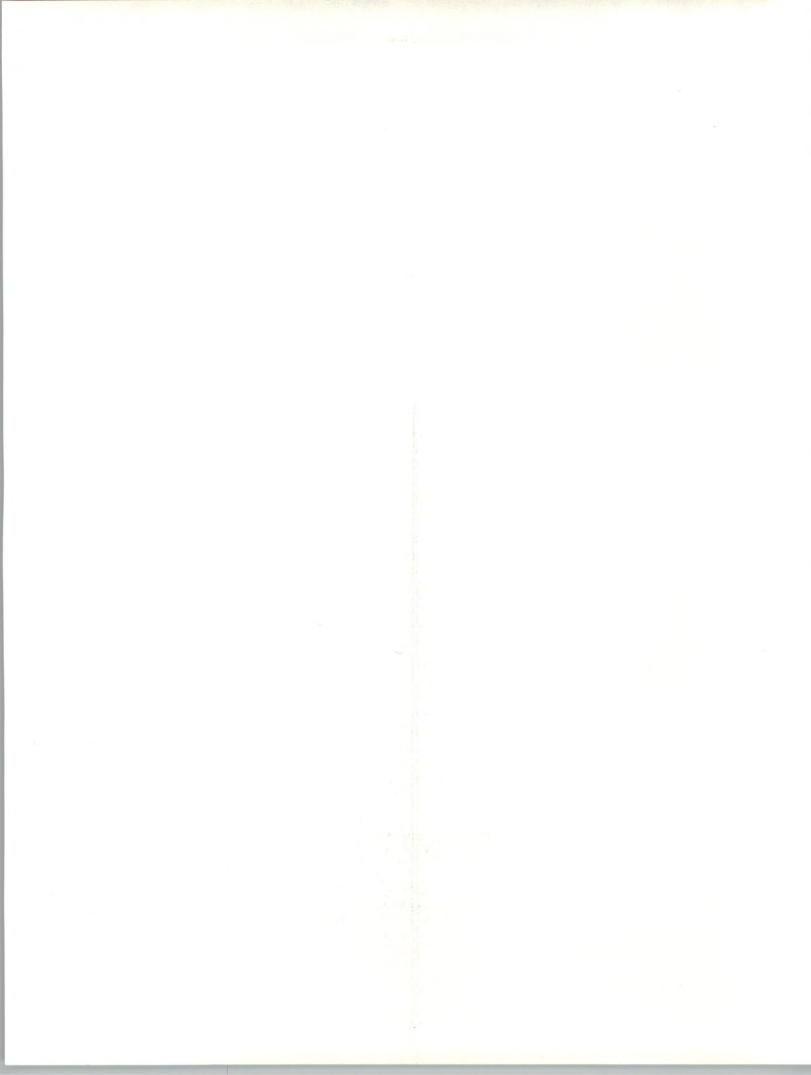This report is part of a series of market analysis reports written each year by INPUT on the key sectors (delivery modes) of the United States (U.S.) Information Services Market. The delivery modes analyzed during 1990 are as follows:

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 (MAP), 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**

**1. Purpose**

This report, *U.S. Processing Services Market Analysis Report, 1990-1995,* analyzes the processing services sector of the U.S. information services market. The report assesses trends and events within the U.S. economy, the U.S. information services market, and the processing services delivery mode to provide the reader with comprehensive foundation for understanding this market sector and anticipating future directions.

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

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

- Review the forces shaping 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 follows:

- Chapter II - Executive Overview, provides a summary of the research analysis, conclusions, and recommendations of the report.

- Chapter III - General Business Climate, provides an overview of the business climate within the U.S. information services market and the processing services delivery mode.

- Chapter IV - Market Forecast, provides a comprehensive look at the specific delivery mode and submodes, the five-year 1990-1995 forecasts, and an assessment of the forces driving this market sector. Where appropriate the forecasts are presented by vertical and cross-industry markets.

- Chapter V - Issues and Trends, discusses the issues and trends that are most critical to this delivery mode for both the immediate and long term.

- Chapter VI - Competition, identifies the leading vendors and assesses the key competitive trends within this delivery mode. Profiles of vendors that exemplify the competitive trends are also provided.

- Chapter VII - Conclusions and Recommendations, provides conclusions and recommendations, and identifies opportunities for the information services vendors active in or considering entering this delivery mode.

- Appendix A - Definitions, defines the terms used throughout INPUT's market analysis work.

- Appendix B - Forecast Data Base, summarizes the forecast for this market sector 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 processing services sector (delivery mode). It includes users 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.

- 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

The processing services delivery mode consists of three submodes as shown in Exhibit I-2—transaction processing, utility processing, and other processing services. Each is briefly described below and defined more completely in Appendix A.

- Transaction Processing—The client uses vendor-provided information systems, including hardware, software and/or data networks, to process application-specific transactions and update application data bases.

- Utility Processing—The client uses vendor-provided software tools (e.g., 4GLs, DBMSs, graphics packages) to develop its own programs using the vendor's hardware system.

- Other Processing Services—The vendor provides ancillary services, usually at the vendor site, such as computer output microfilm, data entry, and disaster recovery.

EXHIBIT I-1

# Information Services Industry Structure—1990
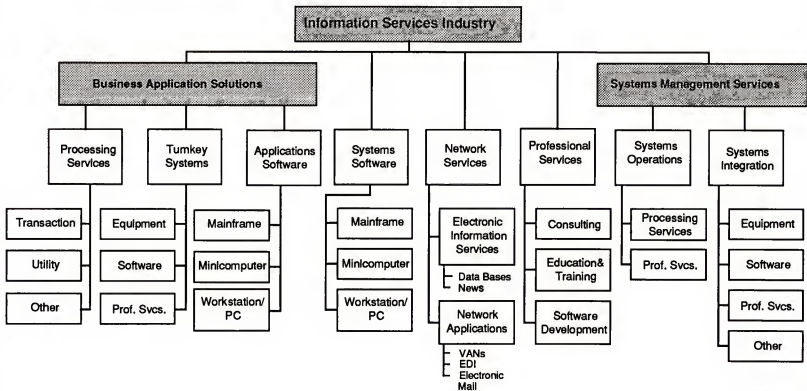
*Source:* INPUT

EXHIBIT I-2

### Processing Services Market Structure

Processing Services

—— Transaction Processing

—— Utility Processing

—— Other Processing Services
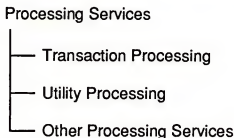
### 2. Methodology

INPUT's methodology for market analysis and forecasting is summarized
in Exhibit I-3. As in past years INPUT has continued the process of
surveying information services vendors to determine their U.S. informa-
tion services revenues and information systems organizations to deter-
mine their expenditure and outside services acquisition plans. INPUT
then interviews 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:
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
  eight delivery modes and 23 vertical and cross-industry sectors for
  hundreds of vendors. This is accomplished through interviews, use of
  public data, and INPUT estimates.

• The initial data is projected to represent the entire information services
  market.

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

• The end result is a base-year, 1989 user expenditure for each of the 23
  vertical and cross-industry sectors and the eight delivery modes.

EXHIBIT I-3

# INPUT Research Methodology

## I. Base-Year Survey Calculations

**Vendor Surveys**
- 500 Vendors
- 1987,1988 Revenues
  - Growth Rates
  - Vertical & Cross-Industry Markets

**Universe (20,000 Vendors)**

**Data Cleansing**
- International Dollars
- Captive Dollars
- Acquisition Dollars
- Calendarizing

**Projecting Sample to Universe**
- > $10 Million Revenues & Firms
- $.25 - $10 Million Revenues
- < $.25 Million Revenues

**7 Delivery Modes**

**Aggregation of Vendor Revenues**

**22 Vertical & CI Markets**

**Adjustment for Distribution Channels**
- Retail Software Sales
- Inter-Industry Transactions VARS

**User Expenditures**
- 1988 Base Year

## II. Forecasts

**User Survey & Analysis**
- Budgets
- Spending Plans
- Technology Needs
- Applications
- Driving/Inhibiting Forces

**Forecasts**

**Industry Analysis**
- Economy (Macro)
- Economy (Micro)
- Technology Impact
- Markets (22) Analysis
- Vendor Consolidations and Strategies

**Reconciliation**
- Markets vs. Delivery Modes
- Prior Years
- Other Segments

**5-Year Forecasts Reports**
- Overview
- 7 Delivery Modes
- 22 Vertical/CI Markets

7/89

**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 end result is a five-year forecast for each of the 23 vertical and cross-industry sectors and the eight 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, providing 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 outlook for 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™ forecast, 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-4 provides both the economic assumptions used by INPUT in the 1989-1994 market analysis reports and those being used 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

EXHIBIT I-4

## 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)

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.

## 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* (seven 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 Europe, 1990-1995*

- *Trends in Processing Services—Western Europe, 1990-1995*

- *Systems Integration Market Forecast—Western Europe, 1990-1995*

- *Systems Operations Market Forecast—Western Europe, 1990-1995*

- *Western European Network Services Markets, 1990-1995*

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

# II

# Executive Overview

A

**Information Services Market**

The information services market consists of eight delivery modes: processing services, turnkey systems, applications software, systems software, network services, professional services, systems operations, and systems integration.

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

The U.S. information services market totaled $89.8 billion in 1989, up 14% from 1988 user expenditures. Overall user expenditures will expand to $100.6 billion in 1990, up 12% from 1989. The modest growth rate of the U.S. information services market will continue, with a projected five-year (1990-1995) compound annual growth rate of 13%.

As INPUT publishes its first set of forecasts for the 1990s, the U.S. information services industry faces a different set of business conditions from those experienced in the 1980s. The 1980s were marked by continuing growth following the formation of the information services industry in the late 1960s and early 1970s. Except for slowed growth during the economic downturn that started in 1982, the information services market grew about 20% each year and routinely outperformed the economy as a whole. This overall growth has moderated in the past few years. In terms of development, the industry is maturing; in some segments it has reached the top of the "S" curve.

## B

**Processing Services Market**

The processing services market is defined by INPUT to include three market sectors: transaction processing, utility processing, and "other" processing. In prior years, INPUT has included systems operations as a processing services market sector; however, user trends towards focusing on core businesses, improving service levels, controlling operating costs and adjusting to limited availability of key skills, has increased the importance of outsourcing and demonstrated the value of facilities management. As a result, the size and significance of the systems operations market has increased, and INPUT now offers analysis of this market in a separate report, *U.S. Systems Operations Market, 1990-1995*. Accordingly, historic and current processing services market data has been adjusted to reflect only transaction, utility, and "other" processing services expenditures.

INPUT has sized the 1990 processing services market at $17 billion (as shown in Exhibit II-1) and projects that it will grow at a modest compound annual rate of 9% to $26.6 billion in 1995. A significant factor in the conservative growth estimate is the effect of the recession which, although not expected to be either deep or long, will have a dampening influence on overall revenue growth. Real growth, estimated to range from 3.7% in 1990 to 6.1% in 1995, is expected to steadily improve as the effects of the recession diminish, purchase decision cycles shorten, and business activities return to normal levels of resource consumption.

**EXHIBIT II-1**
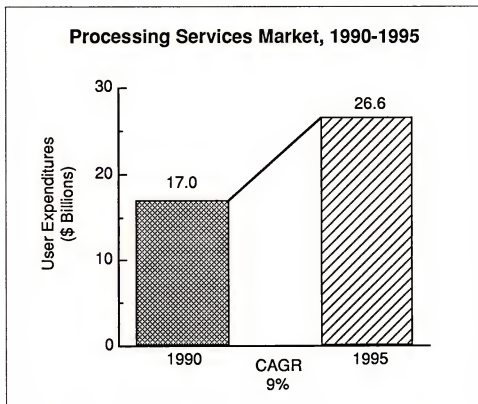


**Processing Services Market, 1990-1995**

Y-axis: User Expenditures ($ Billions)

1990: 17.0
1995: 26.6

CAGR 9%

Although all processing services delivery submodes will experience market growth during the forecast period, other processing services, starting from a $2 billion base in 1990, will grow at a compound rate of 15% (more than double the 6% growth rate of utility processing) to $4.1 billion in 1995. Transaction processing, growing at a compounded rate of 9%, will go from $14.1 billion in 1990 to $21.2 billion in 1995. (See Exhibit II-2). The compound annual growth rates of both the industry-specific and cross-industry processing services markets will be 9%.

EXHIBIT II-2

**Processing Services Market by Submode 1990-1995**

CAGR (Percent)

Transaction Processing — 14.1 / 21.2 — 9

Other Processing — 2.0 / 4.1 — 15

Utility Processing — 0.9 / 1.2 — 6

▨ 1990
◨ 1995

U.S. User Expenditures ($ Billions)

0   5   10   15   20   25
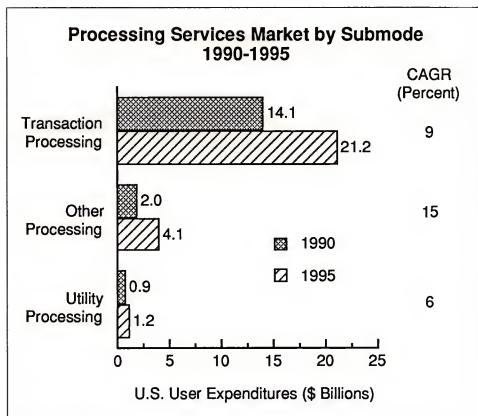
Overall processing services market growth, while modest in most market segments, stills represents a steady increase in user expenditures for the services provided by the processing services vendors. In addition, in certain industry segments there are excellent opportunities for vendors to increase revenues over the next five years.

### 1. Transaction Processing Services Market

The transaction processing sector is characterized by the customer's willingness to "off load" an application or application set, often critical to business. The willingness of user organizations to resist bringing these important applications onto their own in-house systems depends on the vendor's ability to perform such applications in a cost-effective and reliable manner. When the vendor can achieve this, there is strong inertia to leave the application with the vendor and not bring it in-house.

Transaction processing services constitute the dominant form of processing service delivery. Vendors such as ADP, EDS, American Express Information Services Company, FFMC, Mellon Bank, Shared Medical Systems, General Electric Information Services, and National Data Corporation derive a large share of their revenues from such activity.

In 1990, the $10.9 billion in transaction processing user expenditures are spread across 16 vertical industry sectors. The banking and finance sector's consumption of $3.3 billion is nearly twice that of the next largest sector, consumer services, while the personal/consumer services sector is dominated by the expenditures tied to reservations systems.

Over the period 1990-1995, the differentiation between the largest and next-largest sectors becomes even greater as the aggregate expenditures for the period for the banking and finance sector grow to $26.1 billion. Consumer services expenditures for the same period, while large ($12.4 billion), are still less than half the expenditures of the banking and finance sector. Other vertical industry markets, in descending order of total expenditures during the period 1990-1995, include telecommunications, discrete manufacturing, business services, transportation, process manufacturing, medical, insurance and wholesale distribution.

As with the vertical sectors, the leading consumer of transaction processing resources in the cross-industry marketplace is more than twice the size of the next largest sector. Human resources, especially payroll and related activities, continues to be the predominant cross-industry market at $1.5 billion in 1990 and $11.8 billion in total expenditures from 1990 through 1995. Second in transaction services cross-industry consumption is the accounting sector, with $720 million in 1990 and an aggregate of $4.6 billion from 1990 through 1995. Other cross-industry markets, in descending order of expenditures, are miscellaneous or "other," planning and analysis, engineering and scientific, education and training, and office systems.

## 2. Utility Processing Services Market

Utility processing is the use of computing power and tools to develop and/or tailor applications or solutions specific to each user's unique requirements. Utility processing is primarily used in very large government, engineering, and manufacturing environments. The vendor provides access to the computer through a communications network, with software tools and consulting support to enable the user to develop and run the specific application being created. Software tools usually include compilers, DBMSs, 4GLs, sorts, terminal hardware support, scientific and statistical libraries, graphics capabilities, financial modeling systems, and other application development tools.

By its nature, utility processing is neither industry nor cross-industry oriented, but rather is used by large businesses or the government when certain unique resources are required, or access to required resources from a vendor is more desirable than providing them internally. In 1990, expenditures for utility processing services were $900 million, and INPUT forecasts 1995 expenditures to be $1.2 billion—a modest compound annual growth rate of 6%.

### 3. "Other" Processing Services Market

"Other" processing services include computer output laser printing, disaster recovery and backup services, carry-in data entry services, and offshore data entry. This sector has been stimulated by the rapid growth of disaster recovery services, spurred by several frightening experiences at Fortune 500 corporations (the First Interstate Bank fire in Los Angeles, and the 1989 earthquake in San Francisco, for example) which made it clear that large organizations with mission-critical systems are highly vulnerable if they do not have such services in place. Comdisco and SunGard Data Systems have achieved strong positions in the market, and IBM became a significant new entry in 1989.

In contrast to the somewhat sedate growth of the utility processing services market, the market for "other" processing services, dominated by disaster recovery services, will grow at a compound annual rate of 15% from 1990 to 1995, with revenues going from $2 billion in 1990 to more than $4 billion in 1995.

Driving this market will be the strong growth in disaster recovery services, a growth fueled by increased awareness of risk from natural and man-made disasters and the recognition, at the highest corporate levels, of the need to protect corporate assets.

## C
## Key Issues and Trends

The major overall trends or driving forces in the processing services industry fall into two broad categories—the economy, and specific trends within the processing services industry.

The major economic influence is the recession, and most businessmen have adopted a cautious approach to most business matters. In addition, uncertainty regarding its length and depth—topics upon which most economists have differing opinions—tends to reinforce the need for a conservative attitude towards business expenditures. This conservative attitude, however, is felt more in the area of capital expenditures, especially where multiple contenders vie for limited resources. By its nature, however, processing services are pay-as-you-go products, and INPUT believes that the modest 9% compound growth anticipated for the overall market reflects the basic stability and value of such services, especially in uncertain times when customers want to limit expenditures to only what is necessary.

In addition to economic factors, INPUT anticipates a number of significant industry trends occurring or continuing during the forecast period. They are listed in Exhibit II-3.

EXHIBIT II-3

## Processing Services Driving Forces

- Increases in functionality

- Tendency towards technology/function intensity vs. price intensity

- Concentration on core business

- Tendency to stay with established vendors

- Emphasis on productivity solutions

- Risk awareness and a willingness to do something about it

- Vendor consolidations

### 1. Transaction Processing Issues and Trends

The major trends in the transaction processing services industry include:

- The continued growth of systems operations

- Major vendors continue to have strong positions

- Expansion of service delivery modes:
  - Systems integration
  - Software packages
  - Turnkey systems
  - Professional services

- User concerns for stability

- A growing emphasis on global access

- Pricing stability

The continued growth of the transaction processing services market also depends on several factors:

- The impact of the recession—How long and how deep?

- The impact of business downsizing

- The impact of in-house systems, both micros and those applications using complex client/server technology

- The impact of network systems

- Voice/data processing opportunities, using such capabilities as DOV

- The impact of consumer-oriented services

### 2. Utility Processing Issues and Trends

The utility processing services market suffered significantly from the advent and acceptance of minicomputer and microcomputer products. The success of the IBM PC and PC compatibles has had a strong impact on utility processing in the past six or seven years. Many users moved work to PCs that was formerly developed, modified, and run through the use of utility processing on a remote computing service. Customers rode the price/performance curve of the small system. At the same time and perhaps more importantly, new, easy-to-use software tools became available for small systems.

Single-user, repetitive data base or problem-solving applications that required limited processing resources thus moved from services to in-house systems. A similar trend has emerged for departmental systems in the last several years, with the availability of powerful, economical midrange systems with applications software.

This trend will be amplified by the acceptance of 32-bit workstations/PCs connected with file servers in a LAN environment, when applications software becomes available.

In addition, the following realities will affect the market for utility processing services:

- Applications that require intercompany or interlocation interaction will not be readily satisfied by local systems environments.

- As computer centers become more transparent to their users because of remote operations through networks, the users' need for their own centers will diminish.

- A factor limiting vendor growth and profitability in this market will be the presence of "spin-off" vendors, such as university-operated supercomputer centers with spare cycles priced on an incremental basis. This scenario can also include information services vendors with spare cycles.

## 3. "Other" Processing Issues and Trends

Despite the importance of computer output laser printing, carry-in data entry services, and off-shore data entry, the primary "other" processing services activity in this market sector is disaster recovery. Dominated first by Comdisco and SunGard, IBM entered the disaster recovery service (DRS) marketplace in 1989 through its National Services Division, and INPUT expects the trend towards a limited number of major players dominating the DRS market to continue for the forecast period. Any new vendors capable of competing strongly in this market segment will almost certainly come from the ranks of computer manufacturers who, like IBM, will offer DRS services to enhance hardware/system sales, or from the ranks of the major vendors of third-party maintenance services.

INPUT expects the trend of disaster recovery services dominating the "other" processing services market to continue through 1995. The market for disaster recovery was approximately $350 million in 1989, and is growing at about 15% per year. However, there is potential for even more rapid growth as the impacts of disasters such as the San Francisco earthquake make themselves felt. The importance of the earthquake was not the problems it caused, which were generally overcome fairly quickly, but the potential impact of the more severe earthquakes that could follow or occur elsewhere in the U.S.

Computer output microfilm (COM) services are established as a cost-effective way of storing and retrieving large amounts of digitized information. The market is still growing, even though there is a trend towards the overall use of microfilm to stabilize or decline. The reason for this is that in-house installations are being turned over to outside services companies as the in-house equipment becomes obsolete or the user's staff is reduced.

Until CD ROM or image processing systems with high densities become more prevalent at economic prices, the COM services market will continue to grow, albeit slowly. Primarily, this is a matter of economics. Microfilm readers are available for a few hundred dollars, whereas the lowest-cost effective optical storage systems, including their computer drivers, are at least an order of magnitude more expensive.

**D**

Competition

**1. Major Processing Services Vendors**

Exhibit II-4 ranks, in order of 1989 U.S. revenues, the leading processing services vendors.

EXHIBIT II-4

## Leading Processing Services Vendors
## U.S. Revenue, 1989

| Rank | Vendor | Estimated Processing Services Revenue ($ Millions) | Major Markets |
|------|--------|------------------------------|---------------|
| 1 | ADP | 1,280 | Human Resources<br>Banking and Finance |
| 2 | American Express ISC | 660 | Banking and Finance<br>Health |
| 3 | First Financial Mgmt (FFM) | 640 | Banking and Finance<br>Health |
| 4 | Control Data | 618 | Split among many markets including Banking and Finance and Human Resources |
| 5 | American Airlines | 285 | Transportation |
| 6 | NDC | 228 | Banking and Finance<br>Retail |
| 7 | Covia | 223 | Transportation |
| 8 | CCH Computer | 206 | Accounting |
| 9 | GEIS | 160 | Banking and Finance<br>Manufacturing<br>Telecommunications |
| 10 | GTech | 159 | Personal/Consumer Services |

The market leaders noted above may be separated into two types of vendors. One group has concentrated on obtaining processing services revenue from specific cross-industry or vertical markets. This group includes such companies as ADP, FFM, and Shared Medical. Other vendors perform processing work in multiple market sectors. They may also perform related work for their clients that falls outside the processing services market area. Included in this last group are such vendors as General Electric Information Services and Control Data.

The most popular vertical or industry-specific market for the leading processing services vendors is banking and finance. Other major vertical markets are health care services and transportation. Some leading vendors are also major providers in the cross-industry human resources and accounting markets.

## 2. Competitive Issues

One of the most common competitive issues for processing services vendors serving certain vertical markets is the pressure to meet competitive prices. The leading vendors that serve banks, thrifts, and other financial organizations often find that a prospect or client is conducting a comparison of their prices with a competitor. The vendor may react to this pressure with an attractive price package, but more frequently, will attempt to focus its sales or retention effort on system features and services. Processors usually have a narrow margin compared to other information services vendors and would rather meet price competition with emphasis on unique, specialized, or competitively advantaged features and services.

In addition to price versus functionality competition, other competitive issues include:

• Pressures from vendors of alternative products and services, such as turnkey systems

• Currency of applications. Some vendors have regular programs to upgrade software and enjoy a feature, function, and efficiency advantage

• Availability of technical support to make it easier for the user to access or use the vendor's application

## E

## Conclusions and Recommendations

## 1. Transaction Processing Services Marketplace

INPUT's conclusions for the transaction processing services marketplace, as listed in Exhibit II-5, lead to the following recommendations:

- Concentrate on the development of software solutions to market needs.

- Offer applications in multiple delivery environments.

- Develop strong data base capabilities.

- Continue to identify niche markets.

- Remain price competitive for new sales.

- Offer international access.

- Be aware of network systems, and be prepared to respond to them as a threat or an opportunity, depending on the vendor's business objectives and competitive strategies.

EXHIBIT II-5

### Transaction Processing Services Conclusions

- Outsourcing will continue

- Big vendors will get bigger

- Users will be looking for:

  - Application function

  - Worldwide telecommunications

  - Variety in delivery mode options

- Network systems are coming

- Software function will be the most important factor in vendor success

- Prices will remain stable

## 2. Utility Processing Services Marketplace

INPUT believes that for the utility processing services marketplace:

- The growing population of PCs, PC software, and 32-bit processors does not bode well for the general-purpose utility cycle vendor.

- Vendors of supercomputer resources will not be threatened by PC alternatives.

- In-house computer centers will become more transparent and more susceptible to outsourcing to computer utility vendors.

- More vendors will enter the utility processing services market as spinoffs of spare resources from established computer centers, such as colleges and universities, become more common.

Therefore, INPUT recommends that utility processing services vendors:

- Recognize that competitive advantage rests with vendors that offer some resource that is in short supply.

- Be prepared to incrementally price spare cycles not normally consumed by primary business activities

## 3. "Other" Processing Services Marketplace

INPUT believes that in the "other" processing services marketplace:

- The primary service offering will continue to be disaster recovery services (DRS).

- The primary differences between DRS vendors will be:
  - The hardware environment offered
  - Geographic site allocations
  - Telecommunications resources provided

- The DRS market will continue to be dominated by SunGard, Comdisco, and IBM.

- More and more businesses will recognize the value of disaster or contingency processing services, and they will be prepared to implement a comprehensive DRS program.

- For DRS vendors, sophisticated telecommunications access to back up site computers will be mandatory.

- "Other" services such as COM and specialized printing will continue to have niche or geographic opportunities, but growth will be slow.

In order to maintain or achieve competitive advantage in the "other" processing services marketplace, INPUT recommends that:

- Vendors of DRS seek markets with specialized hardware requirements and high-value repetitive operations.

- Vendors must supply a full range of communications resources and service alternatives in order to serve the needs of most large DRS clients.

- In the COM processing services market, vendors must maintain an awareness of the costs of CD ROMs, since, as those costs go down, CD ROM will eventually replace all but the most dedicated COM applications.

# III

# General Business Climate

# III

# General Business Climate

In this chapter INPUT positions the market for systems software products within the entire information services industry. The chapter first characterizes the general business climate, then the issues and climate of the information services industry as a whole. In the last section it positions systems software products within the overall business climate for information services.

The reader will find this chapter quite similar to the corresponding Chapter III in the following additional market analysis reports.

- *U.S. Applications Solutions Market, 1990-1995*
- *U.S. Professional Services Market, 1990-1995*
- *U.S. Professional Services Market, 1990-1995*
- *U.S. Network Services Market, 1990-1995*

## A

### General Economic Climate

**1. A Look at the 1980s**

As INPUT publishes its first set of forecasts for the 1990s, the general U.S. economy and the U.S. information services industry face a new set of business conditions, different from those experienced since early in the 1980s when the last downturn in the economy occurred. As shown in Exhibit III-1, in 1980 the U.S. information services market was less than 20% of its size 10 years later. Today that market represents approximately $100 billion in user expenditures each year.

The 1980s were marked by continuing strong growth following the formation of the information services industry in the late 1960s and early 1970s. Except for slowed growth during the downturn that started in 1982, the information services market grew at about 20% each year and routinely outperformed the economy as a whole.

EXHIBIT III-1

**Information Services Industry Market
1970-1990**

| Year | Value |
|------|-------|
| 1970 | 2 |
| 1980 | 18 |
| 1990 | 100 |

Market Size ($ Billions)
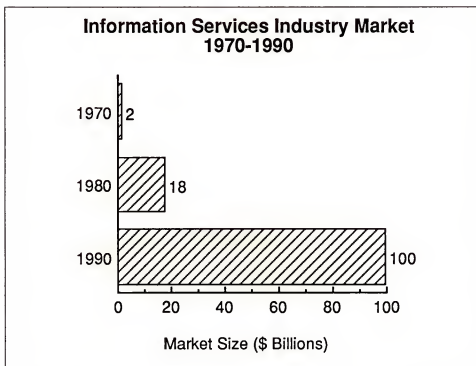
This overall growth has moderated in the past couple of years, with the U.S. information services industry growing about 13% in 1990 as the impacts of the downturn begin to be felt. In terms of development, the industry is maturing; in some segments it has reached the top of the "S" curve. Thus, declining growth rates are to be expected, in particular as the market size continues to increase.

The decade ended with much lower growth rates in mainframe and minicomputer shipments and the first signs of maturity in personal computer and workstation sales. While all of the delivery modes included in INPUT's definition of the information services industry have growth rates above that of hardware, the trends for hardware certainly impact each delivery mode.

Thus, the 1990s begin with a maturing market for the products and services of information systems and services companies. Yet it remains a market that can and does outgrow the economy and continues to offer new business opportunities, in particular those containing a specific application solution.

### 2. Near-Term Impacts

As noted in Chapter I, the U.S. economy is in a recession. While expected to be modest, a recession will directly impact many sectors of the economy, which in turn will impact expenditures for information services. Real growth in the overall U.S. economy will be very small in 1990 and could drop to zero in 1991.

- For the past few years the information systems budget has reflected tightening spending patterns with increases averaging less than 10% overall; many organizations indicate essentially no change from year to year, and some organizations undergo year-to-year reductions of over 10%.

- During this period, growth in expenditures for information services have exceeded the overall growth in information systems budgets. The hardware and internal staff budgets have absorbed much of the impact of tighter budgets.

**a. Information Systems User Impacts**

Exhibit III-2 provides an assessment of information systems budget plans for 1989 through 1991. The research for this assessment was done in November 1990.

EXHIBIT III-2

### Information Systems Budgets
### 1989 vs. 1990 and 1990 vs. 1991



Percent of Respondents
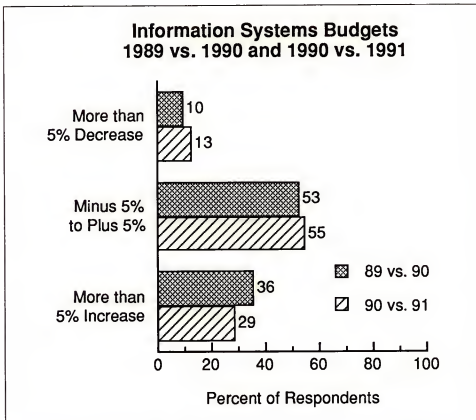
- The findings indicate that only about one in three information systems budgets grew by over 5% in 1990 over 1989 levels, and the percentage planning to grow more than 5% in 1991 is even less, three out of ten.

- At the same time, the research found that drastic cuts are not planned, as might have been expected in a full recessionary environment.

Many respondents indicated that after a number of years of tightening budgets, 1991 would just be another year of the same. For most organizations major strategic projects would not be measurably impacted given current general business projections.

Exhibit III-3 helps support that belief. INPUT found a number of organizations that would actually accelerate some projects in a recessionary economy and very few that would cancel projects.

- Those projects identified for acceleration were typically of key value to business operations.

- Those projects identified for possible delay or cancelation were typically administrative and often were replacements for existing systems.

EXHIBIT III-3

**Applications Development Plans
Recessionary Impacts**
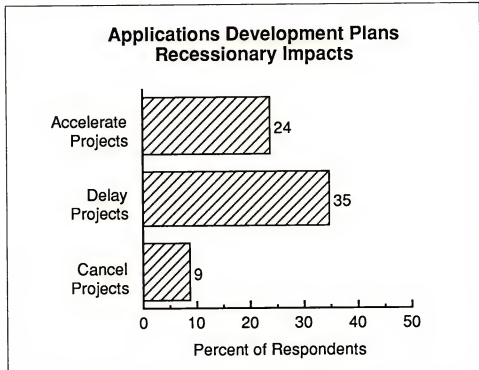


INPUT found that the current economy will impact information systems spending in the near term (through 1991 at least), but not to a significant degree. This will lead to slower growth rates in information services expenditures over the next 12 to 18 months, and may in turn create some pent-up demand for 1992 and beyond. The depth and length of the downturn will be a deciding factor in how much demand is delayed into 1992.

For a complete review of INPUT's recent research into the impacts of the current economy on information systems, see INPUT's report, *The 1990 to 1991 U.S. Economic Slowdown—Impacts on Information Systems Budgets and Spending.*

### b. Information Services Vendor Impacts

In corresponding research with information services vendors to assess the near-term impacts on information services vendors, INPUT found real signs of caution, as indicated in Exhibit III-4.

EXHIBIT III-4

## Information Services Industry
## Near-Term Economic Impacts

- General belief that recession started

- Near-term growth will be impacted

  - Professional services first to be impacted

  - Processing services and systems operations—limited impact

  - Network services to see slower growth

- Some new opportunities exist

  - Project acceleration

  - Processing capacity requirements

  - Systems operations

- There was a general belief, in particular in the professional, processing, and network services firms that a recession of some level had started as early as the third quarter. A number of vendors indicated that they were applying or considering internal budgetary constraints.

- Projections for near-term growth (1991) are more modest, reflecting 1990 experience.

  - Professional services will be the first impacted, with growth expectations dropping to perhaps 11%. Information systems will try to protect internal staff given the reductions experienced over the past few years.

- Processing services and systems operations tend to be long-term decisions. Business levels of processing services are tied to client usage agreements and will not experience significant cutbacks. An opportunity exists in the sale of incremental capacity to companies wishing to delay hardware expenditures.

- Network services has been a strong growth area with forecasted growth about 16% per year. Some slowing in growth is expected near term, but this sector will still outperform the information services market as a whole.

• The downturn offers opportunities to aggressive vendors. To find them it is necessary to stay very close to the current clients and to know the secondary buyers within the prospects.

- Critical operational systems may be accelerated, creating opportunities for professional services and software products vendors. Buying a suitable application software solution may become favored over development of a custom solution.

- As noted above, the solution to capacity needs may be a processing services vendor instead of hardware purchases.

- Systems operations will become more attractive to a company looking for capital to invest in newer, more strategic application systems.

The next 12 to 18 months will be characterized by the unexpected—delayed decisions and unique opportunities. Solid growth is possible for the alert vendor.

### 3. The Mid-1990s

There is a general belief that the economy will return to modest growth like that of the late 1980s beyond the 1990 to mid-1992 period. Modest real growth rates combined with inflation and the ability for the information services industry to continue to outgrow the economy as a whole suggests that annual average growth rates in the low to mid-teens will continue throughout 1990 to 1995.

Growth after 1992 will be stronger than prior to 1992. A true recession will generate some pent-up demand that could cause a real upturn in 1993 if the full economy returns to the growth rates experienced in the late 1980s.

**B**

**Information Services Industry Issues and Climate**

**1. Overview**

The information services industry ended the decade much different than it entered the decade. Exhibit III-5 lists some of the major differences and the related implication for the early 1990s.

EXHIBIT III-5

<table>
<tr><td colspan="2" align="center"><b>Information Services Industry<br>1980 versus 1990</b></td></tr>
<tr><td align="center">Difference</td><td align="center">Implication</td></tr>
<tr>
<td>Five times as big<br>Many large vendors</td>
<td>Slowing growth<br>Consolidation and dominance</td>
</tr>
<tr>
<td>Stronger vendors<br>Willingness to outsource<br>Operations<br>Greater variety of services</td>
<td>Greater reliance by user<br>Processing services<br>Shifts to systems operations<br>Changing distribution channels</td>
</tr>
<tr>
<td>Many small vendors<br>More technological alternatives</td>
<td>Alliances to succeed<br>More services required to integrate</td>
</tr>
</table>

- Markets do not grow at 20% forever. On average, information services did for the entire 1980 decade. Overall slower growth is predictable for the 1990s.

- In 1980 there was not an independent software supplier that had $100 million in revenues worldwide. In 1990, there are many, and $1 billion has been achieved.

  - For some, growth is being fueled through mergers and acquisitions.

  - For others, diversification and a strong element of professional services is driving growth.

- The same can be said for professional services firms. Today, many exceed $100 million in revenue and serve a worldwide market.

- The leading information services vendors are much stronger than they were in the early 1980s. They are large, have financial strength, and have management that is prepared to take on long-term risks. The result is new market opportunities and a different perspective for the user.

- The end of the 1980s was marked by some significant shifts in the structure of the information services industry.

  - Systems integration emerged as a viable business in the commercial market in the mid-1980s, and systems operations (facilities management) has taken on new importance.

  - Larger vendors are changing the economy of scale in offering information services and as a result changing the fundamental channels of distribution. The user can now turn to a single vendor for a complete solution, and the vendors offering these services become customers (distributors) of the other information services vendors.

  - The concept of outsourcing has strengthened considerably recently and will be a trend of the 1990s.

- Information services is an industry where the initial cost of entry has been modest in many of the subsectors. Software product companies show up over night, professional services firms start with a few experts joining together, and most processing services firms started by large organizations selling surplus time. Although low cost of entry remains a characteristic, the cost of gaining market recognition and presence has changed. Success in the 1990s for the start-up company will come through alliances with the larger firms, be they systems integrators, professional services, systems operations, or software products firms.

- Information systems' greatest challenge today, after maintaining the current systems, is to choose from the breadth of information technology now available. The alternatives are great and the implications of some are significant. The result is often delayed decisions and implementation. Relational DBMS technology is about 10 years old; much of the implementation effort is still in front of information systems. And object-oriented data base technology is already available. The result is greater professional services opportunities.

## 2. Information Services Trends

Exhibit III-6 identifies four fundamental trends that will impact the information services industry over the next five to ten years. The overall goal of account/client control will become paramount in the 1990s. It is the primary driving force behind these trends.

EXHIBIT III-6

## Information Services
## Industry Trends

- Full-service vendors

- Decreasing differentiation

- Longer vendor/account relationships

- Changing buyer

- Full services vendors will increase their dominance of the information services market. They will achieve increased account control and become the channel of distribution for many of the specialized products firms. And they will do this to a significant degree through consolidation. A maturing market typically results in fewer and larger vendors that serve all aspects of the market.

- Decreasing differentiation - Professional services is now a factor in essentially each of the delivery modes, whether it is software products, systems operations, systems integration, or even processing and network services. That importance will continue to increase throughout the next five years. The end result will be decreasing differentiation of the leading vendors.

- Longer vendor/account relationships - The relationships formed in systems integration and systems operations agreements are multiyear, and once made, these become the vendors of choice for the next requirement.

- Changing buyer - The buyer is now commonly a partnership between information systems and an operating executive, certainly for major projects. The result is two buyers to be serviced and the opportunity for the vendor to build relationships with multiple parts of the client. This will also lead to increased client control and longer relationships.

In the 1990s the major vendors have the opportunity to tie up major portions of the market for many years. This creates a number of new issues, but means there is improved predictability of revenue in a services industry.

### 3. Issues for the 1990s

The critical issues for information services vendors in the 1990s are summarized in Exhibit III-7. Many of these issues derive from the current emphasis on account control by the leading vendors.

EXHIBIT III-7

<div style="border:1px solid">

## Information Services Industry
## Issues for the 1990s

- Profitability

- People resources

- Mastering technology

- Buyer skills

- Distribution channels

</div>

- Profitability - The shift to long-term relationships with multiyear agreements, and the assumption of risk by the vendor raise the exposure for the vendor. There are already some concerns about the impacts of commercial systems integration on the profitability of larger information services firms. And with the push to gain market share in the systems operations area, this concern could grow. Profitability over the next two years will be a key indicator of probable growth in the mid-1990s as the economy improves.

- People resources - The increasing importance of professional services throughout the industry adds to the pressure on vendors to find and train qualified staff.

  - Many of these professionals are being acquired by hiring the staff of companies served under systems integration and systems operations agreements. The need to reorient these people from internal to vendor perspectives will be a major test over the next few years.

  - The vendor staffing challenge will also be taxed by the training requirements of new technologies and the decline in college enrollment in computer science. The cost burden for training information systems professionals is shifting to some degree from the user to the vendor as greater use of outsourcing services develops.

- Mastering technology - The developers of information technology continue to provide new technologies and products faster than they can be utilized. This is one of the forces behind the growth in the systems integration and professional services delivery modes.

  - The vendor takes on the task of learning the technology and bringing it into the client's environment, and perhaps even operating and maintaining it for some period.

  - As with the general training issues, this is a cost that cannot always be directly recovered by the vendor.

- End-user skills - The influence of senior/operating management in the buying decision will continue to increase into the 1990s. Information Systems will become an internal consultant and the skills of the end user will continue to increase at lower levels.

- The vendor is going to have to become astute at assessing the skills of the buyer at all levels for it is the end users skills, not the skills of the information systems function that will control success.

- Distribution channels - The larger vendors are going to gain even more control of the user expenditure process, while smaller and specialized vendors serve as vendors to the larger vendors.

  - The behavior of the larger vendors and their multiple, often overlapping strategic alliances may control the success of many of the smaller vendors.

## C

## Processing Services Business Issues and Trends

In this section we briefly position the processing services market against the economic and environmental conditions described above. This sets the stage for INPUT's 1990-1995 forecast for processing services presented in Chapter IV.

Three fundamental forces are currently impacting the processing services market. The economy drives the first, customer buying patterns drive the second, and new information technology drives the third.

### 1. Economy

The current slowdown in the U.S. economy is creating only modest pressure on the processing services sector.

- Those organizations already using processing services vendors are unlikely to stop, and their baseline level of use is not likely to decline appreciably. There may not be much growth in use; however, there also will not be much decline in the short term.

- Additionally, many organizations that might need added processing capacity are more inclined to turn to a processing vendor, at least in the short term to defer hardware investment.

- The economic slowdown does bring some internal cost pressure and increases price competition, which will also impact revenue growth into early 1992.

## 2. Customer Buying Patterns

The outsourcing trend that gathered momentum in the late 1980s is continuing strongly, but is changing the character of the services purchased.

- There is a definite shift from outsourcing the processing of a single application or application set (processing services) to the outsourcing of the entire data center operation (systems operations).

- Similarly, the trend to outsource professional services has shifted towards systems integration, with the entire project being placed in the hands of the vendor or systems integrator.

The result has caused INPUT to redefine the information services industry structure and major vendors to change their strategies. Today many traditional processing services firms are aggressively becoming systems operations firms assuming a stronger client/vendor relationship and added risk. Systems operations growth opportunities will exceed those in transaction processing over the next five years.

## 3. New Technology

Just as minicomputers, followed by personal computers, brought major change to the processing services sector, so will client-server technology, with the ability to downsize the hardware while meeting application system requirements, in the 1990s.

The impacts can be expected to be very similar to those expected on the internal mainframe data processing capability. For example:

- The mainframe will shift to the role of data base machine as the application moves further out on the information network.

- The role of the data base management system technology will grow at all levels of the network.

- The need for network management and integration capabilities will grow.

As the chapters that follow show, there remain opportunities within the processing services sector, change will be steady, and there are some major challenges ahead.

# IV

# Market Forecast

# IV

# Market Forecast

## A
## Processing Services Overview

### 1. Historic Perspective

Emerging in the 1960s and growing to prominence in the 1970s, the processing services sector has spawned a number of large and very successful service organizations.

In recent years, however, as this market has matured growth rates have slowed, and INPUT now projects a relatively modest 9% growth rate for the next five years. This growth rate is still significantly greater than the growth of the U.S. economy as a whole, and processing services remains a healthy market that has good revenue and profit potential.

### 2. Market Definition

In prior years, INPUT has included systems operations as a delivery mode, along with transaction, "other," and utility processing. However, user trends towards focusing on core businesses, improving service levels, controlling operating costs, and adjusting to limited availability of key skills, has increased the importance of outsourcing and demonstrated the value of facilities management. As a result, the size and significance of the systems operations market has increased, and INPUT now offers analysis of this market in a separate report, *U. S. Systems Operations Market, 1990-1995*. Accordingly, historic and current processing services market data have been adjusted to reflect only transaction, utility, and "other" processing services expenditures. Each of these market sectors is defined below.

### a. Transaction Processing Market Sector

The transaction processing sector is characterized by the customer's willingness to offload an application or application set, often of a critical business nature. The willingness of user organizations to resist bringing

these important applications onto their own in-house systems depends on the vendor's ability to perform such applications in a cost-effective and reliable manner. When the vendor can achieve this, there is strong a tendency to leave the application with the vendor and not bring it in-house.

Transaction processing services constitute the dominant form of processing service delivery. Vendors such as ADP, EDS, American Express Information Services Company, FFMC, Mellon Bank, Shared Medical Systems, General Electric Information Services, and National Data Corporation derive a large share of their revenues from such activity.

### b. Utility Processing Market Sector

Utility processing is the use of computing power and tools to develop and/or tailor applications or solutions specific to each user's unique requirements. Utility processing is primarily used in very large government, engineering, and manufacturing environments. The vendor provides access to the computer through a communications network, with software tools and consulting support to enable the user to develop and run the specific application being created. Software tools usually include compilers, DBMSs, 4GLs, sorts, terminal hardware support, scientific and statistical libraries, graphics capabilities, financial modeling systems, and other application development tools.

Where local processing, storage, or memory capacity is too limited for a particular customer need, utility processing services are a potential answer. This particularly applies if the need is periodic, its intensity is difficult to predict, or if it requires special skills. Similar reasons would be the need for special peripherals such as laser printers, scanners, or large-scale plotters. Services primarily oriented to these products are discussed in the "other" processing services market section.

A typical example of utility processing is supercomputer processing services. While minisuper and supermini markets will grow more quickly, the market for supercomputer services will continue as long as customers require the sheer size and power of a Cray or similar system. Small repetitive applications will shift to the minisupercomputers, just as small timesharing applications shifted to personal computers.

Most organizations use utility services on a project basis. For example, software product companies, particularly small ones, buy time from vendors to develop and test their products. Other companies, converting from one system to another, buy resources during the change to avoid unnecessary and costly in-house duplication of processing resources. Utility processing can also be used to handle overload conditions on in-house systems.

In government environments in particular, utility processing provides intermediate support while budget approval or procurement processes for in-house systems are in process. The more rapidly systems changes are required, the more useful is this approach, since bureaucratic acquisition processes tend to be cumbersome and slow.

An additional reason for using utility processing is access to specialized software such as statistical or graphics packages. It does not make sense to accommodate on in-house systems a handful of users who need expensive special software or libraries on an intermittent basis.

In these cases, the trade-off between using an in-house system and a utility processing service is efficiency of use, not only of the software, but of the support expertise necessary to effectively use the software. Particularly with new software, it often makes sense to try the system on a service basis before making a commitment to add it to the in-house portfolio. IBM's Information Network Service offers this facility to customers to test new software.

### c. "Other" Processing Services

"Other" processing services include computer output laser printing, disaster recovery and backup services, carry-in data entry services, and off-shore data entry. This sector has been stimulated by the rapid growth of disaster recovery services, spurred by several frightening experiences at Fortune 500 corporations (the First Interstate Bank fire in Los Angeles, and the 1989 earthquake in San Francisco, for example) which made it clear that large organizations with mission-critical systems are highly vulnerable if they do not have such services in place. Comdisco and SunGard Data Systems have achieved strong positions in the market, and IBM became a significant new entry in 1989.

### 3. Processing Services Forecast

INPUT has sized the 1990 processing services market at $17 billion and projects that it will grow at a modest compound annual rate of 9% to $26.6 billion in 1995, as shown in Exhibit IV-1.

EXHIBIT IV-1

## Processing Services Market, 1990-1995



User Expenditures ($ Billions)

17.0

26.6

CAGR
9%

1990      1995
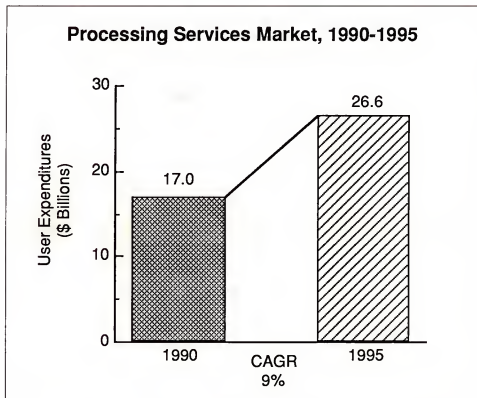
Exhibit IV-2 shows the forecasted annual growth rates for each year, from 1989 through 1995, noting the effect of the GNP deflator on real growth. A significant factor in the conservative growth estimates is the effect of the recession which, although not expected to be either deep or long, will have a dampening influence on overall revenue growth. Real growth, estimated to range from 3.7% in 1990 to 6.1% in 1995, is expected to steadily improve as the effects of the recession diminish, purchase decision cycles shorten, and business activities return to normal levels of resource consumption.

EXHIBIT IV-2

### Processing Services—Real and Nominal Growth 1990-1995

| | Annual Growth Rates (Percent) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 |
| Real Growth | 6.1 | 3.7 | 3.7 | 4.7 | 5.4 | 5.9 | 6.1 |
| GNP Deflator | 4.1 | 4.4 | 4.6 | 4.1 | 4.0 | 4.0 | 3.9 |
| Nominal Growth | 10.2 | 8.1 | 8.3 | 8.8 | 9.4 | 9.9 | 10.0 |

Although all processing services delivery submodes will experience market growth during the forecast period (Exhibit IV-3), "other" processing services, starting from a $2 billion base in 1990, will grow at a compounded rate of 15% (more than double the 6% growth rate of utility processing) to $4.1 billion in 1995. Transaction processing, growing at a compounded rate of 9%, will go from $14.1 billion in 1990 to $21.2 billion in 1995.

EXHIBIT IV-3



**Processing Services Market by Submode 1990-1995**
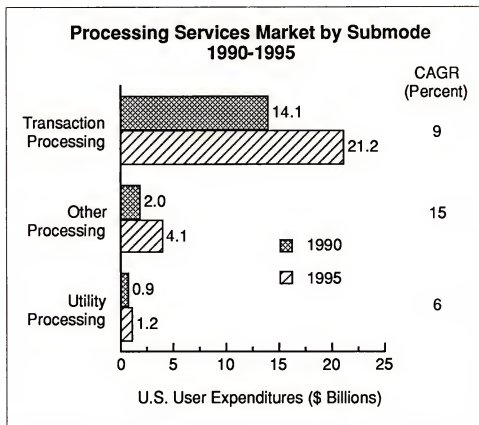
The growth rates of both the industry-specific and cross-industry processing services markets will be 9%, as noted in Exhibit IV-4.

Although overall processing services market growth is modest in most market segments, it still represents a steady increase in user expenditures for the services provided by the processing services vendors. In addition, in certain industry segments (noted in the section on submode forecasts) there are excellent opportunities for vendors to increase revenues over the next five years.

EXHIBIT IV-4

## Processing Services Industry-Specific and Cross-Industry Markets, 1990-1995



CAGR (Percent)

Industry-Specific Markets — 10.9, 16.9 — CAGR 9

1990, 1995

Cross-Industry and Other Markets — 6.2, 9.7 — CAGR 9

U.S. User Expenditures ($ Billions)
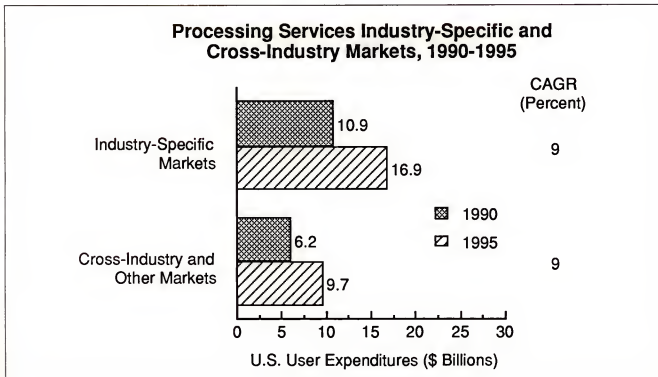
### 4. Vendor Overview

Vendors selling to the processing services marketplace are many and varied—in size, geographic coverage, industry and application support, and product mix. The leading vendors of processing services, as determined by 1989 revenues, are noted in Exhibit IV-5, with a brief notation identifying each business' major markets. Further details and an expanded vendor list and evaluation are contained in Chapter VI, Competition, along with a selection of vendor profiles.

It should not be surprising that six of the ten largest vendors offer processing services to the banking and finance industry, one of 16 vertical markets tracked by INPUT. With 1990 expenditures of $3.3 billion, banking and finance is twice the size of any other industry sector. This industry sector will grow at 12%, reaching $5.7 billion in 1995. Aggregate expenditures over the 1990-1995 period will be $26 billion.

EXHIBIT IV-5

# Leading Processing Services Vendors
## U.S. Revenue, 1989

| Rank | Vendor | Estimated Processing Services Revenue ($ Millions) | Major Markets |
|------|--------|-----------------------------------------------------|---------------|
| 1 | ADP | 1,280 | Human Resources<br>Banking and Finance |
| 2 | American Express ISC | 660 | Banking and Finance<br>Health |
| 3 | First Financial Mgmt (FFM) | 640 | Banking and Finance<br>Health |
| 4 | Control Data | 618 | Split among many markets including Banking and Finance and Human Resources |
| 5 | American Airlines | 285 | Transportation |
| 6 | NDC | 228 | Banking and Finance<br>Retail |
| 7 | Covia | 223 | Transportation |
| 8 | CCH Computer | 206 | Accounting |
| 9 | GEIS | 160 | Banking and Finance<br>Manufacturing<br>Telecommunications |
| 10 | GTech | 159 | Personal/Consumer Services |

**B**

Driving Forces

Two broad categories of forces drive the processing services market-place:  the economy, and specific trends within the processing services industry.  They are shown in Exhibit IV-6.

EXHIBIT IV-6

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### Processing Services Driving Forces

- Increases in functionality

- Tendency towards technology/function intensity vs. price intensity

- Concentration on core business

- Tendency to stay with established vendors

- Emphasis on productivity solutions

- Risk awareness and a willingness to do something about it

- Vendor consolidations

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The major economic influence is the recession, and most businessmen have adopted a cautious approach to most business matters.  In addition, uncertainty regarding its length and depth—topics upon which most economists have differing opinions—tend to reinforce the need for a conservative attitude towards business expenditures.  This conservative attitude, however, is felt more in the area of capital expenditures, especially where multiple contenders vie for limited resources.  By its nature, however, processing services are pay-as-you-go products, and INPUT believes that the modest 9% compound growth anticipated for the overall market still reflects the basic stability and value of such services, especially in uncertain times when customers want to limit expenditures only to what is necessary.

INPUT anticipates a number of significant industry trends occurring or continuing during the forecast period.

- Increases in functionality - Technology and innovation will continue to provide increased processing services functionality.  This capability, in turn, will provide the marketplace with the attribute it values most—the resources necessary to satisfy the user's processing needs, whatever they may be.

- Tendency towards technology/function intensity vs. price intensity - Related to increases in functionality will be the growing need to access that function at reasonable costs, as opposed to cut-rate or commodity costs. For many application- or resource-intensive users, availability of the function will be more important than cost, as long as costs are held within acceptable limits. Those users with a bias towards low-cost solutions will still require that the necessary functions be available.

- Concentration on core business - Many businesses, especially those that are smaller or midsized within their industries, will continue the current trend of concentrating on their primary or core business activities while outsourcing many data-processing activities to processing services vendors. At the levels of efficiency and capability that many such vendors operate, it is frequently difficult for a smaller business to perform functions at equivalent or less cost. A growing number of such users feel that they would prefer to concentrate their human and investment resources on primary business activities, rather than those they can effectively acquire elsewhere.

- Tendency to stay with established vendors - INPUT has seen a greater number of users electing to stay with installed processing services vendors, even when some cost advantage can be obtained from moving to a competitor. Although dealing with a known quantity has some benefits, the more rational justifications for remaining with the existing vendor include a knowledge of that vendor's strengths and weaknesses, and the comfort of knowing who to contact and how they will perform when something does go wrong. Change, even from one established vendor to another, also has elements of risk that many customers elect to avoid.

- Productivity - Processing services is seen by many businesses as a productivity solution, allowing for effective utilization of key internal resources, while outsourcing necessary or periodic work to a processing services vendor. By retaining a smaller nucleus of employees, the user can keep them fully active while off-loading periodic overloads and specialized applications or functions to a processing services vendor.

- Awareness of risk - More and more businesses are looking carefully at the risks of a brief or sustained interruption in their internal data processing capability and concluding that virtually any risk is unacceptable. This belief has been reinforced by such natural disasters as the San Francisco earthquake in 1989 and the First Interstate Bank fire in Los Angeles. As a result, the cost of disaster recovery services seems small when compared to the total DP budget and the potential for lost revenues. Executive liability for failure to take prudent precautions with the stockholder's assets will also encourage business managers to favorably regard risk-reducing contingency processing services.

- Vendor consolidations - In a nutshell, the big are getting bigger and the cost for a new vendor to enter many processing services markets is continuing to go up. This doesn't mean that it is impossible for new vendors to emerge; it simply means that most of the new processing services providers will come from the ranks of established companies with excess resources or unique abilities valued by others. Critical mass is a key attribute of many successful services vendors, and with the recession-imposed limits on capital spending, it is unlikely that any major new entries (who are not already known at this time) will appear during the forecast period. At the same time, there will continue to be new entries by companies such as FMC that decide that they can provide better internal processing services by also servicing external customers.

## C
## Submode Market Forecasts

### 1. Transaction Processing Services Market

Exhibit IV-7 shows the distribution of the $10.9 billion in 1990 transaction processing user expenditures across 16 vertical industry sectors. Expenditures in the banking and finance sector, $3.3 billion, are nearly twice that of the next largest sector, consumer services. The personal/consumer services sector is dominated by the expenditures tied to reservations systems.

Over the period 1990 to 1995, the differentiation between the largest and next-largest sectors becomes even greater as the aggregate expenditures for the period for the banking and finance sector grow to $26.1 billion. Consumer services expenditures for the same period, $12.4 billion, are large, but are still less than half the expenditures of the banking and finance sector. The aggregate expenditures for all industry sectors are shown in Exhibit IV-8.

EXHIBIT IV-7

## 1990 Transaction Processing Expenditures by Industry Sector, 1990

| Industry Sector | User Expenditures ($ Millions) |
|---|---|
| Banking and Finance | 3,300 |
| Personal/Consumer Services | 1,700 |
| Discrete Manufacturing | 800 |
| Business Services | 790 |
| Telecommunications | 730 |
| Process Manufacturing | 680 |
| Transportation | 620 |
| Medical | 500 |
| Insurance | 350 |
| Wholesale Distribution | 290 |
| State and Local Government | 260 |
| Utilities | 200 |
| Federal Government | 200 |
| Education | 190 |
| Retail Distribution | 170 |
| Other Sector Industries | 150 |

User Expenditures ($ Millions)

EXHIBIT IV-8

## Aggregate Transaction Processing Services Expenditures by Industry Sector, 1990-1995

| Industry Sector | User Expenditures ($ Billions) |
|---|---|
| Banking and Finance | 26.1 |
| Consumer Services | 12.4 |
| Telecommunications | 6.4 |
| Discrete Manufacturing | 5.5 |
| Business Services | 5.1 |
| Transportation | 4.9 |
| Process Manufacturing | 4.6 |
| Medical | 3.4 |
| Insurance | 2.7 |
| Wholesale Distribution | 2.2 |
| State and Local Government | 2.1 |
| Utilities | 1.6 |
| Federal Government | 1.3 |
| Education | 1.2 |
| Retail Distribution | 1.2 |
| Other Sector Industries | 0.8 |

User Expenditures ($ Billions)

Transaction processing expenditures for 1990 by cross-industry sector are shown in Exhibit IV-9. Aggregate expenditures for the 1990-1995 period are noted in Exhibit IV-10. As with the vertical sectors, the leading consumer of transaction processing resources in the cross-industry marketplace is more than twice the size of the next largest sector. Human resources, especially payroll and related activities, continues to be the predominant cross-industry market at $1.5 billion in 1990 and $11.8 billion in total expenditures from 1990 through 1995. Second in transaction services cross-industry consumption is the accounting sector, with $720 million in 1990 and an aggregate of $4.6 billion from 1990 through 1995.

EXHIBIT IV-9

## Transaction Processing Expenditures by Cross-Industry Sector, 1990

| Sector | User Expenditures ($ Millions) |
|---|---|
| Human Resources | 1,500 |
| Accounting | 720 |
| Other Cross-Industry Sectors | 530 |
| Planning and Analysis | 200 |
| Engineering and Scientific | 120 |
| Education and Training | 100 |
| Office Systems | 40 |

User Expenditures ($ Millions)
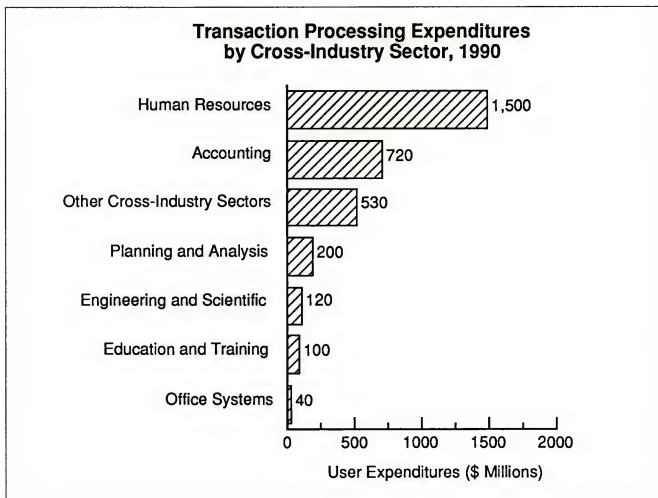
EXHIBIT IV-10

## Aggregate Transaction Processing Services Expenditures by Cross-Industry Sector, 1990-1995

| Sector | User Expenditures ($ Billions) |
|---|---|
| Human Resources | 11.8 |
| Accounting | 4.6 |
| Other Cross-Industry Sectors | 3.8 |
| Planning and Analysis | 1 |
| Engineering and Scientific | 0.8 |
| Education and Training | 0.5 |
| Office Systems | 0.2 |

User Expenditures ($ Billions)
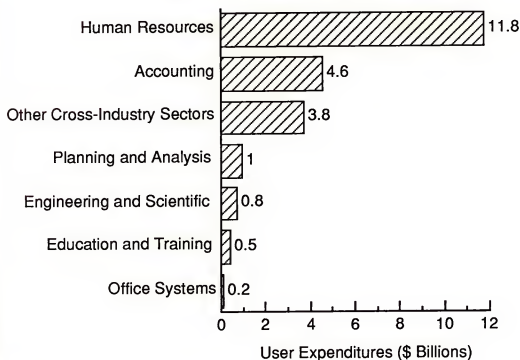
Exhibits IV-11 and IV-12 examine in greater detail the expenditures for transaction processing services, the largest submode market, with approximately 80% of the processing services revenues in both 1990 and 1995.

Exhibit IV-11 notes the 16 vertical markets for transaction processing services, showing annual growth rates and 1990 and 1995 revenues. The two largest industry markets, by expenditures, are banking and finance and consumer services, but the most rapidly growing markets are banking and finance and telecommunications—the latter more than doubling over the forecast period at a CAGR of 15%. Consumer services, though second in size, is expected to grow at a conservative 8%. While this growth will expand this market by a healthy $800 million over the reporting period, it reflects the uncertainty of increased availability of consumer-oriented applications and the willingness of consumers to use them.

EXHIBIT IV-11

## Transaction Processing Industry Sector
## Growth Rates, 1990-1995

| Industry Sector | Revenues ($ Millions) | | CAGR (Percent) |
|---|---|---|---|
| | 1990 | 1995 | |
| Telecommunications | 730 | 1,470 | 15 |
| Banking and Finance | 3,300 | 5,700 | 12 |
| State and Local Gov't. | 260 | 450 | 12 |
| Transportation | 620 | 1,050 | 11 |
| Utilities | 200 | 300 | 9 |
| Insurance | 350 | 570 | 10 |
| Wholesale Dist. | 290 | 450 | 9 |
| Retail Dist. | 170 | 250 | 9 |
| Consumer Services | 1,700 | 2,500 | 8 |
| Discrete Manufacturing | 800 | 1,060 | 6 |
| Process Manufacturing | 680 | 880 | 5 |
| Medical | 500 | 640 | 5 |
| Federal Gov't. | 200 | 240 | 4 |
| Business Services | 790 | 900 | 3 |
| Education | 190 | 220 | 3 |
| Miscellaneous Industries | 150 | 130 | -2 |

Exhibit IV-12 looks at the seven transaction processing services cross-industry markets. Human resources, driven strongly by payroll services, is the largest market in both 1990 and 1995 and the most rapidly growing market segment at 10% CAGR. Unlike the industry-specific markets, growth in the cross-industry markets is modest. This modest growth

reflects a downsizing in the education and training, office systems, and planning and analysis sectors, which are seeing more of their applications off-loaded to in-house PCs or minis.

### Transaction Processing Cross-Industry Sector Growth Rates, 1990-1995

| Industry Sector | Revenues ($ Millions) | | CAGR (Percent) |
|---|---|---|---|
| | 1990 | 1995 | |
| Human Resources | 1,500 | 2,450 | 10 |
| Other Cross-Industry | 530 | 750 | 7 |
| Engineering and Scientific | 120 | 150 | 4 |
| Accounting | 720 | 790 | 2 |
| Education and Training | 100 | 75 | -5 |
| Office Systems | 40 | 30 | -5 |
| Planning and Analysis | 200 | 120 | -10 |

### 2. Utility Processing Services Market

By its nature, utility processing is neither industry nor cross-industry oriented, but rather is used by large businesses or the government when certain unique resources are required, or access to required resources from a vendor is more desirable than providing them internally. Exhibit IV-13 shows that 1990 expenditures for utility processing services were $900 million, and INPUT forecasts 1995 expenditures to be $1.2 billion—a compound annual growth rate of a modest 6%.

### 3. "Other" Processing Services

In contrast to the somewhat sedate growth of the utility processing services market, the market for "other" processing services, dominated by disaster recovery services, will grow at a compound annual rate of 15% from 1990 to 1995, with revenues increasing from $2 billion in 1990 to more than $4 billion in 1995. (See Exhibit IV-14).

EXHIBIT IV-13

**Utility Processing Services Market**
**1990-1995**



CAGR
6%

EXHIBIT IV-14

**"Other" Processing Services Market**
**1990-1995**



CAGR
15%
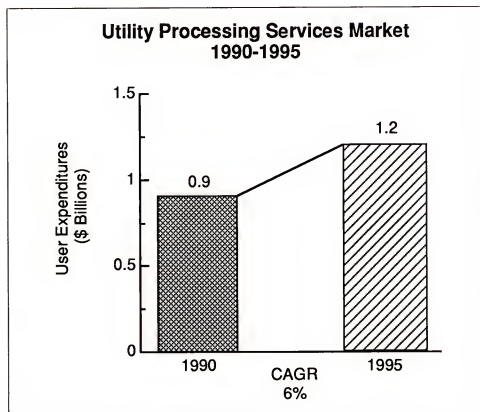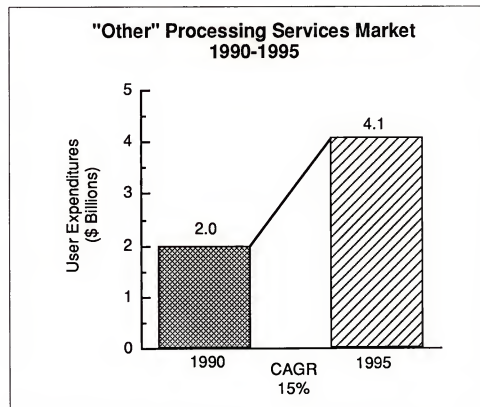
Disaster recovery services, a market INPUT places at about $400 million in 1990, will grow to $800 million in 1995. The good news is that this market will experience dramatic growth and will, in fact, drive the whole "other" processing services market sector. The bad news is that the disaster recovery market is dominated by three large vendors—Comdisco, IBM and SunGard.

This dominance is unlikely to change over the forecast period, since the cost of entry for a new vendor is generally very high, which discourages competition. If another vendor appears, it will almost certainly come from the ranks of major computer manufacturers, as did IBM. IBM has a hardware/systems marketing advantage from enhanced post-installation support services such as disaster recovery and contingency processing.

# V

# Issues and Trends

# V

# Issues and Trends

**A**

**Transaction Processing Services**

**1. Trends**

The major trends in the processing services industry are shown in Exhibit V-1.

EXHIBIT V-1

### Trends in Transaction Processing Services Markets

- Continued growth of systems operations

- Major vendors have strong positions

- Expansion of service delivery modes

  - Systems integration

  - Software packages

  - Turnkey systems

  - Professional services

- User concerns for stability

- Growing emphasis on global access

- Pricing stability

- Over the last year, outsourcing of information systems at all levels has become established. Many companies choose outsourcing as a way of returning to what they do best—their core business—while at the same time ensuring their access to an effective processing services resource.

- Other businesses use systems operations as a way of downsizing without losing critical processing function. The current recession is also having an impact, motivating businesses to hedge their capital investment bets by using transaction processing services in the near term until a clear assessment of the duration and depth of the recession is made. Systems operations will remain strong, however, at least for the forecast period.

The growth in systems operations is analyzed in INPUT's report, *U. S. Systems Operations Market, 1990-1995*. Over the next five years this market will increase at a 16% CAGR, compared to 9% for the more traditional processing services sector. In 1995, INPUT forecasts systems operations to be a $15.2 billion market, versus $26.6 billion for processing services.

- Leading vendors have achieved strong positions in their selected markets. Stated another way, the big are staying big and many are growing. Companies like Automatic Data Processing, Electronic Data Systems, General Electric Information Services, American Express Information Services, Shared Medical Systems, and Mellon Bank have all achieved significant revenues and profits from the processing services industry. They also have grown enough to generate the revenues to invest in the new applications software and systems that customers will need. Any new entries to the ranks of the larger vendors will almost certainly be the result of consolidations of smaller service providers or acquisitions by midsized vendors.

- As both an offensive and defensive strategy, processing services vendors are offering their solutions to clients in an expanding mix of delivery modes. Software products, turnkey systems, systems integration, and professional services are changing the revenue mix and market positions of many companies. More users want a variety of delivery platforms and the option of receiving total support from their services vendor. Software, in particular, will become increasingly important as the 1990s usher businesses into the Age of Software: the application and the ability to meet the user's requirements regardless of delivery mode will become an ever more important success factor for transaction processing services vendors. Vendors are also expected to be flexible in the presentation of an application solution, and be willing to customize it to suit the client's needs. In addition, the leading processing services vendors are all becoming more active in other sectors of the information services industry.

- Over the last few years, and especially since the start of the recession, users have shown a greater preference for stability in their dealings with services vendors. There is a tendency to stay with an installed vendor, even though competitors may offer some price advantage, if needs are being met. In some cases, the contract renewal rates are running well in excess of 90%. The user's perception is that in times of uncertainty, change is not only risky, but can be costly. Companies in strong market positions can exploit this phenomenon by being price competitive in sales to new clients, and then holding firm to published prices when contracts are renewed or services added.

- Thanks to satellites, television, the fax machine, digital communications, and other electronic, social, and economic phenomena, more and more businesses find themselves conducting their activities globally. Even those companies whose primary marketplace is domestic would still like the option of moving into the global arena if their business needs and plans so dictate. While for many applications the lack of vendor access to global markets is not necessarily a detriment, the vendors that offer such an option have a distinct marketing advantage.

- Strange as it may seem, in a period of economic uncertainty, reduced money rates, and technological innovation and opportunity, transaction processing services pricing—in fact all processing services pricing—has remained very stable and is expected to remain stable for the forecast period. Vendors indicate that though price is always a user concern, especially in a competitive environment, no vendor is anticipating any major pricing changes—upward or downward—in the next year or so. The vendors looking beyond 1991-1992 currently do not have any plans for price adjustments. This conservatism is not unexpected; it is consistent with the user's concern for stability in uncertain economic times and the vendor's interest in maintaining a stable and predictable marketplace until many of the uncertainties beyond business' control—the economy, water shortages in the western United States, etc.—are resolved.

## 2. Issues

The continued growth of the transaction processing services market depends on several factors, shown in Exhibit V-2.

EXHIBIT V-2

# Transaction Processing Services Issues

- Impact of the recession—How long and how deep?

- Impact of business downsizing

- Impact of in-house systems: Shared/distributed systems

- Impact of network systems

- Voice/data processing opportunities

- Consumer services—A growing opportunity?

- The recession is a fact. However, its duration and how deep it will go are still matters of speculation. One thing, however, is certain: The recession's impact on businesses, vendors, and markets must be taken into account for the rest of 1991 and certainly for at least the first half of 1992. Even if recovery occurs in mid- to late-1991, economic and business adjustments will carry over to early 1992.

- Business downsizing, a phenomenon first noted in 1989, which grew in 1990 and is generally expected to continue throughout 1991, will continue to offer opportunities for vendors to earn new revenues. These revenues will come from the approach to downsizing that results in outsourced functions, applications, and production. Downsizing by eliminating or reducing internal function without offloading to an outside source will, of course, not generate new vendor revenues. Cross-industry market segments, such as the payroll function of human resources, are particularly susceptible to downsizing by shifting activities to an outside services vendor.

- The proliferation of supermicros, powerful workstations, and file servers as departmental systems will continue to complicate the ability of IS departments and processing services vendors to deliver integrated solutions across distributed systems and data bases. Though such complications may slow the growth of "conventional" processing

services, vendors that can adapt to them will gain a market advantage. The challenges faced may be similar to those occurring when the timesharing services matured and then declined as companies provided internal capabilities and the age of the personal computer began. Looking back at that period may help processing services vendors find opportunities in the age of client/server technology.

- The impact of network systems has yet to be felt fully, but this application/technology approach has the potential to do to mainframes what PCs did to timesharing. By offloading applications to sophisticated, integrated networks of PCs, micros, and minis coupled to LANs, and file servers, many businesses will question the need for complex and expensive large, centralized mainframes. In support of the network systems concept, proponents will emphasize the reduction in exposure to disasters that such systems offer. Although such systems will not proliferate in the near term, INPUT believes that they will become a major factor in the processing services industry in the 1990s, and the sophisticated and innovative transaction services vendors will view network systems as an opportunity to further penetrate in-house processing citadels.

- Technology will continue to provide combined voice/data networks (i.e., ISDN) that are changing the way data communications requirements are satisfied. For example, data-over-voice (DOV) is one of the most effective ways to deliver voice and data communications efficiently to virtually every office using a single telephone line. By placing a single, simple interface to the outside world in each office, this technology, and others like it, broaden the market for the processing services vendor.

- Consumer-oriented services will provide a significant opportunity for network and processing vendors. The unknown factor is the degree to which the 35 million personal computers now installed in the U.S., and the millions more to be installed in the 1990s, will be used by individuals for personal services. INPUT is confident that innovative vendors will continue to find ways to tap this potentially huge market. Prodigy, the popular consumer-oriented on-line service, has demonstrated that there is a place for a reasonably priced, comprehensive product offering. INPUT expects to see other retail, finance, banking, and insurance applications emerge in the forecast period. A key requirement is that the vendor take responsibility in many cases for operation of the system and for the development of the software needed for the future service. In this area, the large processing services companies have a major advantage over application software products companies, as they can provide the network and information source as well as the interface software product.

# B
## Utility Processing Services

The utility processing services market suffered significantly from the advent and acceptance of minicomputer and microcomputer products. The success of the IBM PC and PC compatibles has had a strong impact on utility processing in the past six or seven years. Many users moved work to PCs that was formerly developed, modified, and run through the use of utility processing on a remote computing service. Customers rode the price/performance curve of the small system. At the same time, and perhaps more importantly, new, easy-to-use software tools became available for small systems.

Single-user, repetitive data base or problem-solving applications that required limited processing resources therefore moved from services to in-house systems. A similar trend has emerged in the last several years for departmental systems with the availability of powerful, economical midrange systems that have applications software. This trend will be amplified as LAN-based applications software products become available for 32-bit workstations/PCs used as file servers.

Applications systems requirements for intercompany or interlocation interaction are not readily satisfied by local systems environments. Although an increasing proportion of such systems can communicate point-to-point and locally, the coordination necessary for a major system is generally not available.

As computer centers become more and more transparent (or hidden) to customers because of remote operations through networks, their need for their own centers will diminish. This will be especially true as the complexity of computer/communications networks increases. Many customers may contract out all or part of their application and the "Computer Utility" foreseen by Parkhill in 1967 will start to become a reality again.

The driver to such a "utility" will not only be access to computation power (as it was in the 1950s and 1960s), but access to the effective operation of a multidimensional complex of multivendor computers, communications, software, and skills. Companies such as Litton Computer Services and, to a lesser extent, Genix and On-Line Business Systems, have operated successfully in this field.

One factor that limits growth and profitability in this market is the presence of spin-off vendors, such as university-operated supercomputer centers, that price their services on an incremental basis. Their services costs are covered by a "captive" set of operations, and the parent organization frequently encourages the information systems organization to enter the market for utility services to limit or reduce internal operating costs.

On the other hand, this scenario also applies to information services vendors. Utility processing is a means for vendors to obtain incremental revenue from customers. However, many vendors have a passive attitude toward utility processing and merely accept the incremental business if and when it occurs without actively seeking it out.

- Some astute vendors, however, are proactive and provide specialized software tools and consulting aid to encourage customers to use utility processing.

- Proactive vendors also market to user personnel who can develop the ad hoc software that would effectively use the enhanced resources of a large system. "Large" can apply to memory, processing, storage, peripherals and/or support.

Utility processing can increase vendor revenue without having a signifi- cant impact on the requirement to obtain additional resources. In other words, the vendor cost basis does not need to increase in line with the added revenue. The growth in systems operations could have a positive impact on utility processing. Companies that outsource data center operations, but retain systems development, will need utility processing services. While they may turn to the systems operations vendor for this resource, they can also consider alternative sources, such as a utility services vendor.

## C

### "Other" Processing Services

Despite the importance of computer output laser printing, carry-in data entry services, and off-shore data entry, the primary "other" processing services activity in this market sector is disaster recovery. In 1989, IBM entered the disaster recovery service (DRS) marketplace—which was dominated first by Comdisco and SunGard—through its National Ser- vices Division. INPUT expects the trend towards a limited number of major players dominating the DRS market to continue for the forecast period. Any new vendors capable of competing strongly in this market segment will almost certainly come from the ranks of computer manufac- turers that, like IBM, will offer DRS services to enhance hardware/ system sales, or from the ranks of the major vendors of third-party main- tenance services.

IBM's Business Recovery Services now include the IBM Enterprise System/9370 and /3090 600S, as well as additional options for the de- ployment and testing of customers' backup systems. As an alternative to having their backup systems located at an IBM Business Recovery Center, customers may now have midrange backup systems shipped by IBM to a designated location. Also, customers may now test their recov- ery plans via IBM's National Service Division remote links. IBM has five midrange business recovery centers, as well as two sites for com- bined high and midrange recovery support.

Most major computer manufacturers now offer disaster recovery services in order to support their customers and protect accounts. Several of the recent entrants are from the third-party maintenance community. Both Intelogic Trace and Sorbus (a subsidiary of Bell South) are examples of such new vendors. Sorbus has formed a partnership with SunGard Recovery Services to deliver "hot-site" services for IBM 4300 users and "cold-site" availability for IBM and DEC midrange customers. Previously, SunGard had proven its expertise in the IBM 3090 and 3080 arena, but had yet to penetrate the 4300 market. This alliance matches SunGard's disaster recovery expertise with Sorbus' strong marketing presence in the midrange arena, which includes a large installed base of IBM 4300, IBM System/3X, and DEC system users. Under the new partnership, Sorbus is marketing disaster recovery services provided by SunGard. The team will deliver hot-site services, providing customers with access to systems from SunGard's three "mega-centers" located in Philadelphia, Chicago, and San Diego (CA). In addition, customers can set up operations at cold sites in other cities.

Intelogic Trace (IT) launched its disaster recovery offerings for System/3X and AS/400 customers in 1989 and provides hot-site coverage from 10 locations within the U.S. There are currently some 50 vendors in this market.

INPUT expects the trend of disaster recovery services dominating the "other" processing services market to continue through 1995. The market for disaster recovery was approximately $350 million in 1989, and is growing at about 15% per year. However, there is potential for even more rapid growth as the impacts of disasters such as the San Francisco earthquake make themselves felt. The importance of the earthquake was not the problems it caused, which were generally overcome fairly quickly, but the potential impact of the more severe earthquakes that could follow or occur elsewhere in the U.S.

Computer output microfilm (COM) services are established as a cost-effective way of storing and retrieving large amounts of digitized information. The market is still growing, even though there is a trend towards the overall use of microfilm to stabilize or decline. The reason for this is that in-house installations are being turned over to outside services companies as the in-house equipment becomes obsolete or the user's staff is reduced. Thus, strangely enough, there are utility or commodity markets on both ends of the life cycles of technologies.

Until CD ROM or image processing systems with high densities become available at more economic prices, the COM services market will continue to grow, albeit slowly. Primarily, this is a matter of economics. Microfilm readers are available for a few hundred dollars, whereas the

least costly effective optical storage systems, including their computer drivers, are at least an order of magnitude more expensive. As with other markets, it is not so much a question of replacement in the near term, as one of coexistence.

Leading vendors in this market are EDS, FFMC, Anacomp, and Zytran (part of Dun and Bradstreet). CD ROM and optical storage developments are creating opportunities for processing services. For example, data base conversion to build optical storage files is a growing business.

# VI

# Competition

# VI

# Competition

## A

### Introduction

The leading vendors in the U.S. processing services market and its various segments are identified in this chapter. Processing services include the following:

- Transaction processing
- Utility processing
- Other processing

Where a client enters into a long-term contract to have all processing (or the total processing services for a department) handled by a vendor, the work is classified as systems operations. This market is analyzed by INPUT in a separate report, *U.S. Systems Operations Market, 1990-1995.*

For processing or systems operations services, the informations systems equipment may be owned by the vendor, the client or a third party.

## B

### Market Leaders

The market leaders listed in Exhibit VI-1 can be separated into two types of vendors. One group has concentrated on obtaining processing services revenue from specific cross-industry or vertical markets. This body includes such companies as ADP, First Financial Management, and Shared Medical. Other vendors perform processing work in several market sectors. They may also perform related work for their clients which falls outside the processing services market area. Included in this group are vendors such as General Electric Information Services and Control Data.

EXHIBIT VI-1

## Leading Processing Services Vendors
## U.S. Revenue, 1989

| Rank | Vendor | Estimated Processing Services Revenue Share ($ Millions) | Market Share (Percent) |
|------|--------|------|------|
| 1 | ADP | 1,208 | 8 |
| 2 | American Express ISC | 660 | 4 |
| 3 | First Financial Management (FFM) | 640 | 4 |
| 4 | Control Data | 618 | 4 |
| 5 | American Airlines | 285 | 2 |
| 6 | NDC | 228 | 1 |
| 7 | Covia | 223 | 1 |
| 8 | CCH Computax | 206 | 1 |
| 9 | GEIS | 160 | 1 |
| 10 | GTech | 159 | 1 |
| 11 | Comdata | 157 | 1 |
| 12 | EDS | 153 | 1 |
| 13 | Fiserv | 151 | <1 |
| 14 | Telecredit | 148 | <1 |
| 15 | Shared Medical | 127 | <1 |
| 16 | NCR | 127 | <1 |
| 17 | Paychex | 110 | <1 |
| 18 | Anacomp | 110 | <1 |
| 19 | Citicorp Information Resources | 104 | <1 |
| 20 | SunGard | 103 | <1 |

As shown in Exhibit VI-2, the most popular vertical market for the leading processing services vendors is banking and finance. Other major vertical markets are health care services and transportation. Some leading vendors are also major providers in the cross-industry human resources and accounting markets. A group of vendors that has a sizable presence in one market area and smaller activity in other areas includes NDC, First Financial Management, and American Express ISC. ISC was set up in 1989 as the third core business of American Express. It provides information services within the banking and finance market and also to a number of other markets including health care services.

The top 10 market leaders, noted in Exhibit VI-1, account for about 28% of the $15.8 billion processing services market in 1989. The next 10 vendors represent an additional 8% of the market. Although there is a natural tendency to focus on the larger suppliers of processing services, this market also includes numerous small vendors that process work for local stores, accountants, and other businesses.

During 1989, interest in systems operations increased significantly, leading to a reclassification and reorganization of that delivery option into a mode separate from processing services. This adjustment changed the ranking of leading processing services vendors and dropped some vendors with large volumes of systems operations work, such as EDS, from the list shown in Exhibit VI-1.

The volume of systems operations processing performed by the leading processing vendors is shown in Exhibit VI-3. In this exhibit, the vendors have been reordered by total revenue to illustrate the impact of systems operation work.

Firms that tend to sell only processing services, such as ADP, have not elected to offer a systems operations service as frequently as vendors that provide other services, such as professional services. This trend suggests that flexibility in service offerings, rather than just experience with processing services, has been a factor in entering the systems operations market. Another factor to consider is that vendors such as EDS market systems operations together with other services partially as a means of maintaining client relationships.

Network services is another area of informations systems activity that is closely associated with the transaction processing environment of processing services. For instance, the network services business of ADP, GEIS, and Telecredit can add substantially to the volume of work that they perform for clients of their processing services.

EXHIBIT VI-2

# Major Markets of Selected Leading Processing Vendors

| Vendor | Major Markets |
|--------|---------------|
| ADP | Cross-industry human resources Banking and finance |
| American Airlines | Transportation |
| American Express ISC | Banking and finance, health, personal/consumer services |
| Anacomp | Computer output microfilm |
| CCH Computax | Cross-industry accounting |
| Comdata | Transportation |
| Control Data | Various markets, including banking and finance and cross-industry human resources |
| Covia | Transportation |
| FFM | Banking and finance, health |
| FIserv | Banking and finance |
| GTech | Personal/consumer |
| GEIS | Banking and finance, telecommunications, manufacturing |
| NDC | Banking and finance, retail |
| Shared Medical | Health care services |
| SunGard | Disaster recovery services |

EXHIBIT VI-3

## Systems Operations Revenues of Selected Processing Services Vendors
### (Revenue for 1989)

| Vendor | Processing Services Revenue ($ Millions) | Systems Operation Revenue ($ Millions) | Total Revenue |
|---|---|---|---|
| ADP | 1,208 | - | 1,208 |
| EDS | 153 | 850 | 1,003 |
| American Express ISC | 660 | - | 660 |
| FFM | 640 | - | 640 |
| Control Data | 618 | 9 | 627 |
| CSC | 24 | 300 | 324 |
| Covia | 223 | 56 | 279 |
| Shared Medical | 128 | 127 | 255 |
| NDC | 228 | - | 228 |
| GEIS | 160 | 20 | 180 |
| Systematics | 160 | - | 160 |
| IBM | 102 | 49 | 151 |

## C

**Competitive Issues**

One of the most common competitive issues for processing services vendors serving certain vertical markets is the pressure to meet competitive prices. The leading vendors that serve banks, thrifts, and other financial organizations often find that a prospect or client is conducting a comparison of their prices with a competitor's. The vendor may react to this pressure with an attractive price package, but more frequently will attempt to focus their sales or retention effort on system features and services. Processors usually have a narrow margin compared to other information services vendors and would rather meet price competition with emphasis on unique, specialized, or competitively advantaged features and services.

EXHIBIT VI-4

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### Processing Services
### Competitive Issues

- Price versus functionality

- Alternative products and services

- Currency of applications

- Availability of technical support

</div>

The most common sources of the competitive pressure for processing vendors are from software products, turnkey systems or professional service vendors with alternative solutions in-house.

Another competitive issue is the currency of applications. Some vendors have regular programs to upgrade their processing software and enjoy an efficiency, feature, or function advantage. The software of other competitors may be far from the state-of-the-art in industry applications, and although functional, may not compare well to newer application packages.

In addition to price and currency of applications, firms in competition also feel pressure from each other in terms of the quality of work performed and the availability and performance of knowledgeable personnel. Since there is always a shortage of capable people, knowledgeable staff members can be a strong competitive asset.

The next three exhibits present the leading vendors for each delivery mode, as defined by INPUT's estimate of 1989 processing services revenues.

**D**

Segment Leaders

**1. Transaction Processing Services**

Transaction processing constitutes the dominant form of processing services delivery. It is characterized by the customer's willingness to offload an application or application set that may support a critical business application such as demand deposit accounting or airline reservation processing. If all the activities of a department or company are serviced together by this application, the processing would be classified as systems operations rather than as transaction processing.

The segment leaders include ADP, American Express Information Services Company, and Control Data, as shown in Exhibit VI-5. For some of the companies shown in this exhibit, it is difficult to separate or estimate the volume of utility and other processing services that may occur. In these instances, the entire processing services revenue of the vendor has been shown as transaction processing.

EXHIBIT VI-5

| | | Transaction Processing Services Revenue ($ Millions) | Market Share (Percent) |
|---|---|---|---|
| **Leading Transaction Processing Services Vendors, 1989** | | | |
| Rank | Vendor | | |
| 1 | ADP | 1,072 | 8 |
| 2 | American Express ISC | 660 | 5 |
| 3 | Control Data | 618 | 5 |
| 4 | FFM | 520 | 4 |
| 5 | American Airlines | 285 | 2 |
| 6 | NDC | 228 | 2 |
| 7 | Covia | 223 | 2 |
| 8 | CCH Computax | 206 | 2 |
| 9 | GTech | 159 | 1 |
| 10 | Comdata | 157 | 1 |

The top transaction processing vendors in Exhibit VI-5 are virtually identical to the top vendors in processing services overall, as shown in Exhibit VI-1. Vendors solely devoted to one of the other two modes are not encountered in the top 15 vendors of processing services.

## 2. Utility Processing Services

Utility processing is a submode of processing services in which a vendor provides access to a computer through a communications network as well as access to software and computing support. The software tools can include operating systems tools, compilers, 4GLs, DBMSs, terminal support, scientific and statistical libraries, graphics, financial modeling, DSS, and application development tools.

Utility processing services are attractive where local processing, memory, or peripheral capabilities have not been adequate for user needs. This is particularly true for special or periodic requirements, such as the need for supercomputer processing.

Utility processing business may be obtained by vendors that provide capabilities for user applications together with transaction processing, network applications, or data base access. These vendors include ADP, GEIS, IBM, and EDS, as shown in Exhibit VI-6.

EXHIBIT VI-6

### Vendors with Utility Processing Business

| Rank | Vendor | Estimated 1989 Revenue ($ Millions) | Market Share (Percent) |
|------|--------|-------------------------------------|------------------------|
| 1 | ADP | 61 | 7 |
| 2 | GEIS | 45 | 5 |
| 3 | Comdisco | 40 | 5 |
| 4 | IBM | 10 | 1 |
| 5 | EDS | 10 | 1 |
| 6 | May & Speh | 3 | <1 |
| 7 | CDC | 2 | <1 |

University Computing Centers not available

Another type of vendor that offers utility processing is Comdisco, Inc. (the parent of Comdisco Disaster Recovery Services). Comdisco uses its inventory of equipment to offer utility processing.

A number of IS vendors have small amounts of utility processing that remain from past customer relationships or are temporary steps toward another type of service. Vendors that could be described in this way include CDC, Litton, and Genix. Litton and Genix and other vendors have offered short-term (less than one year) arrangements for running application software from the user's shop or from a third party. If the relationship continued with a long-term contract, it could become a systems operations contract if the processing involved the work of an entire company or division. Otherwise, it would become a processing service. The use of utility processing as a trial service for outsourced applications has the potential to grow as a result of the mounting interest in outsourcing.

Additional types of utility processing are provided by May & Speh and a number of university processing centers. The latter may provide the supercomputer processing power or other capability that an industry or government organization does not need to use on a permanent basis. May & Speh provides utility processing to its clientele to use as a supplement to direct marketing and outsourcing services.

### 3. "Other" Processing Services

"Other" processing services include those concerned with the supply of specialized input and output such as scanning, computer output microfilm (COM) and output laser printing, carry-in data entry, and off-shore data entry. The rapidly growing area of disaster recovery and backup are also included in "other" processing services.

As shown in Exhibit VI-7, several of the largest vendors of other processing services are SunGard and Comdisco Disaster Recovery Services, both of whom are primary providers of disaster recovery and backup services. SunGard specializes in the IBM mainframe market but formed a relationship with Sorbus (a Bell Atlantic subsidiary) to offer midrange IBM and DEC service. Comdisco offers mainframe and midrange service. Sorbus and Intelogic Trace are examples of third-party maintenance vendors that have entered this growing market sector. IBM also entered this sector in 1989 and offers backup systems at IBM Business Recovery Centers as well as at other designated locations.

EXHIBIT VI-7

### Leading Vendors of "Other" Processing Services, 1989

| Rank | Vendor | Estimated 1989 Revenue ($ Millions) | Market Share (Percent) |
|------|--------|-------------------------------------|------------------------|
| 1 | Anacomp | 110 | 6 |
| 2 | SunGard | 103 | 6 |
| 3 | First Financial Management (FFM) | 102 | 6 |
| 4 | Comdisco Disaster Recovery Services | 84 | 5 |
| 5 | ADP | 75 | 4 |
| 6 | EDS | 30 | 2 |
| 7 | Merrill Lynch | 27 | 2 |

"Other" processing services also includes vendors of computer output microfilm services such as FFM, Anacomp, and EDS, which also appear in Exhibit VI-7. This market continues to grow at a slow pace although it will begin to decrease in size when CD ROM or image processing systems with high densities are low enough in price to attract more use and be provided by processing services vendors.

Additional services categorized under "other" processing include the input delivery services of ADP that are available in many areas of the country. ADP also provides specialized output services that contribute to its revenues from other processing services.

Exhibit VI-8 lists the companies profiled in this report:

EXHIBIT VI-8

## Processing Services Company Profiles

- Affiliated Computer Systems

- Anacomp

- ADP

- Citicorp Information Resources

- Comdisco

- CDC Business Management Services

- FFM

- GEIS

- NDC

- Shared Medical Systems

- SunGard

**E**

Vendor Profiles

**1. Affiliated Computer Systems, Inc.,** 2828 North Haskell, P.O. Box 219002, Dallas, TX 75221

**a. Company Background**

Affiliated Computer Systems, Inc. (ACS) provides a range of transaction processing and systems operations (outsourcing) services to financial, commercial, and government institutions.

ACS was formed in July 1988 by Darwin Deason with the purchase of three data processing subsidiaries of a Texas-based financial institution:

- The MoneyMaker Division, which operated one of the largest off-premise ATM networks in the country

- TransFirst Corporation, which specialized in providing electronic benefits transfer services to government and health care agencies

- FTCC, which provided data processing services to Gibraltar Savings and First Texas Savings

ACS' strategy is to become the leading full-service outsourcing and data processing provider by delivering the highest quality products and services to the customer and attracting and maintaining the very best people in the industry. The company's goal is to achieve $500 million in market value by 1993.

Much of the company's growth has resulted from strategic acquisitions and outsourcing contracts. Activities in 1990 include:

- In January 1990, ACS acquired a 30% equity interest in Dataplex Corporation. Other investors include Goldman Sachs & Co., Paribas Technology, and members of Dataplex management. Dataplex, with annual revenue of $47 million, provides information and image capture, data storage protection, and retrieval services to financial institutions.

- In June 1990, ACS was awarded a five-year data processing contract with Builders Emporium in Irvine (CA) valued at $20 million.

- In June 1990, ACS was awarded a 10-year, $160 million contract with International Telecharge, Inc.

ACS' fiscal 1990 revenue reached approximately $125.2 million, a 73% increase over fiscal 1989 revenue of $72.5 million.

### b. Processing Services

Approximately 45% of ACS' revenue is derived from processing services and 45% from systems operations (outsourcing). The remaining 10% of revenue was derived from shared hub satellite transmission services (3%) and business forms and supplies (7%).

ACS Financial Services provides a range of processing services in support of front- and back-office banking, electronic funds transfer, and retail point-of-sale applications.

- Financial Services is also the operator of the MoneyMaker Network, one of the largest off-premise ATM networks in the U.S. MoneyMaker handles over 3 million transactions per month at over 1,000 ATM locations throughout the Southwest.

- Advantage is ACS' on-line processing service for banks. Advantage supports a range of applications, including integrated deposits, certificates of deposit, IRAs, installment loans, commercial loans, retail lending, mortgage loans, PC teller support, customer service, customer

information files, and general ledger. Advantage is currently being used by 200 banks ranging in size from $2 million to $200 million in assets.

ACS Financial Services' Back Office Support Services (BOSS) provided to financial institutions include bulk filing, statement preparation, microfilming, item capturing, lockbox and remittance processing, proof encoding and deposit services, and return-item processing.

EFT services provided by Financial Services include ATM processing, transaction authorization and switching, card production and management, on-line monitoring, marketing support, training, strategic planning, equipment and terminal maintenance, regional and national interchange access, reporting and settlement, and gateway services. Financial Services has designed and delivered systems in support of airline and event ticketing and product promotions.

Retail Point-of-Sale (POS) services include credit and debit authorization, electronic draft capture, ACH debit, check verification, private label processing, EBT, frequent shopper programs, and reporting and settlement.

ACS/Field Electronics, a division of Financial Services, provides field maintenance services for terminals, including ATMs.

TransFirst provides full-service, on-line electronic benefits transfer (EBT) processing services for government agency programs such as Food Stamps, Aid to Families with Dependent Children, Unemployment Insurance, Medicaid, Child Support, Social Security, Supplemental Security Income, and General Public Assistance.

ACCEPT, TransFirst's electronic benefit distribution system, permits electronic delivery of cash and medical services benefits through ATMs, POS and debit/credit terminals, or by direct deposit into individual accounts.

The ACCEPT PLUS program, announced in June 1990, incorporates the placement of electronic terminals at retail checkout lanes in conjunction with consumer payment transaction processing and settlement services. The program will support both commercial services and EBT transactions.

ACS Commercial Services currently provides systems operations and utility processing services to over 500 clients.

Major ACS Commercial Services clients include The Southland Corporation, MorningStar Foods, Price Waterhouse, International Telecharge, Builders Emporium, and Southern Union Gas Company.

Recent systems operations contracts include the following:

- In June 1990, ACS was awarded a five-year contract valued at nearly $20 million by Builders Emporium of Irvine (CA).

- In June 1990, ACS was awarded a 10-year, $160 million contract with International Telecharge, Inc. (ITI), a national telecommunications supplier of network-based operator and information services, primarily to hotels, hospitals, institutions, payphone owners, and interexchange carriers.

- In June 1990, ACS was awarded a five-year, $1.2 million contract by TakeCare Corporation, a Concord (CA)-based health maintenance organization. ACS will operate the TakeCare data base for all membership, claims, and other provider-related applications and will process approximately 20,000 transactions per day.

**2. Anacomp, Inc.,** 11550 North Meridian Street, P.O. Box 40888, Indianapolis, IN 46240, (317) 844-9666

**a. Company Background**

Anacomp, Inc., founded in 1968, provides computer output microfilm (COM) processing services to over 6,000 customers nationwide.

- Noninformation services provided by Anacomp, which represented 83% of revenue during fiscal 1989, include COM hardware systems, maintenance services for COM and other related hardware, duplicate microfilm and other micrographics supplies, and computer tape products.

Anacomp's business strategy over the past several years has been to focus on expanding its COM product and service offerings. As a result, the company has made the following information services acquisitions:

- During fiscal 1989, Anacomp acquired seven micrographics service centers for $5.7 million.

- During fiscal 1988, Anacomp acquired two micrographics service centers and a micrographics film and product maintenance business for $7 million.

- Anacomp acquired 13 micrographics service centers during fiscal 1986 and 1985 for approximately $6.4 million. No data center acquisitions were made during fiscal 1987.

Anacomp's total fiscal 1989 revenue reached $648.9 million, a 55% increase over fiscal 1988 revenue of $417.9 million. Net losses for fiscal 1989 were $170.8 million and include a loss of $178.4 million from discontinued operations.

COM services revenue rose 17% in fiscal 1989 and 11% in fiscal 1988. The improvement is due to a combination of higher volumes through existing centers, the contributions of Xidex's microprinting operations, and acquisitions of customer bases in selected geographical markets.

Anacomp's COM information services competitors include Zytron (a subsidiary of Dun & Bradstreet), Endata Corporation (a subsidiary of First Financial Management Corporation), and hundreds of small, local service bureaus.

**b. Processing Services**

One hundred percent of Anacomp's $111.2 million in information services revenue was derived from COM and microforms processing services.

COM and microforms services are provided to over 6,000 customers nationwide through 53 data centers.

- COM services include the transfer of output directly from magnetic tapes prepared on a computer to microfiche or roll microfilm. Value-added services provided by Anacomp include customized indexing and retrieval software.

  - Over 95% of COM service revenues are repetitive on a daily or weekly basis, and over 80% result from multiyear contracts.

- Microforms services consist of the microfilming of both active and archival paper documents. Anacomp provides both source document microfilming ( the conversion of paper documents to microfilm) and micropublishing (the reproduction of large data bases on microfilm) services.

**3. Automatic Data Processing, Inc.,** One ADP Boulevard, Roseland, NJ 07068, (201) 994-5000

**a. Company Background**

Automatic Data Processing, Inc. (ADP) was formed in 1949 as Automatic Payrolls, Inc. Its name was changed to Automatic Data Processing in 1960.

Since the early 1960s, ADP has implemented an active acquisition program to diversify from its primary business of providing payroll services. Payroll and accounting services still provide the major share of ADP's revenue; however, significant gains have been made in brokerage, services to automotive dealers, and automotive claims services for automobile insurers and repairers. The company now provides information and processing services to more than 200,000 clients worldwide.

ADP reported revenue of over $1.67 billion in fiscal 1989, an 8% increase over fiscal 1988 revenue of $1.55 billion. Net income rose 10%, from $170 million in fiscal 1988 to $187.6 million in fiscal 1989.

INPUT estimates ADP's fiscal 1989 revenue was derived approximately as follows:

| | |
|---|---|
| Processing services | 75% |
| Network services | 13% |
| Turnkey systems | 12% |
| | 100% |

**b. Processing Services**

Employer services are provided to clients engaged in a wide variety of businesses. In addition to marketing its services directly, ADP has marketing relationships with many banks and CPAs whereby ADP offers its services to their clients and prospective clients. Employer services are offered from ADP's regional centers located throughout the U.S. ADP also has data processing centers in Western Europe, Brazil, and Canada. On payday, ADP pays 11 million workers, representing an estimated 10% of the U.S. workforce.

- Employer services include payroll processing and related payroll tax filing, personnel record keeping and reporting, unemployment compensation management, and specialized management reports to over 200,000 clients.

- ADP's payroll services include automatic deposit, quarterly and annual social security and income tax withholding reports, W-2 withholding statements for employees, a complete record of payments for each pay period, and periodic employee historic earnings records. Also included are special statistical and audit reports for management, such as payroll and job cost distribution reports, welfare and pension fund reports, and payroll audit reports.

- Autopay I Payroll service targets small clients with 5 to 19 employees. ADP's Autopay II payroll service focuses on companies with 25 to 500 employees. ADP has over 100,000 clients in this segment.

- The Interactive Payroll and Personnel (IPP) Service is an on-line processing service targeted primarily to companies with more than 500 employees and multiple locations.

- Over 35,000 ADP payroll clients now use microcomputers for payroll input to ADP. This PC-Payroll service (formerly called PC-Connection) is targeted to accounts with 50 or more employees. In late 1989, ADP introduced Easypay, a simplified PC service for smaller payroll clients.

ADP's Brokerage Services business includes the following products and services:

- Back-office stock brokerage and related financial transaction processing services include brokerage processing, cage management, stock loan accounting, on-line inquiry and data collection, portfolio reporting, order matching, and on-line trading.

- Front-office data base and quotation electronic information services, provided by ADP to the investment and brokerage community, include supplying quotations, financial news, and other information to terminals located on brokers' desks.

ADP Automotive Claims Services (ACS) provides computerized estimating services related to auto collision repair and valuation to auto insurers and repairers in the U.S. and Canada.

- Audatex is an on-line collision repair estimating service. The system links 2,500 client-site terminals and about 2,500 claims adjusters' portable terminals to ADP's proprietary data base in Ann Arbor (MI). The data base contains cost and labor hours information on repairing and replacing parts for virtually all models of autos and trucks produced since 1970.

- AutoTrak is a valuation service for cars and trucks used by insurance companies to determine a fair replacement price on totaled vehicles. Autotrak valuations are produced from a computerized data base with pricing information on about three million used cars that have been recently advertised by car owners or dealers.

- Parts Exchange is an automated parts locating and pricing service provided to insurers, manufacturers, distributors, and repair shops. The service offers data—including comparative costs, location, and availability—on more than 900,000 parts.

ADP Dealer Services provides network services and turnkey systems to over 6,500 auto, truck, farm, and heavy equipment dealers throughout the U.S. and Canada. Client retention reached 95% in fiscal 1989.

- Wholesale Distribution Services, formerly part of ADP's Interactive Business Services unit, provides Distribution 2000™, a minicomputer-based turnkey system targeted to the wholesale distribution industry. Distribution 2000 supports front-office order entry, back-office accounting, purchase order, and inventory management. A specialized service group works with these clients, whose annual sales typically range between $2 million and $100 million.

### c. Other Information Services

ADP Network Services provides both general and specialized management-oriented on-line services, primarily to major corporations, large financial institutions, and government organizations in the U.S. and Western Europe.

- ADP Network Services also maintains ADP's Autonet packet-switched teleprocessing network. Autonet's prime function is to aid other ADP divisions with more efficient data communications.

- Treasury Management (CashExpress) is Network Services' leading industry-specific service. It permits banks throughout the world to provide corporate treasurers with instant access to current deposit and account information.

**4. Citicorp Information Resources,** Twelfth Floor, Four Stamford Forum, Stamford, CT 06901, (203) 351-4900

### a. Company Background

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

- CIR was incorporated in 1979 with a charter to provide financial institutions with a range of information services.

- Operating as a subsidiary of Citicorp, CIR derives the majority of its revenue from noncaptive sources. During 1989, CIR took over management responsibilities for Citicorp's internal payroll, human resources, and benefits processing activities.

CIR's 1989 revenue reached an estimated $104 million. Approximately 61% of CIR's 1989 revenue was derived from processing services, 21% from systems operations, 12% from application software products, and 6% from consulting professional services.

## b. Processing Services

CIR is a national supplier of information services for over 800 financial institutions in 43 states and 24 countries around the world. CIR currently has over 150 NSP clients. CIR provides the following products and services to financial institutions:

- The National Service Product is an on-line processing service for banks and thrifts.

- Resource Manager is a systems operations processing service that provides access to third-party software from a CIR data center.

- The Comprehensive Banking System is available as a software product or turnkey system to banks and thrifts.

- Facilities management (systems operations) professional services are provided to banks and thrifts.

- The GALAXY 2000 Credit Union System is available as an on-line processing service, in-house software product, or systems operation professional service. Because GALAXY 2000 is vertically integrated software, all three delivery modes use the same software.

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

The National Service Product (NSP) is CIR's integrated multibranch, multi-organizational on-line servicing system for banks and thrifts. NSP software was originally licensed from Florida Software Services of Orlando (FL) in 1984, and has been customized by CIR to meet the needs of its customers.

The Resource Manager service provides clients with access to third-party software operated in CIR data centers.

- Resource Manager is targeted to institutions with $1 billion or more in assets. It allows them the reduced expense and risk of having their data processed by CIR personnel on dedicated CIR mainframes, while having software programmed to their own particular operating needs.

- CIR has licensed Computer Associates International, Inc.'s CA-INFOPOINT Banking Series line of integrated banking application software for its Resource Manager service.

### c. Other Information Services

CIR's Facilities Management (systems operations) services are provided to approximately 14 clients. CIR provides management, operating, and maintenance personnel for financial institutions' data centers, generally under five-year contracts.

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

CIR's Comprehensive Banking System (CBS) is available to banks and thrifts as a software product for in-house use or as a turnkey system. The turnkey product is targeted to banks and thrifts with $50 million to $3 billion in assets.

CIR's GALAXY 2000 Credit Union System is a Data General-based system available as an on-line remote computing service, an in-house software product, or a systems operation (facilities management) service. Because GALAXY 2000 is a vertically integrated software product, all three delivery modes use the same software.

CIR's Citifile payroll tax filing service processes the payment and filing of corporate payroll taxes on the federal, state, and local levels. The Citifile service, introduced in 1970, was previously offered through Citibank. The service has been available through CIR since early 1990.

Consulting services are provided by CIR to financial institutions in the following areas: diagnostics, strategic planning, financial management, data processing, human resources, training center development, process engineering and rationalization, and corporate banking.

### 5. Comdisco Disaster Recovery Services, Inc., 6111 North River Road, Rosemont, IL 60018, (708) 698-3000

#### a. Company Background

Comdisco Disaster Recovery Services, Inc. (CDRS), founded in 1980, provides disaster recovery processing and associated consulting services to subscribers in the U.S., Canada, the U.K., and the Asia/Pacific region.

CDRS' fiscal 1990 revenue reached $118.0 million, a 36% increase over fiscal 1989 revenue of $86.9 million. Pretax earnings were $14.2 million, compared to $8.1 million in fiscal 1989 and $11.9 million in fiscal 1988. A five-year revenue summary follows:

- CDRS' parent, Comdisco, Inc., leases and remarkets IBM computers and other high technology equipment. Comdisco had revenue of over $1.9 billion and net income of $95 million for fiscal 1990.

CDRS management attributes the company's revenue growth primarily to the growth in its customer base—partially through acquisition—and services offered.

Alliances/agreements announced by CDRS include the following:

- In October 1990, CDRS and MCI Communications Corporation announced the formation of a strategic marketing alliance that will permit customers to obtain a combination of MCI's data communications services and CDRS' recovery services.

- In July 1990, CDRS and Computer Engineering Systems of Singapore (CES) signed a definitive agreement for inclusion of the CES Singapore Computer Recovery Center into CDRS' global recovery network. Under the agreement, CDRS and CES become partners in the Singapore market. CES will represent CDRS' consulting services and ComPAS software, and both organizations will share technology and expertise and will ensure uniformity of their hot-site offerings.

- Also in July 1990, CDRS and Nomura Research Institute (NRI) signed a memorandum of understanding whereby NRI will represent CDRS' consulting services, methodology, and ComPAS software in Japan. The companies will explore the hot-site and continuous availability services market in Japan, and plan to develop a network of centers in Japan.

One hundred percent of CDRS' fiscal 1990 revenue was derived from disaster recovery subscriptions and associated contingency planning services.

**b. Processing Services**

CDRS' disaster recovery services are designed to help minimize the impact of a disaster that has caused significant interruption in the operations of, or inaccessibility to, the customer's data processing facility. CDRS data centers, networks, and technical staff provide alternative processing and telecommunications capability during any outage.

- During fiscal 1990, CDRS successfully handled 34 customer disasters associated with the Northern California earthquake, Hurricane Hugo, and the New York City power failure.

CDRS currently operates two types of centers in support of its disaster recovery services:

- Computer Recovery Facilities house the major hardware system components necessary to support client processing in the event of a disaster, including CPUs and disks.

- Business Recovery Facilities support people-oriented activities and house the peripherals and telecommunications capabilities necessary to interface with CDRS' Computer Recovery Facilities.

Contracts generally range from two to five years, with a majority of the clients having five-year contracts. Pricing is based on the customer's hardware and configuration requirements. Monthly subscription fees range from $500 to $50,000 and average about $6,000.

As of September 30, 1990, CDRS had approximately 2,400 subscribers. The company currently has more than 2,500 subscribers worldwide.

Recovery services/products provided by CDRS include the following:

- CDRS NET, announced in November 1989, provides for the integration of strategically located facilities through a dedicated CDRS high-speed telecommunications network. The network will allow subscribers to transparently access any of CDRS' computer recovery facilities in the event of a disaster. CDRS is working with MCI on the network, which is scheduled to be fully implemented by July 1991.

- CDRS' continuous availability service is an enhanced backup recovery capability targeted to customers that record and process their transactions on-line. Transactions recorded at a customer's data center are simultaneously recorded at a CDRS site, eliminating the need to physically transport backup tapes.

- CDRS offers a network of fixed and mobile satellite earth stations that can bypass telephone control office switching equipment in the event of a telephone company disaster.

- CDRS' COMROC mobile computer recovery center is an alternative shell solution for the convenience of the customer. Instead of occupying a shell at a CDRS site, CDRS will build a computer recovery center at the customer's site in a parking lot, in a field, or on any available real estate, within a week of a disaster.

- ComPAS is a disaster recovery software product that uses artificial intelligence and expert system technology to assist customers in developing, testing, and maintaining a full recovery capability tied to their specific industry and business environment.

**6. Control Data Business Management Services,** 8100 34th Avenue South, Bloomington, MN 55420, (612) 853-8100

### a. Company Background

Control Data's Business Management Services Division provides processing services and software products for payroll, tax filing, human resources management, and accounting applications to well over 30,000 organizations of all sizes nationwide.

- The division also provides medical, dental, and vision claims administration services for large companies that self-fund their benefit plans, and supplies an employee assistance program for a broad customer base.

- Business Management Services currently operates as a division of Control Data Corporation (CDC).

Business Management Services' 1989 revenue reached $170.5 million, a 21% increase over 1988 of $141.4 million.

CDC management attributes Business Management Services' revenue increases during the past three years to an expanded customer base and expanded and enhanced product offerings in its payroll processing, payroll tax filing, and benefit claims processing operations. Revenues in 1989 and, to a lesser degree, in 1988, also benefited from higher interest income due to increased amounts held on behalf of payroll tax filing customers and higher interest rates.

### b. Processing Services

The majority of Business Management Services' revenue is derived from business data payroll processing services. The remainder is derived from benefits claims services and employee assistance programs.

Processing services offered by Business Management Services include the following:

- Signature™ Payroll Services include the following: issuing paychecks; completing electronic funds transfers; and meeting internal, government, and third-party reporting requirements, including labor and job cost reporting.

- Signature™ Tax Filing Services include the preparation, filing, and deposit of all tax obligations, accurately and on time. Federal, state, and local tax information is captured automatically from Signature Payroll Services.

- Performance™ Accounts Receivable Services help speed collections, improve cash flow, and curtail abuses of a company's credit policies. In addition, check-free payment and collection is available via the electronic funds transfer capability.

- Performance Accounts Payable Services help manage cash flow, protect credit ratings, and take advantage of prompt payment discounts. This service can be interfaced with the General Ledger System.

- The Performance General Ledger and Financial Reporting System allows the analysis of historical trends, budget comparisons, and projections. The system also provides a complete audit trail, with detailed general ledger and data base design for customized financial statement preparation.

### c. Other Information Services

Business Management Services also offers the following software products:

- Orchestrator® is a microcomputer-to-mainframe link that allows Business Management Services' processing services clients to enter payroll data via their microcomputers, then transmit the information to Business Management Services for processing.

- The Repertoire™ Human Resources Management System, introduced in 1985, is a microcomputer-based software product that integrates with Business Management Services' Signature Payroll processing service via Orchestrator to form a single data base of employee information for on-line inquiry and updating.

Business Management Services contract examples include the following:

- In early 1990, Business Management Services was awarded contracts by Zoecon Corporation and Immanuel-St. Joseph Hospital to administer their health and vision care benefit plans.

- Payroll processing customers include Coast to Coast Stores; Microsoft, Inc.; ComputerLand; Coca-Cola Bottling Company Consolidated; Colombo Yogurt; Hills Bros., Inc.; Child World; Jefferson Pilot Communications; and Reebok International.

- Employee assistance program clients include Mead Corporation, Pepsi-Cola, Philip Morris, 7-11 Stores, Tandem Computers, and the Federal Aviation Administration.

**7. First Financial Management Corporation,** 3 Corporate Square, Suite 700, Atlanta, GA 30329, (404) 321-0120

**a. Company Background**

First Financial Management Corporation (FFMC), founded in 1971, provides a range of processing services, including financial institution processing, data imaging, micrographics, medical claims servicing, and merchant credit card authorization, processing, and settlement. FFMC also operates a hybrid financial institution and a finance company. Services are currently provided to over 70,000 commercial customers and 450,000 consumers.

Since 1983, FFMC has completed 29 acquisitions, which represent annualized revenues of $670 million, and added 8,000 employees, 68,500 commercial customers, and 450,000 consumer customers.

- FFMC has increased its information services operations and customer base from 170 customers served by 12 data centers in December 1982 to over 70,000 customers served by 84 data centers in January 1990. Much of this expansion since early 1984 has been the result of the acquisition of 28 information services businesses.

- During 1989, FFMC acquired three information services firms, including The Computer Company; MicroBilt Corporation; and Data Preparation, Inc.

- In May 1989, FFMC also completed the acquisition of Georgia Federal Bank for $234.5 million. Georgia Federal, the largest thrift institution in Georgia, provides FFMC with a link to the U.S. payments system for its commercial services business, including membership in the Mastercard and VISA associations.

- FFMC management believes its company is one of the largest providers of processing services to financial institutions in the U.S.

FFMC's total 1989 revenue reached $666.7 million, a 56% increase over 1988 revenue of $427.6 million. Net income rose 65%, from $34.5 million in 1988 to over $56.8 million in 1989.

As a result of its acquisition of Georgia Federal Bank, FFMC conducts its operations in two areas—Consumer Services, which includes the operations of Georgia Federal Bank and its subsidiaries, and Commercial Services, which includes FFMC's information services activities.

Approximately 96% of information services was derived from various processing services and 4% from integrated systems provided by MicroBilt.

### b. Processing Services

*i. Data Services*

Basis provides processing services to over 1,100 customers in 42 states. Clients include banks, mortgage servicers, thrift institutions, and credit unions.

Through the Data Imaging and Micrographics Group, FFMC provides data imaging services and data base services to over 7,400 customers in 46 states through three units:

- Endata provides computer output micrographics (COM) services to more than 5,000 customers, operating from 30 locations in 16 states.

- Appalachian Computer Services (ACS) provides data base design, entry, and management; image conversion; and systems operations services for approximately 1,500 customers through 18 locations nationwide.

- The Computer Company (TCC), acquired during 1989, provides transaction processing services for Medicaid programs in eight states and Washington, D.C. and processes pharmaceutical claims for private and public third-party payers.

*ii. Merchant Services*

NaBANCO, a wholly owned subsidiary of FFMC, provides third-party credit card authorization, processing, and settlement services to approximately 50,000 customers throughout the U.S. and the Caribbean.

- Merchants served range from large, multilocation retailers to one-location specialty stores, restaurant and hotel chains, mail order companies, government/utilities, car rental agencies, and financial institutions. Clients also include fast food chains, theaters, and supermarkets.

- Annual credit card volume is expected to reach $24 billion in 1990, up from $17 billion in 1989 and $12 billion in 1988. Over 95% of the transactions settled by NaBANCO are done electronically.

- NaBANCO also offers specialized services such as cash consolidation and specialty data capture applications, property management credit card interfaces for hotel and restaurant chains, and on-line address verification for mail order merchants.

- FFMC has also developed unique, industry-specific PC software to facilitate authorization and settlement through IBM-compatible personal computer systems.

### c. Other Information Services

MicroBilt markets and supports integrated systems based on internally developed hardware and software products.

- Systems are available for credit verification, electronic forms processing (health care), message broadcast and electronic forms communications (wholesale industry), and retail merchants.

- MicroBilt manages over 40,000 systems for more than 12,000 customers nationwide.

FFMC sells and leases equipment for use in conjunction with its various processing services. Equipment marketed by FFMC includes teller terminals, electronic point-of-sale terminals, microcomputers (primarily IBM and Unisys), CRTs, printers, in-bank MICR capture devices, peripherals, and ATMs.

**8. GE Information Services,** 401 North Washington Street, Rockville, MD 20850, (301) 340-4000

### a. Company Background

GE Information Services (GEIS) currently provides transaction and utility processing; inquiry/response, electronic data interchange, and value-added network services; systems integration; and software development and network management professional services to over 10,000 clients worldwide. Its focused industries include international banking and financial services, international trade and transportation, retail/apparel/merchandising, telecommunications, automotive/heavy equipment/manufacturing, petroleum/chemical, and high technology.

- GEIS was formed in 1979 as General Electric Information Services Company (GEISCO) to consolidate General Electric Company's (GE) MARK III worldwide interactive and remote batch processing services, originally introduced in 1965 under the MARK I name as the first interactive processing service commercially available in the U.S.

INPUT estimates that GEIS's total 1989 revenue was approximately $525 million. The company had approximately 10,000 client by the end of 1989, compared to 6,000 clients in 1988 and 5,000 clients in 1987. INPUT estimates that over 85% of GEIS's 1989 revenue was derived from network and processing services, and the remaining 15% from professional services and systems integration activities.

### b. Processing Services

GEIS offers its clients three delivery systems for its processing/network services as follows:

- The MARK III® Service, serving over 8,000 clients, consists of the following major elements:

  - Foreground Service is the primary offering on the MARK III System, consisting of interactive remote processing on Honeywell computers. GEIS offers two libraries consisting of over 2,000 software products; a summary of these is found in Exhibit A.

  - Background Service augments interactive processing with remote batch capability on Honeywell computers. GEIS computers can be connected to in-house equipment for inter-processing.

- The MARK 3000™ Service is an IBM-compatible companion service to the Honeywell-based offerings. Remote batch and interactive processing on large-scale IBM computers is available. Usage is split among general business applications and engineering, simulation, and statistical analysis applications.

- The MARK 9000™ Service, announced in January 1988, is a bundled offering of IBM MVS/XA operating environment processing, storage, and IBM-compatible network services.

International Banking and Financial Services: GE Financial Information Services, a unit of GEIS formed in 1989, supports international network applications for banking and financial institutions. GEIS offers the following products/services, which are generally used as part of a distributed processing service:

### c. Other Information Services

- The GEIS Network is the company's worldwide teleprocessing network based on a proprietary packet-switching protocol. It permits multisite organizations to achieve data transmission to dispersed terminals and host computers around the world with approximately 600 access points in the U.S. and in-country direct access in 35 countries.

Electronic Data Interchange Products and Services: EDI products and services support the electronic processing and transmission between trading partners of standard formatted data for business documents in a variety of public and private formats using different protocols and access methods. GEIS' EDI services are used by clients in the trade and transportation, manufacturing, and retail industries. GEIS' EDI network currently connects more than 6,000 trading partners worldwide.

Business Communications Products and Services: GEIS offers a family of products for office communications and automation linking geographically dispersed operations via its worldwide teleprocessing network.

• In October 1989, GEIS announced the commercial availability in the U.S. of X.400 standard access to the QUIK-COMM family of products. In February 1990, GEIS announced an X.400 interconnect to Western Union's EasyLink electronic messaging service.

Value-Added Network Services: The MARK*NET Service is a value-added network service offered to clients in the U.S. and Canada through direct access, based on the GEIS network and local support services in both countries.

Managed Network Services: Managed Network Services (MNS), introduced in 1987, is a specialized teleprocessing service that provides client organizations with custom-tailored network and session management of their international information and communications systems.

On-line Consumer Information Services: GEnie™ (GE Network for Information Exchange) is an electronic consumer information service for microcomputer end users. GEnie permits access to a variety of services, including news and information, financial, travel, shopping, computer games and references, electronic mail, and real-time conferences.

• Credit*PRO™, announced in September 1989, is a fully integrated credit management system that automates and manages all the functions required for a retailer to offer credit to customers. Credit*PRO is available as a software package or on a service bureau basis.

• In June 1989, GEIS signed a joint venture agreement with STET, the telecommunications and electronics holding company of the Italian industrial conglomerate IRI.

Under the agreement, STET acquired a 40% interest in GEIS-Italy, GEIS's wholly owned subsidiary in Italy. The company will be operated as a joint venture of STET and GEIS to provide value-added network services in Italy.

**9. Litton Computer Services,** 1300 Villa Street, Mountain View, CA 94043, (415) 966-1771

**a. Company Background**

Litton Computer Services (LCS) provides processing services to commercial clients and state and local government, and professional services to the federal government. LCS also provides processing services support to its parent company, Litton Industries.

INPUT estimates approximately 70% ($70 million) of LCS' fiscal 1988 revenue was derived from noncaptive sources and the remaining 30% ($30 million) was derived from processing services provided to other divisions and/or subsidiaries of Litton.

**b. Processing Services**

LCS provides processing services to over 600 clients from data centers in Reston (VA), Lexington (MA), and Woodland Hills (CA).

• LCS offers dedicated machine environments, and general financial, data base, and utility processing services as well as access to the following applications:

  - Medical Eligibility Database
  - Litton Common Information System (LCIS)
  - Accounts Payable System
  - Customer Information System
  - Distribution Transaction Data Base System
  - Facilities Management System
  - ICS Budget Entry System
  - Financial & Consolidation System
  - Fixed Asset Control System
  - Hazardous Material Reference System
  - Ledger System

• LCS' processing customers come from a range of industries.

**c. Other Information Services**

LCS provides professional services to the federal government in the areas of space systems, logistics systems, and engineering services.

• Areas of expertise include systems engineering, analysis, and integration; systems modeling and simulation; command and control; feasibility studies; management information systems; and the development of real-time systems.

• LCS is the prime contractor for the U.S. Air Force Reliability and Maintainability Information System (REMIS).

• Under an $85 million contract with the Royal Saudi Air Force (RSAF), LCS developed an integrated logistics management system for fielded weapon systems.

• For over two decades LCS has provided continuing support to U.S. military and space programs in the areas of systems design, development, and software engineering.

- LCS continues to provide behavior research and development of training methodologies for the U.S. Army.

**10. Shared Medical Systems Corporation,** 51 Valley Stream Parkway, Malvern, PA 19355, (215) 296-6300

### a. Company Background

Shared Medical Systems Corporation (SMS) was formed in 1969 to provide information services to the hospital industry. In June 1976, SMS became a publicly held corporation.

SMS is currently the nation's leading provider of information services to the health care industry.

- The company's products and services are provided to hospitals, clinics, and physician groups for financial, administrative, and clinical management applications.

- SMS currently provides remote computing, network, and distributed processing services; application software products; turnkey systems; and various professional services, including proprietary network design, custom programming, systems installation, education, and facilities management.

Revenue for 1988 was $378.7 million, a 3% decrease from 1987 revenue of $390.7 million. Net income declined 35%, from $45.3 million in 1987 to $29.4 million in 1988. INPUT estimates approximately 70% of SMS' 1988 revenue was derived from remote processing, 25% from software and hardware leases from in-house/distributed processing and turnkey systems, and the remaining 5% from professional services.

### b. Processing Services

SMS' products and services are provided to hospitals, clinics, and physician groups. The company's primary market is acute-care hospitals, generally with 100 or more beds, and physician groups. SMS currently serves more than 1,200 hospitals and physician group practices.

SMS provides remote computing, distributed processing, and in-house systems to its hospital clients.

- The Information Systems Center processes data for more than 800 hospital and physician group clients using IBM 3090 computers. There are currently more than 30,000 terminals attached to the network that connect clients with the Information Systems Center.

- INDEPENDENCE ™, an IBM-based financial and clinical manage-ment system targeted to large hospitals, is available as a remote com-puting service and as an in-house system for IBM 43XX and 30XX computers.

- ALLEGRA® is an integrated DEC VAX-based health care information system targeted primarily to community hospitals with 100 to 400 beds. The system supports clinical, financial, administrative, and decision support applications. There are currently 50 ALLEGRA clients.

- EXACT® is a distributed system with clinical applications processed on in-hospital DEC or IBM computers, and financial applications pro-cessed remotely at the SMS Information Systems Center.

- SMS' current DEC VAX-based Laboratory System, marketed and supported by the Laboratory Products Division, includes Anatomic Pathology and Blood Bank applications, and a MicroVAX-based on-line instrument interface capability. The system can serve any single hospital or multi-entity environment and can be delivered as part of an integrated hospital system or on a standalone basis.

c. **Other Information Services**

SMS provides over 100 applications to its hospital, clinic, and physician group clients for financial, administrative, and clinical management. A summary of applications provided by SMS is shown in the exhibit.

New/enhanced applications introduced during 1988 include the follow-ing:

- The Decision Support Division released SMS' Decision Support System (DSS), a family of integrated DEC-based software applica-tions, data bases, and consulting services for health care executives and managers.

- A new version of SMS' Nursing application automates and integrates care plan and patient classification activities.

- The latest version of SMS' Radiology Management System, when integrated with a SMS hospital information system, supports patient scheduling, registration, tracking, results reporting, film tracking, and equipment maintenance scheduling. The system uses bar code technol-ogy to access films and reports. An electronic voice synthesizer facili-tates remote inquiry into the results reporting system. Imaging capa-bilities are under development.

- SMS' Laboratory System now provides applications dedicated to chemistry, microbiology, anatomic pathology, and blood bank activities. SMS is pursuing a new segment of the clinical marketplace—multi-entity labs. During 1988, SMS' new Laboratory System was installed at a central lab that serves five affiliated hospitals.

- A new version of the SMS Pharmacy System provides inpatient and outpatient support of hospital pharmacy functions, including full medication and IV support of outpatients, expanded inventory control capabilities, and an enhanced clinical inquiry capability.

SMS services over 400 medical practices representing over 10,000 physicians nationwide. The company provides the following products and services to physician groups:

- SIGNATURE® consists of interrelated physician applications and subsystems designed to provide financial, clinical, and administrative information processing support for medical groups of all sizes.

- The Physicians Office System (POS) is an in-house microcomputer-based office management system targeted to small physician practices of up to five physicians.

**11. SunGard Data Systems Inc.,** 1285 Drummers Lane, Wayne, PA 19087, (215) 341-8700

**a. Company Background**

SunGard Data Systems Inc. provides disaster recovery services, primarily to users of IBM, Tandem, DEC and compatible mainframes. The company also provides remote processing services and disaster recovery consulting; and develops, markets, and supports proprietary application software systems for the financial services industry, including shareholder accounting, employee benefit reporting, portfolio management and accounting, trust accounting, and futures and options accounting.

SunGard's strategy of entering new markets and expansion through acquisition remained evident into 1989.

- SunGard has recently announced a proposed merger with Dyatron Corp. of Birmingham (AL), a financial software firm that has projected 1989 revenue of $50 million.

- SunGard completed the acquisition of Money Management Systems, Inc. late in the second quarter of 1989. Money Management Systems, Inc. provides MONEY MARKET II™, a fixed-income securities trading and accounting system for banks and broker/dealers.

• In February 1989, SunGard issued approximately 250,000 shares of its common stock in a pooling-of-interests with Disaster Control, Inc., a Pennsylvania-based provider of disaster recovery services to users of Unisys Corporation's Burroughs mainframe computers.

Early in 1989 SunGard entered into an agreement with STM Systems Corporation, a major Canadian computer services firm, to provide alternate site disaster recovery services in Canada.

**b. Processing Services**

Descriptions of SunGard's products and services separated by operating group are as follows:

Disaster Recovery and Related Services:

• SunGard Recovery Services

  - The company currently has approximately 800 contracts serving over 300 customers located in 35 states and Canada.

  - The average contract for SunGard generates $80,000 annually and increases at a rate of approximately 10% per year to accommodate client growth. Contracts are generally long-term (one to five years). Eighty-five percent of the contracts are renewed.

  - In the event of a disaster, SunGard charges the customer a "notification fee" of between $25,000 and $50,000 to configure a system similar or identical to that of the customer and begin use of the data processing center; the customer is also charged for computer usage. The customer has available use of a "hot site" with a processor configuration similar or identical to his own. Should the customer require an extended stay (over six weeks), a "cold site" is available where computers may easily be installed and used by the customer.

  - Customers may access SunGard's processors for testing their backup procedures and for actual processing in the event of a disaster via System Network Access Points (SNAP), telecommunications centers strategically placed throughout the U.S.

• Harris Devlin Associates, Inc. - Harris Devlin provides disaster recovery consulting and updating services.

• SunGard Computer Service - This operating group is responsible for leasing excess computer time at SunGard's data centers to software developers, and for providing list enhancement services.

- EDP Security, Inc - EDP Security, Inc. offers the DP/80 software product which guides users through risk analysis and aids them in developing a custom disaster recovery plan. Implementation and training is included with the package, and consulting is available to aid customers who have unique problems.

- Disaster Control, Inc - Disaster Control, Inc. claims to be the largest supplier of disaster recovery services for Unisys Corporation's Burroughs mainframe computers.

### c. Other Information Services

Investment Management Systems:

- SunGard Shareholder Systems Inc. - Formerly Applied Financial Systems, SunGard Shareholder Systems offers two main products for shareholder accounting. Both products are available for in-house installation, or may be accessed through SunGard's remote data centers.

- SunGard Investment Systems Inc - The Employee Benefit Reporting System (EMBERS®) is a family of individual systems that shares a common data base and file-building technique. When licensed as a software package, the EMBERS family sells for approximately $150,000. There are currently 20 installations. Components of EM-BERS are:

- Devon Systems International, Inc - EMS Base Module is the system core of the Exposure Management System. It incorporates processing capabilities for exchange-traded options and futures, a report writer, and a daily general ledger.

# VII

## Conclusions and Recommendations

# VII

# Conclusions and Recommendations

## A

### Processing Services Overview

INPUT expects processing services revenues to grow at a compound annual rate (CAGR) of 9% from 1990 through 1995. During this time, total expenditures by all vertical and cross-industry market segments will grow from $17 billion in 1990 to $26.6 billion in 1995.

Submarket expenditures will vary depending upon delivery mode. Transaction processing services will grow at 9%, going from $14.1 billion in 1990 to $21.2 billion in 1995. Other processing services will grow at a more aggressive rate of 15%, moving from $2 billion in 1990 to $4.1 billion in 1995. Utility processing services, starting from a base of $900 million in 1990, will grow at a modest 6% to $1.2 billion in 1995.

INPUT has also categorized revenues vertically by 16 industry classifications, and horizontally by seven cross-industry groupings. Vertical markets will grow at a CAGR of 9%, from $10.9 billion in 1990 to $16.9 billion in 1995. Cross-industry expenditures will also grow at 9% annually, increasing from $6.2 billion in 1990 to $9.7 billion in 1995.

Two broad influences will drive the processing services marketplace during the reporting period—the recession, and the vendor and consumer trends anticipated over the next five years.

The recession, to date, has had very little effect on the processing services industry, which is basically stable with a comfortable and conservative growth rate of 9%. Should the recession run strongly into 1992, INPUT believes that processing services vendors can benefit from user outsourcing of applications as a result of downsizing in response to constrained or uncertain economic conditions.

Industry trends towards vendor consolidations will tend to reinforce the experience of the last few years that the big get bigger and that entry to this market is becoming more and more difficult unless the vendor has some unique capability. Users will continue to show loyalty to (or a preference for) installed vendors whose functions and performance satisfy user needs. Users will also continue to evaluate the benefits of greater emphasis on core business, with an anticipated growth in outsourcing of non-core activities as more customers conclude that, in uncertain times, they prefer to stay with what they know best.

## B
## Transaction Processing Services

### 1. Conclusions

INPUT believes that for the transaction processing services marketplace:

- Outsourcing will continue and even accelerate as users seek cost-effective hedges against the uncertainty of the economy. Outsourcing will be one effect of downsizing and increased user concentration on core businesses, and will also be a side-effect of capital conservation programs. The cross-industry market sectors will be the most likely beneficiaries of downsizing, as such services as payroll are shifted from in-house human resources departments to services vendors.

- Big vendors will get bigger, and the leading processing services vendors (listed in Exhibit IV-5), will still be on that list in 1995, with perhaps one or two new entries, most probably the result of consolidations of midsized vendors. For a vendor, the cost of entry to this market will continue to grow, and discourage all but those with unique products or unique market niches.

- Users will be looking for ever-increasing application function; worldwide telecommunications access to support ever expanding user markets; vendor stability, most often demonstrated by customer base and market presence; and the availability of a variety of delivery mode options that allow the user to grow or alter processing modes without having to change vendors.

- There will continue to be a growing variety of delivery platform options, and a proliferation of in-house shared and distributed systems. This variety will make it difficult for vendors to emphasize standard applications, but those that can adapt their offerings to new platforms will have a significant market advantage.

- Network systems are coming. They will become more visible in the 1990s and INPUT expects that they will start to displace in-house mainframes. This trend will offer the innovative transaction services vendor the opportunity to further penetrate in-house processing services. As companies turn to server- and LAN-based applications, the

mainframe will become purely a data base machine. At that point, the mainframe processing can be easily sourced externally.

- The three most important factors in vendor success in the 1990s will be software, software, and software. INPUT believes that the 1990s will be the decade in which software function will become the predominant factor for vendor selection. Users who in the past might have compromised slightly on function to obtain price advantages, will now demand full function and then consider price. The success of processing services vendors will be directly proportionate to the perceived value of their application portfolio.

- The PC-oriented consumer services market will continue to offer large opportunities, but vendors will be challenged to find applications that stimulate user interest and the resulting revenues.

- Prices will remain stable during the forecast period. They are relatively insulated from economic pressures, and those vendors that could take advantage of application offloading resulting from user downsizing do not plan any significant price increases.

EXHIBIT VII-1

## Transaction Processing Services Conclusions

- Outsourcing will continue

- Big vendors will get bigger

- Users will be looking for:

  - Application function

  - Worldwide telecommunications

  - Variety in delivery mode options

- Network systems are coming

- Software function will be the most important factor in vendor success

- Prices will remain stable

## 2. Recommendations

In order to maintain or achieve competitive advantage in the transaction processing services marketplace, INPUT's recommendations, listed in Exhibit VII-2, are the following:

• Concentrate on the development of software solutions to market needs. Applications software products will offer the major competitive edge in the 1990s, and those vendors that can identify and develop either niche or general-purpose solutions that can be easily modified to satisfy diverse user requirements will be most likely to prosper. Both the willingness and ability to customize applications will constitute a significant marketing advantage.

• Offer applications in multiple delivery environments. The ability to offer remote, turnkey, distributed and other delivery options will not only broaden the market for new sales, but also favor retention of business that might otherwise migrate in-house.

• Develop strong data base (DB2) capabilities permitting the offering of mainframe central data base services to companies that downsize their primary application systems.

• Continue to identify niche markets that offer a competitive advantage. Although user bias for established suppliers whose size and diverse product lines promise greater stability will tend to continue to favor the large, established transaction services vendors, being large in itself is not a criterion for success. Small vendors can also prosper; however, they must carefully choose niche opportunities that do not represent a large enough market potential to attract powerful competitors.

• Remain price competitive for new sales. Although INPUT feels that prices will remain stable during the reporting period, the combination of strong competition for new customers and the tendency of users to remain with their installed vendors favors a strategy of price flexibility for new sales, followed by firm pricing for renewals and upgrades.

• Offer international access and applications appropriate to the growing world marketplace. There is no mistaking the strong trend towards globalization of the business environment. Those vendors that can take advantage of this movement through the use or development of their own resources, or through strategic alliances, will enjoy a significant advantage in many vertical market sectors, including banking and finance and telecommunications.

• Maintain a strong awareness of network systems, and develop applications that will function in both today's shared processor and tomorrow's distributed processor environments. As the base of

installed, centralized large mainframes erodes into a distributed environment of regional and departmental processors linked as network systems, the vendor with applications that can effectively perform in this new arena will enjoy a significant competitive advantage.

EXHIBIT VII-2

## Transaction Processing Services Recommendations

- Concentrate on the development of software solutions to market needs

- Offer applications in multiple delivery environments

- Develop strong data base capabilities

- Continue to identify niche markets

- Remain price competitive for new sales

- Offer international access

- Be aware of network systems

## C
## Utility Processing Services

### 1. Conclusions

INPUT believes that for the utility processing services marketplace:

- The growing population of personal computers, in conjunction with the explosive growth of sophisticated general-purpose and applications-specific software, and the constant flow of architectural, technical and device enhancements, do not bode well for the vendor of general-purpose utility processing cycles. The general-purpose utility cycles market will be even further diminished by the anticipated strong user acceptance of the new 32-bit processors.

- Those vendors offering access to the small population of supercomputers, such as the Cray systems, or who have proprietary large system-based application software, should not lose cycles to the micros, since the market for such resources should remain constant during the early 1990s.

- In-house computer centers will become more transparent and more susceptible to outsourcing to computer utility vendors. As with transaction processing services, many users will question the need for large, centralized in-house computer centers, and those that shift away from that environment will place some cycles with utility vendors.

- More vendors will enter the utility processing services market as spinoffs of spare resources from established computer centers, such as those at colleges and universities, proliferate. These new competitors will enjoy the advantage of incremental pricing, since their base costs will generally be covered by primary organizational activities. Such vendors will tend to reinforce the commodity pricing nature of the utility cycle market.

### 2. Recommendations

In order to maintain or achieve competitive advantage in the utility processing services market, INPUT recommends that vendors:

- Recognize that competitive advantage in this market belongs to those vendors that offer some resource that is in extremely short supply. Such resources include large memories, fast processors, unusual peripherals, and proprietary software. The advantage also rests with the vendor that has both the willingness to provide consulting and the technical expertise to help the customer effectively accomplish his tasks. Professional services capabilities are an asset in this submode.

- Be prepared to incrementally price spare cycles not normally consumed by primary business activities. Although it is difficult to build a business on this market alone, due to its intrinsic commodity attribute of extreme price sensitivity, selling unused cycles can provide new revenue at virtually no additional resource cost.

## D
## "Other" Processing Services

### 1. Conclusions

INPUT believes that in the "other" processing services marketplace:

- The primary service offering will continue to be disaster recovery services (DRS). It will grow at an annual rate of 15% and drive the whole marketplace.

- The main differences among major DRS vendors will be the hardware environment offered, geographic site allocations (a few centralized or many decentralized sites), and the type and extent of the telecommunications resources offered.

- The DRS market will continue to be dominated by SunGard, Comdisco, and IBM. Any new vendors will come from computer manufacturers or companies offering third-party maintenance services.

- More and more business will recognize the value of disaster or contingency processing services. Driving this trend will be a conscious desire to maintain business continuity under adverse conditions, the low cost of such protection when compared to DP budgets, and the realization of executive liability for failure to adequately protect shareholder assets and business viability.

- For DRS vendors, sophisticated telecommunications access to backup site computers is mandatory, since virtually all large client companies will have telecommunications-dependent applications. Failure to offer such service will severely limit access to this market.

- "Other" services such as COM and specialized printing will continue to have niche or geographic opportunities, but growth will be very slow. CD ROM is coming, but not here yet as a significant service alternative because reader costs are still high when compared to microfilm viewers.

## 2. Recommendations

In order to maintain or achieve competitive advantage in the other processing services market, INPUT recommends that:

- Vendors of DR services seek markets with specialized hardware requirements and high-value repetitive applications. Although this appears to be true, the fact remains that most of the established vendors have first siphoned off the IBM, DEC, Honeywell, and other major manufacturer installations to the DRS environment, creating centralized or decentralized complexes to serve those large markets. Those large users not yet committed to a DRS vendor will almost certainly have major manufacturer hardware and be motivated to place business with one of the three large providers. Smaller prospects, however, may have diverse or specialized hardware, or smaller, high-value applications, and it is with these prospects that a smaller DRS vendor may have some competitive advantage, either because it offers hardware not enough in demand to interest the larger DRS firms, or because it is local to users who prefer that attribute. In DRS, as in any other market, niches are important.

- A full range of communications resources and service alternatives will be mandatory to satisfy the needs of all large DRS users. Virtually every major business is now an extensive and generally sophisticated user of data communications resources, and any DRS vendor must be prepared to offer necessary access to the contingency processing facilities.

- In the COM processing services market, vendors must maintain an awareness of the costs of CD ROMs. As technology or proliferation drives prices down, CD ROM will eventually displace all but the most dedicated COM applications.

# Appendixes

**A**

# Definition of Terms

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**A**
**Overall Definitions and Analytical Framework**

**Information Services** - 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:

- Processing of specific applications using vendor-provided systems (called **Processing Services**)

- A combination of hardware, packaged software and associated support services which will meet a specific application processing need (called **Turnkey Systems**)

- Packaged software (called **Software Products**)

- People services that support users in developing and operating their own information systems (called **Professional Services**)

- Bundled combinations of products and services where the vendor assumes responsibility for the development of a custom solution to an information system problem (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 associated with the delivery of information in electronic form—typically network-oriented services such as value-added networks, electronic mail and document interchange, on-line data bases, on-line news and data feeds, videotex, etc. (called **Network Services**)

In general, the market for information services does not involve providing equipment to users. The exception is where the equipment is bundled as 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., EDI or VAN 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.

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

**Market Sectors** or markets, are groupings or categories of the users who purchase information services. There are three types of user markets:

- *Vertical Industry* markets, such as Banking, Transportation, Utilities, etc.

- *Functional Application* markets, such as Human Resources, Accounting, etc. These are also called "Cross-Industry" markets.

- *Generic* markets, which are neither industry- nor application-specific, such as the market for systems software.

Specific market sectors used by INPUT are defined in Section D, below.

**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 which have a different parent corporation than the user. It is these expenditures which constitute the information services market.

**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 eight delivery modes defined by INPUT, five are considered primary products or services:

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

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

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

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

**Outsourcing** is defined as the contracting of information systems (IS) functions to outside vendors. Outsourcing should be viewed as the opposite of *insourcing*: anything that IS management has considered feasible to do internally (e.g., data center operations, applications development and maintenance, network management, training, etc.) is a potential candidate for outsourcing.

IS has always bought systems software, as it is infeasible for companies to develop it internally. However, all other delivery modes represent functions or products that IS management could choose to perform or develop in-house. Viewed this way, outsourcing is the result of a make-or-buy decision, and the outsourcing market covers any product or service where the vendor must compete against the client firm's own internal resources.

**B**

Industry Structure and Delivery Modes

## 1. Service Categories

The following exhibit presents the structure of the information services industry. Several of the delivery modes can be grouped into higher-level **Service Categories**, based on the kind of problem the user needs to solve. These categories are:

- **Business Application Solutions (BAS)** - prepackaged or standard solutions to common business applications. These applications can be either industry-specific (e.g., mortgage loan processing for a bank), cross-industry (e.g., payroll processing), or generic (e.g., utility timesharing). In general, BAS services involve minimal customization by the vendor, and allow the user to handle a specific business application without having to develop or acquire a custom system or system resources. The following delivery modes are included under BAS:

  - *Processing Services*
  - *Applications Software Products*
  - *Turnkey Systems*

- **Systems Management Services (SMS)** - services which assist users in developing systems or operating/managing the information systems function. Two key elements of SMS are the customization of the service to each individual user and/or project, and the potential for the vendor to assume significant responsibility for management of at least a portion of the user's information systems function. The following delivery modes are included under SMS:

  - *Systems Operations*
  - *Systems Integration*

Each of the remaining three delivery modes represents a separate service category:

- *Professional Services*
- *Network Services*
- *Systems Software Products*

**Note: These service categories are a new concept introduced in the 1990 MAP Program. They are purely an aggregation of lower level delivery mode data. They do not change the underlying delivery modes or industry structure.**

# Information Services Industry Structure—1990
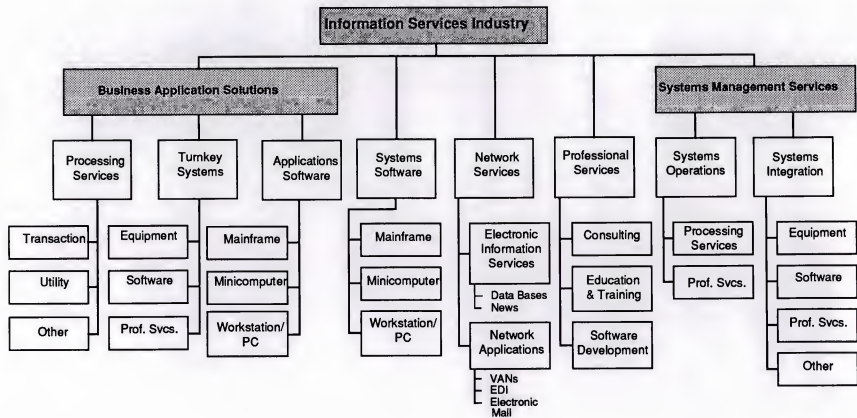


Source: INPUT

## 2. Software Products

There are many similarities between the applications and systems software delivery modes. Both involve user 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 bundled in the software pricing, is also included here.

Expenditures for work performed by organizations other than the package vendor are counted in the category of professional services. Fees for work related to education, consulting, and/or custom modification of software products are counted as professional services, provided such fees are charged separately from the price of the software product itself.

- **Systems Software Products**

  Systems software products enable the computer/communications system to perform basic machine-oriented or user interface functions. These products include:

  - *Systems Control Products* - Software programs that function during application program execution to manage computer system resources and control the execution of the application program. 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. Also included are system utilities (e.g., sorts) which are directly invoked by an applications program.

- **Applications Software Products**

  - *Industry-Specific Applications Software Products* - Software products that perform functions related to solving business or organizational needs unique to a specific vertical market and sold to that market

only. Examples include demand deposit accounting, MRPII, medical recordkeeping, 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. Applications include payroll and human resource systems, accounting systems, word processing and graphics systems, spreadsheets, etc.

### 3. Turnkey Systems

A turnkey system is an integration of equipment (CPU, peripherals, etc.), systems software, and packaged or custom application software into a single system developed to meet a specific set of user requirements. Value added by the turnkey system vendor is primarily in the software and support services provided. 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.

Hardware vendors that combine software with their own general-purpose hardware are not classified by INPUT as turnkey vendors. Their software revenues are included 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 application 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.

Turnkey systems are divided into two categories.

- *Industry-Specific Systems* - systems that serve a specific function for a given industry sector, such as automobile dealer parts inventory, medical recordkeeping, or discrete manufacturing control systems.

- *Cross-Industry Systems* - systems that provide a specific function that is applicable to a wide range of industry sectors, such as financial planning systems, payroll systems, or personnel management systems.

### 4. Processing Services

This category includes transaction processing, utility processing, and other processing services.

- *Transaction Processing:* - Client uses vendor-provided information systems—including hardware, software and/or data networks—at vendor site or customer site, to process transactions and update client data bases. Transactions may be entered in one of four modes:

  - *Interactive* - Characterized by the interaction of the user with the system for data entry, transaction processing, problem solving and report preparation: the user is on-line to the programs/files stored on the vendor's system.

  - *Remote Batch* - Where the user transmits batches of transaction data to the vendor's system, allowing the vendor to schedule job execution according to overall client priorities and resource requirements.

  - *Distributed Services* - Where users maintain portions of an application data base and enter or process some transaction data at their own site, while also being connected through communications networks to the vendor's central systems for processing other parts of the application.

  - *Carry-in Batch* - Where users physically deliver work to a processing services vendor.

- *Utility Processing*: Vendor provides basic software tools (language compilers, assemblers, DBMSs, graphics packages, mathematical models, scientific library routines, etc.), generic applications programs and or data bases, enabling clients to develop their own programs or process data on vendor's system.

- *Other Processing Services*: Vendor provides services—usually at 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.

## 5. Systems Operations

Systems operations involves the operation and management of all or a significant part of the user's information systems functions under a long-term contract. These services can be provided in either of two distinct submodes:

- *Professional Services:* The vendor provides personnel to operate client-supplied equipment. Prior to 1990, this was a submode of the Professional Services delivery mode.

- *Processing Services:* The vendor provides personnel, equipment and (optionally) facilities. Prior to 1990, this was a submode of the Processing Services delivery mode.

In the federal government market the processing services submode is called "COCO" (Contractor-Owned, Contractor-Operated), and the professional services mode is referred to as "GOCO" (Government-Owned, Contractor-Operated).

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 user's information systems (equipment, networks, systems and/or application software), either at the client's site or the vendor's site. Systems operations can also be referred to as "resource management" or "facilities management."

There are two general levels of systems operations:

- *Platform/network operations* - where the vendor operates the computer system and/or network without taking responsibility for the applications

- *Application operations* - where the vendor takes responsibility for the complete system, including equipment, associated telecommunications networks, and applications software

**Note: Systems Operations is a new delivery mode introduced 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 modes before the breakout of Systems Operations.**

## 6. Systems Integration (SI)

Systems integration is a business offering that provides a complete solution to an information system, networking or automation 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.

To be included in the information services market, systems integration projects must involve some application processing component. In addition, the majority of cost must be associated with information systems products and/or services.

The systems integrator will perform, or manage others who perform, most or all of the following functions:

• Program management, including subcontractor management
• Needs analysis
• Specification development
• Conceptual and detailed systems design and architecture
• System component selection, modification, integration and customization
• Custom software design and development
• Custom hardware design and development
• Systems implementation, including testing, conversion and post-implementation evaluation and tuning
• Life cycle support, including
  - System documentation and user training
  - Systems operations during development
  - Systems maintenance
• Financing

## 7. Professional Services

This category includes consulting, education and training, and software development.

• *Consulting:* Services include management consulting (related to information systems), information systems consulting, feasibility analysis and cost-effectiveness studies, and project management assistance. Services may be related to any aspect of information systems, including equipment, software, networks and systems operations.

• *Education and Training:* Products and services related to information systems and services for the professional and end user, including computer-aided instruction, computer-based education, and vendor instruction of user personnel in operations, design, programming, and documentation.

• *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.

## 8. Network Services

Network services typically include a wide variety of network-based functions and operations. Their common thread is that most of these functions could not be performed without network involvement. Network services is divided into two major segments: *Electronic Information Services,* which involve selling information to the user, and *Network Applications,* which involve providing some form of enhanced transport service in support of a user's information processing needs.

- *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 typically inquire into and extract information from the data bases. Although users may load extracted data into their own computer systems, the electronic information vendor provides no data processing or manipulation capability and the users cannot update the vendor's data bases.

  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.

  - *News Services* - Unstructured, primarily textual information on people, companies, events, etc.

  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.

- *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.). Mean-

while, the VAN carriers have also branched into the traditional common carriers' markets and are offering unenhanced basic network circuits as well.

INPUT's market definition covers VAN services only, but includes the VAN revenues of all types of carriers.

- *Electronic Data Interchange (EDI)* - Application-to-application exchange of standardized business documents between trade partners or facilitators. This exchange is commonly performed using VAN services. Specialized translation software is typically employed to convert data from organizations' internal file formats to EDI interchange standards; this software may be provided as part of the VAN service, or may be resident on the organization's own computers.

- *Electronic Information Exchange (EIE)* - Also known as Electronic Mail (E-Mail), EIE involves the transmission of messages across an electronic network managed by a services vendor, including facsimile transmission (FAX), voice mail, voice messaging, and access to Telex, TWX, and other messaging services. This also includes bulletin board services.

- *Other Network Services* - This segment contains videotex and pure network management services. Videotex is actually more a delivery mode than an application. Its prime focus is on the individual as a consumer or in business. These services provide interactive access to data bases and offer the inquirer the capability to send as well as receive information for such purposes as home shopping, home banking, travel reservations, and more.

Network management services included here must involve the vendor's network and network management systems as well as people. People-only services, or services that involve the management of networks as part of the broader task of managing a user's information processing functions are included in Systems Operations.

## C

**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. While the primary data for INPUT's research is vendor interviews, INPUT defines and forecasts the information services market in terms of end-user expenditures. End-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 end-user expenditure also eliminates the double counting of revenues which would occur if sales were tabulated for both producer (e.g., Lotus) and distributor (e.g., BusinessLand).

For most delivery modes, vendor revenues and user expenditures are fairly close. However, there are some significant areas of difference. Many microcomputer software products, for example, are marketed through indirect distribution channels. To capture the valued added through these indirect distribution channels, adjustment factors which incorporate industry discount ratios are used to convert estimated information services vendor revenues to end-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. And turnkey vendors incorporate purchased software into the systems which they sell to end users.

To account for such intra-industry transactions, INPUT uses other conversion ratios to derive the estimate of end-user expenditures.

The following table summarizes the net effect of the various ratios used by INPUT to convert vendor revenues to end-user expenditure (market size) figures for each delivery mode:

| Delivery Mode | Vendor Revenue Multiplier |
| --- | --- |
| Applications Software Products | 1.18 |
| Systems Software Products | 1.10 |
| Systems Operations | 1.00 |
| Systems Integration | 0.99 |
| Professional Services | 0.99 |
| Network Services | 0.99 |
| Processing Services | 0.99 |
| Turnkey Systems | 0.95 |

## D

**Sector Definitions and Delivery Mode Reporting**

**1. Industry Sector Definitions (Vertical Markets)**

INPUT has structured the information services market into 16 generic 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 generic industry sectors are detailed in the attached table.

EXHIBIT A-2

# 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 (except airline reservation services in 4512) |
| | 46xx | Pipelines, except natural gas |
| | 47xx | Transportation services (except 472x, arrangement of passenger transportation) |

EXHIBIT A-2 (Cont.)

# Industry Sector Definitions

| Industry Sector | SIC Code | Description |
|---|---|---|
| Utilities | 49xx | Electric, gas and sanitary services |
| Telecommunications | 48xx | Communications |
| Retail Distribution | 52xx<br>53xx<br>54xx<br>55xx<br>56xx<br>57xx<br><br>58xx<br>59xx | Building materials<br>General merchandise stores<br>Food stores<br>Automotive dealers, gas stations<br>Apparel and accessory stores<br>Home furniture, furnishings and accessory stores<br>Eating and drinking places<br>Miscellaneous retail |
| Wholesale Distribution | 50xx<br>51xx | Wholesale trade - durable goods<br>Wholesale trade - nondurable goods |
| Banking and Finance | 60xx<br>61xx<br>62xx<br><br>67xx | Depositary institutions<br>Nondepository institutions<br>Security and commodity brokers, dealers, exchanges and services<br>Holding and other investment offices |
| Insurance | 63xx<br>64xx | Insurance carriers<br>Insurance agents, brokers and services |
| Health Services | 80xx | Health services |
| Education | 82xx | Educational services |

EXHIBIT A-2 (Cont.)

## Industry Sector Definitions

| Industry Sector | SIC Code | Description |
|---|---|---|
| Business and Technical Services | 65xx | Real estate |
| | 73xx | Business services (except hotel reservation services in 7389) |
| | 81xx | Legal services |
| | 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 |
| Personal/Consumer Services | 4512x | Airline reservation services |
| | 472x | Arrangement of passenger transportation (travel agencies) |
| | 70xx | Hotels, rooming houses, camps, and other lodging places |
| | 72xx | Personal services |
| | 7389x | Hotel reservation services |
| | 75xx | Automotive repair, services and parking |
| | 76xx | Miscellaneous repair services |
| | 78xx | Motion pictures |
| | 79xx | Amusement and recreation services |
| | 83xx | Social services |
| | 84xx | Museums, art galleries, and botanical/zoological gardens |
| | 86xx | Membership organizations |
| | 88xx | Private households |

## 2. Cross-Industry Sector Definitions (Horizontal Markets)

In addition to these vertical industry sectors, INPUT has also identified seven cross-industry or horizontal 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. The seven cross-industry markets are:

- *Human Resource Systems*

- *Education and Training*

- *Office Systems*

- *Accounting Systems*

- *Engineering and Scientific Applications*

- *Planning and Analysis Systems*

- *Other Applications (including telemarketing, sales management and electronic publishing)*

## 3. Delivery Mode Reporting by Sector

The tables below show how market forecasts for individual delivery modes are related to specific market sectors.

### Vertical Market Sectors Only

The following delivery modes are reported by industry sector (vertical market) only:

| Delivery Mode | Applicable Submodes |
|---|---|
| • Network Services: | Network Applications |
| • Systems Operations: | All |
| • Systems Integration: | All |
| • Professional Services: | All |

This reporting structure is intended to provide expenditures by industry sector. However, it is recognized that many of the services provided are not necessarily specific or unique to any of the individual sectors.

### Vertical and Cross-Industry Market Sectors

The following delivery modes are reported by industry sector and cross-industry sector (vertical and horizontal markets):

| Delivery Mode | Applicable Submodes |
|---|---|
| • Processing Services: | Transaction Processing |
| • Software | Applications |
| • Turnkey Systems | All |

All of these delivery modes represent specific business application solutions.

### Vertical and Generic Market Sectors

The following submode is reported both by industry sector (vertical market), and the generic market:

| Delivery Mode | Applicable Submodes |
|---|---|
| • Network Services | Electronic Information Services |

While some electronic information is industry-specific (e.g., farm crop reports), much of it is relevant to or may be used by any industry (e.g., data base services such as Dialog).

### Generic Market Sector Only

The following delivery modes are so generic that they are not reported by industry or cross-industry sector (vertical or horizontal market):

| Delivery Mode | Applicable Submodes |
|---|---|
| • Processing Services: | Utility Processing<br>Other Processing |
| • Software | Systems (All) |

**B**

# Forecast Data Base

## 1. Forecast Data Base

Exhibit B-1 presents the detailed 1989-1995 forecast for the processing services market.

## 2. Forecast Reconciliation

Exhibit B-2 presents the forecast reconciliation for the processing services market. Overall, this continues to be a relatively stable market, suffering only modestly from the 1990-1991 recession with a reduction of 1% in the previously forecast 10% CAGR.

INPUT introduced systems operations as a new delivery mode in the 1990 Market Analysis Program (MAP). 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. The net effect of this change, together with a summary of the changes in the other processing services submodes, is shown in Exhibit B-2.

EXHIBIT B-1

# Processing Services
## 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 | 15,747 | 8 | 17,028 | 18,441 | 20,081 | 21,972 | 24,143 | 26,575 | 9 |
| Vertical Industry Markets | 10,082 | 8 | 10,874 | 11,764 | 12,795 | 13,972 | 15,346 | 16,873 | 9 |
| Discrete Manufacturing | 750 | 6 | 795 | 835 | 877 | 929 | 994 | 1,064 | 6 |
| Process Manufacturing | 640 | 6 | 678 | 712 | 748 | 785 | 832 | 882 | 5 |
| Transportation | 559 | 11 | 621 | 690 | 767 | 852 | 948 | 1,054 | 11 |
| Utilities | 190 | 6 | 201 | 222 | 246 | 273 | 300 | 333 | 11 |
| Telecommunications | 637 | 15 | 733 | 842 | 969 | 1,114 | 1,281 | 1,473 | 15 |
| Retail Distribution | 150 | 10 | 165 | 178 | 192 | 210 | 231 | 254 | 9 |
| Wholesale Distribution | 270 | 7 | 289 | 315 | 343 | 374 | 408 | 445 | 9 |
| Banking and Finance | 2,950 | 11 | 3,275 | 3,602 | 3,998 | 4,478 | 5,060 | 5,718 | 12 |
| Insurance | 314 | 12 | 351 | 390 | 433 | 476 | 519 | 566 | 10 |
| Medical | 476 | 5 | 500 | 530 | 562 | 590 | 619 | 644 | 5 |
| Education | 180 | 3 | 185 | 191 | 196 | 202 | 209 | 215 | 3 |
| Business Services | 757 | 4 | 787 | 811 | 835 | 860 | 878 | 895 | 3 |
| Consumer Services | 1,580 | 7 | 1,691 | 1,809 | 1,954 | 2,110 | 2,300 | 2,507 | 8 |
| Federal Government | 250 | -20 | 200 | 206 | 213 | 220 | 229 | 240 | 4 |
| State and Local Government | 228 | 12 | 255 | 286 | 320 | 359 | 402 | 450 | 12 |
| Miscellaneous Industries | 151 | -2 | 148 | 145 | 142 | 139 | 136 | 134 | -2 |
| Cross-Industry Markets | 3,016 | 7 | 3,229 | 3,424 | 3,629 | 3,857 | 4,098 | 4,363 | 6 |
| Accounting | 700 | 3 | 721 | 743 | 758 | 773 | 781 | 789 | 2 |
| Education and Training | 93 | 2 | 95 | 95 | 93 | 89 | 83 | 74 | -5 |
| Engineering and Scientific | 118 | 4 | 123 | 128 | 133 | 139 | 144 | 150 | 4 |
| Human Resources | 1,360 | 12 | 1,523 | 1,676 | 1,843 | 2,027 | 2,230 | 2,453 | 10 |
| Office Systems | 39 | -4 | 38 | 36 | 34 | 32 | 31 | 29 | -5 |
| Planning and Analysis | 216 | -5 | 205 | 190 | 173 | 154 | 136 | 118 | -10 |
| Other Cross-Industry | 490 | 7 | 525 | 556 | 595 | 642 | 694 | 749 | 7 |
| Generic Markets | 2,649 | 10 | 2,925 | 3,254 | 3,657 | 4,142 | 4,699 | 5,338 | 13 |
| Processing Services-Utility | 855 | 5 | 898 | 943 | 999 | 1,059 | 1,123 | 1,190 | 6 |
| Processing Services - Other | 1,794 | 13 | 2,027 | 2,311 | 2,658 | 3,083 | 3,576 | 4,148 | 15 |

Numbers may not add due to rounding.

EXHIBIT B-2

# 1990 MAP Data Base Reconciliation
## Processing Services 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 ($M) | (%) | 1989 Report (Fcst) ($M) | 1990 Report (Fcst) ($M) | Variance from 1989 Report ($M) | (%) | | |
| Total Processing Market | 15,995 | 15,747 | -248 | -2 | 25,867 | 24,143 | -1,724 | -7 | 10 | 9 |
| Vertical Industry Markets | 10,000 | 10,082 | 82 | 1 | 16,663 | 15,346 | -1,317 | -8 | 11 | 9 |
| Discrete Manufacturing | 750 | 750 | 0 | 0 | 1,005 | 994 | -11 | -1 | 6 | 6 |
| Process Manufacturing | 640 | 640 | 0 | 0 | 860 | 832 | -28 | -3 | 6 | 5 |
| Transportation | 1,702 | 559 | -1,143 | -67 | 3,278 | 948 | -2,330 | -71 | 14 | 11 |
| Utilities | 66 | 190 | 124 | 188 | 97 | 300 | 203 | 210 | 8 | 10 |
| Telecommunications | 609 | 637 | 28 | 5 | 1,225 | 1,281 | 56 | 5 | 15 | 15 |
| Retail Distribution | 138 | 150 | 12 | 9 | 222 | 231 | 9 | 4 | 10 | 9 |
| Wholesale Distribution | 289 | 270 | -19 | -7 | 445 | 408 | -37 | -8 | 9 | 9 |
| Banking and Finance | 2,979 | 2,950 | -29 | -1 | 5,488 | 5,060 | -428 | -8 | 13 | 11 |
| Insurance | 314 | 314 | 0 | 0 | 505 | 519 | 14 | 3 | 10 | 11 |
| Medical | 476 | 476 | 0 | 0 | 608 | 619 | 11 | 2 | 5 | 5 |
| Education | 165 | 180 | 15 | 9 | 190 | 209 | 19 | 10 | 3 | 3 |
| Business Services | 757 | 757 | 0 | 0 | 1,062 | 878 | -184 | -17 | 7 | 3 |
| Consumer Services | -- | 1,580 | 1,580 | -- | -- | 2,300 | 2,300 | -- | -- | 8 |
| Federal Government | 250 | 250 | 0 | 0 | 250 | 229 | -21 | -8 | 0 | -2 |
| State and Local Government | 228 | 228 | 0 | 0 | 402 | 402 | 0 | 0 | 12 | 12 |
| Miscellaneous Industries | 638 | 151 | -487 | -76 | 1,028 | 136 | -891 | -87 | 10 | -2 |
| Cross-Industry Markets | 3,346 | 3,016 | -330 | -10 | 4,754 | 4,098 | -656 | -14 | 7 | 6 |
| Accounting | 1,030 | 700 | -330 | -32 | 1,194 | 781 | -413 | -35 | 3 | 2 |
| Education and Training | 93 | 93 | 0 | 0 | 102 | 83 | -19 | -19 | 2 | -2 |
| Engineering and Scientific | 118 | 118 | 0 | 0 | 144 | 144 | 0 | 0 | 4 | 4 |
| Human Resources | 1,360 | 1,360 | 0 | 0 | 2,395 | 2,230 | -165 | -7 | 12 | 10 |
| Office Systems | 39 | 39 | 0 | 0 | 32 | 31 | -1 | -5 | -4 | -5 |
| Planning and Analysis | 216 | 216 | 0 | 0 | 167 | 136 | -31 | -19 | -5 | -9 |
| Other Cross-Industry | 490 | 490 | 0 | 0 | 720 | 694 | -26 | -4 | 8 | 7 |
| Generic Markets | 2,649 | 2,649 | 0 | 0 | 4,450 | 4,699 | 249 | 6 | 11 | 12 |
| Processing Services-Utility | 855 | 855 | 0 | 0 | 1,190 | 1,123 | -67 | -6 | 7 | 6 |
| Processing Services - Other | 1,794 | 1,794 | 0 | 0 | 4,148 | 3,576 | -572 | -14 | 18 | 15 |

Systems operations accounted for approximately 21% of the processing services delivery mode as defined in 1989. It was also the fastest growing component, with a projected 18% CAGR. Eliminating this submode therefore reduced the 1989 market size by 21%, and reduced the overall market growth rate from 12% to 9%.

Another major change introduced in 1990 was the definition of a new market sector and the restructuring of several old ones. INPUT's previous industry-oriented market definitions were based on the 1977 U.S. Department of Commerce Standard Industrial Classification (SIC) Code structure. Under this structure, consumer-oriented services—including travel reservation systems—were split among the services, transportation, and "other" industry sectors. In addition to some consumer-oriented services, the old "other" sector also contained several miscellaneous industries, such as agriculture and construction.

In 1987, the Commerce Department issued a major revision of the SIC Code structure. Among the areas most heavily affected were the finance and service markets. For the sake of historical consistency, most market and census statistics have continued to be reported under the old SIC Code structure, and the new 1987 classifications are just starting to be widely used in research. INPUT decided to restructure its market definitions starting with the 1990 research program. Among the key changes, the old services sector has been renamed business services, and there is now a separate consumer services sector included in the 1990 report series. The new market structure, including the SIC codes associated with each sector, is outlined in Appendix A.

One change involved in creating a separate consumer services market sector was combining all the information systems activities associated with personal travel and recreation—especially the large and overlapping reservations systems associated with airlines, hotels, and car rental firms. Therefore, from 1990 on, the processing services activities associated with airline reservation systems have been removed from the transportation sector and are covered under consumer services. This new structure rationalizes the market and groups together related businesses that confront similar market trends and issues.

The forecast adjustments resulting from these market restructurings are shown in Exhibit III-2. Although hotel reservation systems had originally been included in the 1989 definition of the services sector, no significant vendor activity had been previously identified in this area. Therefore, this market shift has no impact on the business services sector. All of the reduction in transportation represents a transfer to consumer services. In addition, $437 million has been transferred out of miscellaneous industries (the old "other" sector) into consumer. The remaining $50 million reduction in miscellaneous industries represents a decrease in the estimated size of the markets in agriculture and construction.

Aside from these restructurings, $300 million was taken out of the estimated 1989 accounting market size, due to a previous double counting of tax processing revenues in both the accounting and other sectors.

Five-year growth rates in a number of industries have been reduced slightly—in most cases as a result of the 1990 recession. Business services has been reduced from 7% to 3%, largely as a rest of the increased usage of personal computers as a replacement for outside processing. The shift from a 10% to a -2% CAGR in miscellaneous industries reflects a similar trend toward internalizing many applications, largely as a result of the increased availability of PC-based applications software products.