# U.S. INFORMATION SERVICES MARKETS, 1982 - 1987, VOLUME II

## SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES

INPUT

# About INPUT

INPUT provides planning information, analysis, and recommendations to managers and executives in the information processing industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions. Continuing services are provided to users and vendors of computers, communications, and office products and services.

The company carries out continuous and in-depth research. Working closely with clients on important issues, INPUT's staff members analyze and interpret the research data, then develop recommendations and innovati

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

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INPUT Planning Services for Management

# U.S. INFORMATION SERVICES MARKETS, 1982 - 1987

## VOLUME II

## SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES

DECEMBER 1982

# U.S. INFORMATION SERVICES MARKETS, 1982-1987

## VOLUME II

## SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES

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# U.S. INFORMATION SERVICES MARKETS, 1982-1987

## VOLUME II

## SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES

## EXHIBITS

# 1 INTRODUCTION

# I INTRODUCTION

- This report is produced as part of INPUT's Information Services Industry Program.

- The purpose of the report is to present forecasts and analyses of user expenditures for two key service modes of the information services industry - software products and professional services.

- A companion report, U.S. Information Services Markets, 1982-1987, Volume I, Processing Services and Integrated Systems, discusses the other two major service modes.

- Emphasis is placed throughout this report on profiling market trends, specifying driving forces, and identifying challenges and opportunities available to information services vendors during the next five years. Recommendations, where appropriate, are provided.

- This report focuses on the following segments:

  - Software products.

    . Systems software.

      - Applications development tools.

- Systems control.
- Data center management.

. Applications software.

- Information analysis.
- Accounting.
- Human resources.
- Word processing.
- Graphics.
- Sales, marketing, and distribution.
- Other.

- Professional services.
  - . Programming and analysis.
  - . Consulting.
  - . Education.
  - . Facilities management.

- In addition the following 14 industry categories are analyzed in terms of their expenditures for specific service modes:

- Banking and finance.
- Discrete manufacturing.
- Education.
- Federal government.
- Insurance.
- Medical.
- Process manufacturing.
- Retail.
- Services.
- State and local government.
- Transportation.
- Utilities.
- Wholesale.
- Other.

- Included with the information services industry forecast by industry sector is a presentation of census and economic data drawn largely from government sources.

- The data presented in this report are based on thousands of interviews conducted by INPUT during the past year with users of computers and information services as well as with vendors and industry experts. The information gathered has been analyzed and interpreted by INPUT's senior staff. The results are a distillation of that research and the expertise of the staff who performed it.

- The scope of this report focuses on U.S. user expenditures for noncaptive information services.

- The base year for forecasting is 1981. Forecasts are made for the years 1982 through 1987.

- Assumptions upon which the forecasts in part depend, such as inflation rates and economic growth, are presented and analyzed in the text.

  - The data were gathered from U.S. government and private sector sources and in some cases were modified by INPUT based on its best judgment.

  - These econometric forecasts may be modified by clients to fit individual assessments of future economic conditions.

- All data in the main body of the text have been rounded to the nearest $10 million. This has been done to reduce any implication of a degree of accuracy which is not present.

- The 1982 values for some bar graphs are not printed due to their small size. Their values are available in Appendix B, Data Base.

- Data in the data base are presented as originally estimated or calculated so as to be useful to the reader who wishes to perform his own analysis and tabulations.

- INPUT has further refined the means by which it produces the estimates and forecasts for the information services industry.

  - A detailed discussion of this research and analysis methodology is presented in Appendix C.

  - That appendix also contains a reconciliation of the current forecast with prior INPUT forecasts.

- INPUT welcomes any inquiries or comments from clients on the information presented as well as suggestions for changes in the structure or contents of future editions of this report.

# II EXECUTIVE SUMMARY

# II EXECUTIVE SUMMARY

## A. INFORMATION SERVICES INDUSTRY SIZE AND GROWTH

- INPUT forecasts that the information services industry will grow at a 24% average annual growth rate (AAGR) from 1982 to 1987, as shown in Exhibit II-1.

- User expenditures will increase from a 1982 base of $25.9 billion to $74.9 billion by 1987.

- Demand for information services will be fueled by factors such as:

  - Rapid increases in end user computing, which is being stimulated by the enormous popularity of personal computers and briefcase terminals.

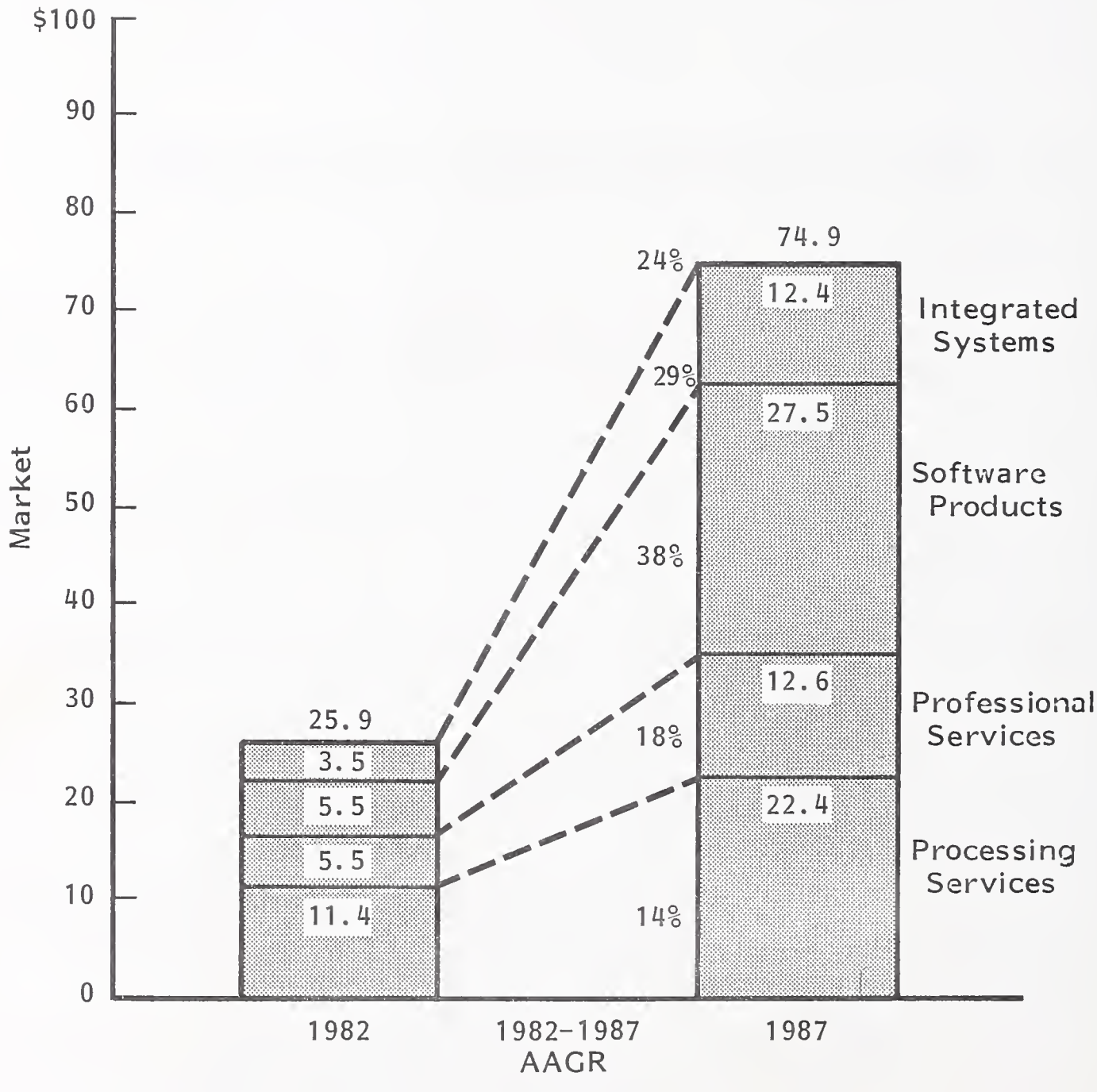
  - Obsolescence of existing software caused by changes triggered by the economy, deregulation, new technology, and competition.

  - The ability of information services vendors to successfully attract capital and professionally manage their businesses.

  - The continuing shortage of qualified technical personnel to service the constantly increasing needs of end users.

EXHIBIT II-1

INFORMATION SERVICES MARKET,
1982-1987
($ billions)



## B. SOFTWARE PRODUCTS MARKETS

- By 1987 software products will emerge as the industry's largest service mode with $27.5 billion in user expenditures. Its 38% AAGR is more than double the 14% AAGR forecast for processing services, 1982's biggest service mode.

### 1. SYSTEMS SOFTWARE

- Systems software will increase more than fourfold to $11.7 billion by 1987, a 35% AAGR, as shown in Exhibit II-2. Its share of the software product market will decline slightly from 47% to 42%.

- Applications development tools will be the fastest growing segment of systems software with a 39% AAGR. By 1987 it will comprise 61% of the systems software marketplace, as compared to a 53% share in 1982.

- The most successful applications development tools will be those that address the needs of the multitudes of end users who have minimal computer knowledge. The power of well-conceived, end-user-oriented software is most vividly illustrated by the market penetration of VisiCalc and its electronic spreadsheet competitors.

- Systems control software (e.g., operating systems, communications monitors, systems library software) comprises the second largest portion of the systems software market with $2.7 billion in user expenditures by 1987, as shown in Exhibit II-2.

- An important emerging market is end-user-oriented operating systems provided by independent software vendors. These products will enjoy significant market acceptance in the years ahead.

EXHIBIT II-2

SOFTWARE PRODUCTS FORECAST BY SEGMENT

| | ($ billions) | | AAGR (%) |
|---|---|---|---|
| | 1982 | 1987 | |
| Systems Software | | | |
| Applications Development Tools | 1.36 | 7.07 | 39% |
| Systems Control | 0.77 | 2.67 | 28 |
| Data Center Management | 0.44 | 1.93 | 34 |
| Total Systems Software | 2.57 | 11.67 | 35% |
| Applications Software | | | |
| Cross-Industry | | | |
| Information Analysis | 0.35 | 2.76 | 51 |
| Accounting | 0.66 | 2.62 | 32 |
| Human Resources | 0.29 | 1.07 | 30 |
| Word Processing | 0.18 | 0.76 | 33 |
| Graphics | 0.08 | 0.63 | 51 |
| Sales, Marketing, and Distribution | 0.09 | 0.25 | 23 |
| Other | 0.05 | 0.33 | 46 |
| Total Cross-Industry | 1.70 | 8.42 | 38% |
| Industry Specific | 1.21 | 7.44 | 44 |
| Total Applications Software | 2.91 | 15.86 | 40% |
| Total Software Products | 5.48 | 27.53 | 38% |

- Personal computer software products will account for 13% of all systems software user expenditures during the next five years. Major innovations in the power, flexibility, and degree of integration of these products will occur during this period.

- To compete effectively in the systems software market of the future, vendors must obtain major sources of financing to fund product development and marketing.

## 2. APPLICATIONS SOFTWARE

- Applications software is the fastest growing service mode within the information services industry. It will grow at a 40% AAGR from a 1982 base of $2.9 billion to a 1987 level of $15.9 billion.

- The need for applications software is being stimulated by:

  - Major increases in the number of end users with budget authority.

  - The urgency of the solution: end users can't wait for a lengthy software development cycle.

  - Vendor innovations, especially in terms of integrated products which link to related systems.

  - Market acceptance of new applications, such as word processing and graphics.

- Cross-industry applications will continue to account for more than one-half of all applications software expenditures during this five-year period.

- Information analysis is becoming the largest and fastest growing of the cross-industry applications products. By 1987 it will account for $2.8 billion in user expenditures, a 51% AAGR from 1982.

- It will become a larger market than accounting systems, currently the biggest in terms of user expenditures.

- The main driving force behind the growth of information analysis is the end-user demand for better insights via information-based decisions in order to cope with an increasingly complex world.

- Personal computer applications software will be an important part of the applications software market growing from 10% in 1982 to 13% by 1987.

3. RECOMMENDATIONS

- Vendors participating in the exploding software products market must do so with caution and foresight. INPUT recommends the following strategic actions in order to maximize business performance during the next five years:

  - Pay close attention to product obsolescence. A surprisingly large number of established vendors have been blindsided by smaller, more innovative firms who have quietly (but quickly) developed a newer, "next generation" product that has won rapid market acceptance at the expense of the leading vendor.

  - Look for opportunities for increased market specialization. The market leaders in terms of growth and profitability are consistently those who understand the limits of their resources and thus target only those segments where they can become major vendors in a reasonable period of time.

  - Integrate product lines to a higher degree. Users are demanding it, and the economics of running a software products firm dictate it.

- Provide more on-line functions. The popularity of personal computers has created a revolution in user expectations that includes on-line access to almost everything.

- Put more emphasis on marketing. The complexities of competing in today's environment require increased attention to such critical functions as market planning, innovative sales promotions (e.g., telemarketing), and upgrading of marketplace intelligence systems.

- Consider new distribution channels. Utilize other organizations to get products to special markets in a more cost effective way. Examples include subcontracting a product line to facilities management vendors bidding on large contracts, seeking joint ventures with remote processing services firms, and using national organizations who interface with targeted prospects.

- Seek ways to link personal computers with existing and future products. In five years there will be over 38 million of these ubiquitous machines available for business use.

- Make certain that key product-planning and marketing personnel have direct access to a personal computer that can process applications related to markets of importance to the firm. If a personal computer is not already available, buy one.

- Manage software maintenance as a profit-making business. It provides financial stability to the firm while simultaneously helping to keep customers satisfied.

- Upgrade mini and mainframe software product packaging (e.g., documentation, graphics, training) to the "user friendly" standards established by successful personal computer software vendors.

## C. PROFESSIONAL SERVICES MARKETS

### 1. OUTLOOK

- Professional services will grow from $5.5 million to $12.5 billion by 1987, an 18% AAGR. Although annual user expenditures will increase $7 billion during this period, its share of the information services market will drop from 21% to 17%.

- Professional services is the most concentrated of the information services industry service modes. Two-thirds of all professional services revenue is obtained by firms over $10 million in size.

- The Big 8 accounting firms are very active in this marketplace with an 8% share. Seven of the Big 8 are among the 40 largest vendors serving this market.

- Programming and analysis comprises about three-quarters of the professional services market throughout the forecast period.

  - This service has a high appeal to a select group of industries.

  - The federal government is the dominant sector accounting for 26% of all expenditures during the 1982-1987 period.

  - The next four largest industry markets are discrete manufacturing, state/local governments, process manufacturing, and banking. In total they account for one-half of the market.

- These same industries are the primary buyers of consulting and education services.

- Professional services facilities management (PSFM) is dominated by the federal government, which accounts for over 70% of user expenditures. Because of this, funding problems within the federal government are an important contributor to the market share decline of PSFM from 9% of professional services expenditures in 1982 to 6% in 1987.

- Challenges facing professional services vendors include:

  - Proliferation of technology which further fragments the market for specific sets of skills.

  - Pressure on profit margins caused by the market slowdown in conjunction with escalating labor costs.

- A number of factors, however, are contributing to a positive outlook for the future.

  - Market interest in development of large, complex systems with expanded on-line facilities that require skills not usually found in-house and encompass applications not offered by software product vendors.

  - A trend toward increased intra-industry cooperation among clients for the purpose of joint development of systems too costly to be individually funded.

## 2. RECOMMENDATIONS

- INPUT recommends that professional services vendors initiate the following actions in order to respond to marketplace opportunities:

  - Specialize in targeted applications or skills where a premium can be charged for unique value-added services.

- Negotiate contracts whereby the vendor retains ownership of the system. This provides a basis for future software products or integrated systems opportunities.

- Place increased emphasis on effective ways to sell top management. This is where the Big 8 firms are successful.

- Make certain that key systems design personnel are abreast of the latest developments for integrating personal computers with other systems. This helps enhance the firm's competitive edge.

## D. INDUSTRY MARKETS

- Only two industries - discrete manufacturing and banking - rank in the top five in both the "largest" and the "fastest growing" categories for the three service modes of systems software, applications software, and programming analysis.

- The fastest growing industries for 1982-1987 for software products are:

  - Transportation (42% AAGR).

  - Banking (42%).

  - Medical (42%).

  - Discrete manufacturing (40%).

  - Process manufacturing (40%).

- The fastest growing industries for 1982-1987 for professional services are:
  - Banking (24%).
  - Discrete manufacturing (22%).
  - Process manufacturing (22%).
  - Utilities (22%).
  - Medical (20%).
  - Insurance (19%).
- These industries are characterized by an especially high level of change due to external factors such as deregulation, technology, and/or intra-industry competition.
- INPUT urges clients to carefully examine each industry sector to determine its unique buying profile. For example:
  - The federal government is a very active buyer of systems software (number 3) but a very small purchaser of applications software (number 14). It ranks number 1 in programming and analysis expenditures.
  - The wholesale sector has the opposite characteristics. It is strong in applications software buying (number 4) but is much weaker in systems software acquisition (number 9). Its expenditures in programming and analysis rank near the bottom (number 11).

# III INFORMATION SERVICES INDUSTRY MARKET ANALYSIS

# III INFORMATION SERVICES INDUSTRY MARKET ANALYSIS

## A. FORECAST BY SERVICE MODE

- The information services industry will grow at an average annual rate of 24% during the next five years. The $25.9 billion level of user expenditures in 1982 will increase to $74.9 billion in 1987. This represents an almost threefold increase in annual expenditures within a five-year period.

- This impressive rate of growth makes information services one of the fastest growing major industries in the U.S.

- Factors contributing to this growth include price increases due to inflation. INPUT predicts the following average annual price increases for 1982-1987:

  - Software products will be 5.5% per year.

  - Professional services will be 5% per year.

  - Processing services will be 4% per year.

  - Integrated systems will be 2% per year.

- A major driving force for the growth of information services is the explosion in use of personal computers.

- Millions of first-time users will demand increasing amounts of automation to stimulate their productivity.

- Computer-trained college graduates will become organization decision makers.

- New applications will become popular as the cost of computing decreases and accessibility increases.

- Major external forces, such as the economy and deregulation, will continue to cause significant restructuring throughout most industrial sectors. Information services are needed to help accommodate this enormous change.

- Applications software will emerge by 1987 as the largest of the major service modes, as shown in Exhibit III-1. From a fourth place position in 1982 with $2.9 billion in user expenditures, it will experience a 40% AAGR to reach a $15.9 billion level by 1987.

  - The proliferation of mini and personal computers, combined with aggressive marketing by multitudes of vendors, is a major stimulant to this service mode.

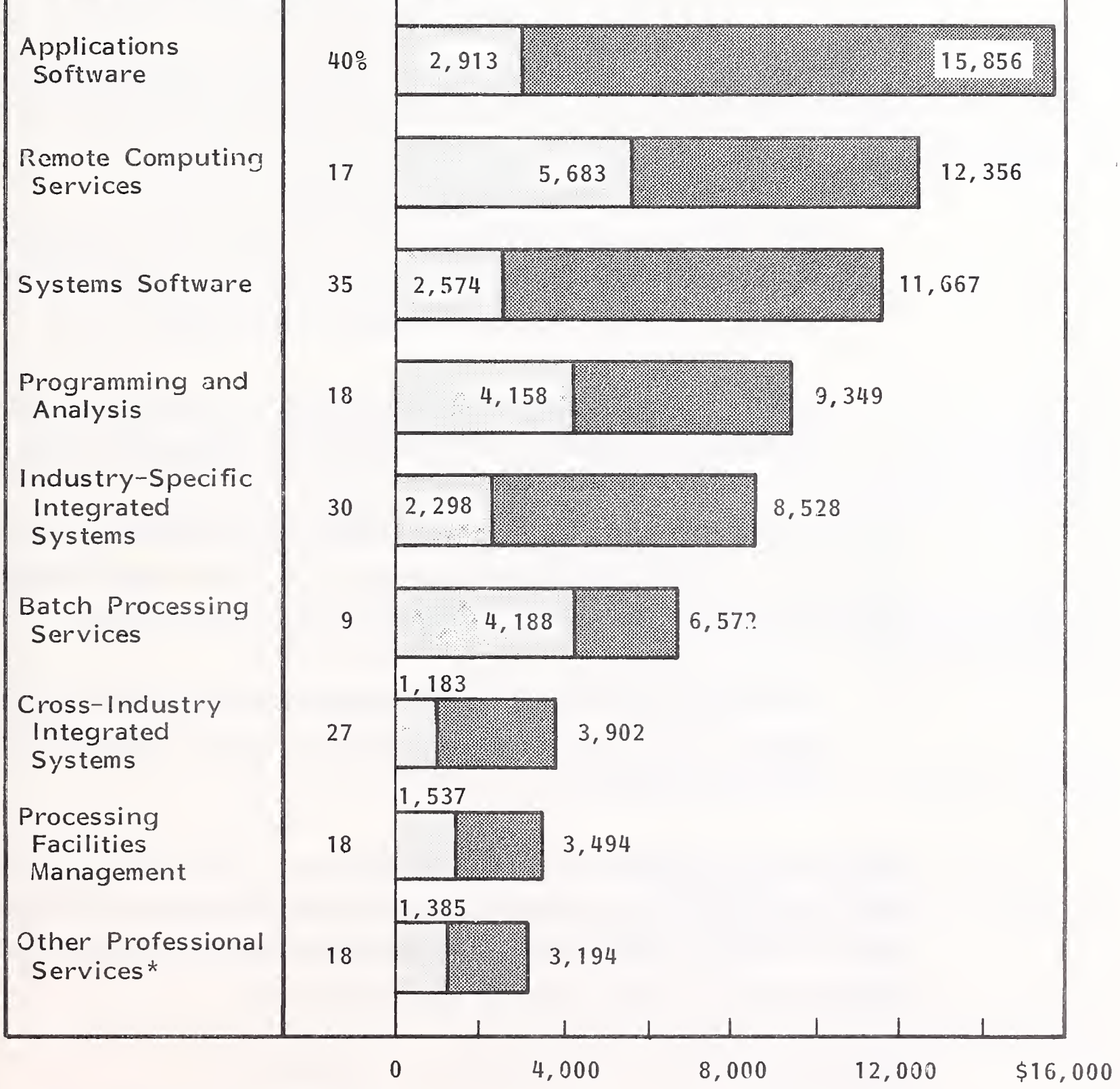
  - Almost 13% of applications software expenditures will be for personal computers by 1987. This market was practically nonexistent a few years ago.

- Remote computing services (RCS) will experience a 17% AAGR for the next five years. This slower than average growth rate will result in a drop from first to second place in size among service modes. Expenditures will increase from the current base of $5.7 billion to $12.4 billion by 1987.

EXHIBIT III-1

INFORMATION SERVICES MARKET BY SERVICE MODE,
1982-1987

| INDUSTRY SECTOR | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) |
|---|---|---|
| Applications Software | 40% | 2,913 → 15,856 |
| Remote Computing Services | 17 | 5,683 → 12,356 |
| Systems Software | 35 | 2,574 → 11,667 |
| Programming and Analysis | 18 | 4,158 → 9,349 |
| Industry-Specific Integrated Systems | 30 | 2,298 → 8,528 |
| Batch Processing Services | 9 | 4,188 → 6,572 |
| Cross-Industry Integrated Systems | 27 | 1,183 → 3,902 |
| Processing Facilities Management | 18 | 1,537 → 3,494 |
| Other Professional Services* | 18 | 1,385 → 3,194 |




| Total Expenditures | | |
|---|---|---|
| 1982 | | $25,919 million |
| 1987 | | $74,918 million |

AAGR = 24%

* Education, Consulting, and Professional Services Facilities Management

- Major opportunities will exist for RCS vendors who specialize in markets they are best equipped to pursue and who are innovative in finding applications for linking personal computers to their mainframes.

- IBM's new Information Network Services will help stimulate growth by lending both innovation and credibility to this service mode.

- Systems software will grow from fifth to third in size during the next five years. A 35% AAGR will propel this service mode to $11.7 billion by 1987 from a 1982 base of $2.6 billion.

  - Much of the growth will come from the popularity of applications development tools. By 1987 they will comprise over 60% of systems software revenue.

  - Another driving factor is top management's emphasis on tools for increasing the productivity of the information systems department.

- Programming and analysis will drop from third to fourth largest service mode as a result of an 18% AAGR during the next five years. User expenditures will increase from a 1982 base of $4.2 billion to $9.4 billion in 1987.

  - Almost 40% of this service mode's expenditures come from government agencies, which will continue to experience budget constraints during the forecast period.

- Industry-specific integrated systems will experience a 30% AAGR from 1982-1987, third highest of the service profiles. User expenditures of $2.3 billion in 1982 will increase to $8.5 billion in 1987. Industry-specific integrated systems will thus move from sixth to fifth largest service mode.

- Increasingly more powerful mini as well as personal computers will provide the basis for cost-effective, integrated systems product introductions throughout the next five years.

- Systems for CAD/CAM applications will be especially strong.

- More powerful integration of functions with other systems will also significantly increase their appeal.

- For more information about the five-year outlook for selected service modes, see INPUT's companion report, U.S. Information Services Markets, 1982-1987, Volume I, Processing Services and Integrated Systems.

## B. FORECAST BY INDUSTRY SECTOR

- Discrete manufacturing will be both the largest and the fastest growing industry sector by 1987. With an AAGR of 28% it will grow from a 1982 base of $4.2 billion to $14.5 billion by 1987, as shown in Exhibit III-2.

  - Manufacturers will approach the challenge of competition, depressed economic conditions, and inflation with increased usage of information services to enhance their competitiveness.

  - CAD/CAM systems will contribute importantly to growth in this sector.

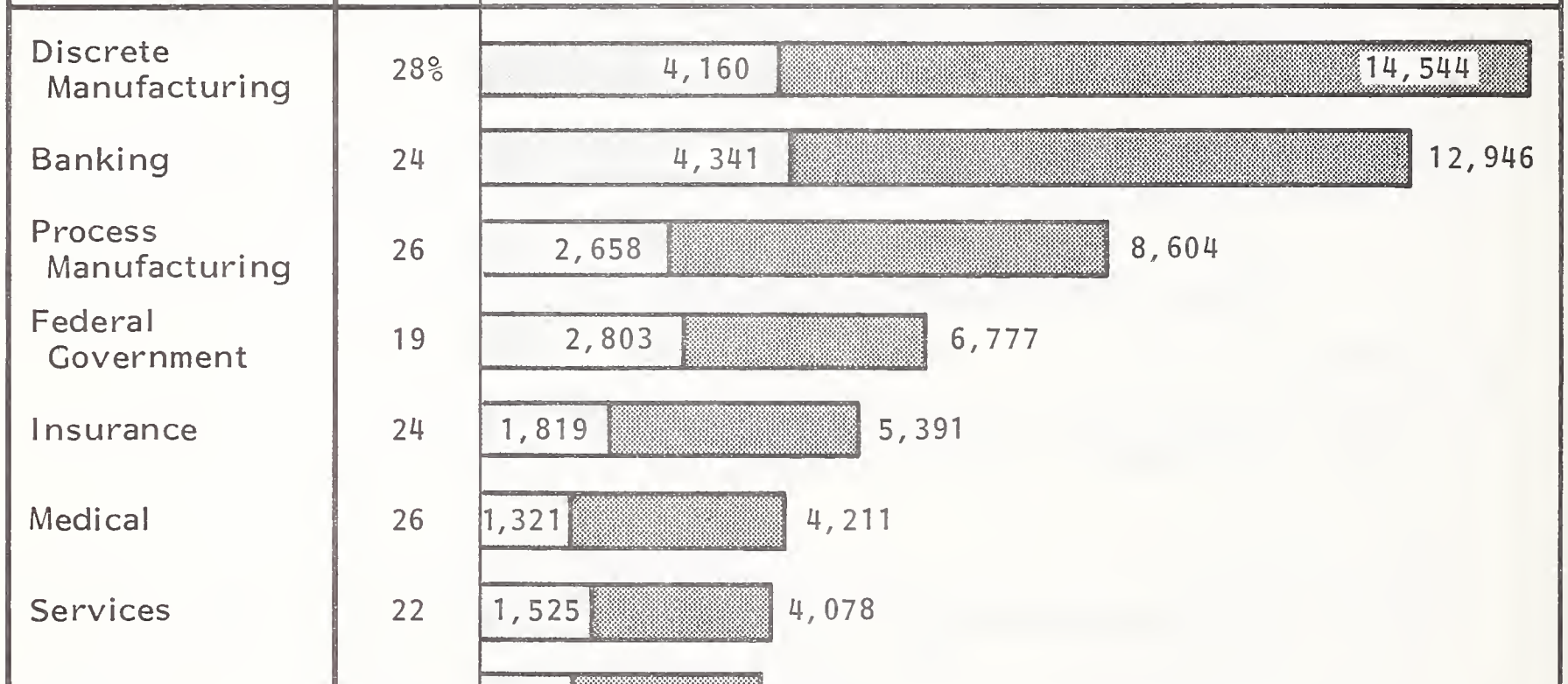
- Banking and finance will experience a 24% AAGR to reach $12.9 billion in user expenditures by 1987, from $4.3 billion in 1982.

  - Although this sector will drop from first to second place in the period, the increase in expenditures is an impressive $8.6 billion.

EXHIBIT III-2

INFORMATION SERVICES MARKET BY INDUSTRY SECTOR,
1982-1987

| INDUSTRY SECTOR | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) |
|---|---|---|
| Discrete Manufacturing | 28% | 4,160 / 14,544 |
| Banking | 24 | 4,341 / 12,946 |
| Process Manufacturing | 26 | 2,658 / 8,604 |
| Federal Government | 19 | 2,803 / 6,777 |
| Insurance | 24 | 1,819 / 5,391 |
| Medical | 26 | 1,321 / 4,211 |
| Services | 22 | 1,525 / 4,078 |
| Wholesale | 24 | 1,346 / 3,910 |
| Retail | 22 | 1,396 / 3,781 |
| State and Local Government | 14 | 1,433 / 2,738 |
| Other | 19 | 1,110 / 2,649 |
| Utilities | 20 | 928 / 2,301 |
| Transportation | 26 | 677 / 2,187 |
| Education | 15 | 404 / 803 |




| Total Expenditures | | |
|---|---|---|
| 1982 | | $25,921 million |
| 1987 | | $74,920 million |

AAGR = 24%

- Major structural changes caused by deregulation, the economy, and technology advances and increased internationalization will stimulate sales. Applications software will lead the growth with a 43% AAGR, and will account for 29% of total user expenditures by 1987.

- In addition to discrete manufacturing and banking, significant five-year growth will occur in the medical (26% AAGR), process manufacturing (26% AAGR), transportation (26% AAGR), insurance (24%), and wholesale (24%) sectors.

  - The medical, insurance, and wholesale sectors are comprised of a high proportion of small establishments. These firms will be targets for mini and personal computers, which will stimulate information services sales.

  - Transportation, although small in terms of total information services expenditures, will grow rapidly in response to major deregulation activities that stimulate competition and thus the need for information services based solutions.

# IV SOFTWARE PRODUCTS MARKETS

# IV SOFTWARE PRODUCTS MARKETS

## A. MARKET GROWTH

- User expenditures over the next five years for software products will grow at a 38% average annual growth rate from a base of $5.5 billion in 1982 to $27.5 billion by 1987, as shown in Exhibit IV-1.

- The scope of the software products market is illustrated in Exhibit IV-2.

- Software products is the fastest growing of the four major delivery modes comprising the information services industry.

- By 1987 software products will replace processing services as the industry's largest service mode. Only 12 years ago the software products market was less than one-seventh the size of processing services.

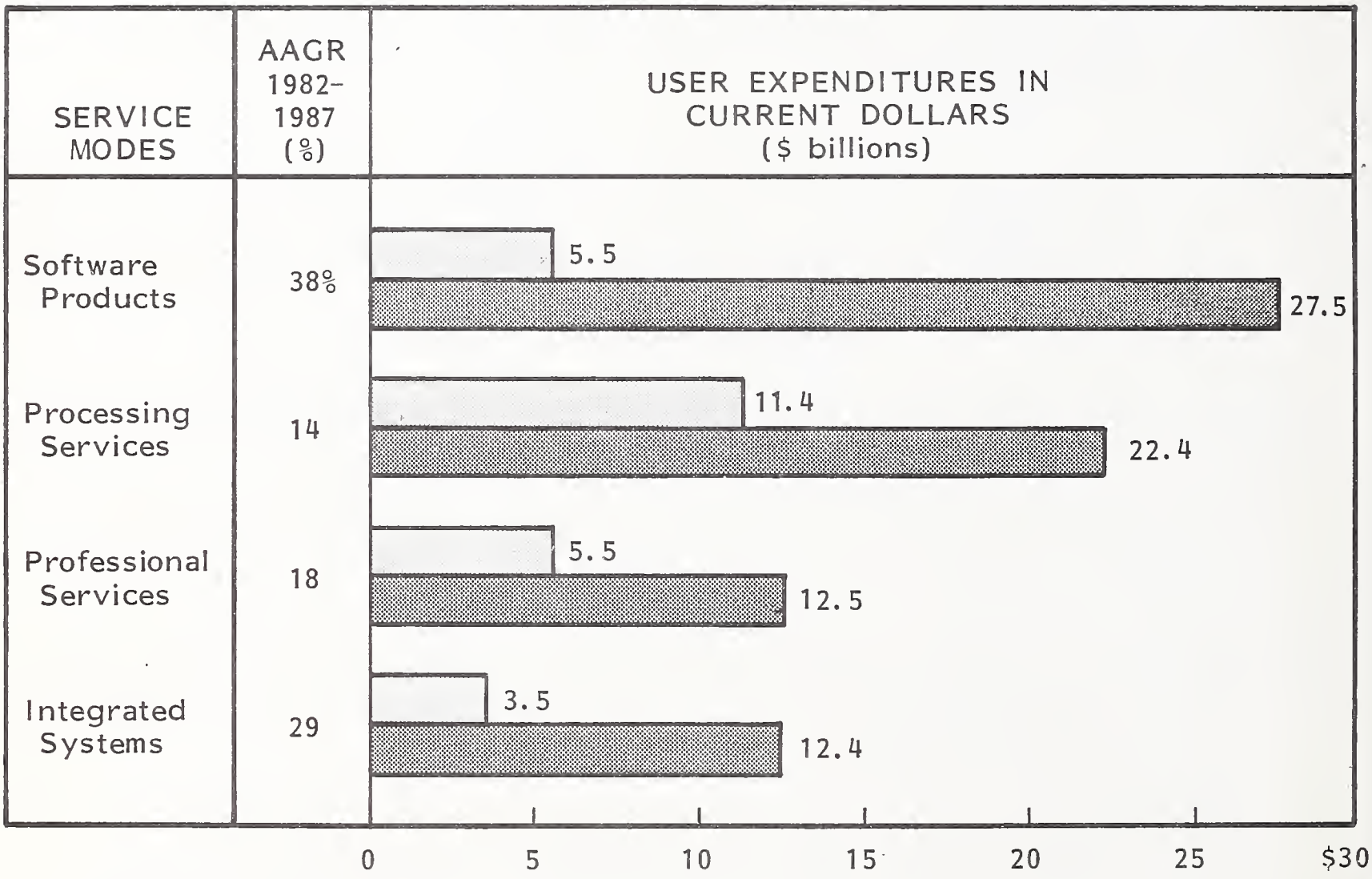
- Forces fueling the rapid growth of software products include:

  - Major structural changes in our economy, which are making obsolete existing ways that organizations are managed thus necessitating new software solutions.

  - Lessening of the "not invented here" attitude of many information systems managers. This is due to major pressure from end users for

EXHIBIT IV-1

MARKET FORECAST, 1982-1987,
SERVICE MODE COMPARISON

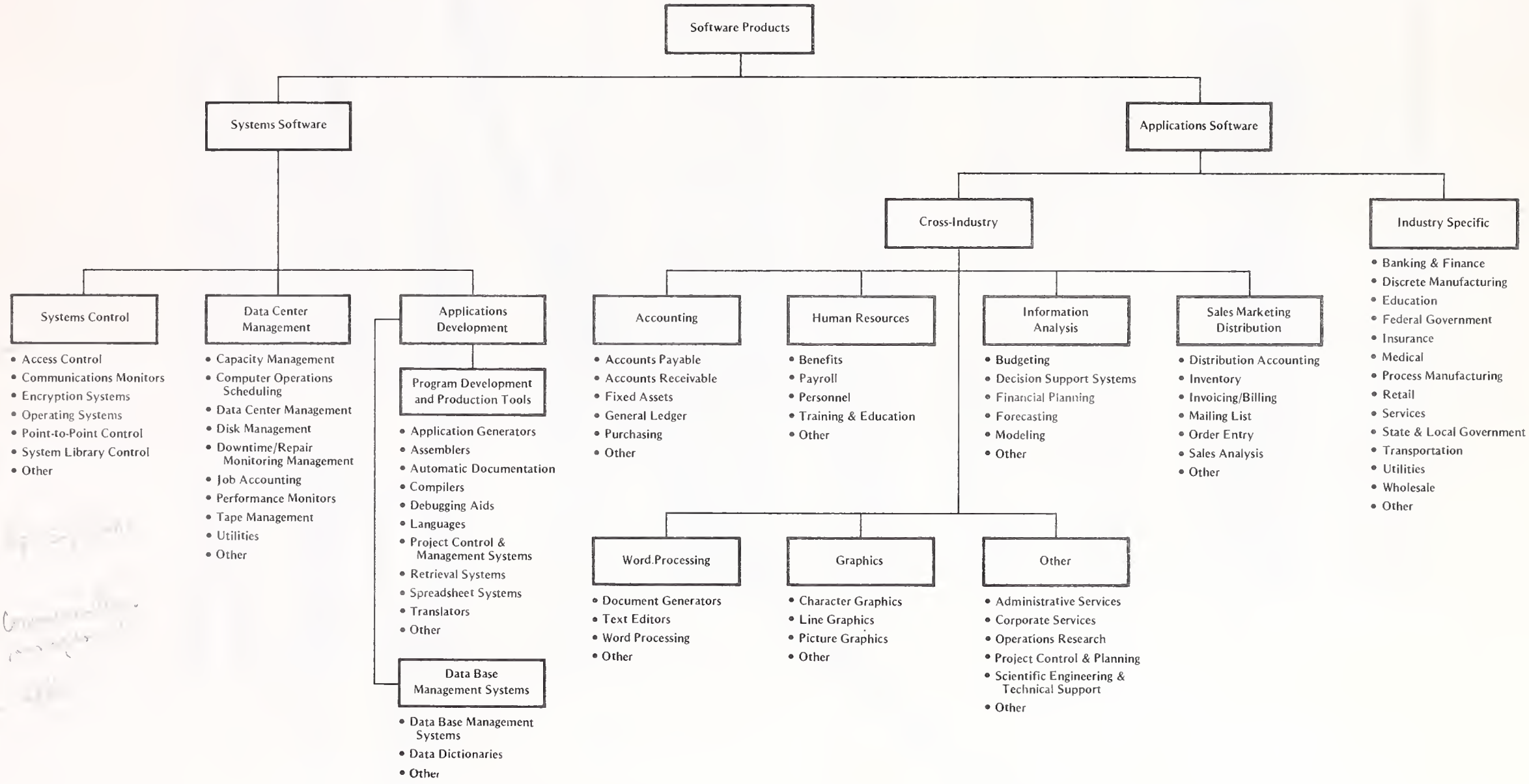



| Total Expenditures | | |
|---|---|---|
| 1982 | | $25.9 billion |
| 1987 | | $74.9 billion |

AAGR = 24%

EXHIBIT IV-2

## SOFTWARE PRODUCTS MARKET STRUCTURE



computerization combined with an abundance of success stories from software products users.

- Recognition by information systems managers that a software product, which typically offers at least a 10:1 savings in both cost and time to implement, can be the foremost applications development productivity tool.

- Relatively easy entry for new vendors.

- Increase in mainframe and minicomputer population during this five-year forecast period.

- Development of more flexible software that allows improved integration of software products with software from other sources.

- The explosion of personal computer sales. Personal computer software products will grow from $0.3 billion (6% of all software products revenue) in 1981 to $3.7 billion (13%) by 1987, as shown in Exhibit IV-3.

- As shown in Exhibit IV-4, excellent growth will occur in both the systems software and the applications software markets.

## B. SYSTEMS SOFTWARE PRODUCTS

### 1. MARKET GROWTH

- Systems software will grow from a $2.6 billion base in 1982 to an $11.7 billion business by 1987. This represents a 35% AAGR, as shown in Exhibit IV-4.

EXHIBIT IV-3

PERSONAL COMPUTER SOFTWARE VERSUS
TOTAL SOFTWARE PRODUCTS USER EXPENDITURES

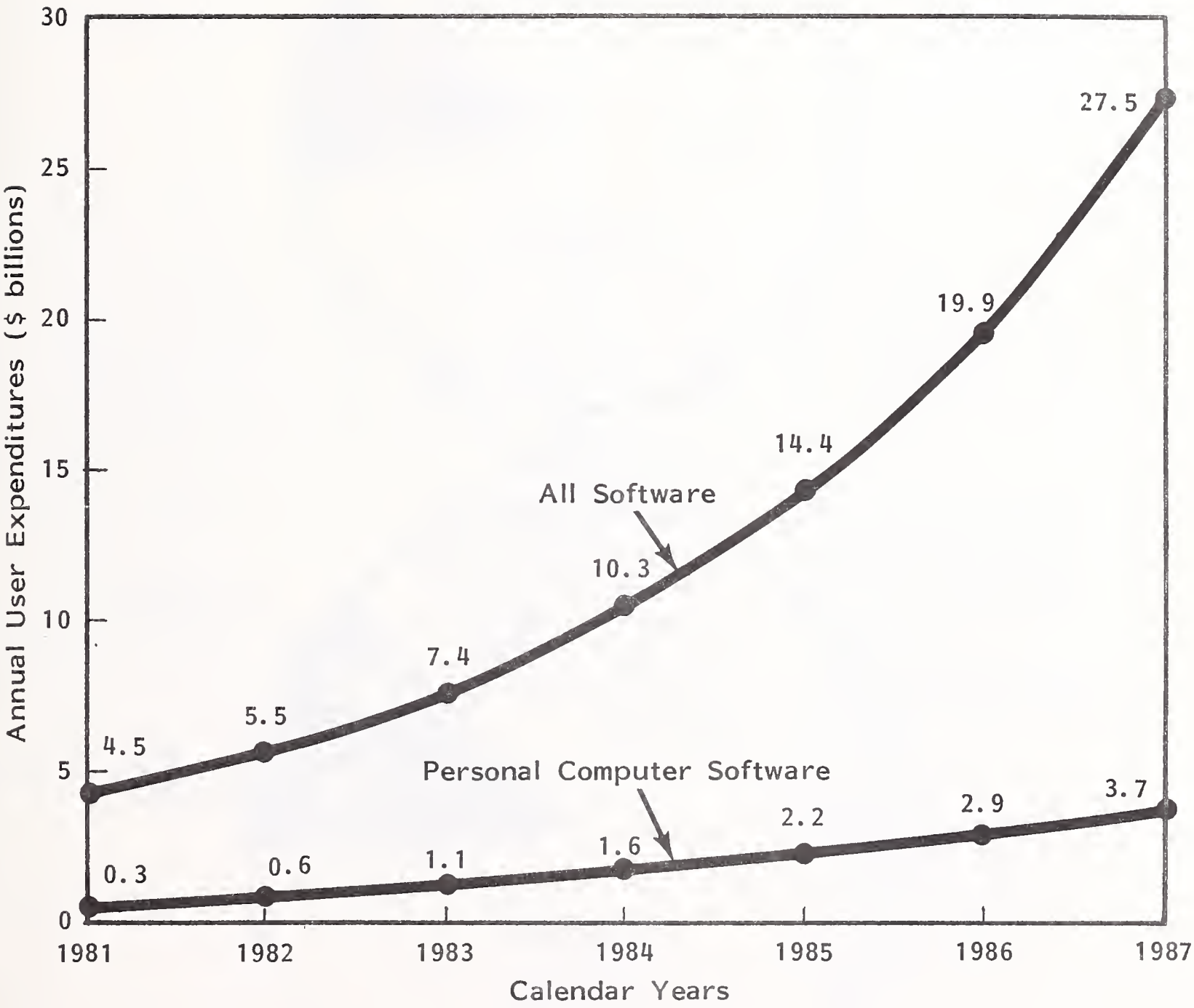
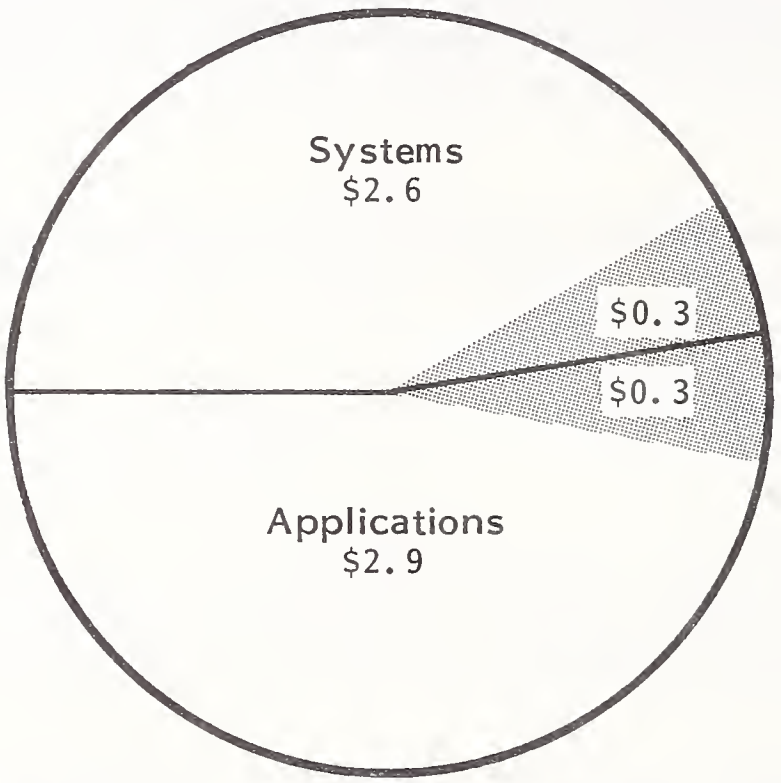
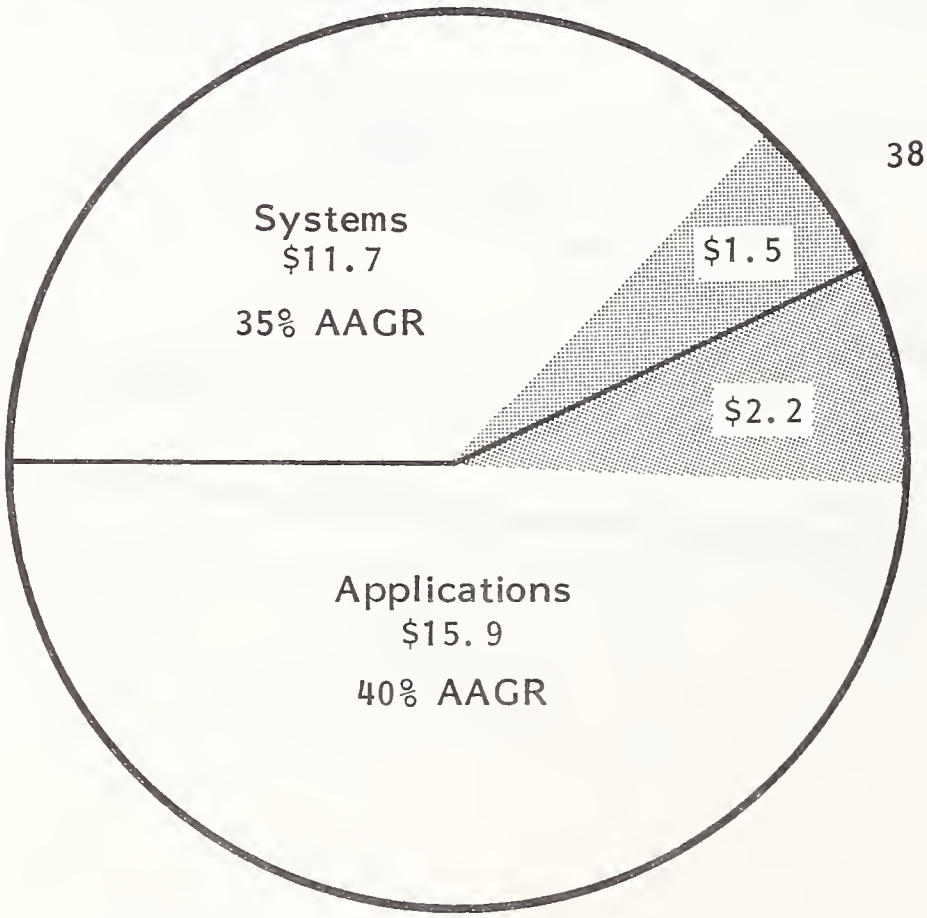


EXHIBIT IV-4

SYSTEMS VERSUS APPLICATIONS
SOFTWARE PRODUCTS GROWTH




1982
$5.5 Billion

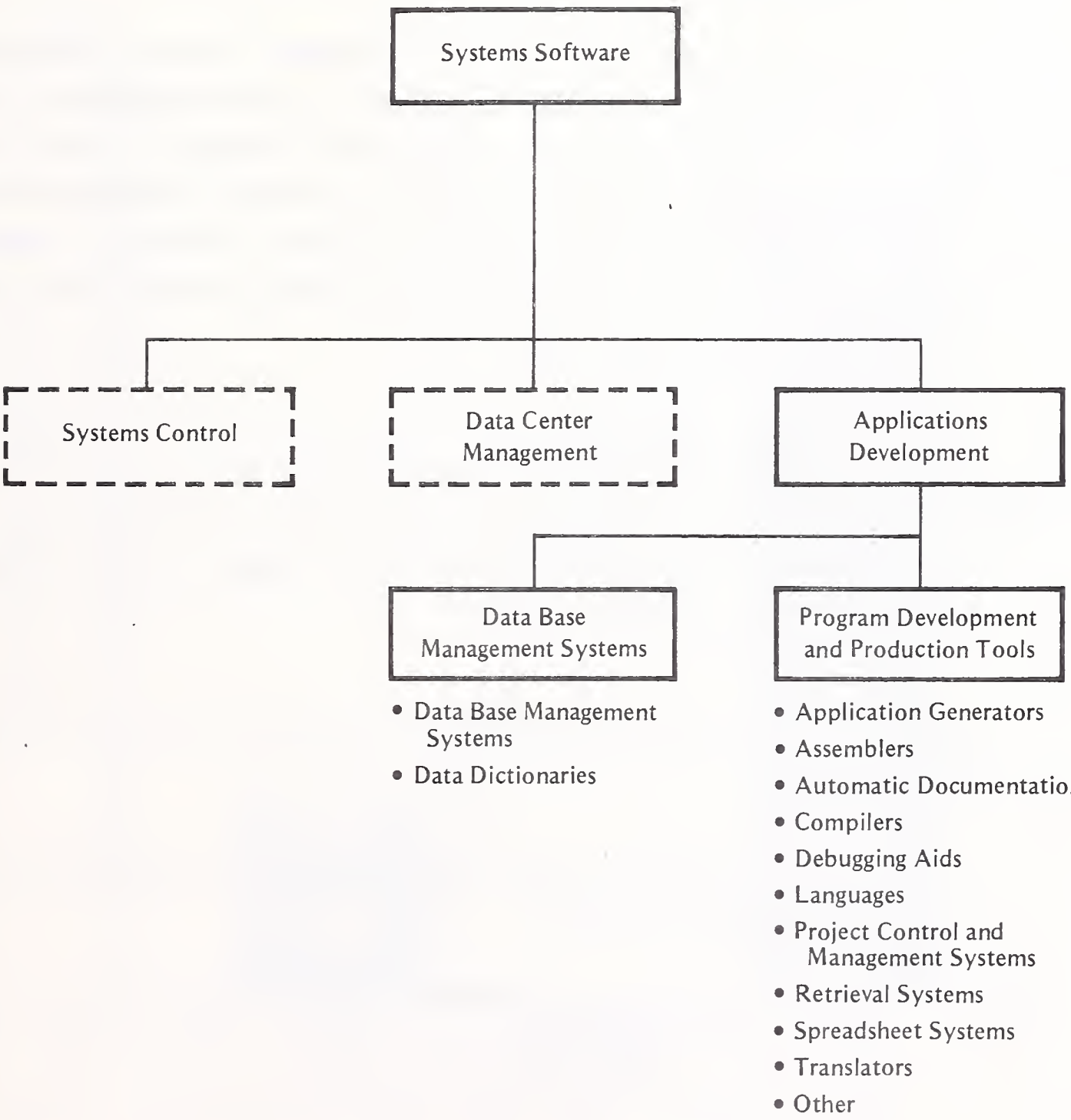



Personal Computer

1987
$27.5 Billion
38% AAGR

EXHIBIT IV-5

## APPLICATIONS DEVELOPMENT SEGMENT STRUCTURE



- The fastest growing segment of systems software is applications development tools.

## 2. APPLICATIONS DEVELOPMENT TOOLS

### a. Market Growth

- As shown in Exhibit IV-5, applications development tools are classified into two major categories: data base management systems (DBMS) and program development and production tools. This latter category includes not only languages and retrieval systems, but also spreadsheet products such as the immensely popular VisiCalc for personal computers. VisiCalc is, in reality, an applications development tool capable of performing a variety of functions of which financial analysis is but one.

- Applications development tools will surpass both systems control and data center management software in growth and size. They account for 50% of 1982 systems software sales and will expand to 61% by 1987. Revenue will grow from a 1982 base of $1.3 billion to $7.1 billion in 1987, as shown in Exhibit IV-6.

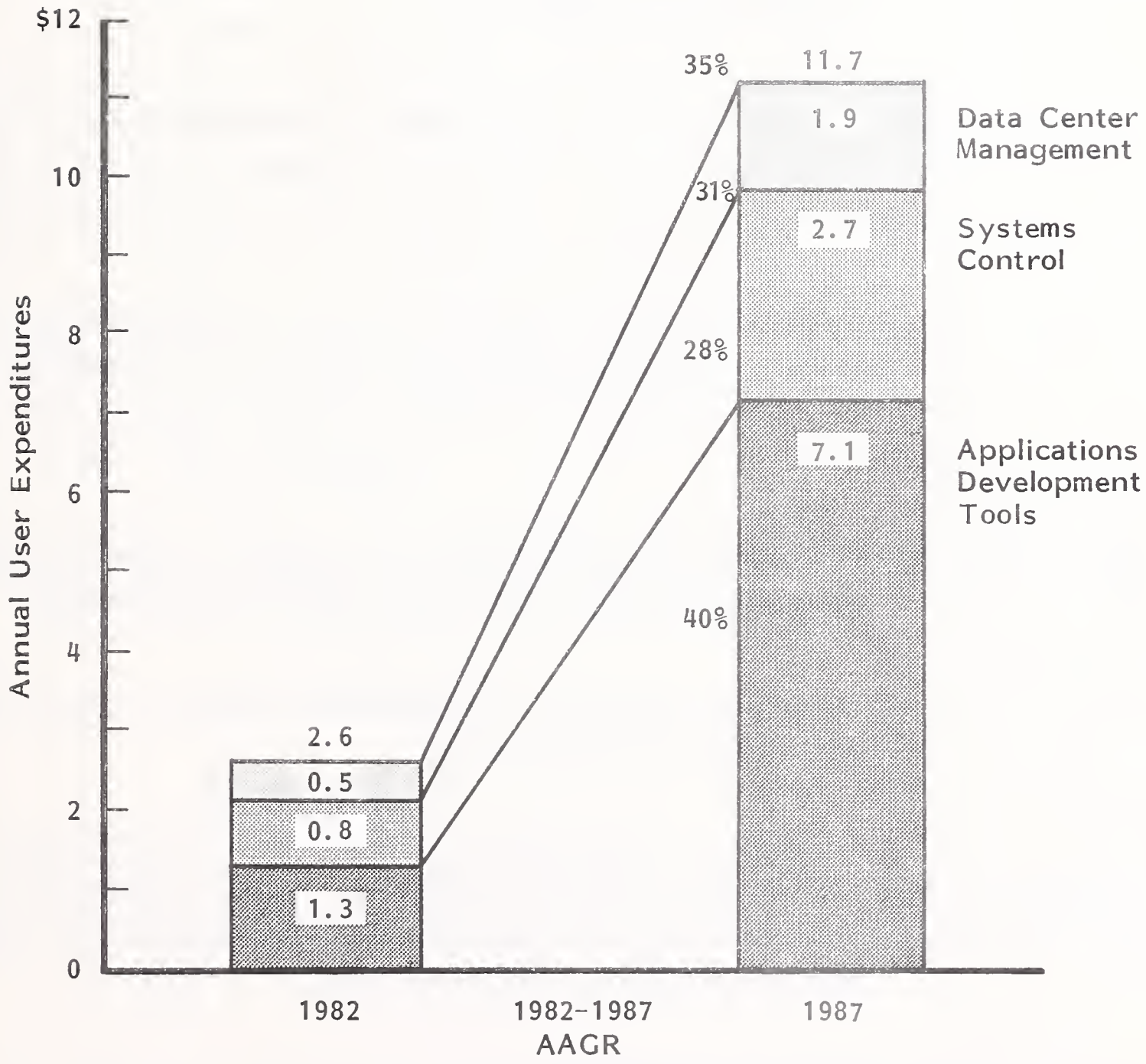
- Demand for applications development tools is being stimulated by a number of factors including:

  - Use of DBMS software as the foundation for other applications, such as decision support systems.

  - The high level of interest in the "information center" concept whereby information systems department personnel show end users how to reduce their own applications backlog by doing the "programming" themselves.

EXHIBIT IV-6

SYSTEMS SOFTWARE PRODUCTS FORECAST,
1982-1987
($ billions)



- The emergence of fourth generation languages that provide data management and retrieval functions easily implemented by end users.

- Enhanced applications development productivity made possible by higher degrees of product integration.

b. Market Issues and Trends

- Tools for end-user computing are a major area of vendor opportunity for the next five years. By 1990 INPUT forecasts that 75% of all processing will be at the end user's location. Noncomputer personnel will actively seek tools which generate applications with minimum time and specialized training.

- The phenomenal success of VisiCalc and its other spreadsheet competitors is a dramatic example of how breakthroughs in user-friendly applications development tools can create large, previously untapped markets. For example, VisiCalc has:

  - Stimulated the overall market for end-user oriented languages that address fundamental business operations with speed and ease.

  - Led to the introduction of similar types of software products aimed at the mini and mainframe market.

  - Triggered the introduction of software products that integrate related functions (e.g., the MBA system from Context Management Systems, which provides one language for spreadsheet, DBMS, word processor, graphics, and communications functions).

c. Competitive Analysis

- Applications development tools have become some of the all-time best sellers of systems software. Six of the seven systems software products that have

sold over $50 million to date are in this category. Four of the seven are data base management systems (DBMS).

- DBMS vendors have adopted a variety of strategies to enhance their market share. Most strategies involve offering new products which interface with their DBMS. Several vendors, for example, have successfully developed systems which combine data base management systems with data dictionary, report writer, inquiry, and application-specific functions.

- The largest vendors in the applications development tools market tend to have broad product lines.

  - Applied Data Research offers 18 products.

  - Cullinane Database Systems markets 14.

d. Recommendations

- Vendors wishing to actively participate in this exploding marketplace should place major emphasis on:

  - Product integration.

  - End-user appeal.

- Increase idea generation for new products for mini and mainframe computers by carefully analyzing personal computer applications development tool successes.

- Market strategies can be improved by more carefully defining the target prospect for the product. Is a programming tool or an end-user tool the desired image? It should be one or the other, not both.

## 3. SYSTEMS CONTROL SOFTWARE

### a. Market Growth

- Systems control software, whose segment structure is shown in Exhibit IV-7, is the second largest of the three systems software segments. Revenue of $800 million in 1982 will grow at a five-year AAGR of 28% to become a $2.7 billion market by 1987, as was shown in Exhibit IV-6.

- The personal computer software portion of this market will expand from a 14% share in 1982 ($115 million) to a 20% share by 1987 ($530 million).

### b. Market Issues and Trends

- Driving forces behind the $1.8 billion annual increase in this market during the next five years include:

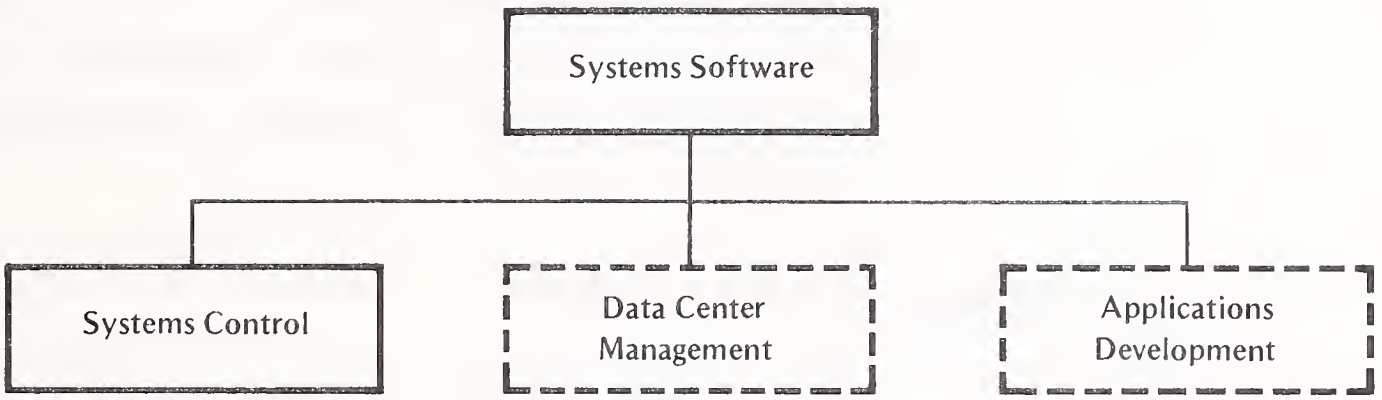
  - Expanding base of computers.
  - Increased emphasis on communicating personal computers.
  - Proliferation of portable terminals.
  - Expansion of end-user computing.

- Most systems control software was designed over 10 years ago when technicians were the sole users. This software does not meet the needs of the huge end-user computing marketplace that is emerging.

- Vulnerability to new directions by hardware manufacturers will continue to be significant. For example, some vendors active in the systems control market are estimating that IBM's new operating system will trigger required modifications in their product that are several times more expensive than previously required changes.

EXHIBIT IV-7

## SYSTEMS CONTROL SEGMENT STRUCTURE




- Access Control
- Communications Monitors
- Encryption Systems
- Operating Systems
- Point-to-Point Control
- System Library Control
- Other

c. Competitive Analysis

- Independently developed and marketed operating systems software is now a viable market, as a result of successes by Bell's UNIX, Digital Research's CP/M, Microsoft's MS-DOS, and Softech Microsystems' p-System.

- The demand for telecommunications software products will be stimulated by such new entrants as American Bell's Net/1000 service and IBM's Information Network Service. American Bell will also emerge as a significant telecommunications software competitor.

d. Recommendations

- Clarify market strategies as targeted to either end-user or computer technicians.

- Seek product line related opportunities in the mini and personal computer area.

## 4. DATA CENTER MANAGEMENT SOFTWARE

a. Market Growth

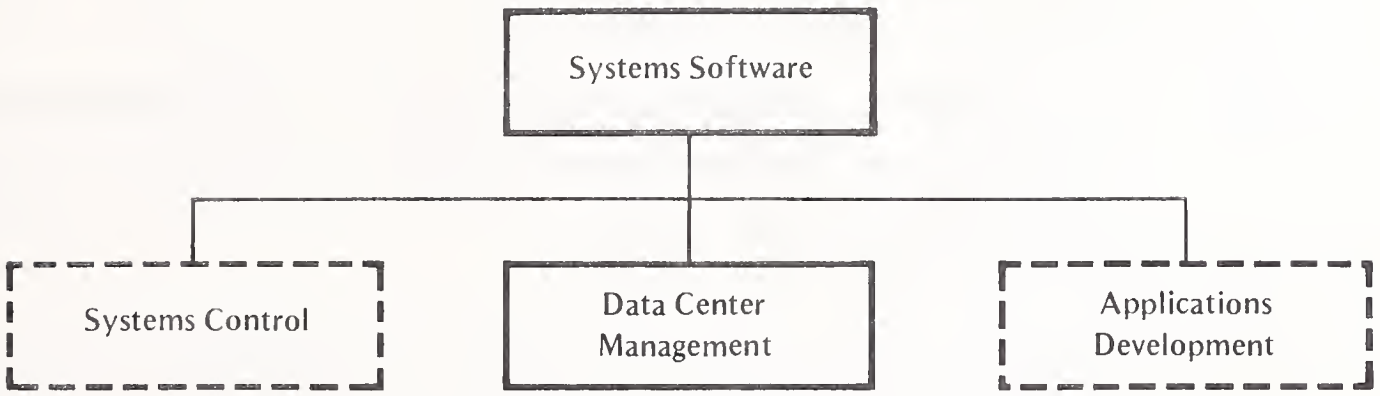
- Data center management software encompasses software listed in Exhibit IV-8.

- Although this sector is the smallest of the three systems software categories, it is a rapidly growing market (31% for 1982-1987) with revenue of $500 million in 1982 and $1.9 billion by 1987.

- In contrast to the other two categories, very little personal computer software is sold in this segment. Data center management software is 99% mainframe and minicomputer based.

EXHIBIT IV-8

## DATA CENTER MANAGEMENT SEGMENT STRUCTURE




- Capacity Management
- Computer Operations Scheduling
- Data Center Management
- Disk Management
- Downtime/Repair Monitoring Management
- Job Accounting
- Performance Monitors
- Tape Management
- Utilities
- Other

b. Market Issues and Trends

- Several forces are helping to stimulate the growth in this market during the 1982-1987 timeframe.

  - The trend in large, central sites toward increasingly more powerful and complex hardware.

  - The enhanced awareness by top management that the computer facility is essential to company operations and thus must be managed in a careful and productive manner.

  - Budget pressures on information systems management to use computer technology to increase its own productivity.

- The market for disk management systems and performance monitoring systems continues to be active and highly competitive.

c. Competitive Analysis

- Systems for monitoring hardware and software maintenance related items are becoming more active.

  - University Computing Company's Reliability Plus service for monitoring and comparing hardware downtime has hundreds of customers.

  - IBM's newly announced service for tracking and analyzing system performance characteristics is attracting much attention and thus is helping to further stimulate market interest in this new type of automated tool.

- Software Module Marketing, a $3 million per year software products vendor that focuses on the data center management marketplace, was acquired by Sterling Software, a software products management and investment company, during 1982.

d. Recommendations

- Vendors desiring greater success in this marketplace should place stronger emphasis, not on technical features, but on better understanding of the concerns, motivations, and fears of the information systems managers who buy and use these systems. Emphasis should be placed on:

  - Easier and more flexible inquiry facilities to system data bases.

  - Improved training (both installation and ongoing).

  - Incorporation of personal computers into existing large and medium systems environments.

## 5. KEY SYSTEMS SOFTWARE MARKET ISSUES AND TRENDS

- The trend toward more emphasis on end-user computing will have major long-term impacts on systems software vendors.

  - In a nutshell, today's systems software is too cumbersome for the new hardware of the 1980s.

  - IBM's mainframe architecture of the 1980s is evolving toward an end-user orientation. This focus results in significantly different needs in areas such as operating systems, telecommunications software, and data base management systems.

- INPUT believes that IBM (and other vendors to a lesser degree) will continue to expand the use of microcode in future systems. Entire operating systems will not be microcoded, but frequently used systems functions will be.

- An encouraging trend for independent systems software vendors is the increased willingness of IBM to actively seek joint marketing arrangements.

  - IBM's new processing offering, Information Network Service, actively promotes the availability of numerous highly popular systems software products from a variety of independent vendors.

  - IBM's Personal Computer offers three different non-IBM developed operating systems (MS-DOS, CP/M, and the UCSD p-system).

  - Microsoft's MultiPlan personal comuter software is now being pushed by IBM.

- Some vendors are using acquisitions to increase their competitiveness in the decade ahead. For example, Capex, a pioneer vendor of IBM OS software with 1981 revenue of $10 million, was acquired by DOS oriented systems software product vendor Computer Associates.

- Some large processing services vendors are beginning to increase their participation in the systems software marketplace. For example, Comshare has acquired Target Software, a developer of applications for personal computers.

## 6. RECOMMENDATIONS

- A major challenge facing systems software vendors, especially those that rose to prominence in the 1970s, is selection of an appropriate growth strategy that recognizes the complexities of operating in the even faster changing and highly competitive environment of the 1980s.

- INPUT believes that four keys to a successful growth strategy are:

  - A high degree of product line integration.

  - A willingness to actively pursue innovative, nontraditional marketing approaches that nonetheless continue to leverage major company strengths.

  - Devising a strategy that provides for becoming a major force in a few carefully selected segments rather than being an "also ran" in a broad spectrum of markets.

  - More emphasis on marketing than selling.

## C. APPLICATIONS SOFTWARE PRODUCTS

### 1. MARKET GROWTH

- The applications software product market is comprised of seven cross-industry segments and 14 industry-specific sectors, as shown in Exhibit IV-9.

- Applications software products grew faster than all other information services industry service modes during the 1981-1982 timeframe with a 33% increase. Revenue for 1982 will reach $2.9 billion, as shown in Exhibit IV-10.

- Applications software products will grow to a $15.9 billion market by 1987. This represents an impressive five-year AAGR of 40%.

- Personal computer applications software products will expand from 10% ($0.3 billion) of the 1982 applications software products market to 14% ($2.2 billion) by 1987, an AAGR of 48%.

EXHIBIT IV-9

## APPLICATIONS SOFTWARE PRODUCTS SEGMENT STRUCTURE

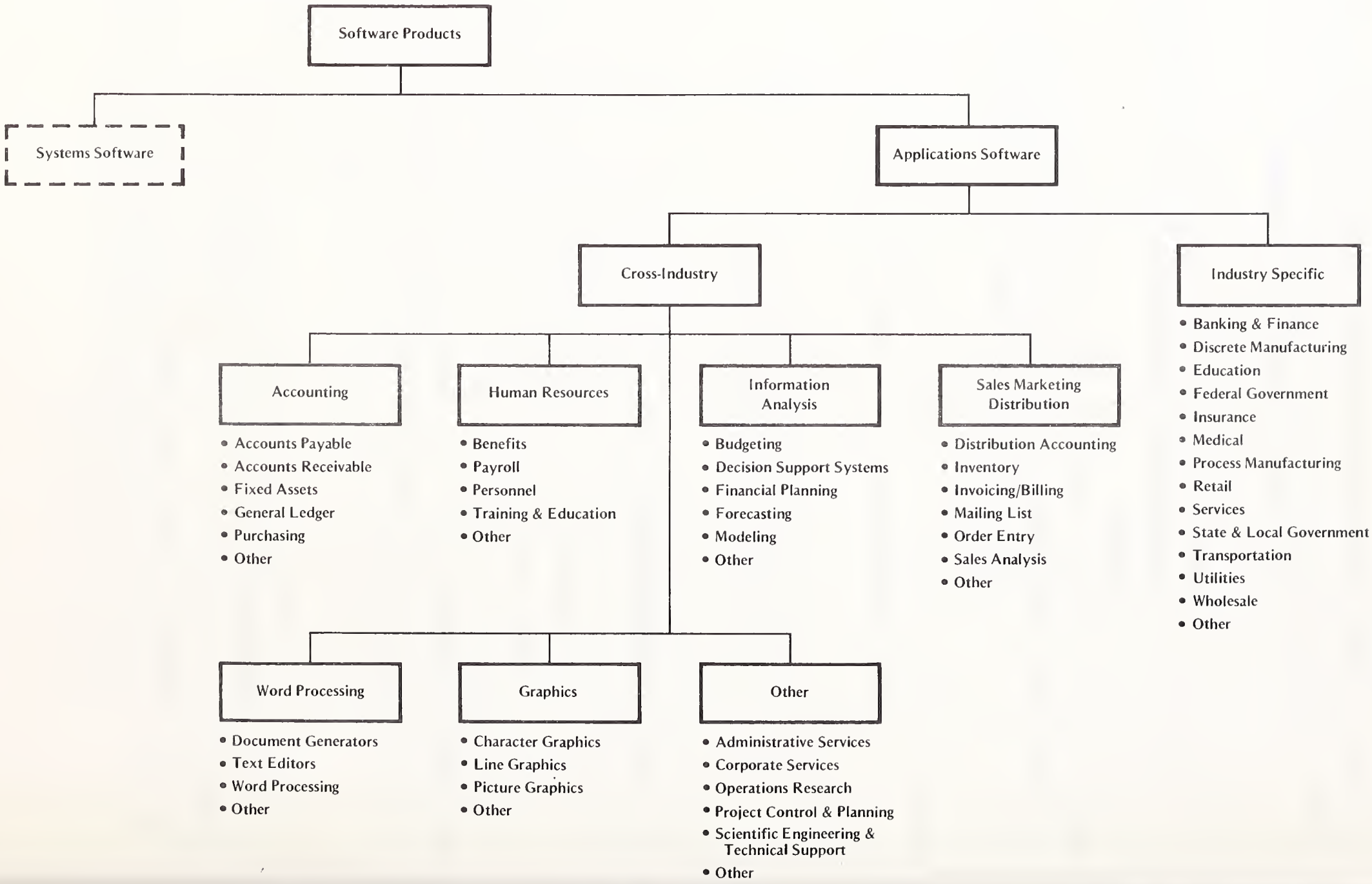
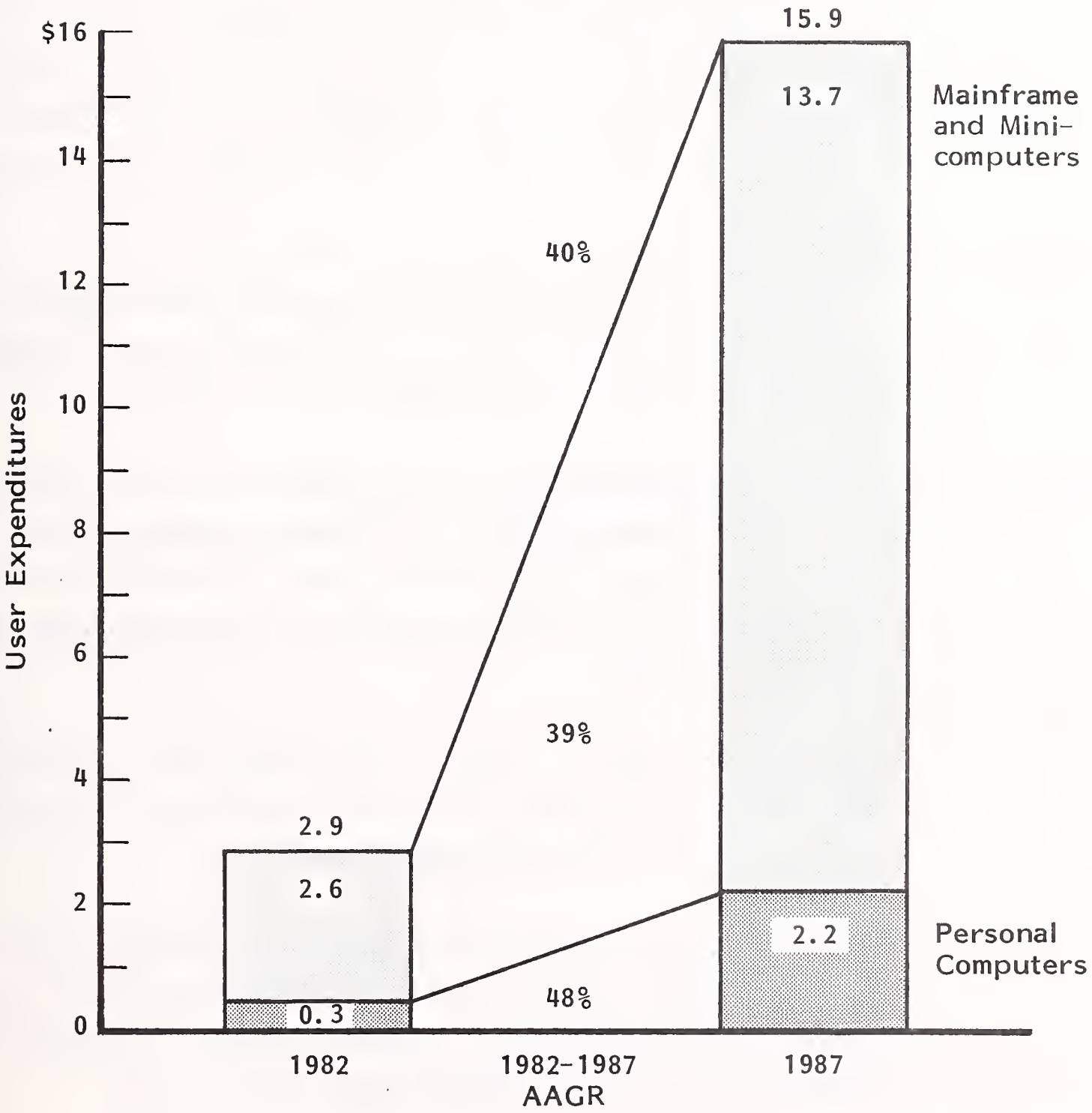


EXHIBIT IV-10

APPLICATIONS SOFTWARE PRODUCTS MARKET FORECAST,
1982-1987, BY HARDWARE CATEGORY
($ billions)



- Factors contributing to the widespread acceptance of applications software products include:

  - The economy: the demand for more computerization has been increasing in parallel with budget squeezes on in-house information systems departments. This has prompted decision makers to loosen their software specifications sufficiently to conform to functions provided by applications software products. Historically, many such applications have been developed in-house or under contract with professional services vendors.

  - The purchase of "canned" applications products, while offering a less perfect fit then custom products, can reduce the cost of bringing up the system by a factor of 10 or more.

  - Need for rapid implementation: end users are now recognizing all of the real costs associated with custom development, including time. They are unwilling to wait while the information systems department works off their two- or three-year applications development backlog to get to their project.

  - More flexible software: vendors are now beginning to interface their products with other systems, whether such systems are their own, those of other vendors, or those developed in-house.

  - Increasing end user independence: end users are making applications products decisions with less involvement from the information systems department. End users are less concerned with the "not invented here" syndrome than are many computer professionals.

  - New applications: word processing and graphics are examples of two increasingly popular applications which, until recently, were relatively insignificant in terms of volume.

- Industry-specific applications include those designed especially for certain industries (e.g., demand deposit systems for banks, materials requirements processing for manufacturing companies).

  - As shown in Exhibit IV-11, these industry-oriented products will increase at an AAGR of 43% during the next five years to reach revenues of $7.2 billion by 1987. For a more detailed discussion of many of these applications refer to the INPUT reports referenced in Appendix E.

  - The seven cross-industry segments shown in Exhibit IV-12 are discussed in the section that follows.

## 2. CROSS-INDUSTRY MARKETS

- The cross-industry applications software products market is comprised of seven segments, as shown in Exhibit IV-12.

- This market will grow from $1.7 billion in 1982 to $8.7 billion by 1987, an AAGR of 39%, as was shown in Exhibit IV-11. This sector's share of the total applications software market will decrease slightly from 59% in 1982 to 55% by 1987.

### a. Information Analysis

#### (i) Market Growth

- As shown in Exhibit IV-13, by 1987 information analysis will be a $2.8 billion business. This will make it the largest as well as one of the fastest growing (52% AAGR) of the seven cross-industry sectors.

EXHIBIT IV-11

APPLICATIONS SOFTWARE PRODUCTS MARKET FORECAST,
1982-1987
($ billions)

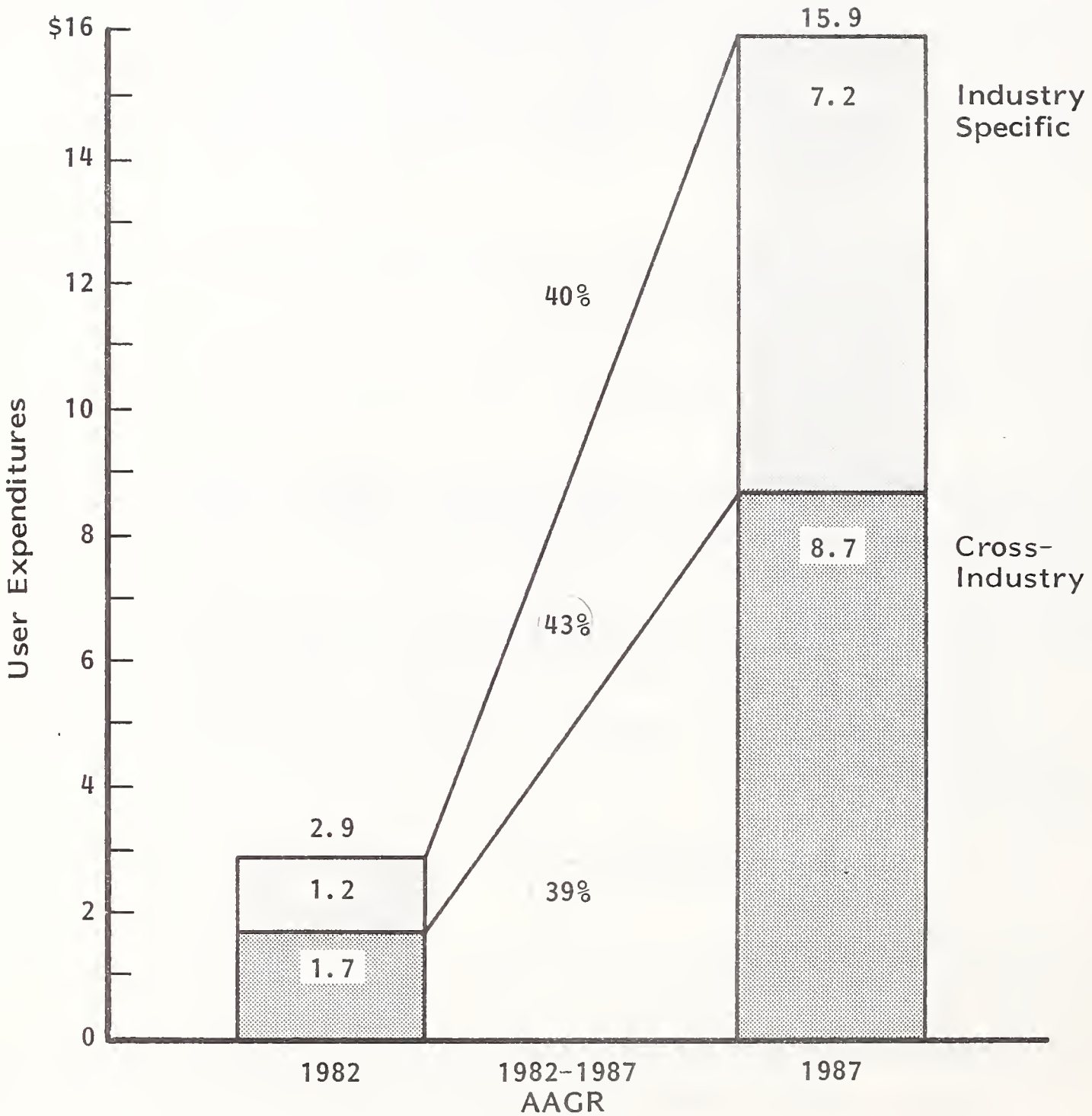


EXHIBIT IV-12

# CROSS-INDUSTRY APPLICATIONS
# SOFTWARE PRODUCTS SEGMENT STRUCTURE

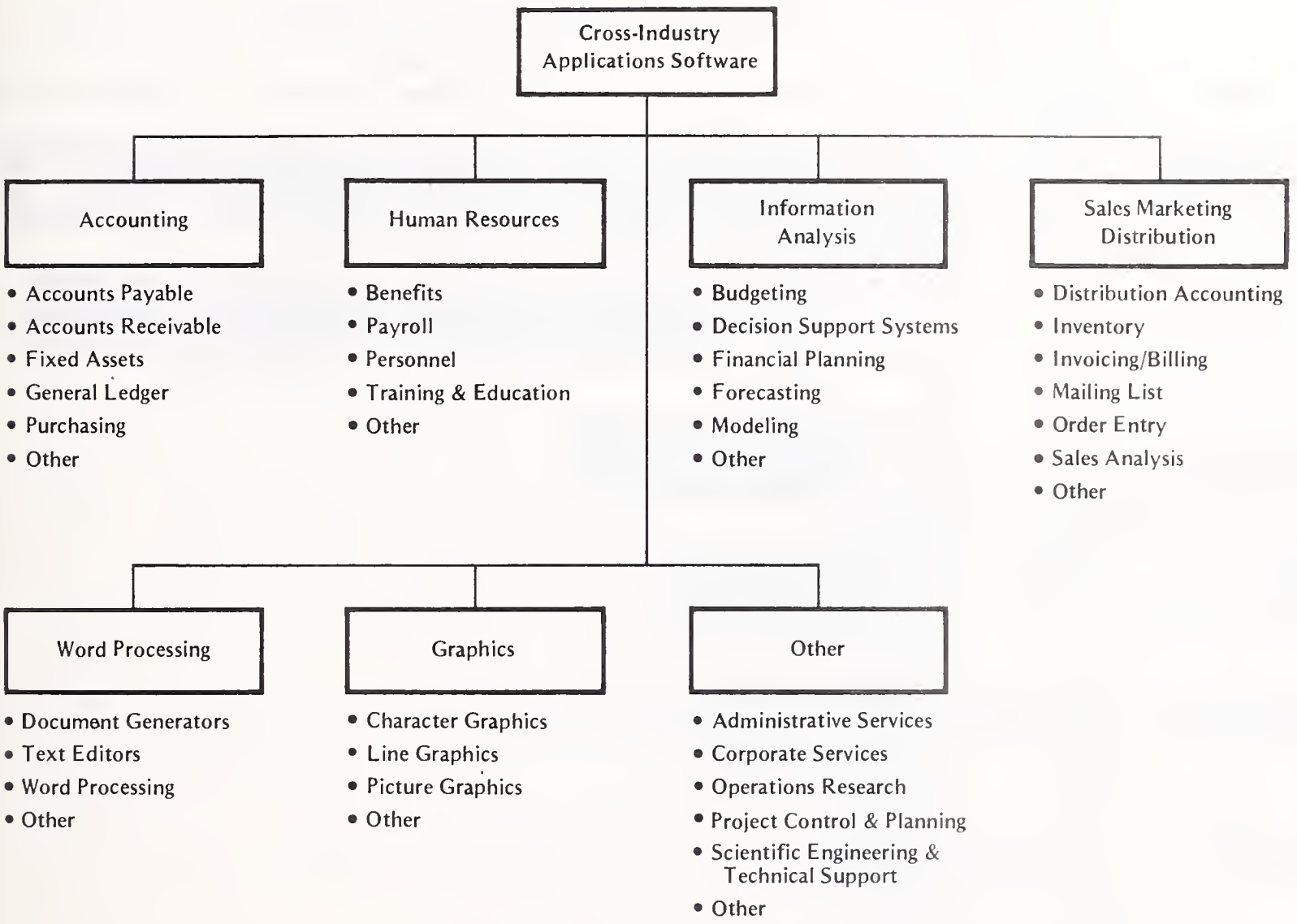
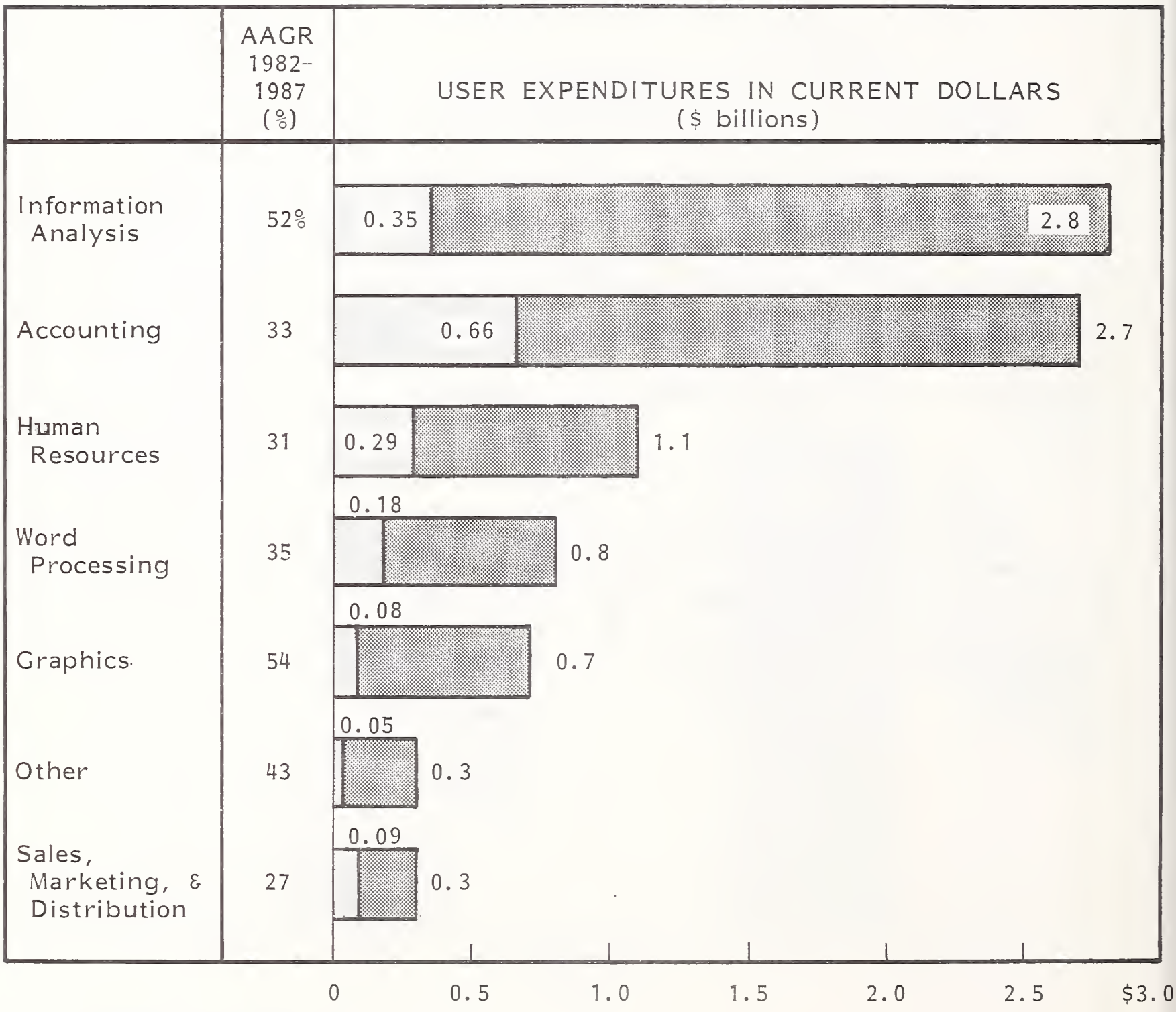


EXHIBIT IV-13

CROSS-INDUSTRY APPLICATIONS SOFTWARE PRODUCTS
MARKET FORECAST, 1982-1987




| Total Expenditures | | |
|---|---|---|
| 1982 | | 1.7 billion |
| 1987 | | 8.7 billion |

AAGR = 39%

(ii) Market Issues and Trends

- This segment is benefiting from several mutually reinforcing trends.

  - Complexities of planning in today's economy.

  - Availability of increasingly user-attractive software for financial planning and modeling applications.

  - Strong market interest in decision support systems (DSS). (DSS are especially attractive from a marketing point of view because they address application areas used by the same people who make the decision to buy, i.e., middle and upper management. Thus, often their justification becomes easier.)

(iii) Competitive Analysis

- Many vendors are actively integrating their products with related systems to enhance their competitive edge. Examples include Context Management Systems and Visicorp.

- Established mainframe vendors are developing personal computer versions of their products.

(iv) Recommendations

- Further integrate information analysis products with systems that enhance their user appeal, e.g., graphics, data base management systems, and general ledger systems.

- Develop systems for central as well as distributed processors that share a common language.

- Sharpen a product's competitive edge by focusing on specific applications.

- Enhance product acceptance by offering more professional services support.

- Encourage trade associations to sponsor development of industry-wide models.

b. Accounting Markets

(i) Market Growth

- As was shown in Exhibit IV-13, accounting software products is a $0.66 billion business for 1982, the largest of all the cross-industry products.

  - This segment will become a $2.7 billion sector by 1987. Its ranking will drop to second place behind information analysis.

  - Accounting's AAGR of 33% is less than the 39% average for the entire cross-industry group.

- Growth of the accounting software products market will be stimulated by:

  - The tougher economic climate of the 1980s. This will continue to place a strong demand on accurate, complete, and current accounting data. This is especially true for accounting systems which are cash-oriented, such as accounts receivable and payable.

  - The continued trend toward deregulation. Many industries are experiencing significant changes in their strategy, size, and scope of business, which in turn can overwhelm their existing accounting systems.

  - Accounting information as the primary fuel that drives analytical processing based applications. By 1990 INPUT estimates that analytical processing will consume 4.5 times more machine cycles than trans-

action processing. This demand will enhance management interest in better and more timely accounting data.

(ii) Market Issues and Trends

- Important buyer needs during the next five years include:

  - Data-base-oriented systems to facilitate information retrieval.

  - Carefully human-engineered input and output.

  - Disbursed processing capabilities (e.g., personal computer linkages to mini- and/or mainframe-based systems).

  - Easy interfaces between accounting systems and other related functions.

(iii) Competitive Analysis

- Many of the largest independent applications software products vendors in the U.S. aggressively compete in this marketplace.

  - Management Science America, the world's largest independent applications software products vendor, has announced 1983 capabilities for customers to establish interfaces between MSA's Peachtree personal computer accounting software and their mainframe-based products.

  - MSA, McCormack and Dodge, and Cullinane have added business graphics software to their product line to facilitate management analysis of accounting information.

  - McCormack and Dodge now offers its broad line of accounting software on six minicomputers in addition to its mainframe capabilities. Files can be exchanged between the different size computers.

- Cullinane has announced the availability of accounting systems which integrate with its DBMS software as well as with DSS-type systems.

- Control Data Corporation, the second largest information services vendor in the U.S., has acquired a minority interest in Star Computer Systems, a vendor of personal-computer-based accounting and financial management software products.

(iv) Recommendations

- To be successful during the next five years, accounting software products vendors must decide how best to integrate their products with the variety of functions, hardware, and communications options now available to customers.

  - One of the most crucial strategic decisions will be the extent to which a vendor should market interfaced software versus providing interfaces to systems marketed by others.

  - INPUT cautions vendors to thoroughly analyze any new market being contemplated, regardless of how closely allied it is to markets currently served. The marketplace is sufficiently complex and fast-changing that even well-established vendors can expect to encounter stiff competition when launching a new product.

c. Human Resources Markets

(i) Market Growth

- The human resources (HR) software products market will remain the third largest cross-industry sector during the 1982-1987 period. Revenue will grow from $0.29 to $1.1 billion by 1987, for a 31% AAGR, as was shown in Exhibit IV-13.

- Human resources growth has slowed since the "fast track" days of 1980-1981 when revenue increased 41%. The reasons include:

  - The Reagan administration's lessening of regulatory policies that had fueled HR growth (especially that of personnel systems) in previous years.

  - The impact of the economy, which has resulted in some postponement of additional automation for "non-mainstream" departments, such as personnel.

- On the positive side, a number of factors will contribute in the future to keeping HR as a major cross-industry market.

  - Increased management focus on control of labor costs, especially in the services industries, which are comprising an ever larger share of the gross national product.

  - The extension of HR systems into new areas, such as benefits administration applications, which assist companies in improving control over an increasingly important portion of personnel costs.

(ii) Market Issues and Trends

- This market sector combines one of the most widely accepted and easiest to understand software products (payroll) with some of the most complex and intangible products (personnel, training, and education). A number of vendors have stumbled in this marketplace because they have underestimated the differences of marketing these two types of products.

(iii) Competitive Analysis

- Significant competition is coming not only from software products vendors but also from integrated systems and processing services vendors.

  - For example, well-designed mini-based systems with newer data-base-oriented software are providing strong competition to HR software products.

  - Vendors that offer processing services initially with later conversion to in-house processing via a software product license have a strong appeal to firms who need the HR benefits but cannot install in-house immediately.

- New vendors continue to come into the market.

(iv) Recommendations

- Success in the HR market requires major commitments of resources due to the complexities of the systems, the length of the sales cycle, and intensity of the competition.

- Established vendors must be prepared to continually upgrade their systems to incorporate the latest in technologies and functions. Failure to do so can result in rapid loss of market share due to superior offerings from newer vendors.

d. Word Processing Markets

(i) Market Growth

- This market analysis excludes software which is "bundled" into manufacturers' products, such as those from Wang, IBM, and Xerox. It addresses products provided independently from hardware.

- The word processing software products market will increase more than four-fold in the next five years to reach $0.8 billion by 1987, a 35% AAGR, as shown in Exhibit IV-13.

- This five-year growth rate represents a decline from rates experienced in the past two years. Word processing software products sales grew from $85 million in 1980 to $133 million in 1981 (a 56% increase). Revenue in 1982 will be $180 million, a 35% increase over 1981.

- Personal computer software will comprise 47% of this market in 1982 ($85 million) and 48% in 1987 ($380 million).

(ii) Market Issues and Trends

- The recent introduction of personal computer software with integrated functions threatens to make obsolete some word processing systems. As mentioned earlier, the integrated function concept combines word processing with graphics, modeling, data base, and communications. Early users report significant improvements in productivity over use of nonintegrated systems.

- Marketplace interest in word processing on personal computers has also helped to stimulate interest in word processing on mainframes. As a result, vendors such as Applied Data Research are more actively promoting such systems.

(iii) Competitive Analysis

- The growth rate in the future will slow down due to intense price competition, especially in the personal computer software products market. INPUT projects that word processing prices will decline such that the average user expenditure for word processing software used on personal computers will drop from a current level of $250-$300 down to the $75-$125 range per product. Thus installations will increase at a much faster rate than user expenditures.

- Competition will also be intense from standalone word processors which will continue to become more cost effective with the addition of such features as add-on computing capabilities.

(iv) Recommendations

- Vendors of word processing software products must target their market segments very carefully in order to fully concentrate their resources on establishing and maintaining a unique competitive edge. "Me-too" products will quickly become unprofitable.

- Major investments in product improvements must be budgeted throughout the 1982-1987 timeframe in order to stay abreast of the demands of a new, rapidly evolving marketplace.

e. Graphics Markets

(i) Market Growth

- Graphics software products are the fastest growing cross-industry segment with a 1982-1987 AAGR of 54%, as was shown in Exhibit IV-13.

  - User expenditures will grow from $80 million in 1982 to $700 million in 1987. This represents an annual increase of $120 million, which will make graphics the fifth largest cross-industry sector by 1987.

  - Personal computer software products comprise 19% of the market in 1982 and will hold 17% of that market in 1987.

(ii) Market Issues and Trends

- The market for graphics software has grown almost threefold in the past two years (1980 revenue was $30 million). A number of factors are stimulating this market.

  - Graphics-related hardware continues to decrease in cost and increase in function.

  - Personal computers with impressive graphics capabilities are reaching the executive suite, thus whetting management's appetite for visual information.

  - Decision support systems, with graphics features, are gaining in popularity.

(iii) Competitive Analysis

- A number of established vendors are adding graphics capabilities to their product lines. Examples include Management Science America and Cullinane. Their substantial resources combined with their emphasis on an integrated product line will make it difficult for smaller vendors to carve out a large market position.

- The exception here appears to be in the personal computer marketplace where an emphasis on ease of use can garner large sales from users with little or no computing experience.

(iv) Recommendations

- Graphics is one of the primary means of simplifying complex operations. Vendors of end-user applications should search for opportunities to incorporate more graphics-based functions into their offerings, including them into

DBMS, information analysis, and even word processing packages. On the personal computer level, these should aim at the inexperienced user, emphasizing ease of use and conversion between different functions.

f. Sales, Marketing, and Distribution Markets

(i) Market Growth

- This market will grow from a base of $90 million in 1982 to $300 million in 1987 for an AAGR of 27%, as was shown in Exhibit IV-13. Personal computer software products comprise 6% ($5 million) of the 1982 market and will grow to 7% ($20 million) of the 1987 market.

(ii) Market Issues and Trends

- Although currently small in terms of other cross-industry markets, INPUT believes significant opportunities exist because most vendors have ignored this segment as an area of specialization.

- The businesses in our country continue to move in the direction of a marketing rather than a production-oriented top management strategy.

  - In the process, marketing-related functions will evolve away from "gut feel" decision- making toward more analytically based methods.

  - Computers will become a major support tool for progressive management.

(iii) Competitive Analysis

- Very few suppliers to date have allied themselves clearly with marketing-related productivity tools.

- The largest suppliers to this market tend to be processing services firms, such as ADVO Systems, which specialize in direct-mail-related applications.

(iv) Recommendations

- Vendors looking for new market areas to penetrate should take a close look at this segment. INPUT believes that pressures for improved business performance are so great that the sales, marketing, and distribution software product application areas will become more important in the next five years.

g. Other Cross-Industry Markets

(i) Market Growth

- Other cross-industry software products markets not included above will grow at a 43% AAGR from a 1982 base of $50 million to a 1987 total of $300 million.

- This segment is the third fastest growing of the cross-industry applications, but as shown in Exhibit IV-9, is a combination of many different product areas, such as scientific and engineering, project control and planning, and operations research.

- Personal computer software products account for about 10% of the total market during this five-year forecast period.

(ii) Market Issues and Trends

- The application areas making up the largest part of this market segment, such as scientific and engineering, typically require large amounts of computing power. As a result, this market historically has been processing services and integrated systems vendors, rather than software products suppliers.

(iii) Competitive Analysis

- Microcomputer-based integrated systems vendors are beginning to aggressively pursue the scientific and engineering market.

- Project planning and control vendor Atlantic Management has been acquired by AGS Computers.

(iv) Recommendations

- Seek ways to incorporate personal computers into existing and new products, thus providing distributed processing capability.

- Keep a close eye on competitors who have acquired new sources of financing.

## 3. KEY MARKET ISSUES AND TRENDS FOR APPLICATIONS SOFTWARE PRODUCTS

- The personal computer is having a major impact on the applications software marketplace. It is:

  - Enlarging the market. Market share for personal computer software ranges from 5% to 45%, depending upon the segment.

  - Stimulating end-user interest in computer solutions of all types.

  - Setting new standards for user friendliness in software products that will impact vendors of mini- and mainframe-based software.

  - Placing demands on vendors to provide interfaces to popular personal computers.

- Creating new mini- and mainframe-based software product market opportunities (e.g., Parallax's IBM 3270-based financial planning software that incorporates many of the popular features of the personal computer spreadsheet systems).

- The concept of the Information Center will continue to build in popularity during the next five years. This is to the advantage of the applications software vendor as it provides a convenient, centralized contact point within an organization for vendors to reach both the end users and the information systems department.

- Applications software products buyers will give higher priorities in the next five years to systems which have a high degree of integration potential with other related systems.

- The market for home personal computer applications is now beginning to accelerate. Much new software will be introduced during 1983 for this emerging marketplace.

## D. RECOMMENDATIONS FOR SOFTWARE PRODUCT VENDORS

- Vendors are urged to ascertain that they are placing sufficient emphasis on product planning and reinvestment. Many well-established vendors have had their sales plans upset by lesser competitors that quietly developed a newer generation product with high market appeal.

- Developments in the personal computer marketplace should be followed extremely closely.

  - INPUT urges its clients to acquire and use personal computers in order to see their far-reaching ramifications firsthand.

- Attention should be directed not only to personal computer software functions, but also to how software is packaged in terms of documentation, support, and training. Many of the approaches can be profitably adopted for marketing of software to clients with larger hardware.

- Innovation in the use of distribution channels is encouraged.

  - Some software products vendors have made major sales by becoming a subcontractor to other vendors bidding on major contracts, such as for large government projects. An example is Applied Data Research's subcontract on EDS' VIABLE project.

  - Opportunities exist to use national organizations that have influence with software product buyers to promote a specific product that is in everybody's interest (e.g., wholesalers promoting software that enhances their position with the dealers they serve).

  - Distribution channels should be specified prior to new product design.

- Find ways to integrate existing products with related functions such that the entire system becomes more effective.

- Contact (or recontact) hardware manufacturers concerning joint marketing opportunities. Many are now actively interested in developing arrangements with software product vendors.

# V PROFESSIONAL SERVICES MARKETS

# V PROFESSIONAL SERVICES MARKETS

## A. MARKET GROWTH

- The professional services market will experience an 18% AAGR from 1982 to 1987. User expenditures will grow from a 1982 base of $5.5 billion to $12.5 billion by 1987, as shown in Exhibit V-1.

- During this five-year period, price increases due to inflation are expected to average 5% annually.

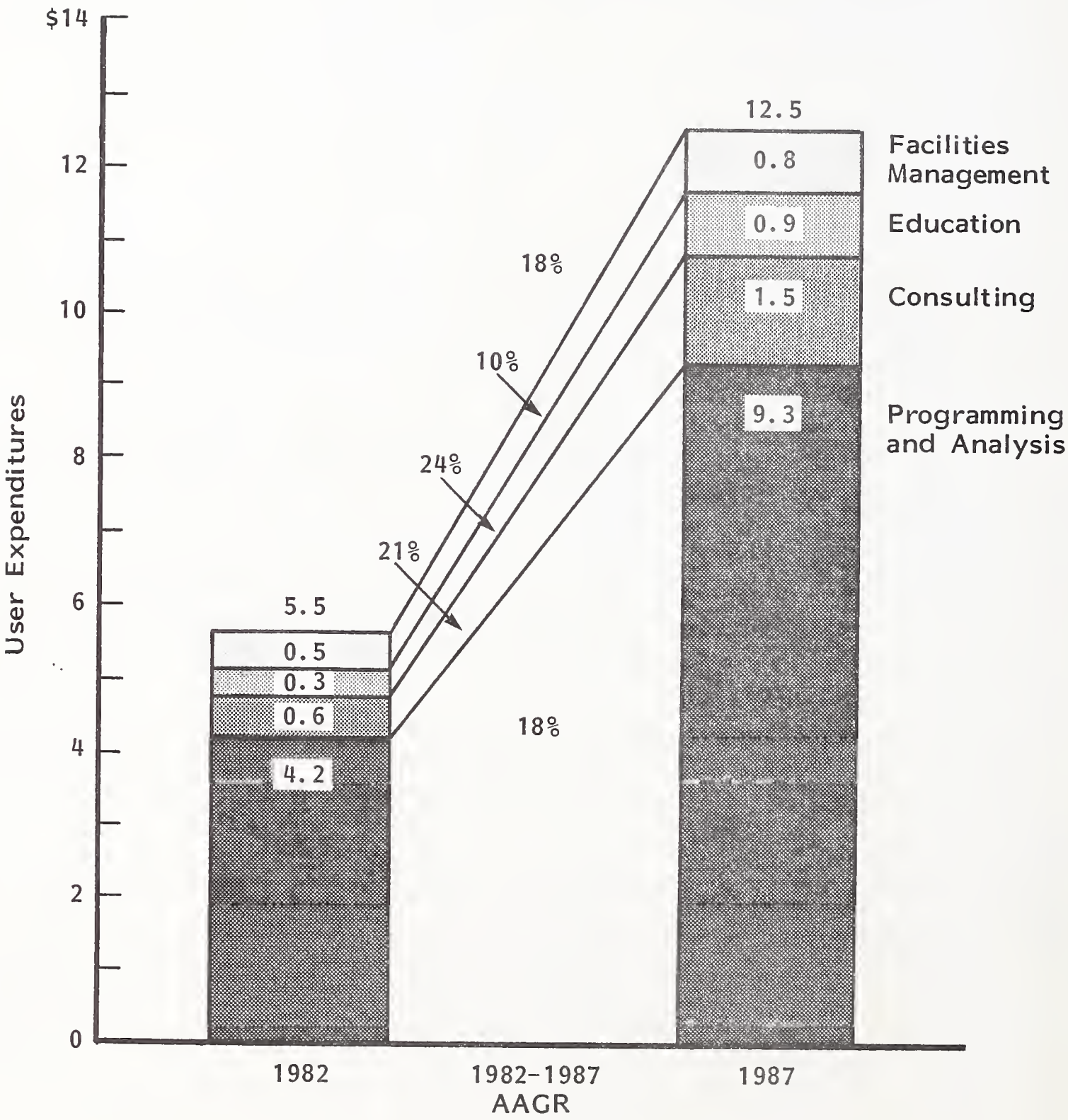
- Professional services is a major market that will remain almost identical in size to the remote processing services market throughout the 1982-1987 period (see Appendix B).

- The market for professional services relating to personal computers will be $25 million for 1982 and will increase to $250 million by 1987.

- Programming and analysis (perhaps more properly termed "software development") is the largest segment of the professional services market. It will grow from $4.2 billion in 1982 to $9.3 billion in 1987, for an AAGR of 18%. Its share of the professional services market will be steady around 74% during this five-year period.

EXHIBIT V-1

PROFESSIONAL SERVICES MARKET FORECAST,
1982-1987
($ billions)



- Consulting will remain as the second largest segment. Its market share is 11% in 1982 ($0.6 billion revenue) and 12% ($1.5 billion revenue) in 1987. Its five-year AAGR is 21%.

- Although education is the smallest of the segments in 1982 with revenue of $0.3 billion and a 5% market share, by 1987 it will have experienced the largest AAGR (24%) and thus will rank in third place with $0.9 billion in revenue and a 7% market share.

- Professional services facilities management will drop from third place in size in 1982 (9% market share on $0.5 billion revenue) to fourth place in 1987 (6% share on $0.8 billion revenue). Its AAGR of 10% is the lowest of the four professional services segments.

- As shown in Exhibit V-2, the annual growth rate of the total professional services market has declined by over one-half in 1982. The annual growth rate will not return to the 20% range until 1985. INPUT has reduced the five-year growth rate forecast from that of a year ago (see the reconciliation discussion in Appendix C). Factors contributing to the fluctuating growth pattern of the professional services marketplace include:

  - The downturn in the economy during the 1981-1982 timeframe. Projects were either cancelled, postponed, or converted to other delivery modes such as applications software packages.

  - Improvement in the economy forecasted for the 1983-1985 period combined with the availability of new services and technology (such as American Bell and IBM's Information Network Service), which encourage the development of large-scale projects well-suited to many professional services vendors.

- Exhibit V-3 shows the annual comparative growth of the four professional services segments. Programming and analysis, consulting, and education will

EXHIBIT V-2

ANNUAL GROWTH RATES FOR PROFESSIONAL SERVICES MARKETS,
1982-1987

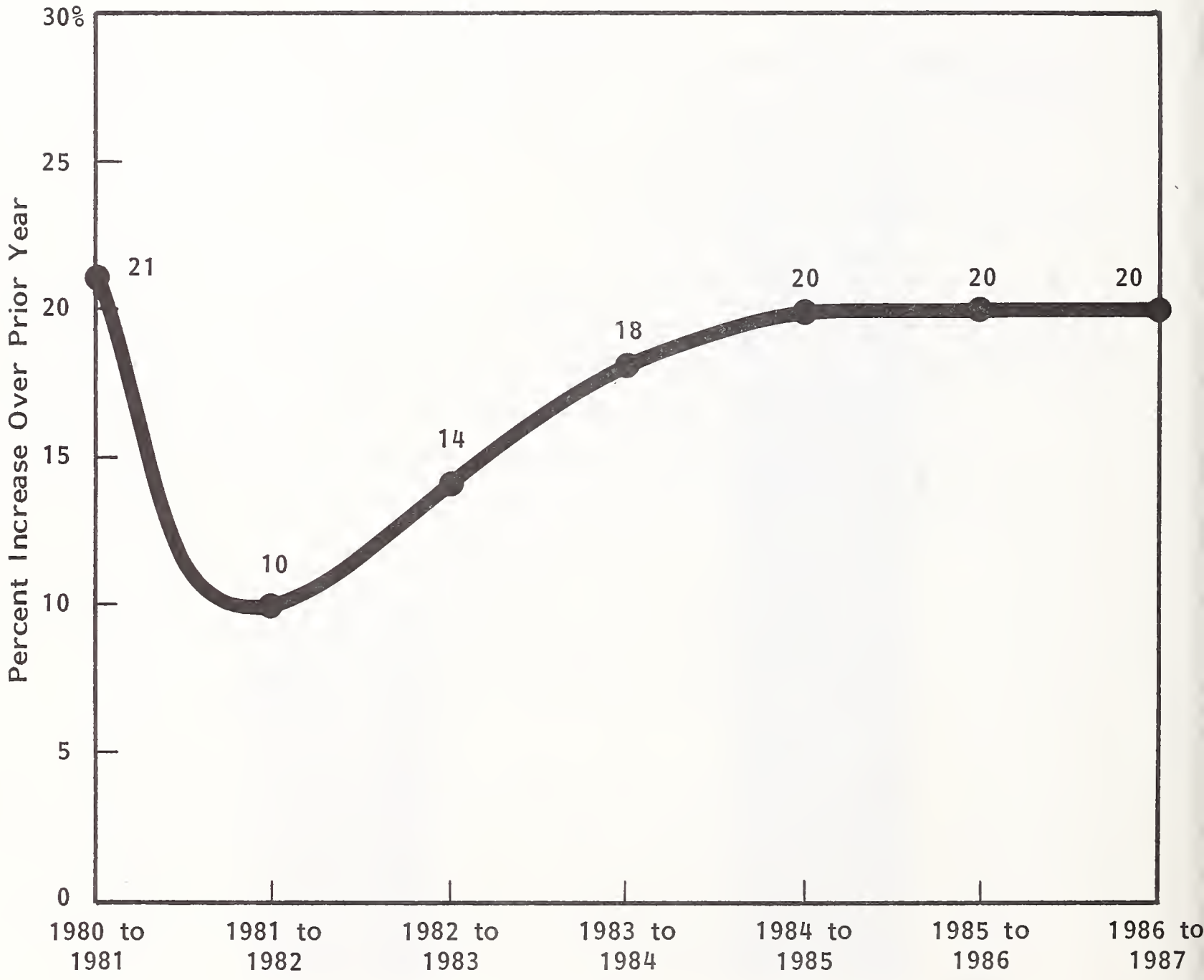
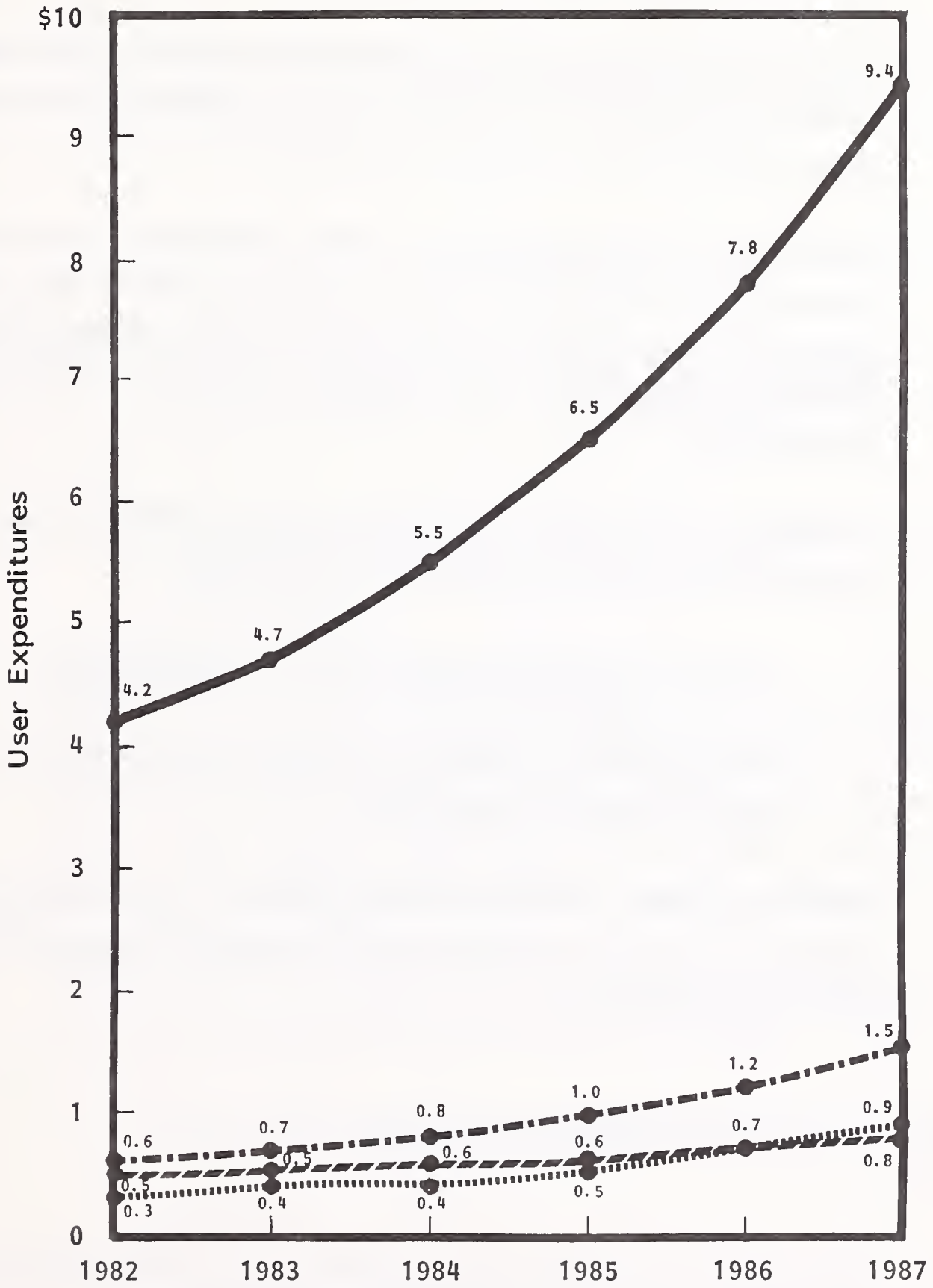


EXHIBIT V-3

PROFESSIONAL SERVICES MARKET SEGMENTS FOR 1982-1987

($ billions)



experience steady growth. Professional services facilities management (PSFM), with its slower growth, will be surpassed in size by the education segment in the 1985-1986 timeframe.

- PSFM will grow at approximately one-half the rate of the other segments due to market preference for processing facilities managment where the vendor, rather than the customer, owns the computer.

- Processing facilities management is almost three times larger than PSFM in 1982 and will be more than four times larger by 1987. (See INPUT's U.S. Information Services Markets: 1982-1987, Volume I, Processing Services and Integrated Systems for a more detailed discussion of processing facilities management).

- Professional services is the most concentrated, in terms of vendor size, of the four segments of the information services industry.
  - The top 10 vendors comprise 78% of the total market.
  - Two-thirds of all professional services revenue is obtained by firms over $10 million in annual sales.

- However, another important characteristic of the professional services segment is that it also includes individual independent personnel numbering in the tens of thousands.

## B. KEY MARKET ISSUES AND TRENDS

- Six of the top 10 vendors derive most of their professional services revenue from the government rather than the commercial sector.

- INPUT's surveys of computer sites during 1982 identified many problem areas of information systems managers which professional services vendors are well positioned to help resolve.

- Top managers of information systems departments cited "personnel" (i.e., hiring, training, and retaining) as the number one problem they faced, as shown in Exhibit V-4.

  - Difficulties in hiring were especially pronounced in the process manufacturing, insurance, and distribution industries.

  - Higher than average staff turnover was reported in the banking and finance, utility, and distribution industry sectors.

  - Problems with staffing are expected to continue for the next several years, providing a continual stimulant for contracting with professional services vendors.

- One INPUT survey revealed another aspect of the built-in demand for software solutions. On the average almost two-thirds of the software currently being used by information systems departments surveyed was five years old or older. Major external forces, such as the economy and deregulation, are helping to accelerate the obsolescence of that aging software.

- Characteristics of software applications which will stimulate professional services activity during the next several years include:

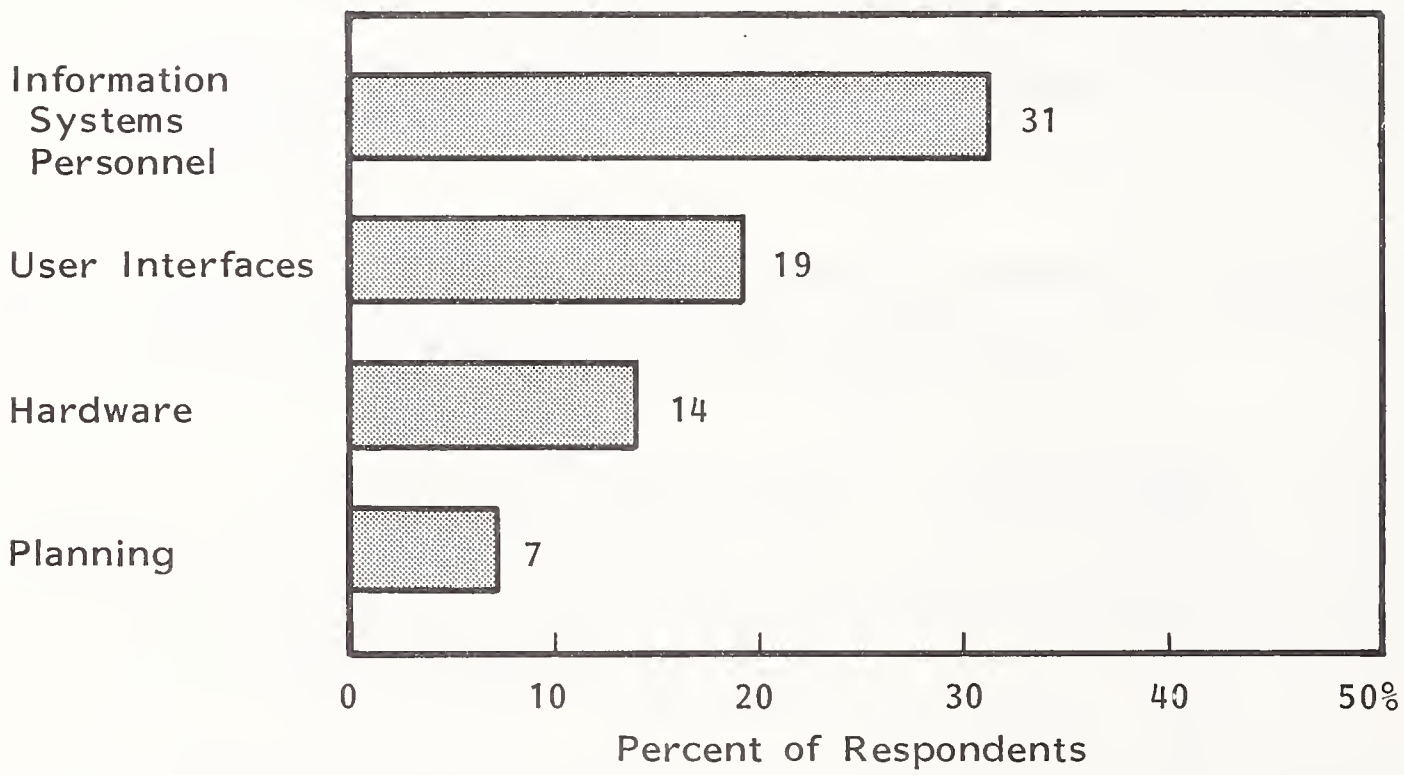
  - Teleprocessing.

  - Data base.

  - Distributed data processing.

EXHIBIT V-4

TOP PROBLEMS OF INFORMATION SYSTEMS MANAGERS




311 Respondents

- Applications software systems in general are growing in size and complexity due to the combined forces of exploding technology and demand from end users.

  - Personal computers are evolving into nodes which connect, as required, with other nodes, mini, and mainframe computers.

  - Few information systems departments can retain the necessary variety of technical skills in-house to keep up with end users' demands.

  - Software product vendors will not be able to define packages to fit the requirements of every major application.

  - In spite of the outpouring of personal computer software packages, 25% of end users surveyed plan to get customized software, either from internal or external sources.

- The key characteristic of the systems of the 1980s is integration. Systems with integrated characteristics require more skill to design, develop, and install. This major market need provides significant opportunities for professional services vendors.

## C. COMPETITIVE ANALYSIS

- Three types of vendors are active in the professional services market.

  - Type I. These firms devote 100% of their business resources to this marketplace. Examples include C.A.C.I. and Cutler-Williams.

  - Type II. These firms have one or more business units dedicated to professional services, but they also are active in other information

integrated systems) and/or may be active in businesses outside the information services industry. Examples include Computer Sciences Corporation, Control Data Corporation, and United Telecom Computer Group.

- Type III. Vendors that tie professional services to the sale of other products or services fall into this category. They look upon professional services as an "add-on" revenue source. Firms in this category include Cullinane Data Base Systems and University Computing Company.

- Vendors with the largest revenue in professional services tend to be Type II firms, as shown in Exhibit V-5.

- The "Big 8" accounting firms are especially active in professional services.

  - Two of the 10 largest professional services vendors are Big 8 firms.

  - Seven of the Big 8 are in the top 40.

  - Arthur Andersen and Company is the fourth largest professional services vendor in the U.S. and is growing at a fast-paced 30%. At $191 million in revenue for 1981, they are twice as large as Peat Marwick and Mitchell, the next largest Big 8 vendor, as shown in Exhibit V-6.

  - The Big 8's share of the professional services market has hovered around 8% for the past two calendar years. As a group they enjoyed a 22% increase of revenue for the last full calendar year.

  - ADAPSO (The Association of Data Processing Service Organizations) has been considering legal action which questions the fairness of the Big 8 firms' competing in this marketplace.

EXHIBIT V-5

TEN LARGEST PROFESSIONAL SERVICES VENDORS
(U.S. NONCAPTIVE REVENUE)
CALENDAR YEAR 1981

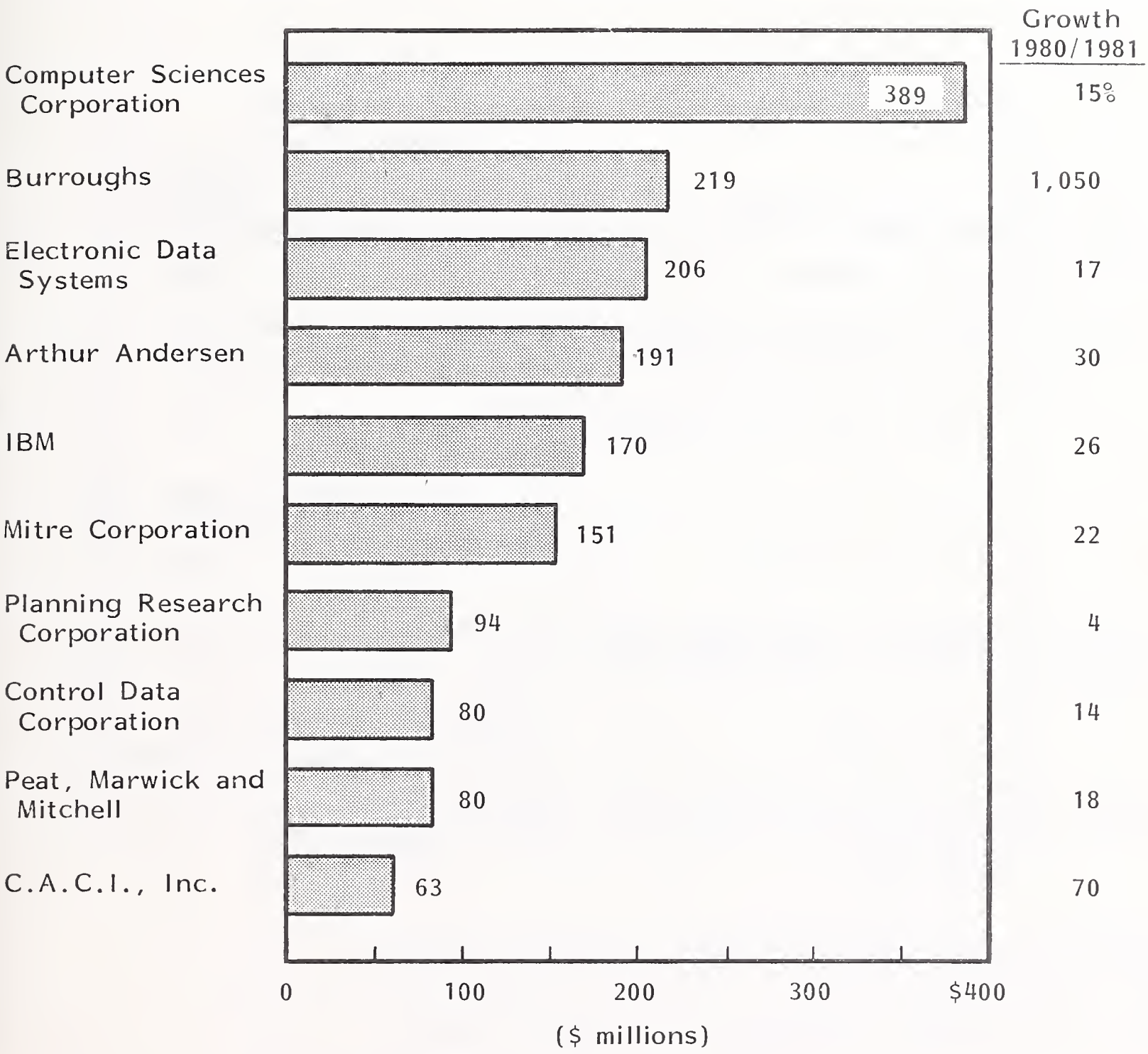


EXHIBIT V-6

BIG EIGHT VENDORS ACTIVE IN PROFESSIONAL SERVICES

| FIRM | CALENDAR YEAR U.S. REVENUES 1981 ($ millions) | GROWTH 1980/1981 |
|---|---|---|
| Arthur Anderson and Company | $191 | 30% |
| Peat, Marwick and Mitchell | 80 | 18 |
| Arthur Young and Company | 37 | 27 |
| Coopers and Lybrand | 28 | 20 |
| Ernst and Whinney | 26 | (13)* |
| Deloitte, Haskins and Sells | 21 | 24 |
| Touche Ross | 20 | 25 |
| Total | $403 | 22% |

*Indicates Decline

- Type III vendors comprise approximately one-fourth of the total professional services marketplace. INPUT expects to see these companies become increasingly more active in the professional services market as a means of enhancing the competitive edge of their primary products.

  - RCS vendors will unbundle more of their product-related consulting.

  - Software products vendors will be more willing to customize their packages for their clients.

- INPUT anticipates that a number of dedicated professional services vendors will be acquired by larger firms over the next five years as a means of gaining both software development resources and access to the customers of the acquired firm. An example of this trend is the acquisition by CAP Gemini of Spiridellis, one of the top 10 fastest growing professional services firms.

## D. RECOMMENDATIONS

- To effectively compete in a slower growing, highly competitive marketplace, professional services vendors should look for opportunities to specialize by type and size of application.

  - For example, "selling to large companies" can be too broad a strategy for the 1980s.

  - "Selling material requirements planning systems to large, technology-oriented manufacturing companies" is a more focused strategy that enables a vendor to develop unique, high-value applications in a cost-effective manner.

- Consider specialization in application areas such as information analysis. (See section IV.C.2.a. for a brief review of this marketplace. A more in-depth discussion is available in INPUT's new multiclient study entitled, Opportunities in Financial Planning Systems Markets, 1982-1987.

- Vendors are urged to specify during contract negotiation that they will own (or will have the rights to sell) the applications system after developing it for the customer.

  - Too many vendors have discovered that applications systems developed for their clients a few years ago are now being licensed by clients to others, with no return to the developer.

  - Vendor retention of applications systems ownership sets the stage for software product and integrated systems product opportunities for the future.

- Sales productivity can be improved by becoming more effective at selling top management.

  - One of the key strengths of the Big 8 firms is their ability to gain the confidence of top executives in the client companies. These managers are making more of the major contract decisions than in the past due to stricter cost controls resulting from the tougher economic climate.

  - Professional services vendors should re-evaluate the ability of their sales force to gain access to and close these high-level decision makers. Weaknesses in this area should be addressed with training and staffing.

# VI INDUSTRY SECTOR MARKETS

# VI INDUSTRY SECTOR MARKETS

## A. ECONOMIC CONSIDERATIONS

- During the next five years the growth of user expenditures for information services will continue to increase faster than either the gross national product or the growth of the industry sectors which contract for those services.

- The economic environment has shown itself capable of impacting the growth of information services. INPUT's forecasts include the following economic assumptions.

- Inflation will average 6% per year for the 1982-1987 period. The inflation-induced annual price increases by information services vendors will be as follows:

  - Five and one-half percent for software products.

  - Five percent for professional services.

  - Four percent for processing services.

  - Two percent for integrated systems.

- A slow economic recovery is assumed for the 1983-1984 period. Positive economic conditions will prevail from 1985 through 1987.

## B. INDUSTRY SECTOR ANALYSIS

- INPUT examines a number of characteristics in order to analyze the size and growth of information services expenditures.

- Industry sector size is measured by the number of employees, the number of establishments, and the value of shipments within each industry sector.

  - INPUT's analysis of each industry sector follows later in this chapter.

  - Industry sector demographic statistics concerning employees and shipments were tabulated from County Business Patterns, 1979.

- The value of shipments was derived from numerous sources.

  - Within an industry sector, comparable values were obtained and, where feasible, totaled for that sector.

  - Values between industry sectors may not always be directly comparable since different measures are often used by different industries.

  - Differences also occur due to definition differences between various sources of data.

  - The census information presented in this report is designed to serve as a general guide only to some of the key characteristics of the industry sectors discussed.

- Both the discrete and the process manufacturing sectors are measured in value of shipments.

  - This measure is the value added to the product by the industries.

  - The data were compiled from the 1979 Annual Survey of Manufacturers and the Statistical Abstract of the U.S., 1981.

- The transportation and utility sectors are measured by operating revenue. Data sources included:

  - Statistical Abstract of the United States, 1981.

  - Survey of Current Business, June 1982.

- The banking and finance sector is measured in assets. The data source was Statistical Abstract of the United States, 1981.

- The value of the insurance industry sector is measured by premium receipts.

  - Receipts were tabulated from the Statistical Abstract of the United States, 1981 and Best's Review, July 1980.

- The value of the medical, educational, and government sectors are measures of expenditures taken from the Statistical Abstract of the United States, 1981.

- The values for the retail, wholesale, services, and other industry sectors are all measured in sales. Data came from several sources:

  - Survey of Current Business, June 1982.

  - Statistical Abstract of the United States, 1981.

  - Enterprise Statistics, 1980.

- Exhibits VI-1 and VI-2 rank industry markets for information services in terms of size and incremental growth.

- The four largest industry markets (now and in 1987) for information services are discrete manufacturing, banking and finance, process manufacturing, and the federal government.

- As shown in Exhibit VI-3, the five-year AAGR of software products (38%) is more than twice that of professional services (18%).

- Industry rankings for systems and applications software products, as well as for each of the four professional services segments (programming/analysis, consulting, education, and facilities management) are shown in Exhibits VI-4 through VI-9.

- Each of the 14 major industry sectors is discussed in more detail below. The industries are presented in sequence according to the size of their 1987 user expenditures for information services (see Exhibit VI-2).

## C. DISCRETE MANUFACTURING SECTOR

- Companies in the discrete manufacturing sector manufacture products sold as units, e.g., automobiles, computers, and refrigerators. In contrast, process manufacturers produce items sold in bulk, e.g., gasoline, fertilizer, and food.

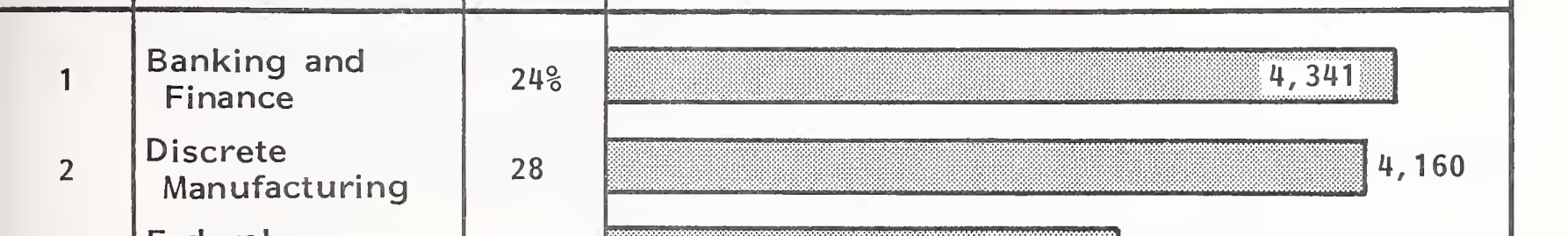
- The value of 1978 shipments for discrete manufacturing was $715 billion, as shown in Exhibit VI-10.

- This sector will be the largest sector for information services by 1987 ($14.5 billion). It also has the fastest five-year growth rate for information services (28%) of all industry sectors, as was shown in Exhibit VI-2.

EXHIBIT VI-1

1982 INFORMATION SERVICES INDUSTRY MARKET RANKINGS

| 1982 RANK | INDUSTRY SECTOR | AAGR 1982-1987 (%) | 1982 USER EXPENDITURES IN CURRENT DOLLARS ($ millions) |
|---|---|---|---|
| 1 | Banking and Finance | 24% | 4,341 |
| 2 | Discrete Manufacturing | 28 | 4,160 |
| 3 | Federal Government | 19 | 2,803 |
| 4 | Process Manufacturing | 26 | 2,658 |
| 5 | Insurance | 24 | 1,819 |
| 6 | Services | 22 | 1,525 |
| 7 | State and Local Government | 14 | 1,433 |
| 8 | Retail | 22 | 1,396 |
| 9 | Wholesale | 24 | 1,346 |
| 10 | Medical | 26 | 1,321 |
| 11 | Other | 19 | 1,110 |
| 12 | Utilities | 20 | 928 |
| 13 | Transportation | 26 | 677 |
| 14 | Education | 15 | 404 |




Total Expenditures

| 1982 | $25,921 million |
|---|---|

EXHIBIT VI-2

INFORMATION SERVICES MARKET BY INDUSTRY SECTOR,
1982-1987

| INDUSTRY SECTOR | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) |
|---|---|---|
| Discrete Manufacturing | 28% | 4,160 / 14,544 |
| Banking | 24 | 4,341 / 12,946 |
| Process Manufacturing | 26 | 2,658 / 8,604 |
| Federal Government | 19 | 2,803 / 6,777 |
| Insurance | 24 | 1,819 / 5,391 |
| Medical | 26 | 1,321 / 4,211 |
| Services | 22 | 1,525 / 4,078 |
| Wholesale | 24 | 1,346 / 3,910 |
| Retail | 22 | 1,396 / 3,781 |
| State and Local Government | 14 | 1,433 / 2,738 |
| Other | 19 | 1,110 / 2,649 |
| Utilities | 20 | 928 / 2,301 |
| Transportation | 26 | 677 / 2,187 |
| Education | 15 | 404 / 803 |

0 2,500 5,000 7,500 10,000 12,500 $15,00

Total Expenditures

| | | |
|---|---|---|
| 1982 | | $25,921 million |
| 1987 | | $74,920 million |

AAGR = 24%

EXHIBIT VI-3

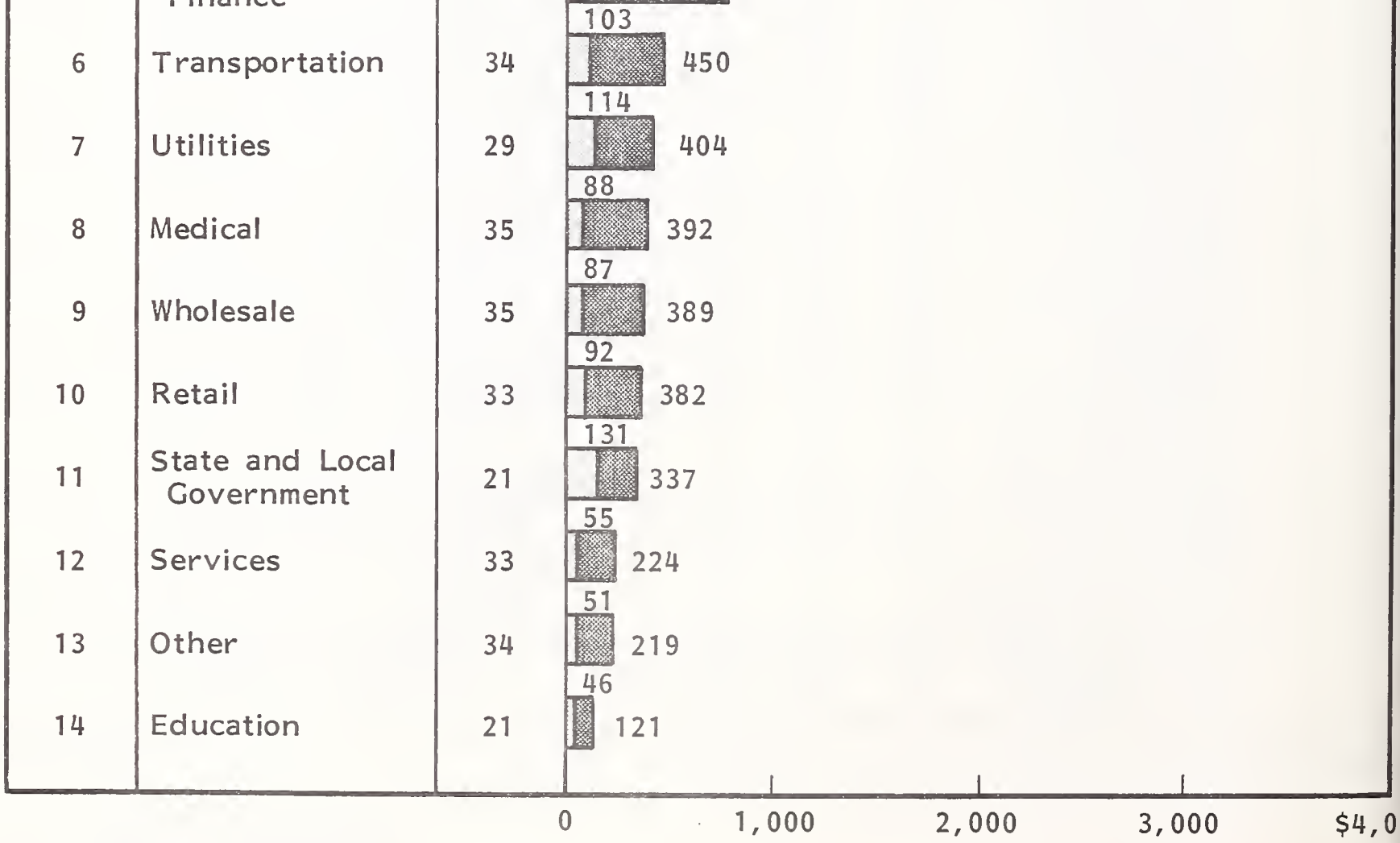
FIVE-YEAR GROWTH RATES BY INDUSTRY
FOR SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES

| INDUSTRY SECTOR | AAGR 1982-1987 | | | | |
|---|---|---|---|---|---|
| | COMBINED | SOFTWARE PRODUCTS | | PROFESSIONAL SERVICES | |
| | AAGR | AAGR | RANK | AAGR | RANK |
| Banking | 40% | 42% | 1 | 24% | 1 |
| Medical | 37 | 42 | 1 | 20 | 3 |
| Discrete Manufacturing | 34 | 40 | 2 | 22 | 2 |
| Transportation | 35 | 42 | 1 | 14 | 7 |
| Services | 34 | 37 | 5 | 15 | 6 |
| Wholesale | 34 | 38 | 4 | 14 | 7 |
| Process Manufacturing | 33 | 40 | 2 | 22 | 2 |
| Retail | 30 | 37 | 5 | 13 | 8 |
| Insurance | 29 | 35 | 6 | 19 | 4 |
| Other | 28 | 39 | 3 | 13 | 8 |
| Utilities | 26 | 30 | 8 | 22 | 2 |
| Federal Government | 20 | 33 | 7 | 16 | 5 |
| Education | 18 | 23 | 9 | 13 | 8 |
| State and Local Government | 14 | 22 | 10 | 13 | 8 |
| Average | 29% | 38% | - | 18% | - |

EXHIBIT VI-4

SYSTEMS SOFTWARE PRODUCT FORECAST
BY INDUSTRY SECTOR, 1982-1987

| 1987 RANK | INDUSTRY SECTOR | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) |
|---|---|---|---|
| 1 | Discrete Manufacturing | 38% | 642 → 3,258 |
| 2 | Process Manufacturing | 39 | 407 → 2,112 |
| 3 | Federal Government | 34 | 417 → 1,786 |
| 4 | Insurance | 34 | 183 → 802 |
| 5 | Banking and Finance | 38 | 157 → 792 |
| 6 | Transportation | 34 | 103 → 450 |
| 7 | Utilities | 29 | 114 → 404 |
| 8 | Medical | 35 | 88 → 392 |
| 9 | Wholesale | 35 | 87 → 389 |
| 10 | Retail | 33 | 92 → 382 |
| 11 | State and Local Government | 21 | 131 → 337 |
| 12 | Services | 33 | 55 → 224 |
| 13 | Other | 34 | 51 → 219 |
| 14 | Education | 21 | 46 → 121 |




Total Expenditures

| | | |
|---|---|---|
| 1982 | | $ 2,574 million |
| 1987 | | $11,667 million |

AAGR = 35%

EXHIBIT VI-5

APPLICATIONS SOFTWARE PRODUCT FORECAST BY INDUSTRY SECTOR, 1982-1987

| 1987 RANK | INDUSTRY SECTOR | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) |
|---|---|---|---|
| 1 | Banking and Finance | 43% | 644 / 3,794 |
| 2 | Discrete Manufacturing | 43 | 494 / 2,927 |
| 3 | Insurance | 35 | 428 / 1,905 |
| 4 | Wholesale | 39 | 287 / 1,512 |
| 5 | Medical | 45 | 192 / 1,215 |
| 6 | Process Manufacturing | 41 | 187 / 1,047 |
| 7 | Retail | 39 | 182 / 935 |
| 8 | Transportation | 49 | 98 / 731 |
| 9 | Services | 38 | 128 / 641 |
| 10 | Other | 41 | 112 / 616 |
| 11 | Utilities | 32 | 54 / 218 |
| 12 | Education | 24 | 45 / 132 |
| 13 | State and Local Government | 25 | 43 / 130 |
| 14 | Federal Government | 24 | 18 / 54 |

0 1,000 2,000 3,000 4,000

Total Expenditures

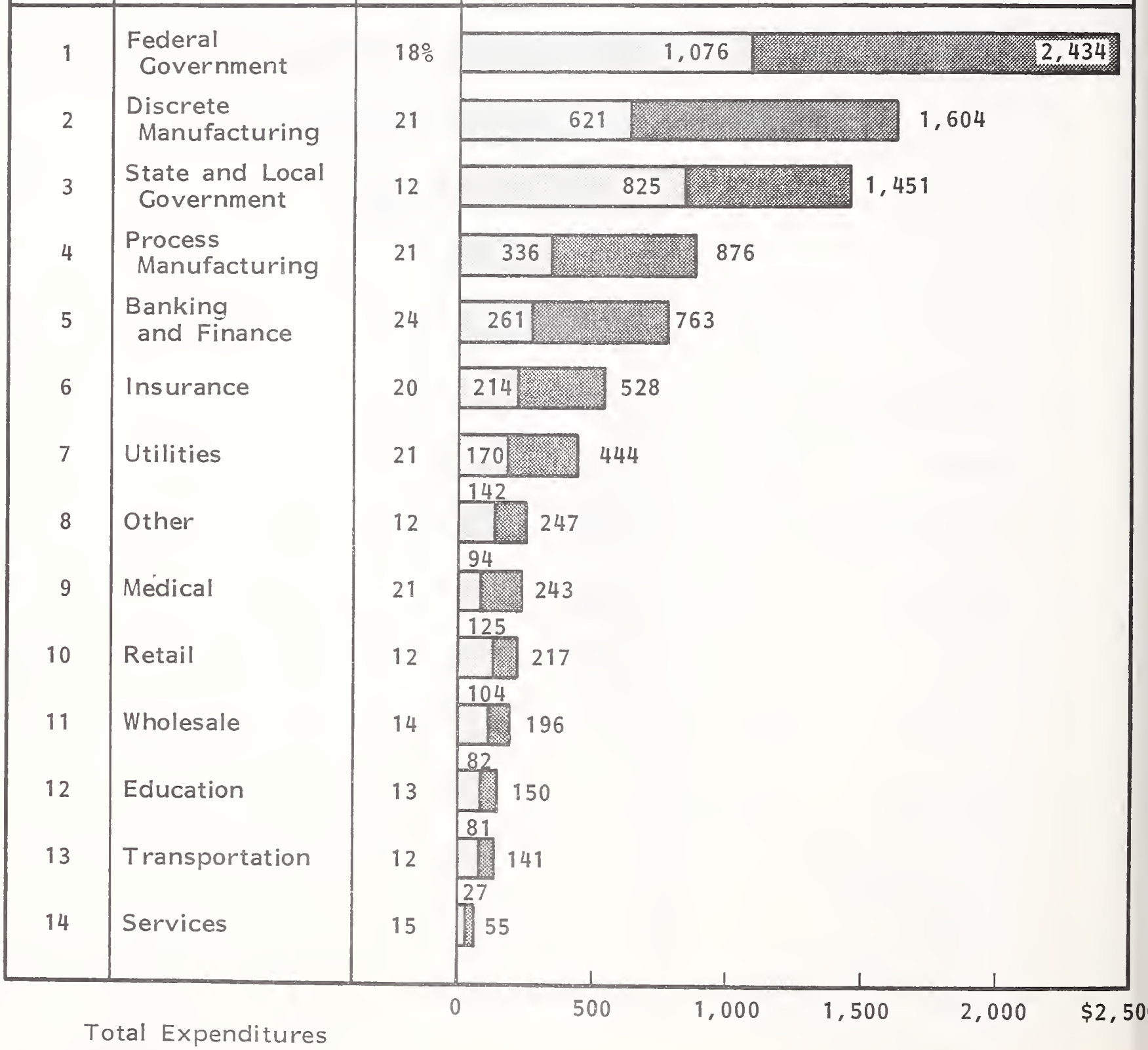
| | | |
|---|---|---|
| 1982 | | $ 2,913 million |
| 1987 | | $15,856 million |

AAGR=40%

EXHIBIT VI-6

PROFESSIONAL SERVICES - PROGRAMMING AND ANALYSIS FORECAST
BY INDUSTRY SECTOR, 1982-1987

| 1987 RANK | INDUSTRY SECTOR | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) |
|---|---|---|---|
| 1 | Federal Government | 18% | 1,076 / 2,434 |
| 2 | Discrete Manufacturing | 21 | 621 / 1,604 |
| 3 | State and Local Government | 12 | 825 / 1,451 |
| 4 | Process Manufacturing | 21 | 336 / 876 |
| 5 | Banking and Finance | 24 | 261 / 763 |
| 6 | Insurance | 20 | 214 / 528 |
| 7 | Utilities | 21 | 170 / 444 |
| 8 | Other | 12 | 142 / 247 |
| 9 | Medical | 21 | 94 / 243 |
| 10 | Retail | 12 | 125 / 217 |
| 11 | Wholesale | 14 | 104 / 196 |
| 12 | Education | 13 | 82 / 150 |
| 13 | Transportation | 12 | 81 / 141 |
| 14 | Services | 15 | 27 / 55 |




Total Expenditures

| | | |
|---|---|---|
| 1982 | | $4,158 million |
| 1987 | | $9,349 million |

AAGR = 18%

EXHIBIT VI-7

PROFESSIONAL SERVICES - CONSULTING FORECAST
BY INDUSTRY SECTOR, 1982-1987

| 1987 RANK | INDUSTRY SECTOR | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) |
|---|---|---|---|
| 1 | Federal Government | 16% | 159 → 336 |
| 2 | Discrete Manufacturing | 28 | 78 → 265 |
| 3 | State and Local Government | 15 | 115 → 230 |
| 4 | Process Manufacturing | 29 | 53 → 188 |
| 5 | Banking and Finance | 26 | 42 → 132 |
| 6 | Insurance | 26 | 33 → 103 |
| 7 | Utilities | 24 | 20 → 58 |
| 8 | Retail | 16 | 20 → 42 |
| 9 | Other | 16 | 20 → 42 |
| 10 | Transportation | 21 | 15 → 37 |
| 11 | Medical | 18 | 12 → 27 |
| 12 | Wholesale | 14 | 14 → 27 |
| 13 | Education | 14 | 12 → 22 |
| 14 | Services | 16 | 6 → 14 |

0 100 200 300 $400

Total Expenditures

| | | |
|---|---|---|
| 1982 | | $ 598 million |
| 1987 | | $1,524 million |

AAGR = 21%

EXHIBIT VI-8

PROFESSIONAL SERVICES - EDUCATION FORECAST
BY INDUSTRY SECTOR, 1982-1987

| 1987 RANK | INDUSTRY SECTOR | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) |
|---|---|---|---|
| 1 | Federal Government | 28% | 76 / 264 |
| 2 | Discrete Manufacturing | 27 | 60 / 195 |
| 3 | State and Local Government | 18 | 52 / 120 |
| 4 | Process Manufacturing | 23 | 37 / 104 |
| 5 | Banking and Finance | 26 | 23 / 72 |
| 6 | Utilities | 25 | 15 / 46 |
| 7 | Insurance | 22 | 14 / 39 |
| 8 | Other | 19 | 18 |
| 9 | Transportation | 16 | 16 |
| 10 | Retail | 16 | 15 |
| 11 | Wholesale | 13 | 13 |
| 12 | Medical | NA | * |
| 13 | Education | NA | * |
| 14 | Services | NA | * |

0 50 100 150 200 250 $300

Total Expenditures

| | | |
|---|---|---|
| 1982 | | $307 million |
| 1987 | | $902 million |

AAGR = 24%

*Under $1 Million

EXHIBIT VI-9

PROFESSIONAL SERVICES - FACILITIES MANAGEMENT FORECAST
BY INDUSTRY SECTOR, 1982-1987

| 1987 RANK | INDUSTRY SECTOR | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) |
|---|---|---|---|
| 1 | Federal Government | 9% | 358 / 544 |
| 2 | Insurance | 13 | 57 / 105 |
| 3 | Banking and Finance | 15 | 31 / 62 |
| 4 | Utilities | 18 | 18 |
| 5 | State and Local Government | 14 | 16 |
| 6 | Medical | 9 | 9 |
| 7 | Discrete Manufacturing | 0 | 5 |
| 8 | Process Manufacturing | 0 | 5 |
| 9 | Wholesale | 11 | 4 |
| 10 | Education | 0 | * |
| 10 | Retail | 0 | * |
| 10 | Services | 0 | * |
| 10 | Transportation | 0 | * |
| 10 | Other | 0 | * |

0 100 200 300 400 500 $600

Total Expenditures

| | | |
|---|---|---|
| 1982 | | $480 million |
| 1987 | | $768 million |

AAGR = 10%

*Under $1 million

Note: See Apendix B for Complete 1982 Figures by Industry

EXHIBIT VI-10

DISCRETE MANUFACTURING INDUSTRY SECTOR -
DEMOGRAPHIC DATA

| STANDARD INDUSTRIAL CLASSIFI-CATION | INDUSTRY NAME | TYPE OF STATISTIC | DATA |
|---|---|---|---|
| All | Discrete Manufacturing | Value of Shipments<br>Number of Establishments<br>Number of Employees | $715.2 Billion<br>197,630<br>11.9 Million |
| 23 | Apparel | Value of Shipments (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 43.0 Billion<br>22,554<br>1.3 Million |
| 25 | Furniture | Value of Shipments (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 19.6 Billion<br>8,904<br>506,569 |
| 27 | Printing | Value of Shipments (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 56.1 Billion<br>44,415<br>1.2 Million |
| 31 | Leather | Value of Shipments (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 8.2 Billion<br>2,671<br>238,369 |
| 34 | Fabricated Metal Products | Value of Shipments (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $101.3 Billion<br>30,901<br>1.7 Million |
| 35 | Machinery | Value of Shipments (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $143.2 Billion<br>45,322<br>2.5 Million |
| 36 | Electronics | Value of Shipments (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $100.5 Billion<br>13,538<br>2.0 Million |
| 37 | Trans-portation Equipment | Value of Shipments (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $188.8 Billion<br>8,661<br>2.0 Million |

Continued

EXHIBIT VI-10 (Cont.)

DISCRETE MANUFACTURING INDUSTRY SECTOR -
DEMOGRAPHIC DATA

| STANDARD INDUSTRIAL CLASSIFICATION | INDUSTRY NAME | TYPE OF STATISTIC | DATA |
|---|---|---|---|
| 38 | Scientific & Control Instruments | Value of Shipments (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 33.7 Billion<br>6,921<br>15,017 |
| 39 | Miscel-laneous Manufacturers | Value of Shipments (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 20.8 Billion<br>13,743<br>455,248 |

- Discrete manufacturing is the largest systems software market during this five-year forecast period. It is also the second largest application software market and will become the second largest programming and analysis market by 1987, as shown in Exhibits VI-4, VI-5, VI-6, and VI-11.

- In terms of five-year growth, this sector is the second fastest growing industry for software products (40%) and the second fastest growing (22%) for professional services (see Exhibit VI-3).

- As shown in Exhibit VI-11, although programming and analysis is slightly larger in size in 1982 than applications software ($0.6 versus $0.5 billion), by 1987 programming and analysis will be 45% smaller than applications software ($1.6 versus $2.9 billion).

- This industry is a very diverse and complex sector due to the variety of sizes and types of businesses it includes. For a more in-depth examination of information services opportunities in this marketplace, see INPUT's recent report entitled, Market Opportunities in Discrete Manufacturing, August 1982.

## D. BANKING AND FINANCE SECTOR

- Banking and finance is currently the largest information services sector ($4.3 billion in 1982). Because its AAGR is only average for all industry sectors (24%) for the next five years, by 1987 it will drop to second place in size ($12.9 billion) behind discrete manufacturing (see Exhibits VI-1 and VI-2).

- Commercial banks, with over $1.5 billion in assets, are the largest segment of this industry sector, as shown in Exhibit VI-12.

EXHIBIT VI-11

DISCRETE MANUFACTURING SECTOR FORECAST -
SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES,
1982-1987

| SERVICE MODES | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) | 1987 INDUSTRY RANK |
|---|---|---|---|
| Software Products | | | |
| Systems | 38% | 642 → 3,258 | 1 |
| Applications | 43 | 494 → 2,927 | 2 |
| Professional Services | | | |
| Programming and Analysis | 21 | 621 → 1,604 | 2 |
| Other* | 27 | 143 → 465 | N/R |

0 1,000 2,000 3,000 $4,000

| | TOTAL USER EXPENDITURES ($ millions) | | |
|---|---|---|---|
| | Combined | Software Products | Professional Services |
| 1982 | 1,900 | 1,136 | 764 |
| 1987 | 8,254 | 6,185 | 2,069 |
| AAGR | 34% | 40% | 22% |

*Education, Consulting, and Facilities Management

N/R = Not Ranked

EXHIBIT VI-12

BANKING AND FINANCE INDUSTRY SECTOR -
DEMOGRAPHIC DATA

| STANDARD INDUSTRIAL CLASSIFICATION | INDUSTRY NAME | TYPE OF STATISTIC | DATA |
|---|---|---|---|
| All | Banking and Finance | Number of Establishments<br>Number of Employees | 130,315<br>2.7 Million |
| 60 | Banks (Total) | Number of Establishments (1979)<br>Number of Employees (1979) | 18,714<br>1.4 Million |
| 601 | Federal Reserve Banks | Assets (1980)<br>Number of Banks (1979)<br>Number of Employees (1979) | $ 168.5 Billion<br>44<br>20,352 |
| 602 | Commercial Banks | Assets (1980)<br>Deposits (1980)<br>Number of Banks (1980)<br>Number of Employees (1979) | $1,543.5 Billion<br>$1,194.0 Billion<br>14,870<br>1.3 Million |
| 603 | Mutual Savings Banks | Assets (1980)<br>Deposits (1980)<br>Number of Banks (1979)<br>Number of Employees (1979) | $ 166.6 Billion<br>$ 149.9 Billion<br>2,130<br>57,116 |
| 604/605 | Trust Companies and Other Functions | Assets<br>Number of Establishments (1979)<br>Number of Employees (1979) | -<br>1,670<br>28,422 |
| 61 | Credit Agencies (Total) | Assets<br>Number of Companies (1979)<br>Number of Employees (1979) | -<br>87,936<br>910,964 |
| 611 | Rediscount and Financing Institutions | Assets<br>Number of Establishments (1979)<br>Number of Employees (1979) | -<br>63<br>1,143 |
| 612 | Savings and Loan Associations | Assets (1980)<br>Number of Associations (1980)<br>Number of Employees (1980) | $ 630.0 Billion<br>4,613<br>224,164 |

Continued

EXHIBIT VI-12 (Cont.)

BANKING AND FINANCE INDUSTRY SECTOR -
DEMOGRAPHIC DATA

| STANDARD INDUSTRIAL CLASSIFICATION | INDUSTRY NAME | TYPE OF STATISTIC | DATA |
|---|---|---|---|
| 613 | Agricultural Credit Institutions | Assets<br>Number of Establishments (1979)<br>Number of Employees (1979) | -<br>1,353<br>15,191 |
| 614 | Credit Unions | Assets (1978)<br>Number of Credit Unions (1979)<br>Number of Employees (1979) | $ 62.6 Billion<br>37,478<br>215,927 |
| 615 | Business Credit Institutions | Assets<br>Number of Establishments (1979)<br>Number of Employees (1979) | -<br>2,430<br>48,902 |
| 616 | Mortgage Bankers & Brokers | Value of Mortgage Originations (1978)<br>Number of Firms (1979)<br>Number of Employees (1979) | $104 Billion<br>4,521<br>61,191 |
| 62 | Security & Commodity Brokers | Total Capitalization (1978)<br>Number of Companies (1979)<br>Number of Employees (1979) | $ 5.7 Billion<br>10,486<br>199,937 |
| 67 | Holding and Other Investment Companies | Number of Establishments (1979)<br>Number of Employees (1979) | 13,179<br>144,509 |

- The entire banking and finance environment is undergoing enormous change due to the impact of the economy, deregulation, and exploding information technology. As a result, banking institutions are under severe cost pressures at the same time that there is an increased need for major, new computer-based services for their clients.

- This sector is the largest industry market for applications software products ($0.6 billion in 1982, $3.8 billion by 1987). Its AAGR of 43% for this service mode is the third largest of all industries, as shown in Exhibits VI-5 and VI-13.

- The strong preference of banking organizations for applications software products is shown in Exhibit VI-10 where it exceeds programming and analysis by 2.5 times in 1982 ($0.64 to $0.26 billion), and by almost five times in 1987 ($3.8 to $0.8 billion). Reasons for this preference include:

  - Commonality of operating procedures within the industry due to its historically highly regulated environment.

  - Market demand for new banking services which cannot wait for the long lead time and higher cost associated with professional services or in-house development.

  - Variety of applications software products available from vendors who aggressively compete in this dynamic marketplace.

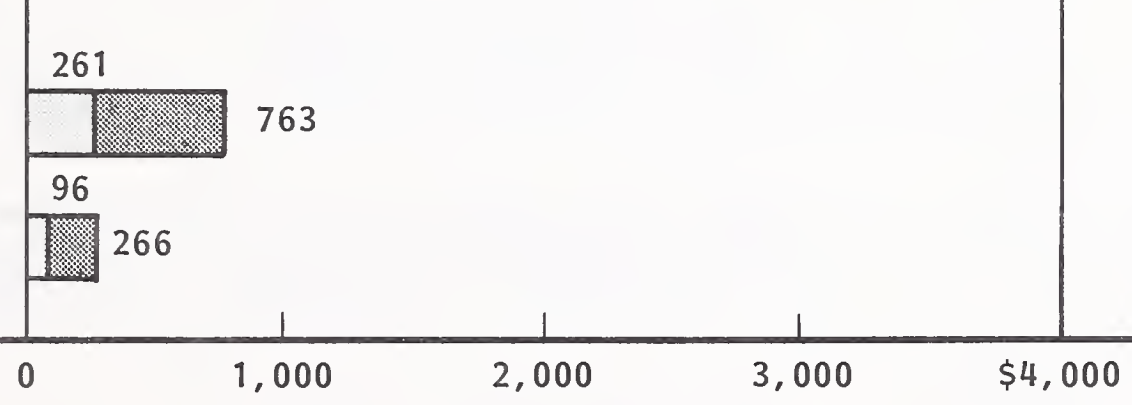
- The banking and finance systems software market ranks fifth in size at $0.8 billion for 1987, as shown in Exhibit VI-13.

- INPUT's recent major research report, New Processing Opportunities in Banking, reviews this industry in greater depth.

EXHIBIT VI-13

BANKING AND FINANCE SECTOR FORECAST -
SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES,
1982-1987

| SERVICE MODES | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) | 1987 INDUSTRY RANK |
|---|---|---|---|
| Software Products | | | |
| Systems | 38% | 157 → 792 | 5 |
| Applications | 43 | 644 → 3,794 | 1 |
| Professional Services | | | |
| Programming and Analysis | 24 | 261 → 763 | 5 |
| Other* | 23 | 96 → 266 | N/R |




| | TOTAL EXPENDITURES ($ millions) | | |
|---|---|---|---|
| | Combined | Software Products | Professional Services |
| 1982 | $1,158 | $ 801 | $ 357 |
| 1987 | 5,615 | 4,586 | 1,029 |
| AAGR | 37% | 42% | 24% |

*Education, Consulting, and Facilities Management

N/R = Not Ranked

## E. PROCESS MANUFACTURING SECTOR

- Products manufactured by this sector are usually sold in bulk or volume measures (e.g., oil by the barrel, textiles by the yard) rather than individual units (e.g., chairs, airplanes, cars).

- The process manufacturing sector is about 30% smaller than the discrete sector in terms of number of establishments and number of employees, as shown in Exhibits VI-10 and VI-14. However, process manufacturing has a much higher revenue per establishment than the discrete sector.

- At least 40% of this industry sector's value of shipment is energy related.

- Process manufacturing will be the third largest industry market for information services, reaching $8.6 billion by 1987. Its AAGR of 26% is slightly larger than the 24% average for all industries and much larger than the 19% AAGR forecast for the federal government, 1982's third largest sector (see Exhibit VI-2).

- Systems software is the largest of the four service modes profiled in Exhibit VI-15 (1987 user expenditures are $2.1 billion). As was shown in Exhibit VI-4, the 39% AAGR for systems software is the largest AAGR of all 14 industry sectors.

## F. FEDERAL GOVERNMENT SECTOR

- The federal government is currently the third largest user of information services with expenditures of $2.8 billion in 1982 (see Exhibit VI-1). With an AAGR of 19%, user expenditures will amount to $6.7 billion by 1987.

EXHIBIT VI-14

PROCESS MANUFACTURING INDUSTRY SECTOR -
DEMOGRAPHIC DATA

| STANDARD INDUSTRIAL CLASSIFICATION | INDUSTRY NAME | TYPE OF STATISTIC | DATA |
|---|---|---|---|
| All | Process Manufacturing | Number of Establishments<br>Number of Employees | 134,735<br>8.3 Million |
| 10 | Metal Mining | Value of Shipments (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 5.3 Billion<br>894<br>90,079 |
| 11 | Anthracite Mining | Value of Shipments (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $226.0 Million<br>158<br>3,549 |
| 12 | Coal Mining | Value of Shipments (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 16.6 Billion<br>4,013<br>257,559 |
| 13 | Oil and Gas Extraction | Value of Shipments (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 66.4 Billion<br>16,220<br>390,506 |
| 20 | Food Products | Value of Shipments (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $216.1 Billion<br>21,362<br>1.5 Million |
| 21 | Tobacco | Value of Shipments (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 10.0 Billion<br>202<br>59,258 |
| 22 | Textile Products | Value of Shipments (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 42.3 Billion<br>6,442<br>868,507 |
| 24 | Lumber and Wood Products | Value of Shipments (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 46.5 Billion<br>31,333<br>761,934 |

Continued

EXHIBIT VI-14 (Cont.)

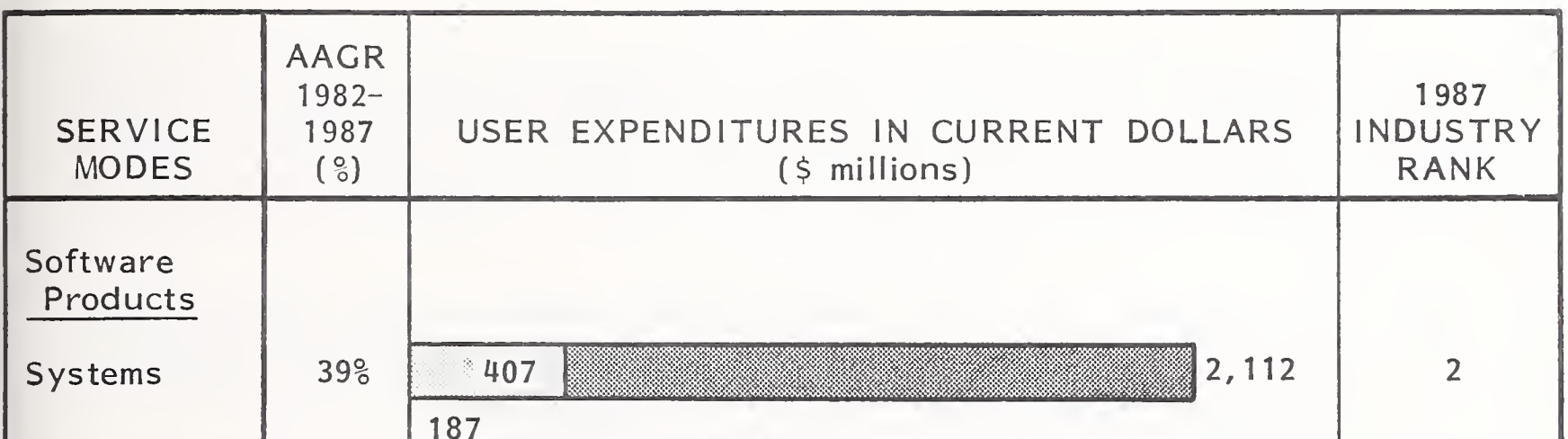
PROCESS MANUFACTURING INDUSTRY SECTOR -
DEMOGRAPHIC DATA

| STANDARD INDUSTRIAL CLASSIFI-CATION | INDUSTRY NAME | TYPE OF STATISTIC | DATA |
|---|---|---|---|
| 26 | Paper Products | Value of Shipments (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 57.0 Billion<br>6,257<br>655,054 |
| 28 | Chemicals | Value of Shipments (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $168.0 Billion<br>11,224<br>915,000 |
| 29 | Petroleum | Value of Shipments (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $103.9 Billion<br>2,129<br>152,404 |
| 30 | Rubber & Plastics | Value of Shipments (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 43.2 Billion<br>11,747<br>809,214 |
| 32 | Stone, Glass, Clay | Value of Shipments (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 41.7 Billion<br>15,834<br>654,741 |
| 33 | Primary Metals | Value of Shipments (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $118.1 Billion<br>6,920<br>1.2 Million |

EXHIBIT VI-15

PROCESS MANUFACTURING SECTOR FORECAST -
SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES,
1982-1987

| SERVICE MODES | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) | 1987 INDUSTRY RANK |
|---|---|---|---|
| Software Products | | | |
| Systems | 39% | 407 → 2,112 | 2 |
| Applications | 41 | 187 → 1,047 | 6 |
| Professional Services | | | |
| Programming and Analysis | 21 | 336 → 876 | 4 |
| Other* | 26 | 95 → 297 | N/R |




| | TOTAL EXPENDITURES ($ millions) | | |
|---|---|---|---|
| | Combined | Software Products | Professional Services |
| 1982 | $1,025 | $ 594 | $ 431 |
| 1987 | 4,332 | 3,159 | 1,173 |
| AAGR | 33% | 40% | 22% |

*Education, Consulting, and Facilities Management
N/R = Not Ranked

- This slower than average growth rate will cause it to fall to fourth place (behind process manufacturing) by 1987, as was shown in Exhibit VI-2.

- The federal government is not a good market for applications software, ranking fourteenth out of 14 industry sectors, as shown in Exhibits VI-5 and VI-16.

- However, it is an excellent market for programming and analysis ($2.4 billion in 1987, #1 ranking), for all other types of professional services ($1.1 billion in 1987, #1 ranking), as well as for systems software ($1.8 billion, #3 ranking).

- The federal government represents the largest market for professional services facilities management with an expenditure of $0.5 billion by 1987, up from $0.4 billion in 1982, as was shown in Exhibit VI-9.

## G. INSURANCE SECTOR

- Insurance is the fifth largest industry market for information services with projected revenue of $5.4 billion by 1987 (see Exhibit VI-2).

- Life insurance, fire/marine/casualty insurance, and medical/health insurance are the largest subsectors in terms of premium receipts, as shown in Exhibit VI-17.

- Applications software has a major appeal to this sector. User expenditures will grow at a 35% AAGR from a base of $0.5 billion in 1982 to $1.9 billion by 1987, as shown in Exhibit VI-18. This growth will enable the insurance sector to remain as the third largest industry sector for applications software throughout this five-year period.

EXHIBIT VI-16

FEDERAL GOVERNMENT SECTOR FORECAST -
SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES,
1982-1987

| SERVICE MODES | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) | 1987 INDUSTRY RANK |
|---|---|---|---|
| Software Products | | | |
| Systems | 34% | 417 — 1,786 | 3 |
| Applications | 24 | 18 — 54 | 14 |
| Professional Services | | | |
| Programming and Analysis | 18 | 1,076 — 2,434 | 1 |
| Other* | 14 | 593 — 1,144 | N/R |

0 500 1,000 1,500 2,000 $2,500

| | TOTAL EXPENDITURES ABOVE | | |
|---|---|---|---|
| | Combined | Software Products | Professional Services |
| 1982 | $2,140 | $ 435 | $1,669 |
| 1987 | 5,418 | 1,840 | 3,578 |
| AAGR | 20% | 33% | 16% |

*Education, Consulting, and Facilities Management
N/R = Not Ranked

EXHIBIT VI-17

INSURANCE INDUSTRY SECTOR -
DEMOGRAPHIC DATA

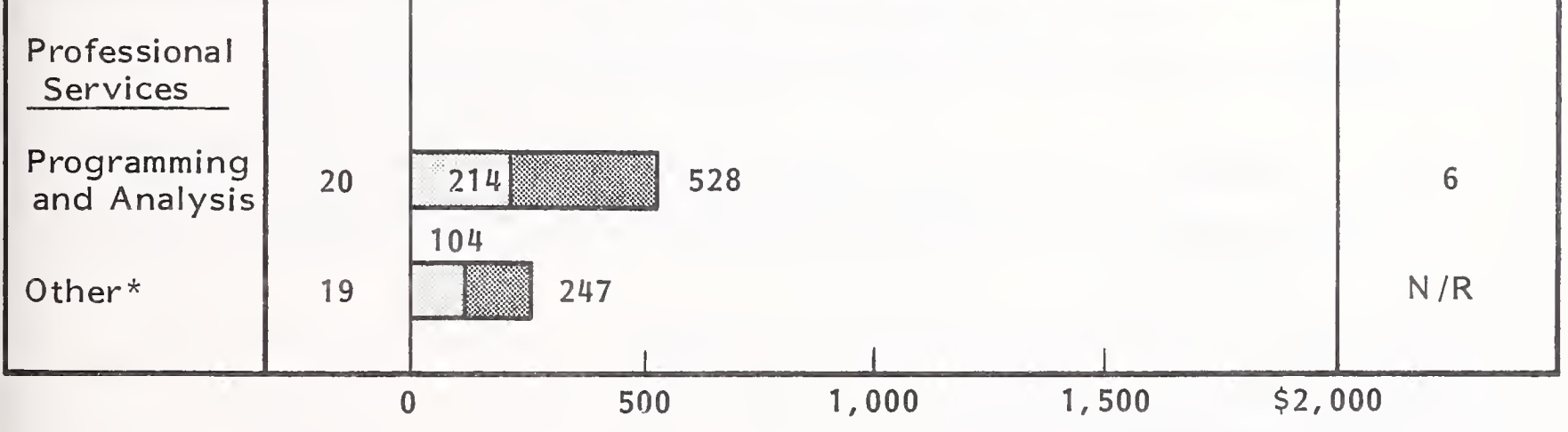
| STANDARD INDUSTRIAL CLASSIFICATION | INDUSTRY NAME | TYPE OF STATISTIC | DATA |
|---|---|---|---|
| All | Insurance | Number of Establishments<br>Number of Employees | 111,482<br>1.7 Million |
| 631 | Life Insurance | Premium Receipts (1980)<br>Number of Corporate Groups (1978)<br>Number of Establishments (1979)<br>Number of Employees (1980) | $ 94.2 Billion<br>1,824<br>15,848<br>540,000 |
| 632 | Medical and Health Insurance | Premium Receipts (1979)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 55.8 Billion<br>1,532<br>111,730 |
| 633 | Fire, Marine and Casualty Insurance | Premium Receipts (1978)<br>Number of Establishments (1979)<br>Number of Corporate Groups (1978)<br>Number of Employees (1979) | $ 81.7 Billion<br>9,335<br>-<br>444,459 |
| 635 | Surety Insurance | Premium Receipts (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $835.8 Million<br>448<br>8,418 |
| 636 | Title Insurance | Premiums Written<br>Number of Establishments (1979)<br>Number of Employees (1979) | -<br>2,518<br>52,075 |
| 637 | Pension, Health and Welfare Funds | Premiums Written-Amount in Force<br>Number of Establishments (1979)<br>Number of Employees (1979) | -<br>3,297<br>44,982 |
| 639 | Insurance Carriers (N.E.C.)* | Premiums Written<br>Number of Establishments (1979)<br>Number of Employees (1979) | -<br>170<br>3,383 |
| 64 | Insurance Agents, Brokers and Services | Operating Revenues (1979)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 20.7 Billion<br>78,334<br>450,700 |

*Not Elsewhere Classified

EXHIBIT VI-18

INSURANCE SECTOR FORECAST -
SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES,
1982-1987

| SERVICE MODES | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) | 1987 INDUSTRY RANK |
|---|---|---|---|
| Software Products | | | |
| Systems | 34% | 183 → 802 | 4 |
| Applications | 35 | 482 → 1,905 | 3 |
| Professional Services | | | |
| Programming and Analysis | 20 | 214 → 528 | 6 |
| Other* | 19 | 104 → 247 | N/R |




| | TOTAL EXPENDITURES ABOVE ($ millions) | | |
|---|---|---|---|
| | Combined | Software Products | Professional Services |
| 1982 | $ 983 | $ 665 | $318 |
| 1987 | 3,482 | 2,707 | 775 |
| AAGR | 29% | 32% | 20% |

*Education, Consulting, and Facilities Management

N/R = Not Ranked

- Insurance represents a good market for systems software also. By 1987 it will account for $0.8 billion, fourth largest of the industry sectors.

- By 1987 the insurance sector will be the sixth largest market for programming and analysis. However, this market is only growing at a 20% AAGR. Thus, while applications software is over two times larger than programming and analysis in 1982, by 1987 it will be more than three times larger.

- The continued strength of applications software products in the insurance sector is being fueled by major changes taking place in the industry.

  - The demand for computerization is being stimulated by the shift toward investment products which compete more aggressively with alternatives offered by the banking and finance organizations. These products are more flexible, as well as more complicated from a sales and administration point of view. Computers are becoming the tool by which insurance firms can establish their competitive edge.

- Insurance is the second largest market for professional services facilities management with an expenditure level of $0.1 billion by 1987, as was shown in Exhibit VI-9.

## H. MEDICAL SECTOR

- The medical sector ranks 10th in terms of total information services expenditures for 1982, as was shown in Exhibit VI-1. However, because its 26% AAGR is one of the highest of all of the industries, by 1987 it will become the sixth largest sector with information services expenditures of $4.2 billion, as was shown in Exhibit VI-2.

- Health expenditures now exceed of $250 billion annually with hospitals comprising the largest segment, as shown in Exhibit VI-19.

- Applications software is the largest of the four service modes, as shown in Exhibit VI-20, with $1.2 billion in user expenditures by 1987.

- The medical sector is the second fastest growing applications software segment with an AAGR of 45%, as was shown in Exhibit VI-5. One of the important driving forces behind this growth is the increased computerization of small hospitals, clinics, doctors, and dentist offices with mini as well as personal computers.

## I. SERVICES SECTOR

- The services sector has the largest payroll with over 18 million employees, as shown in Exhibit VI-21.

- The information services industry is included within this business sector.

- The services sector is seventh in 1987 information services expenditures, as was shown in Exhibit VI-2. However, it ranks ninth in applications software, twelfth in systems software, and fourteenth in programming and analysis, as shown in Exhibit VI-22.

- Both systems software and applications software AAGRs are below the average of all industrial sectors.

  - A great deal of personal computer software will be sold to the smaller establishments which typically comprise this sector.

EXHIBIT VI-19

MEDICAL INDUSTRY SECTOR -
DEMOGRAPHIC DATA

| STANDARD INDUSTRIAL CLASSIFICATION | INDUSTRY NAME | TYPE OF STATISTIC | DATA |
|---|---|---|---|
| All | Medical | Health Expenditures<br>Number of Establishments<br>Number of Employees | 148.1 Billion<br>593,383<br>5.0 Million |
| 801 | Physicians | Health Expenditures (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 46.6 Billion<br>140,130<br>716,739 |
| 802 | Dentists | Health Expenditures (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 15.6 Billion<br>83,891<br>341,771 |
| 803 | Osteopaths | Receipts (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $776.3 Million<br>5,293<br>23,510 |
| 804 | Health Practitioners (N.E.C.)* | Health Expenditures (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 2.2 Billion<br>28,291<br>86,400 |
| 805 | Nursing Homes | Health Expenditures (1979)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 17.8 Billion<br>12,707<br>979,844 |
| 806 | Hospitals | Health Expenditures (1979)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 99.6 Billion<br>5,230<br>2.6 Million |
| 807 | Medical and Dental Laboratories | Health Expenditures (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 2.1 Billion<br>10,720<br>98,589 |
| 808 | Outpatient Care Facilities | Health Expenditures (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 1.8 Billion<br>4,467<br>60,432 |

*Not Elsewhere Classified

Continued

EXHIBIT VI-19 (Cont.)

MEDICAL INDUSTRY SECTOR -
DEMOGRAPHIC DATA

| STANDARD INDUSTRIAL CLASSIFI-CATION | INDUSTRY NAME | TYPE OF STATISTIC | DATA |
|---|---|---|---|
| 809 | Health and Allied Services (N.E.C.) * | Health Expenditures (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 3.6 Billion<br>3,276<br>97,184 |

*Not Elsewhere Classified

EXHIBIT VI-20

MEDICAL SECTOR FORECAST -
SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES,
1982-1987

| SERVICE MODES | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) | 1987 INDUSTRY RANK |
|---|---|---|---|
| Software Products | | | |
| Systems | 35% | 88 → 392 | 8 |
| Applications | 45 | 192 → 1,215 | 5 |
| Professional Services | | | |
| Programming and Analysis | 21 | 94 → 243 | 9 |
| Other* | 15 | 18 → 36 | N/R |

0 500 1,000 $1,500

| | TOTAL EXPENDITURES ABOVE ($ millions) | | |
|---|---|---|---|
| | Combined | Software Products | Professional Services |
| 1982 | $ 392 | $ 280 | $112 |
| 1987 | 1,886 | 1,607 | 279 |
| AAGR | 37% | 42% | 20% |

*Education, Consulting, and Facilities Management

N/R = Not Ranked

EXHIBIT VI-21

SERVICES INDUSTRY SECTOR -
DEMOGRAPHIC DATA

| STANDARD INDUSTRIAL CLASSIFI-CATION | INDUSTRY NAME | TYPE OF STATISTIC | DATA |
|---|---|---|---|
| All | Services | Receipts<br>Number of Establishments<br>Number of Employees | $ 96.4 Billion<br>332,233<br>4.2 Million |
| 73 | Business Services | Receipts (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 54.5 Billion<br>154,313<br>2.9 Million |
| 81 | Legal Services | Receipts (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 18.7 Billion<br>94,897<br>477,744 |
| 891 | Engineering and Archi-tectural Services | Receipts (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 14.7 Billion<br>36,180<br>474,467 |
| 892 | Non-Commercial Research Organizations | Receipts (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 81.7 Million<br>2,026<br>70,664 |
| 893 | Accounting, Auditing & Bookkeeping | Receipts (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 8.0 Billion<br>39,982<br>290,508 |
| 899 | Services (N.E.C.)* | Receipts (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $439.2 Million<br>4,835<br>22,708 |

*Not Elsewhere Classified

EXHIBIT VI-22

SERVICES SECTOR FORECAST -
SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES,
1982-1987

| SERVICE MODES | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) | 1987 INDUSTRY RANK |
|---|---|---|---|
| Software Products | | | |
| Systems | 33% | 55 → 224 | 12 |
| Applications | 38 | 128 → 641 | 9 |
| Professional Services | | | |
| Programming and Analysis | 15 | 27 → 55 | 14 |
| Other* | 18 | 6 → 14 | N/R |

0 200 400 600 $800

| | TOTAL EXPENDITURES ABOVE ($ millions) | | |
|---|---|---|---|
| | Combined | Software Products | Professional Services |
| 1982 | $216 | $183 | $33 |
| 1987 | 934 | 865 | 69 |
| AAGR | 34% | 36% | 16% |

*Education, Consulting, and Facilities Management

N/R = Not Ranked

- However, the total user expenditures are not huge due to the relative scarcity of mini and mainframe computers requiring large investments in software.

## J. WHOLESALE SECTOR

- The wholesale sector is populated by many small businesses. The average firm has 13 employees.

- The largest subsector is petroleum and petroleum products, which at $158.2 billion in sales has now surpassed groceries and related products ($149.9 billion), as shown in Exhibit VI-23.

- The wholesale sector is eighth in amount of information services expenditures, as was shown in Exhibit VI-2, with $3.9 billion forecast by 1987. Its 24% AAGR is equal to the industry average.

  - Businesses in this group are active users of applications software ($1.5 billion by 1987, #4 ranked), as shown in Exhibit VI-24.

  - This contrasts with expenditures for programming and analysis, which at $0.2 billion by 1987 ranks eleventh.

- The availability of mini and personal computers for the smaller establishments, such as typically found in the wholesale sector, helps fuel the interest in applications software.

EXHIBIT VI-23

WHOLESALE INDUSTRY SECTOR -
DEMOGRAPHIC DATA

| STANDARD INDUSTRIAL CLASSIFI-CATION | INDUSTRY NAME | TYPE OF STATISTIC | DATA |
|---|---|---|---|
| 50-51 | Wholesale Trade | Total Sales (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 362.4 Billion<br>200,726<br>2.7 Million |
| 501 | Motor Vehicles & Automotive Equipment | Total Sales (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 81.6 Billion<br>38,066<br>482,392 |
| 502 | Furniture | Total Sales(1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 15.6 Billion<br>1,081<br>123,427 |
| 503 | Lumber and Construction | Total Sales (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 33.2 Billion<br>16,237<br>214,696 |
| 504 | Sporting Goods and Toys | Total Sales<br>Number of Establishments (1979)<br>Number of Employees (1979) | -<br>6,206<br>85,939 |
| 505 | Metals and Minerals | Total Sales (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 29.0 Billion<br>9,259<br>151,630 |
| 506 | Electrical Goods | Total Sales (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 46.4 Billion<br>25,040<br>319,240 |
| 507 | Hardware, Plumbing and Heating | Total Sales (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 27.6 Billion<br>18,960<br>216,925 |
| 508 | Machinery and Equipment | Total Sales (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 129.0 Billion<br>85,877<br>1.1 Million |

Continued

EXHIBIT VI-23 (Cont.)

WHOLESALE INDUSTRY SECTOR -
DEMOGRAPHIC DATA

| STANDARD INDUSTRIAL CLASSIFICATION | INDUSTRY NAME | TYPE OF STATISTIC | DATA |
|---|---|---|---|
| 509 | Miscellaneous Durables | Total Sales<br>Number of Establishments (1979)<br>Number of Employees (1979) | -<br>109,855<br>1.5 Million |
| 511 | Paper and Paper Products | Total Sales (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 21.6 Billion<br>16,681<br>162,527 |
| 512 | Drugs and Sundries | Total Sales (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 13.0 Billion<br>3,419<br>97,859 |
| 513 | Apparel Piece Goods and Notions | Total Sales (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 25.8 Billion<br>12,472<br>144,619 |
| 514 | Groceries & Related Products | Total Sales (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $149.9 Billion<br>36,127<br>649,767 |
| 515 | Farm Products | Total Sales (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 84.2 Billion<br>13,947<br>141,378 |
| 516 | Chemicals and Allied Products | Number of Establishments (1979)<br>Number of Employees (1979) | 8,330<br>105,043 |
| 517 | Petroleum and Petroleum Products | Total Sales (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $158.2 Billion<br>18,879<br>184,268 |

EXHIBIT VI-24

WHOLESALE SECTOR FORECAST -
SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES,
1982-1987

| SERVICE MODES | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) | 1987 INDUSTRY RANK |
|---|---|---|---|
| Software Products | | | |
| Systems | 35% | 87 → 389 | 9 |
| Applications | 39 | 287 → 1,517 | 4 |
| Professional Services | | | |
| Programming and Analysis | 14 | 104 → 196 | 11 |
| Other* | 13 | 24 → 44 | N/R |

0 500 1,000 1,500 $2,000

| | TOTAL EXPENDITURES ABOVE ($ millions) | | |
|---|---|---|---|
| | Combined | Software Products | Professional Services |
| 1982 | $ 502 | $ 374 | $128 |
| 1987 | 2,141 | 1,901 | 240 |
| AAGR | 34% | 38% | 13% |

*Education, Consulting, and Facilities Management

N/R = Not Ranked

## K. RETAIL SECTOR

- The retail sector is one of the largest industry sectors in terms of value of shipments. Total number of employees (over 15.1 million) is second only to the services sector, as shown in Exhibit VI-25.

- The two largest subsectors are automotive dealers/gasoline service stations and food stores. They each comprise over 25% of total industry sales.

- The retail sector is ninth in total information services expenditures, as was shown in Exhibit VI-2), and is growing at a rate (22% AAGR) that is slightly less than the average for all industrial sectors.

- Applications software expenditures by 1987 will be at $0.9 billion, seventh largest of the major industries, as shown in Exhibit VI-26. Large numbers of the over 1.2 million establishments in this sector will be able to afford computers for the first time. This will boost both systems and applications software sales.

- Programming and analysis will grow at a much smaller rate (12% AAGR) than either systems or applications software. By 1987 total programming and analysis expenditures will be $0.2 billion.

## L. STATE AND LOCAL GOVERNMENT SECTOR

- State and local government is the 10th largest information services market with expenditures of $1.4 billion in 1982 increasing to $2.7 billion by 1987, for an AAGR of 14%, as was shown in Exhibits VI-1 and VI-2.

EXHIBIT VI-25

RETAIL INDUSTRY SECTOR -
DEMOGRAPHIC DATA

| STANDARD INDUSTRIAL CLASSIFICATION | INDUSTRY NAME | TYPE OF STATISTIC | DATA |
|---|---|---|---|
| All | Retail Trade | Sales<br>Number of Establishments<br>Number of Employees | $866.4 Billion<br>1.2 Million<br>14.5 Million |
| 52 | Building Materials, Hardware | Sales (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 48.2 Billion<br>62,970<br>542,696 |
| 53 | General Merchandise | Sales (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $116.7 Billion<br>37,349<br>2.0 Million |
| 54 | Food Stores | Sales (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $217.5 Billion<br>159,162<br>2.2 Million |
| 55 | Automotive Dealers & Gasoline Service Stations | Sales (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $261.5 Billion<br>211,199<br>1.9 Million |
| 56 | Apparel & Accessories | Sales (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 44.5 Billion<br>123,484<br>959,353 |
| 57 | Furniture, Home Furnishings & Equipment | Sales (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 43.2 Billion<br>86,976<br>585,680 |
| 58 | Eating & Drinking | Sales (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 86.6 Billion<br>283,599<br>4.4 Million |
| 59 | Miscellaneous Retail | Sales (1980)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 48.2 Billion<br>260,114<br>1.9 Million |

EXHIBIT VI-26

RETAIL SECTOR FORECAST -
SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES,
1982-1987

| SERVICE MODES | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) | 1987 INDUSTRY RANK |
|---|---|---|---|
| Software Products | | | |
| Systems | 33% | 92 → 382 | 10 |
| Applications | 39 | 182 → 935 | 7 |
| Professional Services | | | |
| Programming and Analysis | 12 | 125 → 217 | 10 |
| Other* | 16 | 27 → 57 | N/R |

0 250 500 750 $1,000

| | TOTAL EXPENDITURES ABOVE ($ millions) | | |
|---|---|---|---|
| | Combined | Software Products | Professional Services |
| 1982 | $ 426 | $ 274 | $152 |
| 1987 | 1,591 | 1,317 | 274 |
| AAGR | 30% | 37% | 13% |

*Education, Consulting, and Facilities Management

N/R = Not Ranked

- Major expenditures are made for education, welfare, highways, and hospitals, as shown in Exhibit VI-27.

- There exists a large need for increased computerization throughout state and local government functions. However, recent economic problems coupled with "Proposition 13" legislation (which restricts budgets by law) have prevented meeting this need.

- State and local governments are a major market for programming and analysis services. Currently in second place with $0.8 billion of expenditures for 1982, this sector will grow at a 12% AAGR to become a $1.5 billion market by 1987, ranking third place behind discrete manufacturing, as shown in Exhibits VI-6 and VI-28.

- This sector also ranks third in professional services consulting and education with a projected 1987 expenditure level of $0.2 billion and $0.1 billion respectively, as was shown in Exhibits VI-7 and VI-8.

## M. OTHER INDUSTRIES SECTOR

- This sector includes all industries not included in the other 13 sectors. As shown in Exhibit VI-29, this "others" group is comprised of subsectors with greatly differing characteristics.

- The largest subsectors, in terms of sales, are construction, real estate/insurance, and agriculture.

- This sector ranks 11th in information services expenditures (see Exhibit VI-2) with $1.5 billion in 1982 and $2.6 billion by 1987.

EXHIBIT VI-27

STATE AND LOCAL GOVERNMENT -
DEMOGRAPHIC DATA

| SUMMARY OF FINANCES | DATA |
|---|---|
| Revenues (Fiscal 1980) | $369 Billion |
| Expenditures (Fiscal 1980) | $432 Billion |
| Number of Employees (1980) | 13.3 Million |
| Number of States (1977) | 50 |
| Number of Municipalities (1977) | 18,862 |
| Number of Townships & Towns (1977) | 16,822 |
| Number of Counties (1977) | 3,042 |
| Number of School Districts (1977) | 15,174 |
| Number of Special Districts (1977) | 25,962 |
| Total State & Local Government Entities (1977) | 79,912 |

| EXPENDITURES BY FUNCTION, FISCAL 1980 | EXPENDITURES ($ billion) | PERCENT |
|---|---|---|
| Direct General Expenditures | $367.3 | 85.0% |
| Education | 133.2 | 30.8 |
| Higher Education | 33.9 | 7.8 |
| Local Schools | 92.9 | 21.5 |
| Highways | 33.3 | 7.7 |
| Public Welfare | 45.5 | 10.5 |
| Health | 8.4 | 1.9 |
| Hospitals | 23.8 | 5.5 |
| Police Protection | 13.5 | 3.1 |
| Local Fire Protection | 5.7 | 1.3 |
| Natural Resources | 5.5 | 1.3 |
| Sanitation & Sewage | 13.2 | 3.1 |
| Housing & Urban Renewal | 6.1 | 1.4 |
| Local Parks & Recreation | 6.5 | 1.5 |
| Financial Administration | 6.7 | 1.5 |
| General Control | 8.7 | 2.0 |
| Interest on General Debt | 14.7 | 3.4 |
| Utility & Liquor Store Expenditures | 36.2 | 8.4 |
| Water Supply System | 9.2 | 2.1 |
| Electric Power System | 15.0 | 3.5 |
| Transit System | 7.7 | 1.8 |
| Gas Supply System | 1.7 | 0.4 |
| Liquor Stores | 2.6 | 0.6 |
| Insurance Trust Expenditures | 28.8 | 6.7 |
| Employee Retirement | 14.0 | 3.2 |
| Unemployment Compensation | 12.1 | 2.8 |

EXHIBIT VI-28

STATE AND LOCAL GOVERNMENT SECTOR FORECAST - SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES, 1982-1987

| SERVICE MODES | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) | 1987 INDUSTRY RANK |
|---|---|---|---|
| Software Products | | | |
| Systems | 21% | 131 / 11 | 11 |
| Applications | 25 | 43 / 130 | 13 |
| Professional Services | | | |
| Programming and Analysis | 12 | 825 / 1,451 | 3 |
| Other* | 16 | 175 / 366 | N/R |

0 500 1,000 $1,500

| | TOTAL EXPENDITURES ABOVE ($ millions) | | |
|---|---|---|---|
| | Combined | Software Products | Professional Services |
| 1982 | $1,174 | $174 | $1,000 |
| 1987 | 2,284 | 467 | 1,817 |
| AAGR | 14% | 22% | 13% |

*Education, Consulting, and Facilities Management

N/R = Not Ranked

EXHIBIT VI-29

OTHER INDUSTRIES SECTOR -
DEMOGRAPHIC DATA

| STANDARD INDUSTRIAL CLASSIFICATION | INDUSTRY NAME | TYPE OF STATISTIC | DATA |
|---|---|---|---|
| All | All | Number of Establishments<br>Number of Employees | 1.5 Million<br>12.5 Million |
| 01-09 | Agriculture, Forestry, Fishing | Sales (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $136.7 Billion<br>45,880<br>282,689 |
| 15-17 | Construction | Sales (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $223.2 Billion<br>447,273<br>4.6 Million |
| 65 | Real Estate | Sales (1979)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $119.8 Billion<br>175,565<br>1.0 Million |
| 66 | Real Estate, Insurance | Sales (1979)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $341.0 Million<br>6,730<br>32,221 |
| 70 | Hotels, Etc. | Receipts (1979)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 23.5 Billion<br>42,315<br>1.1 Million |
| 72 | Personal Services | Receipts (1979)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 22.2 Billion<br>154,914<br>965,099 |
| 75 | Auto Repair | Receipts (1979)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 29.3 Billion<br>101,605<br>585,992 |
| 76 | Miscellaneous Repair | Receipts (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 15.8 Billion<br>49,140<br>313,929 |

Continued

EXHIBIT VI-29 (Cont.)

OTHER INDUSTRIES SECTOR -
DEMOGRAPHIC DATA

| STANDARD INDUSTRIAL CLASSIFI-CATION | INDUSTRY NAME | TYPE OF STATISTIC | DATA |
|---|---|---|---|
| 78 | Motion Pictures | Receipts (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 7.8 Billion<br>15,041<br>213,011 |
| 79 | Recreation | Receipts (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 11.9 Billion<br>45,317<br>692,766 |
| 83 | Social Services | Receipts (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 10.3 Billion<br>59,867<br>1.0 Million |
| 84 | Museums, Etc. | Expenses (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $613.1 Million<br>1,530<br>28,785 |
| 86 | Membership Organizations | Expenses (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 12.1 Billion<br>131,875<br>1.2 Million |
| 99 | Non-Classifiable | Number of Establishments (1979)<br>Number of Employees (1979) | 219,736<br>485,864 |

- Applications software is the largest of the service modes profiled in Exhibit VI-30 with $0.6 billion of expenditures by 1987. This represents an impressive 41% AAGR for the 1982-1987 period. This growth will be stimulated by more aggressive software product acquisitions as the economy slowly improves, especially in the construction and real estate subsectors.

## N. UTILITIES SECTOR

- Utilities are the 12th largest information services market with $0.9 billion in expenditures in 1982 growing to $2.3 billion by 1987, an AAGR of 20%, as was shown in Exhibit VI-2.

- Electric services comprises the largest subsector with over $82 billion in customer revenue. Poor earnings combined with the resistance of state regulatory agencies to allow rate increases result in slower than average growth rates for software and professional services, as shown in Exhibit VI-31.

- Telephone companies are the second largest subsector with over $55 billion.

  - The 1983 spin-off of the Bell operating companies from AT&T will result in a more competitive marketplace, further encouraging computerization as a strategic tool for obtaining a competitive edge.

  - One of the primary beneficiaries of this new environment will be the programming and analysis service mode. It is the largest of the service modes for the utility sector with $0.4 billion in expenditures by 1987, as shown in Exhibit VI-32.

EXHIBIT VI-30

OTHER SECTOR FORECAST -

SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES,

1982-1987

| SERVICE MODES | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) | 1987 INDUSTRY RANK |
|---|---|---|---|
| Software Products | | | |
| Systems | 34% | 51 → 219 | 13 |
| Applications | 41 | 112 → 616 | 10 |
| Professional Services | | | |
| Programming and Analysis | 12 | 142 → 247 | 8 |
| Other* | 17 | 27 → 60 | N/R |

0 200 400 600 $800

| | TOTAL EXPENDITURES ($ millions) | | |
|---|---|---|---|
| | Combined | Software Products | Professional Services |
| 1982 | $ 332 | $163 | $169 |
| 1987 | 1,142 | 835 | 307 |
| AAGR | 28% | 39% | 13% |

*Education, Consulting, and Facilities Management

N/R = Not Ranked

EXHIBIT VI-31

UTILITIES INDUSTRY SECTOR -
DEMOGRAPHIC DATA

| STANDARD INDUSTRIAL CLASSIFICATION | INDUSTRY NAME | TYPE OF STATISTIC | DATA |
|---|---|---|---|
| All | Utilities | Number of Establishments<br>Number of Employees | 38,785<br>2 Million |
| 481 | Telephone Communications | Operating Revenues (1979)<br>Number of Companies (1979)<br>Number of Employees (1979) | $ 55.7 Billion<br>13,389<br>1.0 Million |
| 482 | Telegraph Companies | Operating Revenues (1979)<br>Number of Companies (1979)<br>Number of Employees (1979) | $ 1.1 Billion<br>690<br>12,726 |
| 483 | Radio and TV Broadcasting | Operating Revenues (1979)<br>Number of Stations (1979)<br>Number of Employees (1979) | $ 10.7 Billion<br>6,141<br>174,918 |
| 489 | Communications Services (N.E.C.)* | Operating Revenues<br>Number of Establishments (1979)<br>Number of Employees (1979) | -<br>3,166<br>54,579 |
| 491 | Electric Services | Revenues (1980)<br>Number of Plants (1979)<br>Number of Employees (1979) | $ 82.0 Billion<br>4,471<br>360,700 |
| 492 | Gas Products & Services | Revenues (1979)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 39.4 Billion<br>2,922<br>128,578 |
| 493 | Combined Gas and Electric | Operating Revenues<br>Number of Establishments (1979)<br>Number of Employees (1979) | -<br>946<br>160,768 |
| 494 | Water Supply | Operating Revenues<br>Number of Establishments (1979)<br>Number of Employees (1979) | -<br>2,933<br>21,374 |

*Not Elsewhere Classified

Continued

EXHIBIT VI-31 (Cont.)

UTILITIES INDUSTRY SECTOR -
DEMOGRAPHIC DATA

| STANDARD INDUSTRIAL CLASSIFI-CATION | INDUSTRY NAME | TYPE OF STATISTIC | DATA |
|---|---|---|---|
| 495 | Sanitary Services | Operating Revenues<br>Number of Establishments (1979)<br>Number of Employees (1979) | -<br>3,760<br>49,597 |
| 496 | Steam Supply | Operating Revenues<br>Number of Establishments (1979)<br>Number of Employees (1979) | -<br>57<br>2,579 |
| 497 | Irrigation Systems | Operating Revenues<br>Number of Establishments (1979)<br>Number of Employees (1979) | -<br>310<br>1,967 |

EXHIBIT VI-32

UTILITIES SECTOR FORECAST -
SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES,
1982-1987

| SERVICE MODES | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) | 1987 INDUSTRY RANK |
|---|---|---|---|
| Software Products | | | |
| Systems | 29% | 114 → 404 | 7 |
| Applications | 32 | 54 → 218 | 11 |
| Professional Services | | | |
| Programming and Analysis | 21 | 170 → 444 | 7 |
| Other* | 25 | 43 → 122 | N/R |

0 100 200 300 400 $500

| | TOTAL EXPENDITURES ($ millions) | | |
|---|---|---|---|
| | Combined | Software Products | Professional Services |
| 1982 | $ 381 | $168 | $213 |
| 1987 | 1,188 | 622 | 566 |
| AAGR | 26% | 30% | 22% |

*Education, Consulting, and Facilities Management

N/R = Not Ranked

## O. TRANSPORTATION SECTOR

- One of the largest subsectors of the transportation sector is the airlines which comprises close to 40% of the sector's operating revenue, as shown in Exhibit VI-33. This industrial group experienced major shakeouts during 1982.

- This sector is 13th in expenditures for information services with a 1982 base of $0.7 billion which increases to $2.2 billion by 1987, as was shown in Exhibit VI-2. Although total expenditures are small relative to other sectors, transportation's AAGR of 26% is the second highest of the 14 industry sectors, as was shown in Exhibit VI-2.

- Transportation ranks first in AAGR for software products with a 42%, as was shown in Exhibit VI-3.

- As shown in Exhibit VI-34, systems software expenditures rank sixth by 1987 with $0.5 billion.

- Applications software ranks eighth in size with $0.7 billion in expenditures by 1987. This sector's 49% AAGR, however, ranks first among all industries.

- Deregulation is a major contributor to the service mode increases described above.

## P. EDUCATION SECTOR

- Education is the smallest industry sector with information services expenditures of $0.4 billion in 1982 growing to $0.8 billion in 1987, an AAGR of 15%, as was shown in Exhibit VI-2.

EXHIBIT VI-33

TRANSPORTATION INDUSTRY SECTOR -
DEMOGRAPHIC DATA

| STANDARD INDUSTRIAL CLASSIFICATION | INDUSTRY NAME | TYPE OF STATISTIC | DATA |
|---|---|---|---|
| All | Transportation | Operating Revenues<br>Number of Establishments<br>Number of Employees | $ 71.9 Billion<br>126,701<br>2.4 Million |
| 41 | Local and Suburban Transit | Operating Revenues (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 2.4 Billion<br>13,223<br>275,814 |
| 42 | Motor Freight | Operating Revenues (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 36.5 Billion<br>79,049<br>1.3 Million |
| 44 | Water Transportation | Operating Revenues (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $944.0 Million<br>6,635<br>216,287 |
| 45 | Air Transportation | Operating Revenues (1979)<br>Number of Air Carriers (1979)<br>Number of Employees (1979) | $ 27.1 Billion<br>6,023<br>418,949 |
| 46 | Pipelines | Operating Revenues (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 4.9 Billion<br>522<br>18,051 |
| 47 | Transportation Services | Operating Revenues (1978)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 68.8 Million<br>21,249<br>197,770 |

EXHIBIT VI-34

TRANSPORTATION SECTOR FORECAST -
SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES,
1982-1987

| SERVICE MODES | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) | 1987 INDUSTRY RANK |
|---|---|---|---|
| Software Products | | | |
| Systems | 34% | 103 → 450 | 6 |
| Applications | 49 | 98 → 731 | 8 |
| Professional Services | | | |
| Programming and Analysis | 12 | 81 → 141 | 13 |
| Other* | 19 | 22 → 53 | N/R |

0 200 400 600 $800

| | TOTAL EXPENDITURES ABOVE ($ millions) | | |
|---|---|---|---|
| | Combined | Software Products | Professional Services |
| 1982 | $ 304 | $ 201 | $103 |
| 1987 | $1,375 | $1,181 | $194 |
| AAGR | 35% | 43% | 14% |

*Education, Consulting, and Facilities Management

N/R = Not Ranked

- Elementary and secondary schools comprise over 50% of this sector, as shown in Exhibit VI-35.

- Although programming and analysis is the largest service mode in 1982, as shown in Exhibit VI-36, by 1987 systems software and applications software will be close in size.

- The fastest growing service mode (24% AAGR) is applications software which will account for $132 million by 1987. Much of these expenditures will be for personal computer software which will be used for administrative as well as education purposes.

EXHIBIT VI-35

## EDUCATION INDUSTRY SECTOR - DEMOGRAPHIC DATA

| STANDARD INDUSTRIAL CLASSIFICATION | INDUSTRY NAME | TYPE OF STATISTIC | DATA |
|---|---|---|---|
| All | Education | Expenditures<br>Number of Establishments<br>Number of Employees | $154.3 Billion<br>122,482<br>1.2 Million |
| 821 | Elementary and Secondary | Expenditures (1979)<br>Number of Schools (1979)<br>Number of Employees (1979) | $ 98.0 Billion<br>110,500<br>301,906 |
| 822 | Higher Education | Expenditures (1979)<br>Number of Colleges (1979)<br>Number of Employees (1979) | $ 54.2 Billion<br>2,871<br>794,468 |
| 823 | Libraries and Similar | Expenditures (1979)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $188.3 Million<br>1,332<br>13,242 |
| 824 | Correspondence and Vocational | Expenditures (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $ 1.0 Billion<br>2,820<br>46,171 |
| 829 | Schools and Educational Services (N.E.C.)* | Expenditures (1977)<br>Number of Establishments (1979)<br>Number of Employees (1979) | $895.2 Million<br>4,959<br>60,923 |

*Not Elsewhere Classified

EXHIBIT VI-36

EDUCATION SECTOR FORECAST -
SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES,
1982-1987

| SERVICE MODES | AAGR 1982-1987 (%) | USER EXPENDITURES IN CURRENT DOLLARS ($ millions) | 1987 INDUSTRY RANK |
|---|---|---|---|
| Software Products | | | |
| Systems | 21% | 46 → 121 | 14 |
| Applications | 24 | 45 → 132 | 12 |
| Professional Services | | | |
| Programming and Analysis | 13 | 82 → 150 | 12 |
| Other* | 13 | 12 → 22 | N/R |

0 50 100 150 $200

| | TOTAL EXPENDITURES ($ millions) | | |
|---|---|---|---|
| | Combined | Software Products | Professional Services |
| 1982 | $185 | $ 91 | $ 94 |
| 1987 | 425 | 253 | 172 |
| AAGR | 18% | 23% | 13% |

*Education, Consulting, and Facilities Management

N/R = Not Ranked

# APPENDIX A: DEFINITIONS

## APPENDIX A: DEFINITIONS

### A. REVENUE

- All revenue and user expenditures reported are available (i.e., noncaptive) revenue, as defined below.

- NONCAPTIVE INFORMATION SERVICES REVENUE - Revenue received for computer services provided within the United States from users who are not part of the same parent corporation as the vendor.

- CAPTIVE INFORMATION SERVICES REVENUE - Revenue received from users who are part of the same parent corporation as the vendors.

- TOTAL INFORMATION SERVICES REVENUE - Revenue received from services provided by vendors which perform:

  - Data processing functions using vendor computers (processing services).

  - Services that assist users to perform such functions on their own computers (software products and/or professional services).

  - A combination of hardware and software, integrated into a total system (integrated systems).

- OTHER REVENUE - Revenue derived from lines of business other than those defined above.

## B. SERVICE MODES

- PROCESSING SERVICES - Remote computing services, batch services, and processing facilities management.

  - REMOTE COMPUTING SERVICES (RCS) - Provision of data processing to a user by means of terminals at the user's sites(s) connected by a data communications network to the vendor's central computer. There are five submodes of RCS:

    . INTERACTIVE (timesharing) - Characterized by the interaction of the user with the system, primarily for problem-solving time-sharing but also for data entry and transaction processing: the user is on-line to the program/files.

    . REMOTE BATCH - Where the user hands over control of a job to the vendor's computer, which schedules job execution according to priorities and resource requirements.

    . DATA BASE - Characterized by the retrieval and processing of information from a vendor-maintained data base. The data base may be owned by the vendor or a third party.

    . USER SITE HARDWARE SERVICES (USHS) - These offerings provided by RCS vendors place programmable hardware on the user's site (rather than the EDP center). USHS offers:

      - Access to a communications network.

- Access through the network to the RCS vendor's larger computers.

- Significant software as part of the service.

- VIDEOTEX - A variant of interactive remote computing services.

  - Access may be through cable television systems as well as ordinary telephone lines.

  - The display is a television set equipped with a keypad or typewriter keyboard and special circuitry.

  - The user may not create programs on the remote computer.

  - The user may query or enter transactions to the remote computer through menu-driven software.

  - Prestel and QUBE are examples of videotex.

- BATCH SERVICES - This includes data processing performed at vendors' sites of user programs and/or data which are physically transported (as opposed to electronically by telecommunications media) to and/or from those sites. Data entry and data output services, such as keypunching and computer output microfilm processing, are also included. Batch services include those expenditures by users who take their data to a vendor site which has a terminal connected to a remote computer for the actual processing.

- PROCESSING FACILITIES MANAGEMENT (PFM) - (Also referred to as "Resource Management" or "Systems Management.") The management of all or part of a user's data processing functions under a long-term

contract (not less than one year). This would include both remote computing and batch services. To qualify as PFM, the contractor must directly plan, control, operate, and own the facility provided to the user, either on-site, through communications lines, or in a mixed mode.

- PROFESSIONAL SERVICES - Made up of services in the following categories:

  - EDUCATION SERVICES - EDP products and/or services - related to corporations, not individuals.

  - CONSULTING SERVICES - EDP management consulting and feasibility studies, for example.

  - PROGRAMMING AND ANALYSIS - Including system design, contract programming, and "body shopping."

  - PROFESSIONAL SERVICES FACILITIES MANAGEMENT (PSFM) - The counterpart to processing facilities management, except that in this case the computers are owned by the client, not the vendor; the vendor provides people to operate and manage the client facility.

- INTEGRATED SYSTEMS (Also known as Turnkey Systems) - An integration of systems and applications software with hardware, packaged as a single entity. The value added by the vendor is primarily in the software. Most CAD/CAM systems and many small business systems are integrated systems. This does not include specialized hardware systems such as word processors, cash registers, and process control systems.

- Integrated systems revenue in this report is divided into two categories:

  - INDUSTRY SPECIFIC systems; i.e., systems that serve a specific function for a given industry sector such as seismic processing systems, automobile dealer parts inventory, CAD/CAM systems, discrete manufacturing control systems, etc.

- CROSS-INDUSTRY systems; i.e., systems that provide a specific function that is applicable to a wide range of industry sectors such as financial planning systems, payroll systems, personnel management systems, etc.

- Revenues include hardware, software, and support functions.

- SOFTWARE PRODUCTS - This category includes users' purchases of applications and systems packages for use on in-house computer systems. Included are lease and purchase expenditures, as well as fees for work performed by the vendor to implement and maintain the package at the users' sites. Fees for work performed by organizations other than the package vendor are counted in professional services. There are several subcategories of software products:

  - APPLICATIONS PRODUCTS - Software that performs processing to service user functions. They consist of:

    . CROSS-INDUSTRY PRODUCTS - Used in multiple user industry sectors. Examples are payroll, inventory control, and financial planning.

    . INDUSTRY-SPECIALIZED PRODUCTS - Used in a specific industry sector such as banking and finance, transportation, or discrete manufacturing. Examples are demand deposit accounting and airline scheduling.

  - SYSTEMS PRODUCTS - Software that enables the computer/communications system to perform basic functions. They consist of:

    . SYSTEMS CONTROL PRODUCTS - Function during applications program execution to manage the computer system resource. Examples include operating systems, communication monitors, emulators, and spoolers.

- DATA CENTER MANAGEMENT PRODUCTS - Used by operations personnel to manage the computer system resources and personnel more effectively. Examples include performance measurement, job accounting, computer operations scheduling, and utilities.

- APPLICATION DEVELOPMENT PRODUCTS - Used to prepare applications for execution by assisting in designing, programming, testing, and related functions. Examples include languages, sorts, productivity aids, data dictionaries, data base management systems, report writers, project control systems and retrieval systems.

## C. TYPES OF PROCESSING SERVICES

- Processing services encompass processing services facilities management, remote computing services, and batch services. They are categorized by type of services bought by users as follows:

  - Function Specific services are the processing of applications that are targeted to specific user departments (e.g., finance, personnel, sales) but cut across industry lines. Most general ledger, accounts receivable, payroll, and personnel applications fall into this category. Functional specific data base services where the vendor supplies the data base and controls access to it (although it may be owned by a third party), are included in this category. General-purpose tools such as financial planning systems, linear regression packages, and other statistical routines are also included. However, when the application, tool, or data base is designed for specific industry usage, then the service is industry specific.

- Industry Specific services provide processing for particular functions or problems unique to an industry or industry group. The software is provided by the vendor either as a complete package or as an applications "tool" which the user employs to produce a unique solution. Specialty applications can be either business or scientific in orientation. Industry specific data base services, where the vendor supplies the data base and controls access to it (although it may be owned by a third party), are also included under this category. Examples of industry specialty applications are seismic data processing, numerically controlled machine tool software development, and demand deposit accounting.

- Utility services are those where the vendor provides access to a computer and/or communications network with basic software that enables any user to develop its own problem solution or processing system. These basic tools include terminal-handling software, sorts, language compilers, data base management systems, information retrieval software, scientific library routines, and other systems software.

## D. OTHER CONSIDERATIONS

- When questions arise as to the proper place to count certain user expenditures, INPUT addresses the questions from the user viewpoint and categorizes the expenditures according to the answer to: "What do the users perceive they are buying?"

## E. INDUSTRY SECTOR DEFINITIONS

- The standard industrial classification (SIC) codes are used to define the economic activity contained in generic sectors such as "Process Manufacturing," "Insurance," "Transportation," etc.

- The specific industries (and their SIC codes) included under these generic industry sectors are detailed in Exhibit A-1.

EXHIBIT A-1

## INDUSTRY SECTOR DEFINITIONS

| INDUSTRY SECTOR | INDUSTRY SIC | INDUSTRY NAME |
|---|---|---|
| Discrete Manufacturing | 23 | Apparel |
| | 25 | Furniture |
| | 27 | Printing |
| | 31 | Leather |
| | 34 | Metal |
| | 35 | Machinery |
| | 36 | Electronics |
| | 37 | Transportation |
| | 38 | Scientific and Control Instruments |
| | 39 | Miscellaneous Manufacturing |
| Process Manufacturing | 10 | Metal Mining |
| | 11 | Anthracite Mining |
| | 12 | Coal Mining |
| | 13 | Oil and Gas Extraction |
| | 20 | Food Products |
| | 21 | Tobacco |
| | 22 | Textile Products |
| | 24 | Lumber and Wood Products |
| | 26 | Paper Products |
| | 28 | Chemicals |
| | 29 | Petroleum |
| | 30 | Rubber and Plastics |
| | 32 | Stone, Glass, Clay |
| | 33 | Primary Metals |

Continued

EXHIBIT A-1 (Cont.)

## INDUSTRY SECTOR DEFINITIONS

| INDUSTRY SECTOR | INDUSTRY SIC | INDUSTRY NAME |
|---|---|---|
| Transportation | 40 | Railroads |
| | 41 | Local Transit |
| | 42 | Motor Freight |
| | 43 | U.S. Postal Service |
| | 44 | Water Transportation |
| | 45 | Air |
| | 46 | Pipelines |
| | 47 | Transportation Services |
| Utilities | 48 | Communications |
| | 49 | Electric, Gas, and Sanitary |
| Banking and Finance | 60 | Banks |
| | 61 | Credit Agencies |
| | 62 | Security and Commodity Brokers |
| | 67 | Holding and Investment Offices |
| Insurance | 63 | Insurance (Life, Health, Etc.) |
| | 64 | Insurance Agents |
| Medical | 80 | Health Services |

Continued

EXHIBIT A-1 (Cont.)

INDUSTRY SECTOR DEFINITIONS

| INDUSTRY SECTOR | INDUSTRY SIC | INDUSTRY NAME |
|---|---|---|
| Education | 82 | Educational Services |
| Retail | 52 | Building Materials, Hardware |
| | 53 | General Merchandise |
| | 54 | Food |
| | 55 | Automotive and Gas Stations |
| | 56 | Apparel |
| | 57 | Furniture |
| | 58 | Eating and Drinking |
| | 59 | Miscellaneous Retail |
| Wholesale | 50 | Durable Goods |
| | 51 | Nondurable Goods |
| State and Local Government | 91-97 | As Appropriate |
| Federal Government | 91-97 | As Appropriate |
| Services | 73 | Business Services (excluding information services companies themselves) |

Continued

EXHIBIT A-1 (Cont.)

INDUSTRY SECTOR DEFINITIONS

| INDUSTRY SECTOR | INDUSTRY SIC | INDUSTRY NAME |
|---|---|---|
| Other Industries | 01-09 | Agriculture, Forestry, and Fishing |
| | 15-17 | Construction |
| | 65 | Real Estate |
| | 66 | Combinations of Real Estate, Insurance, Loans, Law Offices |
| | 70 | Hotels, Rooming Houses, Camps, and Other Lodging Places |
| | 72 | Personal Services |
| | 75 | Automotive Repair, Services, and Garages |
| | 76 | Miscellaneous Repair Services |
| | 78 | Motion Pictures |
| | 79 | Amusement and Recreation Services, Except Motion Pictures |
| | 83 | Social Services |
| | 84 | Museums, Art Galleries, Botanical and Zoological Gardens |
| | 86 | Membership Organizations |
| | 89 | Miscellaneous Services |

# APPENDIX B: DATA BASE

## APPENDIX B: DATA BASE

- This section contains the data base used in this report and in the companion report on processing services and integrated systems.

- In addition to the 1981 base year data, data are given for all of the intervening years from 1982 to 1987.

- None of the individual numbers have been rounded, as they have been in the main body of the report (but the reader should not assume a higher degree of accuracy for these data than for those in the main body of the report). Totals, however, have been rounded so that:

  - Certain items will not total due to the rounding.

  - The exhibits will not necessarily cross-foot and total exactly because the tabulations were rounded along different axes.

- Exhibits B-1 through B-28 present the market data by industry sector.

- Exhibit B-29 through B-43 present the market data by delivery mode.

EXHIBIT B-1

INFORMATION SERVICES - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 3514 | 18 | 4160 | 5028 | 6374 | 8300 | 10958 | 14544 | 28 |
| PROCESS MANUFACTURING | 2212 | 20 | 2658 | 3269 | 4121 | 5265 | 6737 | 8604 | 26 |
| TRANSPORTATION | 590 | 15 | 677 | 804 | 1005 | 1292 | 1674 | 2187 | 26 |
| UTILITIES | 805 | 15 | 928 | 1081 | 1293 | 1557 | 1889 | 2301 | 20 |
| BANKING/FINANCE | 3697 | 17 | 4341 | 5217 | 6456 | 8083 | 10185 | 12946 | 24 |
| INSURANCE | 1554 | 17 | 1819 | 2189 | 2731 | 3423 | 4286 | 5391 | 24 |
| MEDICAL | 1090 | 21 | 1321 | 1625 | 2043 | 2590 | 3290 | 4211 | 26 |
| EDUCATION | 377 | 7 | 404 | 445 | 506 | 591 | 686 | 803 | 15 |
| RETAIL DISTRIBUTION | 1227 | 14 | 1396 | 1611 | 1960 | 2410 | 3000 | 3781 | 22 |
| WHOLESALE DISTRIBUTION | 1146 | 17 | 1346 | 1601 | 1972 | 2456 | 3081 | 3910 | 24 |
| FEDERAL GOVERNMENT | 2460 | 14 | 2803 | 3246 | 3847 | 4611 | 5608 | 6777 | 19 |
| STATE/LOCAL GOVERNMENT | 1339 | 7 | 1433 | 1566 | 1758 | 2031 | 2360 | 2738 | 14 |
| SERVICES | 1314 | 16 | 1525 | 1825 | 2204 | 2690 | 3310 | 4078 | 22 |
| OTHER | 1008 | 10 | 1110 | 1283 | 1514 | 1807 | 2186 | 2649 | 19 |
| TOTAL | 22330 | 16 | 25920 | 30790 | 37790 | 47110 | 59250 | 74920 | 24 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-2

PROCESSING SERVICES - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 1193 | 9 | 1299 | 1444 | 1649 | 1895 | 2186 | 2493 | 14 |
| PROCESS MANUFACTURING | 1083 | 15 | 1250 | 1479 | 1749 | 2078 | 2474 | 2912 | 18 |
| TRANSPORTATION | 208 | 9 | 226 | 246 | 278 | 315 | 364 | 423 | 13 |
| UTILITIES | 391 | 9 | 428 | 476 | 534 | 601 | 683 | 780 | 13 |
| BANKING/FINANCE | 2380 | 14 | 2705 | 3098 | 3554 | 4120 | 4787 | 5580 | 16 |
| INSURANCE | 628 | 10 | 689 | 768 | 873 | 1002 | 1151 | 1319 | 14 |
| MEDICAL | 655 | 15 | 754 | 875 | 1026 | 1208 | 1428 | 1687 | 17 |
| EDUCATION | 141 | 3 | 145 | 150 | 159 | 173 | 185 | 202 | 7 |
| RETAIL DISTRIBUTION | 696 | 8 | 748 | 819 | 921 | 1043 | 1197 | 1371 | 13 |
| WHOLESALE DISTRIBUTION | 572 | 7 | 614 | 667 | 733 | 804 | 876 | 959 | 9 |
| FEDERAL GOVERNMENT | 579 | 9 | 633 | 707 | 797 | 904 | 1033 | 1189 | 13 |
| STATE/LOCAL GOVERNMENT | 200 | 6 | 211 | 229 | 252 | 278 | 307 | 338 | 10 |
| SERVICES | 912 | 11 | 1010 | 1132 | 1267 | 1433 | 1645 | 1891 | 13 |
| OTHER | 653 | 7 | 697 | 780 | 879 | 989 | 1126 | 1279 | 13 |
| TOTAL | 10290 | 11 | 11410 | 12870 | 14670 | 16840 | 19450 | 22420 | 14 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-3

FUNCTION SPECIFIC PROCESSING SERVICES - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 454 | 7 | 484 | 523 | 585 | 659 | 746 | 832 | 11 |
| PROCESS MANUFACTURING | 254 | 13 | 287 | 337 | 397 | 476 | 574 | 679 | 19 |
| TRANSPORTATION | 47 | 9 | 51 | 55 | 60 | 67 | 75 | 83 | 10 |
| UTILITIES | 124 | 11 | 138 | 153 | 170 | 191 | 216 | 243 | 12 |
| BANKING/FINANCE | 274 | 11 | 305 | 341 | 380 | 422 | 460 | 499 | 10 |
| INSURANCE | 116 | 9 | 127 | 144 | 165 | 190 | 219 | 252 | 15 |
| MEDICAL | 50 | 18 | 59 | 69 | 80 | 92 | 105 | 119 | 15 |
| EDUCATION | 41 | 5 | 43 | 45 | 47 | 51 | 55 | 59 | 7 |
| RETAIL DISTRIBUTION | 133 | 11 | 147 | 166 | 187 | 213 | 244 | 278 | 13 |
| WHOLESALE DISTRIBUTION | 214 | 14 | 243 | 275 | 310 | 344 | 377 | 415 | 11 |
| FEDERAL GOVERNMENT | 169 | 8 | 182 | 198 | 219 | 243 | 270 | 301 | 11 |
| STATE/LOCAL GOVERNMENT | 45 | 9 | 49 | 54 | 61 | 68 | 77 | 88 | 12 |
| SERVICES | 232 | 10 | 255 | 283 | 312 | 352 | 399 | 454 | 12 |
| OTHER | 177 | 6 | 188 | 212 | 238 | 266 | 297 | 332 | 12 |
| TOTAL | 2330 | 10 | 2560 | 2850 | 3210 | 3630 | 4110 | 4630 | 13 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-4

INDUSTRY SPECIFIC PROCESSING SERVICES - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 546 | 12 | 609 | 698 | 815 | 950 | 1110 | 1277 | 16 |
| PROCESS MANUFACTURING | 537 | 20 | 645 | 793 | 955 | 1141 | 1347 | 1567 | 19 |
| TRANSPORTATION | 123 | 11 | 136 | 151 | 175 | 203 | 239 | 285 | 16 |
| UTILITIES | 121 | 12 | 136 | 156 | 179 | 204 | 236 | 274 | 15 |
| BANKING/FINANCE | 2035 | 14 | 2324 | 2672 | 3079 | 3590 | 4202 | 4937 | 16 |
| INSURANCE | 475 | 10 | 523 | 581 | 661 | 760 | 875 | 1004 | 14 |
| MEDICAL | 584 | 15 | 673 | 782 | 920 | 1087 | 1291 | 1532 | 18 |
| EDUCATION | 59 | 4 | 61 | 64 | 70 | 77 | 83 | 93 | 9 |
| RETAIL DISTRIBUTION | 489 | 8 | 526 | 575 | 649 | 736 | 849 | 978 | 13 |
| WHOLESALE DISTRIBUTION | 215 | 8 | 232 | 253 | 279 | 313 | 350 | 393 | 11 |
| FEDERAL GOVERNMENT | 37 | 11 | 41 | 45 | 52 | 61 | 70 | 82 | 15 |
| STATE/LOCAL GOVERNMENT | 46 | 7 | 49 | 55 | 60 | 66 | 73 | 80 | 10 |
| SERVICES | 589 | 12 | 660 | 747 | 842 | 955 | 1106 | 1281 | 14 |
| OTHER | 370 | 8 | 399 | 452 | 515 | 586 | 676 | 779 | 14 |
| TOTAL | 6230 | 13 | 7010 | 8020 | 9250 | 10730 | 12510 | 14560 | 16 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-5

UTILITY PROCESSING SERVICES - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 193 | 7 | 206 | 223 | 249 | 286 | 330 | 384 | 13 |
| PROCESS MANUFACTURING | 292 | 8 | 318 | 349 | 397 | 461 | 553 | 666 | 16 |
| TRANSPORTATION | 38 | 1 | 39 | 40 | 43 | 45 | 50 | 54 | 7 |
| UTILITIES | 146 | 5 | 154 | 167 | 185 | 206 | 231 | 263 | 11 |
| BANKING/FINANCE | 71 | 7 | 76 | 85 | 95 | 108 | 125 | 144 | 14 |
| INSURANCE | 37 | 5 | 39 | 43 | 47 | 52 | 57 | 63 | 10 |
| MEDICAL | 21 | 5 | 22 | 24 | 26 | 29 | 32 | 36 | 10 |
| EDUCATION | 41 | 0 | 41 | 41 | 42 | 45 | 47 | 50 | 4 |
| RETAIL DISTRIBUTION | 74 | 1 | 75 | 78 | 85 | 94 | 104 | 116 | 9 |
| WHOLESALE DISTRIBUTION | 143 | -3 | 139 | 139 | 144 | 147 | 149 | 151 | 2 |
| FEDERAL GOVERNMENT | 373 | 10 | 410 | 464 | 526 | 600 | 693 | 806 | 14 |
| STATE/LOCAL GOVERNMENT | 109 | 4 | 113 | 120 | 131 | 144 | 157 | 170 | 8 |
| SERVICES | 91 | 4 | 95 | 102 | 113 | 126 | 140 | 156 | 10 |
| OTHER | 106 | 4 | 110 | 116 | 126 | 137 | 153 | 169 | 9 |
| TOTAL | 1730 | 6 | 1840 | 1990 | 2210 | 2480 | 2820 | 3230 | 12 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-6

REMOTE COMPUTING SERVICES - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 675 | 11 | 746 | 844 | 985 | 1163 | 1382 | 1624 | 17 |
| PROCESS MANUFACTURING | 437 | 11 | 485 | 554 | 652 | 782 | 959 | 1173 | 19 |
| TRANSPORTATION | 116 | 11 | 129 | 141 | 165 | 192 | 230 | 275 | 16 |
| UTILITIES | 301 | 10 | 332 | 373 | 424 | 483 | 556 | 642 | 14 |
| BANKING/FINANCE | 985 | 16 | 1141 | 1337 | 1581 | 1910 | 2338 | 2860 | 20 |
| INSURANCE | 217 | 10 | 238 | 269 | 308 | 357 | 417 | 484 | 15 |
| MEDICAL | 214 | 16 | 249 | 293 | 348 | 416 | 507 | 619 | 20 |
| EDUCATION | 58 | 2 | 59 | 60 | 64 | 70 | 76 | 83 | 7 |
| RETAIL DISTRIBUTION | 449 | 9 | 487 | 540 | 622 | 724 | 859 | 1020 | 16 |
| WHOLESALE DISTRIBUTION | 210 | 9 | 228 | 248 | 281 | 319 | 363 | 416 | 13 |
| FEDERAL GOVERNMENT | 434 | 6 | 462 | 498 | 553 | 622 | 703 | 801 | 12 |
| STATE/LOCAL GOVERNMENT | 76 | 7 | 81 | 86 | 96 | 107 | 120 | 136 | 11 |
| SERVICES | 595 | 12 | 664 | 750 | 861 | 1000 | 1189 | 1414 | 16 |
| OTHER | 349 | 9 | 382 | 436 | 504 | 586 | 690 | 811 | 16 |
| TOTAL | 5120 | 11 | 5680 | 6430 | 7440 | 8730 | 10390 | 12360 | 17 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-7

REMOTE COMPUTING SERVICES - FUNCTION SPECIFIC MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 152 | 9 | 165 | 182 | 209 | 246 | 296 | 352 | 16 |
| PROCESS MANUFACTURING | 152 | 13 | 171 | 202 | 240 | 291 | 355 | 426 | 20 |
| TRANSPORTATION | 26 | 8 | 29 | 31 | 35 | 40 | 46 | 52 | 13 |
| UTILITIES | 81 | 12 | 91 | 102 | 115 | 132 | 153 | 175 | 14 |
| BANKING/FINANCE | 88 | 10 | 97 | 108 | 124 | 145 | 172 | 202 | 16 |
| INSURANCE | 90 | 11 | 99 | 113 | 132 | 155 | 183 | 215 | 17 |
| MEDICAL | 19 | 17 | 23 | 27 | 32 | 38 | 46 | 55 | 19 |
| EDUCATION | 22 | 6 | 23 | 24 | 26 | 29 | 32 | 35 | 9 |
| RETAIL DISTRIBUTION | 47 | 10 | 51 | 59 | 68 | 83 | 102 | 125 | 19 |
| WHOLESALE DISTRIBUTION | 65 | 7 | 70 | 75 | 84 | 95 | 106 | 119 | 11 |
| FEDERAL GOVERNMENT | 119 | 9 | 129 | 143 | 160 | 180 | 202 | 228 | 12 |
| STATE/LOCAL GOVERNMENT | 25 | 12 | 28 | 31 | 36 | 41 | 48 | 57 | 15 |
| SERVICES | 148 | 9 | 161 | 176 | 197 | 227 | 266 | 311 | 14 |
| OTHER | 54 | 5 | 56 | 64 | 72 | 83 | 96 | 110 | 14 |
| TOTAL | 1090 | 10 | 1190 | 1340 | 1530 | 1790 | 2100 | 2460 | 16 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-8

REMOTE COMPUTING SERVICES - INDUSTRY SPECIFIC MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 424 | 12 | 475 | 547 | 645 | 761 | 898 | 1042 | 17 |
| PROCESS MANUFACTURING | 58 | 16 | 67 | 81 | 100 | 123 | 154 | 193 | 23 |
| TRANSPORTATION | 64 | 15 | 73 | 82 | 99 | 119 | 147 | 182 | 20 |
| UTILITIES | 106 | 12 | 119 | 138 | 160 | 184 | 215 | 252 | 16 |
| BANKING/FINANCE | 842 | 17 | 985 | 1163 | 1382 | 1679 | 2065 | 2540 | 21 |
| INSURANCE | 104 | 11 | 115 | 129 | 146 | 169 | 197 | 228 | 15 |
| MEDICAL | 186 | 16 | 216 | 255 | 303 | 363 | 444 | 544 | 20 |
| EDUCATION | 11 | 0 | 11 | 11 | 12 | 13 | 14 | 16 | 8 |
| RETAIL DISTRIBUTION | 362 | 9 | 395 | 438 | 505 | 586 | 694 | 822 | 16 |
| WHOLESALE DISTRIBUTION | 118 | 11 | 131 | 146 | 167 | 192 | 222 | 258 | 14 |
| FEDERAL GOVERNMENT | 37 | 10 | 41 | 45 | 52 | 61 | 71 | 82 | 15 |
| STATE/LOCAL GOVERNMENT | 13 | 12 | 15 | 17 | 19 | 21 | 23 | 26 | 12 |
| SERVICES | 377 | 14 | 429 | 493 | 573 | 670 | 807 | 972 | 18 |
| OTHER | 218 | 13 | 247 | 289 | 341 | 402 | 480 | 574 | 18 |
| TOTAL | 2920 | 14 | 3320 | 3830 | 4500 | 5340 | 6430 | 7730 | 18 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-9

REMOTE COMPUTING SERVICES - UTILITY MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 99 | 7 | 106 | 115 | 131 | 156 | 188 | 230 | 17 |
| PROCESS MANUFACTURING | 227 | 9 | 247 | 271 | 312 | 368 | 450 | 554 | 18 |
| TRANSPORTATION | 26 | 5 | 27 | 28 | 31 | 33 | 37 | 41 | 9 |
| UTILITIES | 114 | 7 | 122 | 133 | 149 | 167 | 188 | 215 | 12 |
| BANKING/FINANCE | 55 | 7 | 59 | 66 | 75 | 86 | 101 | 118 | 15 |
| INSURANCE | 23 | 6 | 24 | 27 | 30 | 33 | 37 | 41 | 11 |
| MEDICAL | 9 | 10 | 10 | 11 | 13 | 15 | 17 | 20 | 15 |
| EDUCATION | 25 | 0 | 25 | 25 | 26 | 28 | 30 | 32 | 5 |
| RETAIL DISTRIBUTION | 40 | 2 | 41 | 43 | 49 | 55 | 63 | 73 | 12 |
| WHOLESALE DISTRIBUTION | 27 | 0 | 27 | 27 | 30 | 32 | 35 | 39 | 7 |
| FEDERAL GOVERNMENT | 278 | 5 | 292 | 310 | 341 | 381 | 431 | 491 | 11 |
| STATE/LOCAL GOVERNMENT | 38 | 0 | 38 | 38 | 41 | 45 | 49 | 53 | 7 |
| SERVICES | 70 | 6 | 74 | 81 | 91 | 103 | 116 | 131 | 12 |
| OTHER | 77 | 3 | 79 | 83 | 91 | 101 | 114 | 127 | 10 |
| TOTAL | 1110 | 6 | 1170 | 1260 | 1410 | 1610 | 1860 | 2170 | 13 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-10

PROCESSING FACILITIES MANAGEMENT - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 53 | 11 | 59 | 68 | 79 | 93 | 109 | 128 | 17 |
| PROCESS MANUFACTURING | 37 | 13 | 42 | 48 | 55 | 64 | 78 | 92 | 17 |
| TRANSPORTATION | 28 | 4 | 29 | 31 | 34 | 38 | 42 | 49 | 11 |
| UTILITIES | 12 | 0 | 12 | 13 | 14 | 15 | 16 | 18 | 8 |
| BANKING/FINANCE | 535 | 15 | 615 | 720 | 845 | 1000 | 1180 | 1392 | 18 |
| INSURANCE | 275 | 10 | 303 | 339 | 393 | 460 | 538 | 629 | 16 |
| MEDICAL | 213 | 20 | 256 | 307 | 374 | 460 | 562 | 685 | 22 |
| EDUCATION | 18 | 6 | 19 | 21 | 24 | 28 | 32 | 38 | 14 |
| RETAIL DISTRIBUTION | 13 | 0 | 13 | 14 | 15 | 16 | 17 | 18 | 6 |
| WHOLESALE DISTRIBUTION | 36 | 4 | 38 | 41 | 44 | 51 | 57 | 63 | 11 |
| FEDERAL GOVERNMENT | 80 | 30 | 104 | 141 | 172 | 206 | 250 | 303 | 24 |
| STATE/LOCAL GOVERNMENT | 29 | 3 | 30 | 34 | 37 | 41 | 46 | 50 | 11 |
| SERVICES | 4 | 0 | 4 | 5 | 5 | 6 | 6 | 7 | 11 |
| OTHER | 12 | 12 | 13 | 14 | 16 | 17 | 19 | 22 | 10 |
| TOTAL | 1340 | 14 | 1540 | 1790 | 2110 | 2490 | 2950 | 3490 | 18 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-11

PROCESSING FACILITIES MANAGEMENT - FUNCTION SPECIFIC MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 6 | 7 | 6 | 6 | 7 | 8 | 8 | 9 | 9 |
| PROCESS MANUFACTURING | 2 | 9 | 2 | 3 | 3 | 3 | 4 | 4 | 10 |
| TRANSPORTATION | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| UTILITIES | 2 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| BANKING/FINANCE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INSURANCE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MEDICAL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EDUCATION | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RETAIL DISTRIBUTION | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WHOLESALE DISTRIBUTION | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FEDERAL GOVERNMENT | 38 | 5 | 40 | 42 | 45 | 48 | 52 | 56 | 7 |
| STATE/LOCAL GOVERNMENT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SERVICES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 50 | 5 | 50 | 50 | 60 | 60 | 70 | 70 | 7 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-12

PROCESSING FACILITIES MANAGEMENT - INDUSTRY SPECIFIC MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 29 | 11 | 32 | 37 | 43 | 50 | 59 | 69 | 17 |
| PROCESS MANUFACTURING | 30 | 12 | 34 | 38 | 44 | 52 | 63 | 75 | 18 |
| TRANSPORTATION | 28 | 5 | 29 | 31 | 34 | 38 | 42 | 49 | 11 |
| UTILITIES | 2 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| BANKING/FINANCE | 535 | 15 | 615 | 720 | 845 | 1000 | 1180 | 1392 | 18 |
| INSURANCE | 275 | 10 | 303 | 339 | 393 | 460 | 538 | 629 | 16 |
| MEDICAL | 213 | 20 | 256 | 307 | 374 | 460 | 562 | 685 | 22 |
| EDUCATION | 18 | 8 | 19 | 21 | 24 | 28 | 32 | 38 | 14 |
| RETAIL DISTRIBUTION | 13 | 3 | 13 | 14 | 15 | 16 | 17 | 18 | 6 |
| WHOLESALE DISTRIBUTION | 32 | 2 | 33 | 36 | 39 | 45 | 50 | 56 | 11 |
| FEDERAL GOVERNMENT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| STATE/LOCAL GOVERNMENT | 9 | 0 | 9 | 10 | 11 | 12 | 14 | 15 | 11 |
| SERVICES | 4 | 8 | 4 | 5 | 5 | 6 | 6 | 7 | 11 |
| OTHER | 8 | 6 | 8 | 9 | 10 | 11 | 12 | 14 | 10 |
| TOTAL | 1200 | 14 | 1360 | 1570 | 1840 | 2180 | 2580 | 3050 | 18 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly. Growth rates are rounded to nearest 1%.

EXHIBIT B-13

PROCESSING FACILITIES MANAGEMENT - UTILITY MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 18 | 15 | 21 | 25 | 29 | 35 | 42 | 50 | 19 |
| PROCESS MANUFACTURING | 5 | 19 | 6 | 7 | 8 | 9 | 11 | 13 | 18 |
| TRANSPORTATION | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| UTILITIES | 8 | 9 | 8 | 9 | 10 | 11 | 12 | 14 | 11 |
| BANKING/FINANCE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INSURANCE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MEDICAL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EDUCATION | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RETAIL DISTRIBUTION | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WHOLESALE DISTRIBUTION | 4 | 5 | 5 | 5 | 5 | 6 | 7 | 7 | 10 |
| FEDERAL GOVERNMENT | 42 | 52 | 64 | 99 | 127 | 158 | 198 | 247 | 31 |
| STATE/LOCAL GOVERNMENT | 20 | 10 | 21 | 24 | 26 | 29 | 32 | 35 | 10 |
| SERVICES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| OTHER | 4 | 8 | 5 | 5 | 6 | 6 | 7 | 8 | 11 |
| TOTAL | 100 | 28 | 130 | 170 | 210 | 260 | 310 | 370 | 24 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly. Growth rates are rounded to nearest 1%.

EXHIBIT B-14

BATCH PROCESSING SERVICES - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 465 | 6 | 494 | 532 | 585 | 639 | 695 | 741 | 8 |
| PROCESS MANUFACTURING | 609 | 19 | 723 | 877 | 1042 | 1232 | 1437 | 1647 | 18 |
| TRANSPORTATION | 64 | 6 | 68 | 74 | 79 | 85 | 92 | 98 | 8 |
| UTILITIES | 78 | 7 | 84 | 90 | 96 | 103 | 111 | 120 | 8 |
| BANKING/FINANCE | 860 | 10 | 949 | 1041 | 1128 | 1210 | 1269 | 1328 | 7 |
| INSURANCE | 136 | 9 | 148 | 160 | 172 | 185 | 196 | 206 | 7 |
| MEDICAL | 228 | 9 | 249 | 275 | 304 | 332 | 359 | 383 | 9 |
| EDUCATION | 65 | 3 | 67 | 69 | 71 | 75 | 77 | 81 | 4 |
| RETAIL DISTRIBUTION | 234 | 6 | 248 | 265 | 284 | 303 | 321 | 334 | 6 |
| WHOLESALE DISTRIBUTION | 326 | 7 | 348 | 378 | 408 | 434 | 456 | 480 | 7 |
| FEDERAL GOVERNMENT | 65 | 3 | 67 | 68 | 72 | 76 | 80 | 85 | 5 |
| STATE/LOCAL GOVERNMENT | 95 | 5 | 100 | 109 | 119 | 130 | 141 | 152 | 9 |
| SERVICES | 313 | 9 | 342 | 377 | 401 | 427 | 450 | 470 | 7 |
| OTHER | 292 | 3 | 302 | 330 | 359 | 386 | 417 | 447 | 8 |
| TOTAL | 3830 | 9 | 4190 | 4650 | 5120 | 5620 | 6100 | 6570 | 9 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-15

BATCH PROCESSING SERVICES - FUNCTION SPECIFIC MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 296 | 6 | 313 | 335 | 369 | 405 | 442 | 471 | 8 |
| PROCESS MANUFACTURING | 100 | 14 | 114 | 132 | 154 | 182 | 215 | 249 | 17 |
| TRANSPORTATION | 21 | 8 | 22 | 24 | 25 | 27 | 29 | 31 | 7 |
| UTILITIES | 41 | 9 | 45 | 49 | 53 | 57 | 61 | 66 | 8 |
| BANKING/FINANCE | 186 | 12 | 208 | 233 | 256 | 277 | 288 | 297 | 7 |
| INSURANCE | 26 | 7 | 28 | 31 | 33 | 35 | 36 | 37 | 6 |
| MEDICAL | 31 | 15 | 36 | 42 | 48 | 54 | 59 | 64 | 12 |
| EDUCATION | 19 | 3 | 20 | 21 | 21 | 22 | 23 | 24 | 4 |
| RETAIL DISTRIBUTION | 86 | 12 | 96 | 107 | 119 | 130 | 142 | 153 | 10 |
| WHOLESALE DISTRIBUTION | 149 | 16 | 173 | 200 | 226 | 249 | 271 | 296 | 11 |
| FEDERAL GOVERNMENT | 12 | 7 | 13 | 13 | 14 | 15 | 16 | 17 | 6 |
| STATE/LOCAL GOVERNMENT | 20 | 5 | 21 | 23 | 25 | 27 | 29 | 31 | 8 |
| SERVICES | 84 | 12 | 94 | 107 | 115 | 125 | 133 | 143 | 9 |
| OTHER | 123 | 8 | 132 | 148 | 166 | 183 | 201 | 222 | 11 |
| TOTAL | 1190 | 10 | 1320 | 1470 | 1630 | 1790 | 1950 | 2100 | 10 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly. Growth rates are rounded to nearest 1%.

EXHIBIT B-16

BATCH PROCESSING SERVICES - INDUSTRY SPECIFIC MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 93 | 9 | 102 | 114 | 127 | 139 | 153 | 166 | 10 |
| PROCESS MANUFACTURING | 449 | 21 | 544 | 674 | 811 | 966 | 1130 | 1299 | 19 |
| TRANSPORTATION | 31 | 11 | 34 | 38 | 42 | 46 | 50 | 54 | 9 |
| UTILITIES | 13 | 10 | 15 | 16 | 17 | 18 | 19 | 20 | 7 |
| BANKING/FINANCE | 658 | 10 | 724 | 789 | 852 | 911 | 957 | 1005 | 7 |
| INSURANCE | 96 | 9 | 105 | 113 | 122 | 131 | 140 | 147 | 7 |
| MEDICAL | 185 | 9 | 201 | 220 | 243 | 264 | 285 | 303 | 8 |
| EDUCATION | 30 | 2 | 31 | 32 | 34 | 36 | 37 | 39 | 5 |
| RETAIL DISTRIBUTION | 114 | 3 | 118 | 123 | 129 | 134 | 138 | 138 | 3 |
| WHOLESALE DISTRIBUTION | 65 | 5 | 68 | 71 | 73 | 76 | 78 | 79 | 3 |
| FEDERAL GOVERNMENT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| STATE/LOCAL GOVERNMENT | 24 | 7 | 25 | 28 | 30 | 33 | 36 | 39 | 9 |
| SERVICES | 208 | 9 | 227 | 249 | 264 | 279 | 293 | 302 | 6 |
| OTHER | 144 | 0 | 144 | 154 | 164 | 173 | 184 | 191 | 6 |
| TOTAL | 2110 | 11 | 2340 | 2620 | 2910 | 3210 | 3500 | 3780 | 10 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-17

BATCH PROCESSING SERVICES - UTILITY MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 76 | 3 | 79 | 83 | 89 | 95 | 100 | 104 | 6 |
| PROCESS MANUFACTURING | 60 | 9 | 65 | 71 | 77 | 84 | 92 | 99 | 9 |
| TRANSPORTATION | 12 | 0 | 12 | 12 | 12 | 12 | 13 | 13 | 3 |
| UTILITIES | 24 | 3 | 24 | 25 | 26 | 28 | 31 | 34 | 7 |
| BANKING/FINANCE | 16 | 8 | 17 | 19 | 20 | 22 | 24 | 26 | 9 |
| INSURANCE | 14 | 6 | 15 | 16 | 17 | 19 | 20 | 22 | 8 |
| MEDICAL | 12 | 5 | 12 | 13 | 13 | 14 | 15 | 16 | 5 |
| EDUCATION | 16 | 0 | 16 | 16 | 16 | 17 | 17 | 18 | 3 |
| RETAIL DISTRIBUTION | 34 | 0 | 34 | 35 | 36 | 39 | 41 | 43 | 5 |
| WHOLESALE DISTRIBUTION | 112 | -5 | 107 | 107 | 109 | 109 | 107 | 105 | 0 |
| FEDERAL GOVERNMENT | 53 | 2 | 54 | 55 | 58 | 61 | 64 | 68 | 5 |
| STATE/LOCAL GOVERNMENT | 51 | 7 | 54 | 58 | 64 | 70 | 76 | 82 | 9 |
| SERVICES | 21 | 0 | 21 | 21 | 22 | 23 | 24 | 25 | 4 |
| OTHER | 25 | 4 | 26 | 28 | 29 | 30 | 32 | 34 | 5 |
| TOTAL | 530 | 2 | 540 | 560 | 590 | 620 | 660 | 690 | 5 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly. Growth rates are rounded to nearest 1%.

EXHIBIT B-18

SOFTWARE PRODUCTS - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 861 | 32 | 1136 | 1537 | 2168 | 3078 | 4380 | 6185 | 40 |
| PROCESS MANUFACTURING | 435 | 37 | 594 | 827 | 1174 | 1660 | 2306 | 3159 | 40 |
| TRANSPORTATION | 156 | 29 | 201 | 278 | 398 | 578 | 829 | 1181 | 42 |
| UTILITIES | 130 | 29 | 168 | 215 | 283 | 368 | 478 | 622 | 30 |
| BANKING/FINANCE | 612 | 31 | 801 | 1106 | 1614 | 2285 | 3238 | 4586 | 42 |
| INSURANCE | 470 | 30 | 611 | 810 | 1108 | 1499 | 2014 | 2707 | 35 |
| MEDICAL | 194 | 44 | 280 | 406 | 582 | 826 | 1150 | 1607 | 42 |
| EDUCATION | 77 | 18 | 91 | 112 | 137 | 166 | 205 | 253 | 23 |
| RETAIL DISTRIBUTION | 206 | 33 | 274 | 357 | 501 | 689 | 945 | 1317 | 37 |
| WHOLESALE DISTRIBUTION | 271 | 38 | 374 | 508 | 712 | 988 | 1371 | 1901 | 38 |
| FEDERAL GOVERNMENT | 345 | 26 | 435 | 557 | 738 | 986 | 1347 | 1840 | 33 |
| STATE/LOCAL GOVERNMENT | 147 | 18 | 174 | 207 | 257 | 318 | 385 | 467 | 22 |
| SERVICES | 137 | 33 | 183 | 251 | 345 | 474 | 648 | 865 | 37 |
| OTHER | 124 | 31 | 163 | 229 | 321 | 448 | 616 | 835 | 39 |
| TOTAL | 4170 | 32 | 5490 | 7400 | 10340 | 14360 | 19910 | 27520 | 38 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-19

APPLICATIONS SOFTWARE PRODUCTS - MARKET FORCAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 374 | 32 | 494 | 676 | 980 | 1392 | 2019 | 2927 | 43 |
| PROCESS MANUFACTURING | 135 | 38 | 187 | 261 | 376 | 526 | 742 | 1047 | 41 |
| TRANSPORTATION | 76 | 30 | 98 | 144 | 218 | 329 | 491 | 731 | 49 |
| UTILITIES | 40 | 33 | 54 | 71 | 99 | 129 | 168 | 218 | 32 |
| BANKING/FINANCE | 495 | 30 | 644 | 895 | 1325 | 1881 | 2672 | 3794 | 43 |
| INSURANCE | 332 | 29 | 428 | 565 | 774 | 1045 | 1411 | 1905 | 35 |
| MEDICAL | 129 | 49 | 192 | 284 | 412 | 594 | 849 | 1215 | 45 |
| EDUCATION | 37 | 22 | 45 | 58 | 73 | 89 | 108 | 132 | 24 |
| RETAIL DISTRIBUTION | 135 | 35 | 182 | 238 | 334 | 467 | 654 | 935 | 39 |
| WHOLESALE DISTRIBUTION | 205 | 40 | 287 | 391 | 551 | 771 | 1080 | 1512 | 39 |
| FEDERAL GOVERNMENT | 14 | 28 | 18 | 23 | 28 | 35 | 44 | 54 | 24 |
| STATE/LOCAL GOVERNMENT | 37 | 18 | 43 | 53 | 69 | 84 | 105 | 130 | 25 |
| SERVICES | 95 | 35 | 128 | 180 | 251 | 347 | 479 | 641 | 38 |
| OTHER | 86 | 30 | 112 | 159 | 223 | 316 | 446 | 616 | 41 |
| TOTAL | 2190 | 33 | 2910 | 4000 | 5710 | 8010 | 11270 | 15860 | 40 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-20

SYSTEMS SOFTWARE PRODUCTS - MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 487 | 32 | 642 | 861 | 1188 | 1686 | 2361 | 3258 | 38 |
| PROCESS MANUFACTURING | 300 | 36 | 407 | 566 | 798 | 1134 | 1564 | 2112 | 39 |
| TRANSPORTATION | 80 | 29 | 103 | 134 | 180 | 249 | 338 | 450 | 34 |
| UTILITIES | 90 | 26 | 114 | 144 | 184 | 239 | 310 | 404 | 19 |
| BANKING/FINANCE | 117 | 34 | 157 | 211 | 289 | 404 | 566 | 792 | 38 |
| INSURANCE | 138 | 33 | 183 | 245 | 334 | 454 | 603 | 802 | 34 |
| MEDICAL | 65 | 36 | 88 | 122 | 170 | 232 | 301 | 392 | 35 |
| EDUCATION | 40 | 16 | 46 | 54 | 64 | 77 | 97 | 121 | 21 |
| RETAIL DISTRIBUTION | 71 | 29 | 92 | 119 | 167 | 222 | 291 | 382 | 33 |
| WHOLESALE DISTRIBUTION | 66 | 33 | 87 | 117 | 161 | 217 | 291 | 389 | 35 |
| FEDERAL GOVERNMENT | 331 | 26 | 417 | 534 | 710 | 951 | 1303 | 1786 | 34 |
| STATE/LOCAL GOVERNMENT | 110 | 19 | 131 | 154 | 188 | 234 | 280 | 337 | 21 |
| SERVICES | 42 | 29 | 55 | 71 | 94 | 127 | 169 | 224 | 33 |
| OTHER | 38 | 35 | 51 | 70 | 98 | 132 | 170 | 219 | 34 |
| TOTAL | 1970 | 30 | 2570 | 3400 | 4630 | 6360 | 8650 | 11670 | 35 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-21

PROFESSIONAL SERVICES - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 691 | 12 | 764 | 881 | 1040 | 1268 | 1596 | 2069 | 22 |
| PROCESS MANUFACTURING | 373 | 16 | 431 | 504 | 599 | 730 | 913 | 1173 | 22 |
| TRANSPORTATION | 97 | 6 | 103 | 112 | 127 | 147 | 168 | 194 | 14 |
| UTILITIES | 183 | 16 | 213 | 249 | 300 | 367 | 456 | 566 | 22 |
| BANKING/FINANCE | 311 | 15 | 357 | 421 | 521 | 648 | 817 | 1029 | 24 |
| INSURANCE | 282 | 13 | 318 | 373 | 445 | 536 | 644 | 775 | 19 |
| MEDICAL | 100 | 12 | 112 | 126 | 152 | 185 | 227 | 279 | 20 |
| EDUCATION | 91 | 3 | 94 | 101 | 116 | 134 | 152 | 172 | 13 |
| RETAIL DISTRIBUTION | 142 | 7 | 152 | 166 | 184 | 211 | 240 | 274 | 13 |
| WHOLESALE DISTRIBUTION | 116 | 10 | 128 | 141 | 157 | 181 | 209 | 240 | 14 |
| FEDERAL GOVERNMENT | 1478 | 13 | 1669 | 1905 | 2217 | 2605 | 3088 | 3578 | 16 |
| STATE/LOCAL GOVERNMENT | 949 | 5 | 1000 | 1076 | 1183 | 1355 | 1571 | 1817 | 13 |
| SERVICES | 31 | 8 | 33 | 37 | 43 | 50 | 59 | 69 | 15 |
| OTHER | 159 | 7 | 169 | 181 | 200 | 229 | 264 | 307 | 13 |
| TOTAL | 4990 | 11 | 5540 | 6280 | 7280 | 8640 | 10400 | 12540 | 18 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-22

PROFESSIONAL SERVICES - PROGRAMMING AND ANALYSIS MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 554 | 12 | 621 | 714 | 835 | 1003 | 1243 | 1604 | 21 |
| PROCESS MANUFACTURING | 290 | 16 | 336 | 393 | 464 | 556 | 684 | 876 | 21 |
| TRANSPORTATION | 77 | 5 | 81 | 87 | 98 | 111 | 125 | 141 | 12 |
| UTILITIES | 145 | 17 | 170 | 200 | 240 | 293 | 361 | 444 | 21 |
| BANKING/FINANCE | 227 | 15 | 261 | 310 | 385 | 481 | 606 | 763 | 24 |
| INSURANCE | 188 | 14 | 214 | 252 | 303 | 366 | 440 | 528 | 20 |
| MEDICAL | 84 | 12 | 94 | 107 | 129 | 158 | 196 | 243 | 21 |
| EDUCATION | 79 | 5 | 82 | 89 | 102 | 118 | 133 | 150 | 13 |
| RETAIL DISTRIBUTION | 117 | 7 | 125 | 135 | 149 | 170 | 192 | 217 | 12 |
| WHOLESALE DISTRIBUTION | 95 | 9 | 104 | 115 | 129 | 148 | 171 | 196 | 14 |
| FEDERAL GOVERNMENT | 928 | 16 | 1076 | 1245 | 1469 | 1749 | 2098 | 2434 | 18 |
| STATE/LOCAL GOVERNMENT | 786 | 5 | 825 | 883 | 962 | 1097 | 1262 | 1451 | 12 |
| SERVICES | 25 | 10 | 27 | 30 | 35 | 40 | 47 | 55 | 15 |
| OTHER | 134 | 6 | 142 | 151 | 165 | 187 | 215 | 247 | 12 |
| TOTAL | 3730 | 12 | 4160 | 4710 | 5470 | 6480 | 7770 | 9350 | 18 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly. Growth rates are rounded to nearest 1%.

EXHIBIT B-23

PROFESSIONAL SERVICES - CONSULTING MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 67 | 17 | 78 | 93 | 118 | 154 | 204 | 265 | 28 |
| PROCESS MANUFACTURING | 44 | 20 | 53 | 65 | 81 | 107 | 144 | 188 | 29 |
| TRANSPORTATION | 13 | 12 | 15 | 17 | 20 | 25 | 30 | 37 | 21 |
| UTILITIES | 18 | 10 | 20 | 23 | 29 | 36 | 46 | 58 | 24 |
| BANKING/FINANCE | 36 | 15 | 42 | 51 | 64 | 80 | 103 | 132 | 26 |
| INSURANCE | 29 | 13 | 33 | 40 | 50 | 64 | 81 | 103 | 26 |
| MEDICAL | 11 | 8 | 12 | 13 | 16 | 19 | 23 | 27 | 18 |
| EDUCATION | 12 | 0 | 12 | 12 | 14 | 16 | 19 | 22 | 14 |
| RETAIL DISTRIBUTION | 18 | 10 | 20 | 23 | 26 | 30 | 35 | 42 | 16 |
| WHOLESALE DISTRIBUTION | 12 | 11 | 14 | 15 | 17 | 20 | 23 | 27 | 14 |
| FEDERAL GOVERNMENT | 145 | 9 | 159 | 181 | 210 | 247 | 291 | 336 | 16 |
| STATE/LOCAL GOVERNMENT | 109 | 6 | 115 | 126 | 143 | 167 | 198 | 230 | 15 |
| SERVICES | 6 | 9 | 6 | 7 | 8 | 10 | 12 | 14 | 16 |
| OTHER | 18 | 8 | 20 | 22 | 25 | 30 | 35 | 42 | 16 |
| TOTAL | 540 | 11 | 600 | 690 | 820 | 1000 | 1240 | 1520 | 21 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-24

PROFESSIONAL SERVICES - EDUCATION MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 55 | 9 | 60 | 69 | 82 | 106 | 144 | 195 | 27 |
| PROCESS MANUFACTURING | 34 | 9 | 37 | 41 | 49 | 62 | 80 | 104 | 23 |
| TRANSPORTATION | 7 | 7 | 7 | 8 | 9 | 11 | 13 | 16 | 16 |
| UTILITIES | 13 | 13 | 15 | 17 | 20 | 25 | 34 | 46 | 25 |
| BANKING/FINANCE | 20 | 15 | 23 | 26 | 32 | 41 | 54 | 72 | 26 |
| INSURANCE | 13 | 12 | 14 | 16 | 19 | 23 | 30 | 39 | 22 |
| MEDICAL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EDUCATION | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RETAIL DISTRIBUTION | 7 | 9 | 7 | 8 | 9 | 11 | 13 | 15 | 16 |
| WHOLESALE DISTRIBUTION | 7 | 6 | 7 | 8 | 8 | 10 | 11 | 13 | 13 |
| FEDERAL GOVERNMENT | 68 | 13 | 76 | 90 | 110 | 145 | 196 | 264 | 28 |
| STATE/LOCAL GOVERNMENT | 47 | 11 | 52 | 58 | 67 | 79 | 97 | 120 | 18 |
| SERVICES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| OTHER | 7 | 10 | 7 | 8 | 10 | 12 | 14 | 18 | 19 |
| TOTAL | 280 | 11 | 310 | 350 | 420 | 520 | 690 | 900 | 24 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-25

PROFESSIONAL SERVICES - FACILITIES MANAGEMENT MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 5 | 0 | 5 | 5 | 5 | 5 | 5 | 5 | 0 |
| PROCESS MANUFACTURING | 5 | 0 | 5 | 5 | 5 | 5 | 5 | 5 | 0 |
| TRANSPORTATION | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| UTILITIES | 7 | 12 | 8 | 9 | 11 | 13 | 15 | 18 | 18 |
| BANKING/FINANCE | 28 | 11 | 31 | 34 | 40 | 46 | 54 | 62 | 15 |
| INSURANCE | 52 | 10 | 57 | 65 | 73 | 83 | 93 | 105 | 13 |
| MEDICAL | 5 | 9 | 6 | 6 | 7 | 8 | 8 | 9 | 9 |
| EDUCATION | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RETAIL DISTRIBUTION | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WHOLESALE DISTRIBUTION | 2 | 10 | 3 | 3 | 3 | 3 | 4 | 4 | 11 |
| FEDERAL GOVERNMENT | 337 | 6 | 358 | 389 | 428 | 464 | 503 | 544 | 9 |
| STATE/LOCAL GOVERNMENT | 7 | 13 | 8 | 9 | 11 | 12 | 14 | 16 | 14 |
| SERVICES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 450 | 7 | 480 | 530 | 580 | 640 | 700 | 770 | 10 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-26

INTEGRATED SYSTEMS - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 779 | 23 | 961 | 1166 | 1517 | 2059 | 2796 | 3797 | 32 |
| PROCESS MANUFACTURING | 321 | 19 | 383 | 459 | 599 | 797 | 1044 | 1360 | 29 |
| TRANSPORTATION | 129 | 14 | 147 | 168 | 202 | 252 | 313 | 390 | 22 |
| UTILITIES | 101 | 18 | 120 | 141 | 176 | 221 | 272 | 333 | 23 |
| BANKING/FINANCE | 394 | 21 | 478 | 592 | 767 | 1030 | 1343 | 1751 | 30 |
| INSURANCE | 174 | 16 | 201 | 238 | 305 | 386 | 477 | 590 | 24 |
| MEDICAL | 141 | 24 | 175 | 218 | 283 | 371 | 485 | 638 | 30 |
| EDUCATION | 68 | 9 | 74 | 82 | 94 | 118 | 144 | 176 | 19 |
| RETAIL DISTRIBUTION | 183 | 21 | 222 | 269 | 354 | 467 | 618 | 819 | 30 |
| WHOLESALE DISTRIBUTION | 187 | 24 | 231 | 285 | 370 | 483 | 625 | 809 | 29 |
| FEDERAL GOVERNMENT | 58 | 14 | 66 | 77 | 95 | 116 | 140 | 170 | 21 |
| STATE/LOCAL GOVERNMENT | 43 | 12 | 48 | 54 | 66 | 80 | 97 | 117 | 20 |
| SERVICES | 234 | 28 | 299 | 405 | 549 | 733 | 958 | 1253 | 33 |
| OTHER | 72 | 11 | 80 | 93 | 114 | 141 | 180 | 228 | 23 |
| TOTAL | 2880 | 21 | 3480 | 4250 | 5490 | 7250 | 9490 | 12430 | 29 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-27

INTEGRATED SYSTEMS - INDUSTRY SPECIFIC MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 565 | 25 | 706 | 855 | 1128 | 1557 | 2133 | 2922 | 33 |
| PROCESS MANUFACTURING | 235 | 20 | 282 | 336 | 446 | 603 | 795 | 1041 | 30 |
| TRANSPORTATION | 85 | 12 | 95 | 107 | 128 | 161 | 200 | 248 | 21 |
| UTILITIES | 75 | 18 | 89 | 103 | 127 | 159 | 193 | 233 | 21 |
| BANKING/FINANCE | 295 | 23 | 363 | 454 | 596 | 816 | 1070 | 1401 | 31 |
| INSURANCE | 60 | 16 | 70 | 80 | 108 | 146 | 188 | 243 | 28 |
| MEDICAL | 80 | 22 | 98 | 122 | 161 | 216 | 291 | 393 | 32 |
| EDUCATION | 50 | 8 | 54 | 59 | 68 | 86 | 106 | 130 | 19 |
| RETAIL DISTRIBUTION | 83 | 22 | 101 | 117 | 156 | 206 | 266 | 343 | 28 |
| WHOLESALE DISTRIBUTION | 95 | 26 | 120 | 146 | 191 | 251 | 318 | 404 | 28 |
| FEDERAL GOVERNMENT | 45 | 16 | 52 | 60 | 75 | 92 | 112 | 136 | 21 |
| STATE/LOCAL GOVERNMENT | 25 | 7 | 27 | 29 | 36 | 45 | 54 | 64 | 19 |
| SERVICES | 165 | 30 | 215 | 295 | 401 | 533 | 693 | 900 | 33 |
| OTHER | 25 | 11 | 28 | 32 | 40 | 47 | 57 | 68 | 20 |
| TOTAL | 1880 | 22 | 2300 | 2790 | 3660 | 4920 | 6480 | 8530 | 30 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-28

INTEGRATED SYSTEMS - CROSS INDUSTRY MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

| INDUSTRY SECTOR | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| DISCRETE MANUFACTURING | 214 | 19 | 255 | 311 | 389 | 502 | 663 | 875 | 28 |
| PROCESS MANUFACTURING | 86 | 18 | 101 | 123 | 153 | 194 | 249 | 319 | 26 |
| TRANSPORTATION | 44 | 17 | 51 | 61 | 74 | 91 | 113 | 142 | 22 |
| UTILITIES | 26 | 20 | 31 | 38 | 49 | 62 | 79 | 100 | 27 |
| BANKING/FINANCE | 99 | 16 | 115 | 138 | 171 | 214 | 273 | 350 | 25 |
| INSURANCE | 114 | 15 | 131 | 158 | 197 | 240 | 289 | 347 | 21 |
| MEDICAL | 61 | 26 | 77 | 96 | 122 | 155 | 194 | 245 | 26 |
| EDUCATION | 18 | 12 | 20 | 23 | 26 | 32 | 38 | 46 | 18 |
| RETAIL DISTRIBUTION | 100 | 21 | 121 | 152 | 198 | 261 | 352 | 476 | 32 |
| WHOLESALE DISTRIBUTION | 92 | 20 | 110 | 139 | 179 | 232 | 307 | 405 | 30 |
| FEDERAL GOVERNMENT | 13 | 10 | 14 | 17 | 20 | 24 | 28 | 34 | 19 |
| STATE/LOCAL GOVERNMENT | 18 | 14 | 21 | 25 | 30 | 35 | 43 | 53 | 20 |
| SERVICES | 69 | 22 | 84 | 110 | 148 | 200 | 265 | 353 | 33 |
| OTHER | 47 | 9 | 51 | 61 | 74 | 94 | 123 | 160 | 25 |
| TOTAL | 1000 | 18 | 1180 | 1450 | 1830 | 2340 | 3020 | 3900 | 27 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-29

DISCRETE MANUFACTURING SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

| DELIVERY MODE | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| REMOTE COMPUTING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 152 | 9 | 165 | 182 | 209 | 246 | 296 | 352 | 16 |
| INDUSTRY SPECIFIC | 424 | 12 | 475 | 547 | 645 | 761 | 898 | 1042 | 17 |
| UTILITY MARKET | 99 | 7 | 106 | 115 | 131 | 156 | 188 | 230 | 17 |
| SUBTOTAL | 675 | 11 | 746 | 844 | 985 | 1163 | 1382 | 1624 | 17 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | | |
| FUNCTION SPECIFIC | 6 | 7 | 6 | 6 | 7 | 8 | 8 | 9 | 9 |
| INDUSTRY SPECIFIC | 29 | 11 | 32 | 37 | 43 | 50 | 59 | 69 | 17 |
| UTILITY MARKET | 18 | 15 | 21 | 25 | 29 | 35 | 42 | 50 | 19 |
| SUBTOTAL | 53 | 11 | 59 | 68 | 79 | 93 | 109 | 128 | 17 |
| BATCH PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 296 | 6 | 313 | 335 | 369 | 405 | 442 | 471 | 8 |
| INDUSTRY SPECIFIC | 93 | 9 | 102 | 114 | 127 | 139 | 153 | 166 | 10 |
| UTILITY MARKET | 76 | 3 | 79 | 83 | 89 | 95 | 100 | 104 | 6 |
| SUBTOTAL | 465 | 6 | 494 | 532 | 585 | 639 | 695 | 741 | 8 |
| TOTAL PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 454 | 7 | 484 | 523 | 585 | 659 | 746 | 832 | 11 |
| INDUSTRY SPECIFIC | 546 | 12 | 609 | 698 | 815 | 950 | 1110 | 1277 | 16 |
| UTILITY MARKET | 193 | 7 | 206 | 223 | 249 | 286 | 330 | 384 | 13 |
| GRAND TOTAL PROCESSING SERVICES | 1193 | 9 | 1299 | 1444 | 1649 | 1895 | 2186 | 2493 | 14 |
| SOFTWARE PRODUCTS | | | | | | | | | |
| SYSTEMS SOFTWARE | 487 | 32 | 642 | 861 | 1188 | 1686 | 2361 | 3258 | 38 |
| APPLICATIONS SOFTWARE | 374 | 32 | 494 | 676 | 980 | 1392 | 2019 | 2927 | 43 |
| SUBTOTAL | 861 | 32 | 1136 | 1537 | 2168 | 3078 | 4380 | 6185 | 40 |
| PROFESSIONAL SERVICES | | | | | | | | | |
| EDUCATION SERVICES | 55 | 9 | 60 | 69 | 82 | 106 | 144 | 195 | 27 |
| CONSULTING SERVICES | 67 | 17 | 78 | 93 | 118 | 154 | 204 | 265 | 28 |
| PROGRAMMING & ANALYSIS | 554 | 12 | 621 | 714 | 835 | 1003 | 1243 | 1604 | 21 |
| FACILITIES MANAGEMENT | 5 | 0 | 5 | 5 | 5 | 5 | 5 | 5 | 0 |
| SUBTOTAL | 681 | 12 | 764 | 881 | 1040 | 1268 | 1596 | 2069 | 22 |
| INTEGRATED SYSTEMS | | | | | | | | | |
| INDUSTRY SPECIFIC | 565 | 25 | 706 | 855 | 1128 | 1557 | 2133 | 2922 | 33 |
| CROSS INDUSTRY | 214 | 19 | 255 | 311 | 389 | 502 | 663 | 875 | 28 |
| SUBTOTAL | 779 | 23 | 961 | 1166 | 1517 | 2059 | 2796 | 3797 | 32 |
| GRAND TOTAL | 3510 | 18 | 4160 | 5030 | 6370 | 8300 | 10960 | 14540 | 28 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-30

PROCESS MANUFACTURING SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

| DELIVERY MODE | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| REMOTE COMPUTING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 152 | 13 | 171 | 202 | 240 | 291 | 355 | 426 | 20 |
| INDUSTRY SPECIFIC | 58 | 16 | 67 | 81 | 100 | 123 | 154 | 193 | 23 |
| UTILITY MARKET | 227 | 9 | 247 | 271 | 312 | 368 | 450 | 554 | 18 |
| SUBTOTAL | 437 | 11 | 485 | 554 | 652 | 782 | 959 | 1173 | 19 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | | |
| FUNCTION SPECIFIC | 2 | 9 | 2 | 3 | 3 | 3 | 4 | 4 | 10 |
| INDUSTRY SPECIFIC | 30 | 12 | 34 | 38 | 44 | 52 | 63 | 75 | 18 |
| UTILITY MARKET | 5 | 19 | 6 | 7 | 8 | 9 | 11 | 13 | 18 |
| SUBTOTAL | 37 | 13 | 42 | 48 | 55 | 64 | 78 | 92 | 17 |
| BATCH PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 100 | 14 | 114 | 132 | 154 | 182 | 215 | 249 | 17 |
| INDUSTRY SPECIFIC | 449 | 21 | 544 | 674 | 811 | 966 | 1130 | 1299 | 19 |
| UTILITY MARKET | 60 | 9 | 65 | 71 | 77 | 84 | 92 | 99 | 9 |
| SUBTOTAL | 609 | 19 | 723 | 877 | 1042 | 1232 | 1437 | 1647 | 18 |
| TOTAL PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 254 | 13 | 287 | 337 | 397 | 476 | 574 | 679 | 19 |
| INDUSTRY SPECIFIC | 537 | 20 | 645 | 793 | 955 | 1141 | 1347 | 1567 | 19 |
| UTILITY MARKET | 292 | 9 | 318 | 349 | 397 | 461 | 553 | 666 | 16 |
| GRAND TOTAL PROCESSING SERVICES | 1083 | 15 | 1250 | 1479 | 1749 | 2078 | 2474 | 2912 | 18 |
| SOFTWARE PRODUCTS | | | | | | | | | |
| SYSTEMS SOFTWARE | 300 | 36 | 407 | 566 | 798 | 1134 | 1564 | 2112 | 39 |
| APPLICATIONS SOFTWARE | 135 | 38 | 187 | 261 | 376 | 526 | 742 | 1047 | 41 |
| SUBTOTAL | 435 | 37 | 594 | 827 | 1174 | 1660 | 2306 | 3159 | 40 |
| PROFESSIONAL SERVICES | | | | | | | | | |
| EDUCATION SERVICES | 34 | 9 | 37 | 41 | 49 | 62 | 80 | 104 | 23 |
| CONSULTING SERVICES | 44 | 20 | 53 | 65 | 81 | 107 | 144 | 188 | 29 |
| PROGRAMMING & ANALYSIS | 290 | 16 | 336 | 393 | 464 | 556 | 684 | 876 | 21 |
| FACILITIES MANAGEMENT | 5 | 0 | 5 | 5 | 5 | 5 | 5 | 5 | 0 |
| SUBTOTAL | 373 | 16 | 431 | 504 | 599 | 730 | 913 | 1173 | 22 |
| INTEGRATED SYSTEMS | | | | | | | | | |
| INDUSTRY SPECIFIC | 235 | 20 | 282 | 336 | 446 | 603 | 795 | 1041 | 30 |
| CROSS INDUSTRY | 86 | 18 | 101 | 123 | 153 | 194 | 249 | 319 | 26 |
| SUBTOTAL | 321 | 19 | 383 | 459 | 599 | 797 | 1044 | 1360 | 29 |
| GRAND TOTAL | 2210 | 20 | 2660 | 3270 | 4120 | 5270 | 6740 | 8600 | 26 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-31

TRANSPORTATION SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

| DELIVERY MODE | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| REMOTE COMPUTING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 26 | 8 | 29 | 31 | 35 | 40 | 46 | 52 | 13 |
| INDUSTRY SPECIFIC | 64 | 15 | 73 | 82 | 99 | 119 | 147 | 182 | 20 |
| UTILITY MARKET | 26 | 5 | 27 | 28 | 31 | 33 | 37 | 41 | 9 |
| SUBTOTAL | 116 | 11 | 129 | 141 | 165 | 192 | 230 | 275 | 16 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | | |
| FUNCTION SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 28 | 5 | 29 | 31 | 34 | 38 | 42 | 49 | 11 |
| UTILITY MARKET | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 28 | 4 | 29 | 31 | 34 | 38 | 42 | 49 | 11 |
| BATCH PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 21 | 8 | 22 | 24 | 25 | 27 | 29 | 31 | 7 |
| INDUSTRY SPECIFIC | 31 | 11 | 34 | 38 | 42 | 46 | 50 | 54 | 9 |
| UTILITY MARKET | 12 | 0 | 12 | 12 | 12 | 12 | 13 | 13 | 3 |
| SUBTOTAL | 64 | 6 | 68 | 74 | 79 | 85 | 92 | 98 | 8 |
| TOTAL PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 47 | 9 | 51 | 55 | 60 | 67 | 75 | 83 | 10 |
| INDUSTRY SPECIFIC | 123 | 11 | 136 | 151 | 175 | 203 | 239 | 285 | 16 |
| UTILITY MARKET | 38 | 1 | 39 | 40 | 43 | 45 | 50 | 54 | 7 |
| GRAND TOTAL PROCESSING SERVICES | 208 | 9 | 226 | 246 | 278 | 315 | 364 | 423 | 13 |
| SOFTWARE PRODUCTS | | | | | | | | | |
| SYSTEMS SOFTWARE | 80 | 29 | 103 | 134 | 180 | 249 | 338 | 450 | 34 |
| APPLICATIONS SOFTWARE | 76 | 30 | 98 | 144 | 218 | 329 | 491 | 731 | 49 |
| SUBTOTAL | 156 | 29 | 201 | 278 | 398 | 578 | 829 | 1181 | 42 |
| PROFESSIONAL SERVICES | | | | | | | | | |
| EDUCATION SERVICES | 7 | 7 | 7 | 8 | 9 | 11 | 13 | 16 | 16 |
| CONSULTING SERVICES | 13 | 12 | 15 | 17 | 20 | 25 | 30 | 37 | 21 |
| PROGRAMMING & ANALYSIS | 77 | 5 | 81 | 87 | 98 | 111 | 125 | 141 | 12 |
| FACILITIES MANAGEMENT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 97 | 6 | 103 | 112 | 127 | 147 | 168 | 194 | 14 |
| INTEGRATED SYSTEMS | | | | | | | | | |
| INDUSTRY SPECIFIC | 85 | 12 | 95 | 107 | 128 | 161 | 200 | 248 | 21 |
| CROSS INDUSTRY | 44 | 17 | 52 | 61 | 74 | 91 | 113 | 142 | 22 |
| SUBTOTAL | 129 | 14 | 147 | 168 | 202 | 252 | 313 | 390 | 22 |
| GRAND TOTAL | 590 | 15 | 680 | 800 | 1010 | 1290 | 1670 | 2190 | 26 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-32

UTILITIES SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

| DELIVERY MODE | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| REMOTE COMPUTING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 81 | 12 | 91 | 102 | 115 | 132 | 153 | 175 | 14 |
| INDUSTRY SPECIFIC | 106 | 12 | 119 | 138 | 160 | 184 | 215 | 252 | 16 |
| UTILITY MARKET | 114 | 7 | 122 | 133 | 149 | 167 | 188 | 215 | 12 |
| SUBTOTAL | 301 | 10 | 332 | 373 | 424 | 483 | 556 | 642 | 14 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | | |
| FUNCTION SPECIFIC | 2 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| INDUSTRY SPECIFIC | 2 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| UTILITY MARKET | 8 | 9 | 8 | 9 | 10 | 11 | 12 | 14 | 11 |
| SUBTOTAL | 12 | 0 | 12 | 13 | 14 | 15 | 16 | 18 | 8 |
| BATCH PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 41 | 9 | 45 | 49 | 53 | 57 | 61 | 66 | 8 |
| INDUSTRY SPECIFIC | 13 | 10 | 15 | 16 | 17 | 18 | 19 | 20 | 7 |
| UTILITY MARKET | 24 | 3 | 24 | 25 | 26 | 28 | 31 | 34 | 7 |
| SUBTOTAL | 78 | 7 | 84 | 90 | 96 | 103 | 111 | 120 | 8 |
| TOTAL PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 124 | 11 | 138 | 153 | 170 | 191 | 216 | 243 | 12 |
| INDUSTRY SPECIFIC | 121 | 12 | 136 | 156 | 179 | 204 | 236 | 274 | 15 |
| UTILITY MARKET | 146 | 5 | 154 | 167 | 185 | 206 | 231 | 263 | 11 |
| GRAND TOTAL PROCESSING SERVICES | 391 | 9 | 428 | 476 | 534 | 601 | 683 | 780 | 13 |
| SOFTWARE PRODUCTS | | | | | | | | | |
| SYSTEMS SOFTWARE | 90 | 26 | 114 | 144 | 184 | 239 | 310 | 404 | 29 |
| APPLICATIONS SOFTWARE | 40 | 33 | 54 | 71 | 99 | 129 | 168 | 218 | 32 |
| SUBTOTAL | 130 | 29 | 168 | 215 | 283 | 368 | 478 | 622 | 30 |
| PROFESSIONAL SERVICES | | | | | | | | | |
| EDUCATION SERVICES | 13 | 13 | 15 | 17 | 20 | 25 | 34 | 46 | 25 |
| CONSULTING SERVICES | 18 | 10 | 20 | 23 | 29 | 36 | 46 | 58 | 24 |
| PROGRAMMING & ANALYSIS | 145 | 17 | 170 | 200 | 240 | 293 | 361 | 444 | 21 |
| FACILITIES MANAGEMENT | 7 | 12 | 8 | 9 | 11 | 13 | 15 | 18 | 18 |
| SUBTOTAL | 183 | 16 | 213 | 249 | 300 | 367 | 456 | 566 | 22 |
| INTEGRATED SYSTEMS | | | | | | | | | |
| INDUSTRY SPECIFIC | 75 | 18 | 89 | 103 | 127 | 159 | 193 | 233 | 21 |
| CROSS INDUSTRY | 26 | 20 | 31 | 38 | 49 | 62 | 79 | 100 | 27 |
| SUBTOTAL | 101 | 18 | 120 | 141 | 176 | 221 | 272 | 333 | 23 |
| GRAND TOTAL | 810 | 15 | 930 | 1080 | 1290 | 1560 | 1890 | 2300 | 20 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-33

BANKING AND FINANCE SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

| DELIVERY MODE | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| REMOTE COMPUTING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 88 | 10 | 97 | 108 | 124 | 145 | 172 | 202 | 16 |
| INDUSTRY SPECIFIC | 842 | 17 | 985 | 1163 | 1382 | 1679 | 2065 | 2540 | 21 |
| UTILITY MARKET | 55 | 7 | 59 | 66 | 75 | 86 | 101 | 118 | 15 |
| SUBTOTAL | 985 | 16 | 1141 | 1337 | 1581 | 1910 | 2338 | 2860 | 20 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | | |
| FUNCTION SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 535 | 15 | 615 | 720 | 845 | 1000 | 1180 | 1392 | 18 |
| UTILITY MARKET | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 535 | 15 | 615 | 720 | 845 | 1000 | 1180 | 1392 | 18 |
| BATCH PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 186 | 12 | 208 | 233 | 256 | 277 | 288 | 297 | 7 |
| INDUSTRY SPECIFIC | 658 | 10 | 724 | 789 | 852 | 911 | 957 | 1005 | 7 |
| UTILITY MARKET | 16 | 8 | 17 | 19 | 20 | 22 | 24 | 26 | 9 |
| SUBTOTAL | 860 | 10 | 949 | 1041 | 1128 | 1210 | 1269 | 1328 | 7 |
| TOTAL PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 274 | 11 | 305 | 341 | 380 | 422 | 460 | 499 | 10 |
| INDUSTRY SPECIFIC | 2035 | 14 | 2324 | 2672 | 3079 | 3590 | 4202 | 4937 | 16 |
| UTILITY MARKET | 71 | 7 | 76 | 85 | 95 | 108 | 125 | 144 | 14 |
| GRAND TOTAL PROCESSING SERVICES | 2380 | 14 | 2705 | 3098 | 3554 | 4120 | 4787 | 5580 | 16 |
| SOFTWARE PRODUCTS | | | | | | | | | |
| SYSTEMS SOFTWARE | 117 | 34 | 157 | 211 | 289 | 404 | 566 | 792 | 38 |
| APPLICATIONS SOFTWARE | 495 | 30 | 644 | 895 | 1325 | 1881 | 2672 | 3794 | 43 |
| SUBTOTAL | 612 | 31 | 801 | 1106 | 1614 | 2285 | 3238 | 4586 | 42 |
| PROFESSIONAL SERVICES | | | | | | | | | |
| EDUCATION SERVICES | 20 | 15 | 23 | 26 | 32 | 41 | 54 | 72 | 26 |
| CONSULTING SERVICES | 36 | 15 | 42 | 51 | 64 | 80 | 103 | 132 | 26 |
| PROGRAMMING & ANALYSIS | 227 | 15 | 261 | 310 | 385 | 481 | 606 | 763 | 24 |
| FACILITIES MANAGEMENT | 28 | 11 | 31 | 34 | 40 | 46 | 54 | 62 | 15 |
| SUBTOTAL | 311 | 15 | 357 | 421 | 521 | 648 | 817 | 1029 | 24 |
| INTEGRATED SYSTEMS | | | | | | | | | |
| INDUSTRY SPECIFIC | 295 | 23 | 363 | 454 | 596 | 816 | 1070 | 1401 | 31 |
| CROSS INDUSTRY | 99 | 16 | 115 | 138 | 171 | 214 | 273 | 350 | 25 |
| SUBTOTAL | 394 | 21 | 478 | 592 | 767 | 1030 | 1343 | 1751 | 30 |
| GRAND TOTAL | 3700 | 17 | 4340 | 5220 | 6460 | 8080 | 10190 | 12950 | 24 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-34

INSURANCE SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

| DELIVERY MODE | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| REMOTE COMPUTING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 90 | 11 | 99 | 113 | 132 | 155 | 183 | 215 | 17 |
| INDUSTRY SPECIFIC | 104 | 11 | 115 | 129 | 146 | 169 | 197 | 228 | 15 |
| UTILITY MARKET | 23 | 6 | 24 | 27 | 30 | 33 | 37 | 41 | 11 |
| SUBTOTAL | 217 | 10 | 238 | 269 | 308 | 357 | 417 | 484 | 15 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | | |
| FUNCTION SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 275 | 10 | 303 | 339 | 393 | 460 | 538 | 629 | 16 |
| UTILITY MARKET | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 275 | 10 | 303 | 339 | 393 | 460 | 538 | 629 | 16 |
| BATCH PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 26 | 7 | 28 | 31 | 33 | 35 | 36 | 37 | 6 |
| INDUSTRY SPECIFIC | 96 | 9 | 105 | 113 | 122 | 131 | 140 | 147 | 7 |
| UTILITY MARKET | 14 | 6 | 15 | 16 | 17 | 19 | 20 | 22 | 8 |
| SUBTOTAL | 136 | 9 | 148 | 160 | 172 | 185 | 196 | 206 | 7 |
| TOTAL PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 116 | 9 | 127 | 144 | 165 | 190 | 219 | 252 | 15 |
| INDUSTRY SPECIFIC | 475 | 10 | 523 | 581 | 661 | 760 | 875 | 1004 | 14 |
| UTILITY MARKET | 37 | 5 | 39 | 43 | 47 | 52 | 57 | 63 | 10 |
| GRAND TOTAL PROCESSING SERVICES | 628 | 10 | 689 | 768 | 873 | 1002 | 1151 | 1319 | 14 |
| SOFTWARE PRODUCTS | | | | | | | | | |
| SYSTEMS SOFTWARE | 138 | 33 | 183 | 245 | 334 | 454 | 603 | 802 | 34 |
| APPLICATIONS SOFTWARE | 332 | 29 | 428 | 565 | 774 | 1045 | 1411 | 1905 | 35 |
| SUBTOTAL | 470 | 30 | 611 | 810 | 1108 | 1499 | 2014 | 2707 | 35 |
| PROFESSIONAL SERVICES | | | | | | | | | |
| EDUCATION SERVICES | 13 | 12 | 14 | 16 | 19 | 23 | 30 | 39 | 22 |
| CONSULTING SERVICES | 29 | 13 | 33 | 40 | 50 | 64 | 81 | 103 | 26 |
| PROGRAMMING & ANALYSIS | 188 | 14 | 214 | 252 | 303 | 366 | 440 | 528 | 20 |
| FACILITIES MANAGEMENT | 52 | 10 | 57 | 65 | 73 | 83 | 93 | 105 | 13 |
| SUBTOTAL | 282 | 13 | 318 | 373 | 445 | 536 | 644 | 775 | 19 |
| INTEGRATED SYSTEMS | | | | | | | | | |
| INDUSTRY SPECIFIC | 60 | 16 | 70 | 80 | 108 | 146 | 188 | 243 | 28 |
| CROSS INDUSTRY | 114 | 15 | 131 | 158 | 197 | 240 | 289 | 347 | 21 |
| SUBTOTAL | 174 | 16 | 201 | 238 | 305 | 386 | 477 | 590 | 24 |
| GRAND TOTAL | 1550 | 17 | 1820 | 2190 | 2730 | 3420 | 4290 | 5390 | 24 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-35

MEDICAL SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

| DELIVERY MODE | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| REMOTE COMPUTING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 19 | 17 | 23 | 27 | 32 | 38 | 46 | 55 | 19 |
| INDUSTRY SPECIFIC | 186 | 16 | 216 | 255 | 303 | 363 | 444 | 544 | 20 |
| UTILITY MARKET | 9 | 10 | 10 | 11 | 13 | 15 | 17 | 20 | 15 |
| SUBTOTAL | 214 | 16 | 249 | 293 | 348 | 416 | 507 | 619 | 20 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | | |
| FUNCTION SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 213 | 20 | 256 | 307 | 374 | 460 | 562 | 685 | 22 |
| UTILITY MARKET | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 213 | 20 | 256 | 307 | 374 | 460 | 562 | 685 | 22 |
| BATCH PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 31 | 15 | 36 | 42 | 48 | 54 | 59 | 64 | 12 |
| INDUSTRY SPECIFIC | 185 | 9 | 201 | 220 | 243 | 264 | 285 | 303 | 8 |
| UTILITY MARKET | 12 | 5 | 12 | 13 | 13 | 14 | 15 | 16 | 5 |
| SUBTOTAL | 228 | 9 | 249 | 275 | 304 | 332 | 359 | 383 | 9 |
| TOTAL PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 50 | 18 | 59 | 69 | 80 | 92 | 105 | 119 | 15 |
| INDUSTRY SPECIFIC | 584 | 15 | 673 | 782 | 920 | 1087 | 1291 | 1532 | 18 |
| UTILITY MARKET | 21 | 5 | 22 | 24 | 26 | 29 | 32 | 36 | 10 |
| GRAND TOTAL PROCESSING SERVICES | 655 | 15 | 754 | 875 | 1026 | 1208 | 1428 | 1687 | 17 |
| SOFTWARE PRODUCTS | | | | | | | | | |
| SYSTEMS SOFTWARE | 65 | 36 | 88 | 122 | 170 | 232 | 301 | 392 | 35 |
| APPLICATIONS SOFTWARE | 129 | 49 | 192 | 284 | 412 | 594 | 849 | 1215 | 45 |
| SUBTOTAL | 194 | 44 | 280 | 406 | 582 | 826 | 1150 | 1607 | 42 |
| PROFESSIONAL SERVICES | | | | | | | | | |
| EDUCATION SERVICES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CONSULTING SERVICES | 11 | 8 | 12 | 13 | 16 | 19 | 23 | 27 | 18 |
| PROGRAMMING & ANALYSIS | 84 | 12 | 94 | 107 | 129 | 158 | 196 | 243 | 21 |
| FACILITIES MANAGEMENT | 5 | 9 | 6 | 6 | 7 | 8 | 8 | 9 | 9 |
| SUBTOTAL | 100 | 12 | 112 | 126 | 152 | 185 | 227 | 279 | 20 |
| INTEGRATED SYSTEMS | | | | | | | | | |
| INDUSTRY SPECIFIC | 80 | 22 | 98 | 122 | 161 | 216 | 291 | 393 | 32 |
| CROSS INDUSTRY | 61 | 26 | 77 | 96 | 122 | 155 | 194 | 245 | 26 |
| SUBTOTAL | 141 | 24 | 175 | 218 | 283 | 371 | 485 | 638 | 30 |
| GRAND TOTAL | 1090 | 21 | 1320 | 1630 | 2040 | 2590 | 3290 | 4210 | 26 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-36

EDUCATION SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

| DELIVERY MODE | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| REMOTE COMPUTING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 22 | 6 | 23 | 24 | 26 | 29 | 32 | 35 | 9 |
| INDUSTRY SPECIFIC | 11 | 0 | 11 | 11 | 12 | 13 | 14 | 16 | 8 |
| UTILITY MARKET | 25 | 0 | 25 | 25 | 26 | 28 | 30 | 32 | 5 |
| SUBTOTAL | 58 | 2 | 59 | 60 | 64 | 70 | 76 | 83 | 7 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | | |
| FUNCTION SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 18 | 8 | 19 | 21 | 24 | 28 | 32 | 38 | 14 |
| UTILITY MARKET | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 18 | 6 | 19 | 21 | 24 | 28 | 32 | 38 | 14 |
| BATCH PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 19 | 3 | 20 | 21 | 21 | 22 | 23 | 24 | 4 |
| INDUSTRY SPECIFIC | 30 | 2 | 31 | 32 | 34 | 36 | 37 | 39 | 5 |
| UTILITY MARKET | 16 | 0 | 16 | 16 | 16 | 17 | 17 | 18 | 3 |
| SUBTOTAL | 65 | 3 | 67 | 69 | 71 | 75 | 77 | 81 | 4 |
| TOTAL PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 41 | 5 | 43 | 45 | 47 | 51 | 55 | 59 | 7 |
| INDUSTRY SPECIFIC | 59 | 4 | 61 | 64 | 70 | 77 | 83 | 93 | 9 |
| UTILITY MARKET | 41 | 0 | 41 | 41 | 42 | 45 | 47 | 50 | 4 |
| GRAND TOTAL PROCESSING SERVICES | 141 | 3 | 145 | 150 | 159 | 173 | 185 | 202 | 7 |
| SOFTWARE PRODUCTS | | | | | | | | | |
| SYSTEMS SOFTWARE | 40 | 16 | 46 | 54 | 64 | 77 | 97 | 121 | 21 |
| APPLICATIONS SOFTWARE | 37 | 22 | 45 | 58 | 73 | 89 | 108 | 132 | 24 |
| SUBTOTAL | 77 | 18 | 91 | 112 | 137 | 166 | 205 | 253 | 23 |
| PROFESSIONAL SERVICES | | | | | | | | | |
| EDUCATION SERVICES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CONSULTING SERVICES | 12 | 0 | 12 | 12 | 14 | 16 | 19 | 22 | 14 |
| PROGRAMMING & ANALYSIS | 79 | 5 | 82 | 89 | 102 | 118 | 133 | 150 | 13 |
| FACILITIES MANAGEMENT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 91 | 3 | 94 | 101 | 116 | 134 | 152 | 172 | 13 |
| INTEGRATED SYSTEMS | | | | | | | | | |
| INDUSTRY SPECIFIC | 50 | 8 | 54 | 59 | 68 | 86 | 106 | 130 | 19 |
| CROSS INDUSTRY | 18 | 12 | 20 | 23 | 26 | 32 | 38 | 46 | 18 |
| SUBTOTAL | 68 | 9 | 74 | 82 | 94 | 118 | 144 | 176 | 19 |
| GRAND TOTAL | 380 | 7 | 400 | 450 | 500 | 590 | 690 | 800 | 15 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-37

RETAIL DISTRIBUTION SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

| DELIVERY MODE | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| REMOTE COMPUTING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 47 | 10 | 51 | 59 | 68 | 83 | 102 | 125 | 19 |
| INDUSTRY SPECIFIC | 362 | 9 | 395 | 438 | 505 | 586 | 694 | 822 | 16 |
| UTILITY MARKET | 40 | 2 | 41 | 43 | 49 | 55 | 63 | 73 | 12 |
| SUBTOTAL | 449 | 9 | 487 | 540 | 622 | 724 | 859 | 1020 | 16 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | | |
| FUNCTION SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 13 | 3 | 13 | 14 | 15 | 16 | 17 | 18 | 6 |
| UTILITY MARKET | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 13 | 0 | 13 | 14 | 15 | 16 | 17 | 18 | 6 |
| BATCH PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 86 | 12 | 96 | 107 | 119 | 130 | 142 | 153 | 10 |
| INDUSTRY SPECIFIC | 114 | 3 | 118 | 123 | 129 | 134 | 138 | 138 | 3 |
| UTILITY MARKET | 34 | 0 | 34 | 35 | 36 | 39 | 41 | 43 | 5 |
| SUBTOTAL | 234 | 6 | 248 | 265 | 284 | 303 | 321 | 334 | 6 |
| TOTAL PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 133 | 11 | 147 | 166 | 187 | 213 | 244 | 278 | 13 |
| INDUSTRY SPECIFIC | 489 | 8 | 526 | 575 | 649 | 736 | 849 | 978 | 13 |
| UTILITY MARKET | 74 | 1 | 75 | 78 | 85 | 94 | 104 | 116 | 9 |
| GRAND TOTAL PROCESSING SERVICES | 696 | 8 | 748 | 819 | 921 | 1043 | 1197 | 1371 | 13 |
| SOFTWARE PRODUCTS | | | | | | | | | |
| SYSTEMS SOFTWARE | 71 | 29 | 92 | 119 | 167 | 222 | 291 | 382 | 33 |
| APPLICATIONS SOFTWARE | 135 | 35 | 182 | 238 | 334 | 467 | 654 | 935 | 39 |
| SUBTOTAL | 206 | 33 | 274 | 357 | 501 | 689 | 945 | 1317 | 37 |
| PROFESSIONAL SERVICES | | | | | | | | | |
| EDUCATION SERVICES | 7 | 9 | 7 | 8 | 9 | 11 | 13 | 15 | 16 |
| CONSULTING SERVICES | 18 | 10 | 20 | 23 | 26 | 30 | 35 | 42 | 16 |
| PROGRAMMING & ANALYSIS | 117 | 7 | 125 | 135 | 149 | 170 | 192 | 217 | 12 |
| FACILITIES MANAGEMENT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 142 | 7 | 152 | 166 | 184 | 211 | 240 | 274 | 13 |
| INTEGRATED SYSTEMS | | | | | | | | | |
| INDUSTRY SPECIFIC | 83 | 22 | 101 | 117 | 156 | 206 | 266 | 343 | 28 |
| CROSS INDUSTRY | 100 | 21 | 121 | 152 | 198 | 261 | 352 | 476 | 32 |
| SUBTOTAL | 183 | 21 | 222 | 269 | 354 | 467 | 618 | 819 | 30 |
| GRAND TOTAL | 1230 | 14 | 1400 | 1610 | 1960 | 2410 | 3000 | 3780 | 22 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-38

WHOLESALE DISTRIBUTION SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

| DELIVERY MODE | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| REMOTE COMPUTING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 65 | 7 | 70 | 75 | 84 | 95 | 106 | 119 | 11 |
| INDUSTRY SPECIFIC | 118 | 11 | 131 | 146 | 167 | 192 | 222 | 258 | 14 |
| UTILITY MARKET | 27 | 0 | 27 | 27 | 30 | 32 | 35 | 39 | 7 |
| SUBTOTAL | 210 | 9 | 228 | 248 | 281 | 319 | 363 | 416 | 13 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | | |
| FUNCTION SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 32 | 2 | 33 | 36 | 39 | 45 | 50 | 56 | 11 |
| UTILITY MARKET | 4 | 5 | 5 | 5 | 5 | 6 | 7 | 7 | 10 |
| SUBTOTAL | 36 | 4 | 38 | 41 | 44 | 51 | 57 | 63 | 11 |
| BATCH PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 149 | 16 | 173 | 200 | 226 | 249 | 271 | 296 | 11 |
| INDUSTRY SPECIFIC | 65 | 5 | 68 | 71 | 73 | 76 | 78 | 79 | 3 |
| UTILITY MARKET | 112 | -5 | 107 | 107 | 109 | 109 | 107 | 105 | 00 |
| SUBTOTAL | 326 | 7 | 348 | 378 | 408 | 434 | 456 | 480 | 7 |
| TOTAL PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 214 | 14 | 243 | 275 | 310 | 344 | 377 | 415 | 11 |
| INDUSTRY SPECIFIC | 215 | 8 | 232 | 253 | 279 | 313 | 350 | 393 | 11 |
| UTILITY MARKET | 143 | -3 | 139 | 139 | 144 | 147 | 149 | 151 | 2 |
| GRAND TOTAL PROCESSING SERVICES | 572 | 7 | 614 | 667 | 733 | 804 | 876 | 959 | 9 |
| SOFTWARE PRODUCTS | | | | | | | | | |
| SYSTEMS SOFTWARE | 66 | 33 | 87 | 117 | 161 | 217 | 291 | 389 | 35 |
| APPLICATIONS SOFTWARE | 205 | 40 | 287 | 391 | 551 | 771 | 1080 | 1512 | 39 |
| SUBTOTAL | 271 | 38 | 374 | 508 | 712 | 988 | 1371 | 1901 | 38 |
| PROFESSIONAL SERVICES | | | | | | | | | |
| EDUCATION SERVICES | 7 | 6 | 7 | 8 | 8 | 10 | 11 | 13 | 13 |
| CONSULTING SERVICES | 12 | 11 | 14 | 15 | 17 | 20 | 23 | 27 | 14 |
| PROGRAMMING & ANALYSIS | 95 | 9 | 104 | 115 | 129 | 148 | 171 | 196 | 14 |
| FACILITIES MANAGEMENT | 2 | 10 | 3 | 3 | 3 | 3 | 4 | 4 | 11 |
| SUBTOTAL | 116 | 10 | 128 | 141 | 157 | 181 | 209 | 240 | 14 |
| INTEGRATED SYSTEMS | | | | | | | | | |
| INDUSTRY SPECIFIC | 95 | 26 | 120 | 146 | 191 | 251 | 318 | 404 | 28 |
| CROSS INDUSTRY | 92 | 20 | 111 | 139 | 179 | 232 | 307 | 405 | 30 |
| SUBTOTAL | 187 | 24 | 231 | 285 | 370 | 483 | 625 | 809 | 29 |
| GRAND TOTAL | 1150 | 17 | 1350 | 1600 | 1970 | 2460 | 3080 | 3910 | 24 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-39

FEDERAL GOVERNMENT SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

| DELIVERY MODE | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| REMOTE COMPUTING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 119 | 9 | 129 | 143 | 160 | 180 | 202 | 228 | 12 |
| INDUSTRY SPECIFIC | 37 | 10 | 41 | 45 | 52 | 61 | 70 | 82 | 15 |
| UTILITY MARKET | 278 | 5 | 292 | 310 | 341 | 381 | 431 | 491 | 11 |
| SUBTOTAL | 434 | 6 | 462 | 498 | 553 | 622 | 703 | 801 | 12 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | | |
| FUNCTION SPECIFIC | 38 | 5 | 40 | 42 | 45 | 48 | 52 | 56 | 7 |
| INDUSTRY SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| UTILITY MARKET | 42 | 52 | 64 | 99 | 127 | 158 | 198 | 247 | 31 |
| SUBTOTAL | 80 | 30 | 104 | 141 | 172 | 206 | 250 | 303 | 24 |
| BATCH PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 12 | 7 | 13 | 13 | 14 | 15 | 16 | 17 | 6 |
| INDUSTRY SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| UTILITY MARKET | 53 | 2 | 54 | 55 | 58 | 61 | 64 | 68 | 5 |
| SUBTOTAL | 65 | 3 | 67 | 68 | 72 | 76 | 80 | 85 | 5 |
| TOTAL PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 169 | 8 | 182 | 198 | 219 | 243 | 270 | 301 | 11 |
| INDUSTRY SPECIFIC | 37 | 11 | 41 | 45 | 52 | 61 | 70 | 82 | 15 |
| UTILITY MARKET | 373 | 10 | 410 | 464 | 526 | 600 | 693 | 806 | 14 |
| GRAND TOTAL PROCESSING SERVICES | 579 | 9 | 633 | 707 | 797 | 904 | 1033 | 1189 | 13 |
| SOFTWARE PRODUCTS | | | | | | | | | |
| SYSTEMS SOFTWARE | 331 | 26 | 417 | 534 | 710 | 951 | 1303 | 1786 | 34 |
| APPLICATIONS SOFTWARE | 14 | 28 | 18 | 23 | 28 | 35 | 44 | 54 | 24 |
| SUBTOTAL | 345 | 26 | 435 | 557 | 738 | 986 | 1347 | 1840 | 33 |
| PROFESSIONAL SERVICES | | | | | | | | | |
| EDUCATION SERVICES | 68 | 13 | 76 | 90 | 110 | 145 | 196 | 264 | 28 |
| CONSULTING SERVICES | 145 | 9 | 159 | 181 | 210 | 247 | 291 | 336 | 16 |
| PROGRAMMING & ANALYSIS | 928 | 16 | 1076 | 1245 | 1469 | 1749 | 2098 | 2434 | 18 |
| FACILITIES MANAGEMENT | 337 | 6 | 358 | 389 | 428 | 464 | 503 | 544 | 9 |
| SUBTOTAL | 1478 | 13 | 1669 | 1905 | 2217 | 2605 | 3088 | 3578 | 16 |
| INTEGRATED SYSTEMS | | | | | | | | | |
| INDUSTRY SPECIFIC | 45 | 16 | 52 | 60 | 75 | 92 | 112 | 136 | 21 |
| CROSS INDUSTRY | 13 | 10 | 14 | 17 | 20 | 24 | 28 | 34 | 19 |
| SUBTOTAL | 58 | 14 | 66 | 77 | 95 | 116 | 140 | 170 | 21 |
| GRAND TOTAL | 2460 | 14 | 2800 | 3250 | 3850 | 4610 | 5610 | 6780 | 19 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-40

STATE AND LOCAL GOVERNMENT SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

| DELIVERY MODE | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| REMOTE COMPUTING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 25 | 12 | 28 | 31 | 36 | 41 | 48 | 57 | 15 |
| INDUSTRY SPECIFIC | 13 | 12 | 15 | 17 | 19 | 21 | 23 | 26 | 12 |
| UTILITY MARKET | 38 | 0 | 38 | 38 | 41 | 45 | 49 | 53 | 7 |
| SUBTOTAL | 76 | 7 | 81 | 86 | 96 | 107 | 120 | 136 | 11 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | | |
| FUNCTION SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 9 | 0 | 9 | 10 | 11 | 12 | 14 | 15 | 11 |
| UTILITY MARKET | 20 | 10 | 21 | 24 | 26 | 29 | 32 | 35 | 10 |
| SUBTOTAL | 29 | 3 | 30 | 34 | 37 | 41 | 46 | 50 | 11 |
| BATCH PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 20 | 5 | 21 | 23 | 25 | 227 | 29 | 31 | 8 |
| INDUSTRY SPECIFIC | 24 | 7 | 25 | 28 | 30 | 33 | 36 | 39 | 9 |
| UTILITY MARKET | 51 | 7 | 54 | 58 | 64 | 70 | 76 | 82 | 9 |
| SUBTOTAL | 95 | 5 | 100 | 109 | 119 | 330 | 141 | 152 | 9 |
| TOTAL PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 45 | 9 | 49 | 54 | 61 | 268 | 77 | 88 | 12 |
| INDUSTRY SPECIFIC | 46 | 7 | 49 | 55 | 60 | 66 | 73 | 80 | 10 |
| UTILITY MARKET | 109 | 4 | 113 | 120 | 131 | 144 | 157 | 170 | 8 |
| GRAND TOTAL PROCESSING SERVICES | 200 | 6 | 211 | 229 | 252 | 478 | 307 | 338 | 10 |
| SOFTWARE PRODUCTS | | | | | | | | | |
| SYSTEMS SOFTWARE | 110 | 19 | 131 | 154 | 188 | 234 | 280 | 337 | 21 |
| APPLICATIONS SOFTWARE | 37 | 18 | 43 | 53 | 69 | 84 | 105 | 130 | 25 |
| SUBTOTAL | 147 | 18 | 174 | 207 | 257 | 318 | 385 | 467 | 22 |
| PROFESSIONAL SERVICES | | | | | | | | | |
| EDUCATION SERVICES | 47 | 11 | 52 | 58 | 67 | 79 | 97 | 120 | 18 |
| CONSULTING SERVICES | 109 | 6 | 115 | 126 | 143 | 167 | 198 | 230 | 15 |
| PROGRAMMING & ANALYSIS | 786 | 5 | 825 | 883 | 962 | 1097 | 1262 | 1451 | 12 |
| FACILITIES MANAGEMENT | 7 | 13 | 8 | 9 | 11 | 12 | 14 | 16 | 14 |
| SUBTOTAL | 949 | 5 | 1000 | 1076 | 1183 | 1355 | 1571 | 1817 | 13 |
| INTEGRATED SYSTEMS | | | | | | | | | |
| INDUSTRY SPECIFIC | 25 | 7 | 27 | 29 | 36 | 45 | 54 | 64 | 19 |
| CROSS INDUSTRY | 18 | 14 | 21 | 25 | 30 | 35 | 43 | 53 | 20 |
| SUBTOTAL | 43 | 12 | 48 | 54 | 66 | 80 | 97 | 117 | 20 |
| GRAND TOTAL | 1340 | 7 | 1430 | 1570 | 1760 | 2230 | 2360 | 2740 | 14 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-41

SERVICES SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

| DELIVERY MODE | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| REMOTE COMPUTING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 148 | 9 | 161 | 176 | 197 | 227 | 266 | 311 | 14 |
| INDUSTRY SPECIFIC | 377 | 14 | 429 | 493 | 573 | 670 | 807 | 972 | 18 |
| UTILITY MARKET | 70 | 6 | 74 | 81 | 91 | 103 | 116 | 131 | 12 |
| SUBTOTAL | 595 | 12 | 664 | 750 | 861 | 1000 | 1189 | 1414 | 16 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | | |
| FUNCTION SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 4 | 8 | 4 | 5 | 5 | 6 | 6 | 7 | 11 |
| UTILITY MARKET | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 4 | 0 | 4 | 5 | 5 | 6 | 6 | 7 | 11 |
| BATCH PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 84 | 12 | 94 | 107 | 115 | 125 | 133 | 143 | 9 |
| INDUSTRY SPECIFIC | 208 | 9 | 227 | 249 | 264 | 279 | 293 | 302 | 6 |
| UTILITY MARKET | 21 | 0 | 21 | 21 | 22 | 23 | 24 | 25 | 4 |
| SUBTOTAL | 313 | 9 | 342 | 377 | 401 | 427 | 450 | 470 | 7 |
| TOTAL PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 232 | 10 | 255 | 283 | 312 | 352 | 399 | 454 | 12 |
| INDUSTRY SPECIFIC | 589 | 12 | 660 | 747 | 842 | 955 | 1106 | 1281 | 14 |
| UTILITY MARKET | 91 | 4 | 95 | 102 | 113 | 126 | 140 | 156 | 10 |
| GRAND TOTAL PROCESSING SERVICES | 912 | 11 | 1010 | 1132 | 1267 | 1433 | 1645 | 1891 | 13 |
| SOFTWARE PRODUCTS | | | | | | | | | |
| SYSTEMS SOFTWARE | 42 | 29 | 55 | 71 | 94 | 127 | 169 | 224 | 33 |
| APPLICATIONS SOFTWARE | 95 | 35 | 128 | 180 | 251 | 347 | 479 | 641 | 38 |
| SUBTOTAL | 137 | 33 | 183 | 251 | 345 | 474 | 648 | 865 | 37 |
| PROFESSIONAL SERVICES | | | | | | | | | |
| EDUCATION SERVICES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CONSULTING SERVICES | 6 | 9 | 6 | 7 | 8 | 10 | 12 | 14 | 16 |
| PROGRAMMING & ANALYSIS | 25 | 10 | 27 | 30 | 35 | 40 | 47 | 55 | 15 |
| FACILITIES MANAGEMENT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 31 | 8 | 33 | 37 | 43 | 50 | 59 | 69 | 15 |
| INTEGRATED SYSTEMS | | | | | | | | | |
| INDUSTRY SPECIFIC | 165 | 30 | 215 | 295 | 401 | 533 | 693 | 900 | 33 |
| CROSS INDUSTRY | 69 | 22 | 84 | 110 | 148 | 200 | 265 | 353 | 33 |
| SUBTOTAL | 234 | 28 | 299 | 405 | 549 | 733 | 958 | 1253 | 33 |
| GRAND TOTAL | 1310 | 16 | 1530 | 1830 | 2200 | 2690 | 3310 | 4080 | 22 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B-42

OTHER SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

| DELIVERY MODE | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| REMOTE COMPUTING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 54 | 5 | 56 | 64 | 72 | 83 | 96 | 110 | 14 |
| INDUSTRY SPECIFIC | 218 | 13 | 247 | 289 | 341 | 402 | 480 | 574 | 18 |
| UTILITY MARKET | 77 | 3 | 79 | 83 | 91 | 101 | 114 | 127 | 10 |
| SUBTOTAL | 349 | 9 | 382 | 436 | 504 | 586 | 690 | 811 | 16 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | | |
| FUNCTION SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 8 | 6 | 8 | 9 | 10 | 11 | 12 | 14 | 10 |
| UTILITY MARKET | 4 | 8 | 5 | 5 | 6 | 6 | 7 | 8 | 11 |
| SUBTOTAL | 12 | 12 | 13 | 14 | 16 | 17 | 19 | 22 | 10 |
| BATCH PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 123 | 8 | 132 | 148 | 166 | 183 | 201 | 222 | 11 |
| INDUSTRY SPECIFIC | 144 | 0 | 144 | 154 | 164 | 173 | 184 | 191 | 6 |
| UTILITY MARKET | 25 | 4 | 26 | 28 | 29 | 30 | 32 | 34 | 5 |
| SUBTOTAL | 292 | 3 | 302 | 330 | 359 | 386 | 417 | 447 | 8 |
| TOTAL PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 177 | 6 | 188 | 212 | 238 | 266 | 297 | 332 | 12 |
| INDUSTRY SPECIFIC | 370 | 8 | 399 | 452 | 515 | 586 | 676 | 779 | 14 |
| UTILITY MARKET | 106 | 4 | 110 | 116 | 126 | 137 | 153 | 169 | 9 |
| GRAND TOTAL PROCESSING SERVICES | 653 | 7 | 697 | 780 | 879 | 989 | 1126 | 1279 | 13 |
| SOFTWARE PRODUCTS | | | | | | | | | |
| SYSTEMS SOFTWARE | 38 | 35 | 51 | 70 | 98 | 132 | 170 | 219 | 34 |
| APPLICATIONS SOFTWARE | 86 | 30 | 112 | 159 | 223 | 316 | 446 | 616 | 41 |
| SUBTOTAL | 124 | 31 | 163 | 229 | 321 | 448 | 616 | 835 | 39 |
| PROFESSIONAL SERVICES | | | | | | | | | |
| EDUCATION SERVICES | 7 | 10 | 7 | 8 | 10 | 12 | 14 | 18 | 19 |
| CONSULTING SERVICES | 18 | 8 | 20 | 22 | 25 | 30 | 35 | 42 | 16 |
| PROGRAMMING & ANALYSIS | 134 | 6 | 142 | 151 | 165 | 187 | 215 | 247 | 12 |
| FACILITIES MANAGEMENT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 159 | 7 | 169 | 181 | 200 | 229 | 264 | 307 | 13 |
| INTEGRATED SYSTEMS | | | | | | | | | |
| INDUSTRY SPECIFIC | 25 | 11 | 28 | 32 | 40 | 47 | 57 | 68 | 20 |
| CROSS INDUSTRY | 47 | 9 | 52 | 61 | 74 | 94 | 123 | 160 | 25 |
| SUBTOTAL | 72 | 11 | 80 | 93 | 114 | 141 | 180 | 228 | 23 |
| GRAND TOTAL | 1010 | 10 | 1110 | 1280 | 1510 | 1810 | 2190 | 2650 | 19 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

EXHIBIT B43

INFORMATION SERVICES - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

| DELIVERY MODE | USER EXPENDITURES FORECAST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1981 ($M) | 81-82 GROWTH (%) | 1982 ($M) | 1983 ($M) | 1984 ($M) | 1985 ($M) | 1986 ($M) | 1987 ($M) | AAGR 82-87 (%) |
| REMOTE COMPUTING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 1089 | 10 | 1193 | 1336 | 1531 | 1785 | 2103 | 2462 | 16 |
| INDUSTRY SPECIFIC | 2921 | 14 | 3319 | 3831 | 4502 | 5343 | 6432 | 7729 | 18 |
| UTILITY MARKET | 1108 | 6 | 1171 | 1259 | 1408 | 1605 | 1858 | 2165 | 13 |
| SUBTOTAL | 5117 | 11 | 5683 | 6426 | 7441 | 8733 | 10393 | 12356 | 17 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | | |
| FUNCTION SPECIFIC | 48 | 5 | 50 | 53 | 57 | 61 | 66 | 71 | 7 |
| INDUSTRY SPECIFIC | 1196 | 14 | 1358 | 1568 | 1839 | 2178 | 2577 | 3050 | 18 |
| UTILITY MARKET | 100 | 28 | 129 | 173 | 211 | 255 | 309 | 373 | 24 |
| SUBTOTAL | 1344 | 14 | 1537 | 1794 | 2107 | 2494 | 2952 | 3494 | 18 |
| BATCH PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 1193 | 10 | 1315 | 1465 | 1626 | 1787 | 1945 | 2101 | 10 |
| INDUSTRY SPECIFIC | 2111 | 11 | 2337 | 2620 | 2908 | 3207 | 3501 | 3782 | 10 |
| UTILITY MARKET | 525 | 2 | 536 | 560 | 590 | 623 | 656 | 689 | 5 |
| SUBTOTAL | 3829 | 9 | 4188 | 4645 | 5124 | 5617 | 6102 | 6572 | 9 |
| TOTAL PROCESSING SERVICES | | | | | | | | | |
| FUNCTION SPECIFIC | 2329 | 10 | 2558 | 2854 | 3214 | 3633 | 4114 | 4634 | 13 |
| INDUSTRY SPECIFIC | 6228 | 13 | 7014 | 8019 | 9249 | 10728 | 12510 | 14561 | 16 |
| UTILITY MARKET | 1733 | 6 | 1836 | 1992 | 2209 | 2483 | 2823 | 3227 | 12 |
| GRAND TOTAL PROCESSING SERVICES | 10290 | 11 | 11408 | 12865 | 14672 | 16844 | 19447 | 22422 | 14 |
| SOFTWARE PRODUCTS | | | | | | | | | |
| SYSTEMS SOFTWARE | 1974 | 30 | 2574 | 3401 | 4626 | 6357 | 8646 | 11667 | 35 |
| APPLICATIONS SOFTWARE | 2191 | 33 | 2913 | 3999 | 5714 | 8007 | 11266 | 15856 | 40 |
| SUBTOTAL | 4165 | 32 | 5487 | 7400 | 10340 | 14364 | 19912 | 27523 | 38 |
| PROFESSIONAL SERVICES | | | | | | | | | |
| EDUCATION SERVICES | 277 | 11 | 307 | 350 | 415 | 524 | 687 | 902 | 24 |
| CONSULTING SERVICES | 540 | 11 | 598 | 687 | 821 | 1004 | 1243 | 1524 | 21 |
| PROGRAMMING & ANALYSIS | 3727 | 12 | 4158 | 4714 | 5466 | 6477 | 7772 | 9349 | 18 |
| FACILITIES MANAGEMENT | 449 | 7 | 480 | 526 | 582 | 639 | 701 | 768 | 10 |
| SUBTOTAL | 4993 | 11 | 5543 | 6277 | 7284 | 8644 | 10403 | 12543 | 18 |
| INTEGRATED SYSTEMS | | | | | | | | | |
| INDUSTRY SPECIFIC | 1883 | 22 | 2298 | 2793 | 3661 | 4917 | 6475 | 8529 | 30 |
| CROSS INDUSTRY | 1001 | 18 | 1183 | 1452 | 1829 | 2336 | 3017 | 3902 | 27 |
| SUBTOTAL | 2884 | 21 | 3481 | 4245 | 5490 | 7253 | 9492 | 12430 | 29 |
| GRAND TOTAL | 22330 | 16 | 25920 | 30790 | 37790 | 47110 | 59250 | 74920 | 24 |

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

# APPENDIX C: METHODOLOGY AND RECONCILIATION

## APPENDIX C: METHODOLOGY AND RECONCILIATION

### A. INTRODUCTION

- Each year INPUT examines the forecasts it provided to clients in previous years in light of the new data obtained from:

  - The current year's research.

  - Actual performance of vendors as reported by annual reports, 10Ks, and press releases.

  - Company data from INPUT's CAMP directory data base.

- In Exhibits C-1 through C-15 three comparisons are made:

  - A comparison of 1982 sizing of the 1981 market, with the 1981 estimate of that market.

  - A comparison of the 1982 sizing of the 1987 market, with the 1981 estimate of that market.

  - A comparison of the five-year AAGR found in this year's report, with the five-year AAGR forecast in the 1981 report.

EXHIBIT C-1

TOTAL INFORMATION SERVICES - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

| DELIVERY MODE | USER EXPENDITURES | | | | | | AAGR FORECAST IN '81 REPORT | AAGR FORECAST IN '82 REPORT |
|---|---|---|---|---|---|---|---|---|
| | 1981 FORECAST OF '81 MARKET | 1982 REPORT OF '81 MARKET | DIFFERENCE AS % OF 1981 MARKET | 1981 FORECAST OF '87 MARKET | 1982 FORECAST OF '87 MARKET | DIFFERENCE AS % OF 1982 FORECAST | | |
| REMOTE COMPUTING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 1060 | 1088 | 3 | 2934 | 2462 | -19 | 19 | 16 |
| INDUSTRY SPECIFIC | 2850 | 2921 | 2 | 9089 | 7729 | -18 | 22 | 18 |
| UTILITY MARKET | 1084 | 1108 | 2 | 2802 | 2165 | -29 | 18 | 13 |
| SUBTOTAL | 4994 | 5117 | 2 | 15155 | 12356 | -23 | 21 | 17 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | |
| FUNCTION SPECIFIC | 50 | 48 | -4 | 94 | 71 | -33 | 12 | 7 |
| INDUSTRY SPECIFIC | 1189 | 1196 | 1 | 3792 | 3050 | -24 | 22 | 18 |
| UTILITY MARKET | 114 | 100 | -12 | 352 | 373 | 6 | 20 | 24 |
| SUBTOTAL | 1353 | 1344 | -1 | 4141 | 3494 | -19 | 21 | 18 |
| BATCH PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 1050 | 1193 | 14 | 1946 | 2101 | 7 | 11 | 10 |
| INDUSTRY SPECIFIC | 1843 | 2111 | 15 | 3119 | 3782 | 18 | 9 | 10 |
| UTILITY MARKET | 451 | 525 | 16 | 549 | 689 | 20 | 3 | 5 |
| SUBTOTAL | 3344 | 3829 | 15 | 5608 | 6572 | 15 | 9 | 9 |
| TOTAL PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 2160 | 2329 | 8 | 4909 | 4634 | -6 | 15 | 13 |
| INDUSTRY SPECIFIC | 5882 | 6228 | 6 | 15610 | 14561 | -7 | 18 | 16 |
| UTILITY MARKET | 1649 | 1733 | 5 | 3715 | 3227 | -15 | 15 | 12 |
| SUBTOTAL | 9691 | 10290 | 6 | 24222 | 22422 | -8 | 17 | 14 |
| SOFTWARE PRODUCTS | | | | | | | | |
| SYSTEMS SOFTWARE | 1906 | 1974 | 4 | 12878 | 11667 | -10 | 38 | 35 |
| APPLICATIONS SOFTWARE | 1670 | 2191 | 31 | 7724 | 15856 | 51 | 27 | 40 |
| SUBTOTAL | 3576 | 4165 | 16 | 20537 | 27523 | 25 | 33 | 38 |
| PROFESSIONAL SERVICES | | | | | | | | |
| EDUCATION SERVICES | NA | 277 | NA | NA | 902 | NA | NA | 24 |
| CONSULTING SERVICES | NA | 540 | NA | NA | 1524 | NA | NA | 21 |
| PROGRAMMING & ANALYSIS | 4310 | 3727 | -14 | 18883 | 9349 | -102 | 30 | 18 |
| FACILITIES MANAGEMENT | 452 | 449 | -1 | 876 | 768 | -14 | 12 | 10 |
| SUBTOTAL | 4762 | 4993 | 5 | 20073 | 12543 | -60 | 29 | 18 |
| GRAND TOTAL | 18029 | 19448 | 8 | 65011 | 62488 | -4 | 24 | 23 |

EXHIBIT C-2

DISCRETE MANUFACTURING SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

| DELIVERY MODE | USER EXPENDITURES | | | | | | AAGR FORECAST IN '81 REPORT | AAGR FORECAST IN '82 REPORT |
|---|---|---|---|---|---|---|---|---|
| | 1981 FORECAST OF '81 MARKET | 1982 REPORT OF '81 MARKET | DIFFERENCE AS % OF 1981 MARKET | 1981 FORECAST OF '87 MARKET | 1982 FORECAST OF '87 MARKET | DIFFERENCE AS % OF 1982 FORECAST | | |
| REMOTE COMPUTING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 145 | 152 | 5 | 338 | 352 | 4 | 15 | 16 |
| INDUSTRY SPECIFIC | 410 | 424 | 3 | 1464 | 1042 | -40 | 25 | 17 |
| UTILITY MARKET | 94 | 99 | 5 | 231 | 230 | 00 | 16 | 17 |
| SUBTOTAL | 649 | 675 | 4 | 2052 | 1624 | -26 | 22 | 17 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | |
| FUNCTION SPECIFIC | 6 | 6 | 0 | 13 | 9 | -40 | 14 | 9 |
| INDUSTRY SPECIFIC | 30 | 29 | -3 | 87 | 69 | -27 | 20 | 17 |
| UTILITY MARKET | 21 | 18 | -14 | 68 | 50 | -35 | 22 | 19 |
| SUBTOTAL | 57 | 53 | -7 | 166 | 128 | -30 | 20 | 17 |
| BATCH PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 255 | 296 | 16 | 369 | 471 | 22 | 6 | 8 |
| INDUSTRY SPECIFIC | 81 | 93 | 15 | 137 | 166 | 17 | 9 | 10 |
| UTILITY MARKET | 66 | 76 | 15 | 85 | 104 | 18 | 4 | 6 |
| SUBTOTAL | 402 | 465 | 16 | 581 | 741 | 22 | 6 | 8 |
| TOTAL PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 406 | 454 | 12 | 726 | 832 | 13 | 10 | 11 |
| INDUSTRY SPECIFIC | 521 | 546 | 5 | 1701 | 1277 | -33 | 23 | 16 |
| UTILITY MARKET | 181 | 193 | 7 | 377 | 384 | 2 | 13 | 13 |
| SUBTOTAL | 1108 | 1193 | 8 | 2769 | 2493 | -11 | 17 | 14 |
| SOFTWARE PRODUCTS | | | | | | | | |
| SYSTEMS SOFTWARE | 464 | 487 | 5 | 3205 | 3258 | 2 | 38 | 38 |
| APPLICATIONS SOFTWARE | 272 | 374 | 38 | 1444 | 2927 | 51 | 30 | 43 |
| SUBTOTAL | 736 | 861 | 17 | 4620 | 6185 | 25 | 35 | 40 |
| PROFESSIONAL SERVICES | | | | | | | | |
| EDUCATION SERVICES | NA | 55 | NA | NA | 195 | NA | NA | 27 |
| CONSULTING SERVICES | NA | 67 | NA | NA | 265 | NA | NA | 28 |
| PROGRAMMING & ANALYSIS | 612 | 554 | -9 | 3082 | 1604 | -92 | 33 | 21 |
| FACILITIES MANAGEMENT | 5 | 5 | 0 | 5 | 5 | 0 | 0 | 0 |
| SUBTOTAL | 617 | 681 | 10 | 3133 | 2069 | -51 | 33 | 22 |
| GRAND TOTAL | 2481 | 2735 | 11 | 13007 | 10747 | -21 | 33 | 27 |

EXHIBIT C-3

PROCESS MANUFACTURING SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

| DELIVERY MODE | USER EXPENDITURES | | | | | | AAGR FORECAST IN '81 REPORT | AAGR FORECAST IN '82 REPORT |
|---|---|---|---|---|---|---|---|---|
| | 1981 FORECAST OF '81 MARKET | 1982 REPORT OF '81 MARKET | DIFFERENCE AS % OF 1981 MARKET | 1981 FORECAST OF '87 MARKET | 1982 FORECAST OF '87 MARKET | DIFFERENCE AS % OF 1982 FORECAST | | |
| REMOTE COMPUTING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 150 | 152 | 1 | 721 | 426 | -69 | 32 | 20 |
| INDUSTRY SPECIFIC | 58 | 58 | 0 | 275 | 193 | -43 | 31 | 23 |
| UTILITY MARKET | 227 | 227 | 0 | 785 | 554 | -42 | 24 | 18 |
| SUBTOTAL | 435 | 437 | 0 | 1779 | 1173 | -52 | 28 | 19 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | |
| FUNCTION SPECIFIC | 2 | 2 | 0 | 5 | 4 | -37 | 20 | 10 |
| INDUSTRY SPECIFIC | 33 | 30 | -9 | 124 | 75 | -65 | 26 | 18 |
| UTILITY MARKET | 5 | 5 | 0 | 19 | 13 | -44 | 26 | 18 |
| SUBTOTAL | 40 | 37 | -8 | 149 | 92 | -62 | 26 | 17 |
| BATCH PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 87 | 100 | 15 | 196 | 249 | 21 | 14 | 17 |
| INDUSTRY SPECIFIC | 393 | 449 | 14 | 1213 | 1299 | 7 | 21 | 19 |
| UTILITY MARKET | 48 | 60 | 25 | 67 | 99 | 33 | 5 | 9 |
| SUBTOTAL | 528 | 609 | 15 | 1487 | 1647 | 10 | 19 | 18 |
| TOTAL PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 239 | 254 | 6 | 940 | 679 | -38 | 27 | 19 |
| INDUSTRY SPECIFIC | 484 | 537 | 11 | 1622 | 1567 | -3 | 23 | 19 |
| UTILITY MARKET | 280 | 292 | 4 | 878 | 666 | -32 | 22 | 16 |
| SUBTOTAL | 1003 | 1083 | 8 | 3332 | 2912 | -14 | 23 | 18 |
| SOFTWARE PRODUCTS | | | | | | | | |
| SYSTEMS SOFTWARE | 288 | 300 | 4 | 2566 | 2112 | -21 | 45 | 39 |
| APPLICATIONS SOFTWARE | 103 | 135 | 31 | 651 | 1047 | 38 | 35 | 41 |
| SUBTOTAL | 391 | 435 | 11 | 3273 | 3159 | -4 | 43 | 40 |
| PROFESSIONAL SERVICES | | | | | | | | |
| EDUCATION SERVICES | NA | 34 | NA | NA | 104 | NA | NA | 23 |
| CONSULTING SERVICES | NA | 44 | NA | NA | 188 | NA | NA | 29 |
| PROGRAMMING & ANALYSIS | 319 | 290 | -9 | 1668 | 876 | -90 | 34 | 21 |
| FACILITIES MANAGEMENT | 5 | 5 | 0 | 5 | 5 | 0 | 0 | 0 |
| SUBTOTAL | 324 | 373 | 15 | 1708 | 1173 | -46 | 34 | 22 |
| GRAND TOTAL | 1718 | 1891 | 10 | 8351 | 7244 | -15 | 31 | 26 |

EXHIBIT C-4

TRANSPORTATION SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

| DELIVERY MODE | USER EXPENDITURES | | | | | | AAGR FORECAST IN '81 REPORT | AAGR FORECAST IN '82 REPORT |
|---|---|---|---|---|---|---|---|---|
| | 1981 FORECAST OF '81 MARKET | 1982 REPORT OF '81 MARKET | DIFFERENCE AS % OF 1981 MARKET | 1981 FORECAST OF '87 MARKET | 1982 FORECAST OF '87 MARKET | DIFFERENCE AS % OF 1982 FORECAST | | |
| REMOTE COMPUTING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 25 | 26 | 4 | 52 | 52 | -0 | 13 | 13 |
| INDUSTRY SPECIFIC | 62 | 64 | 3 | 218 | 182 | -20 | 24 | 20 |
| UTILITY MARKET | 24 | 26 | 8 | 53 | 41 | -28 | 15 | 9 |
| SUBTOTAL | 111 | 116 | 5 | 320 | 275 | -17 | 20 | 16 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | |
| FUNCTION SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 30 | 28 | -7 | 76 | 49 | -55 | 18 | 11 |
| UTILITY MARKET | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 30 | 28 | -7 | 76 | 49 | -55 | 18 | 11 |
| BATCH PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 19 | 21 | 11 | 33 | 31 | -6 | 10 | 7 |
| INDUSTRY SPECIFIC | 27 | 31 | 15 | 43 | 54 | 20 | 8 | 9 |
| UTILITY MARKET | 10 | 12 | 20 | 10 | 13 | 21 | 0 | 3 |
| SUBTOTAL | 56 | 64 | 14 | 85 | 98 | 13 | 7 | 8 |
| TOTAL PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 44 | 47 | 7 | 85 | 83 | -3 | 12 | 10 |
| INDUSTRY SPECIFIC | 119 | 123 | 3 | 343 | 285 | -21 | 20 | 16 |
| UTILITY MARKET | 34 | 38 | 12 | 64 | 54 | -19 | 12 | 7 |
| SUBTOTAL | 197 | 208 | 6 | 488 | 422 | -16 | 17 | 13 |
| SOFTWARE PRODUCTS | | | | | | | | |
| SYSTEMS SOFTWARE | 79 | 80 | 1 | 493 | 450 | -9 | 36 | 34 |
| APPLICATIONS SOFTWARE | 56 | 76 | 36 | 418 | 731 | 43 | 38 | 49 |
| SUBTOTAL | 135 | 156 | 16 | 925 | 1181 | 22 | 37 | 42 |
| PROFESSIONAL SERVICES | | | | | | | | |
| EDUCATION SERVICES | NA | 7 | NA | NA | 16 | NA | NA | 16 |
| CONSULTING SERVICES | NA | 13 | NA | NA | 37 | NA | NA | 21 |
| PROGRAMMING & ANALYSIS | 84 | 77 | -8 | 377 | 141 | -167 | 32 | 12 |
| FACILITIES MANAGEMENT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 84 | 97 | 15 | 384 | 194 | -98 | 32 | 14 |
| GRAND TOTAL | 416 | 461 | 11 | 1830 | 1797 | -2 | 28 | 28 |

EXHIBIT C-5

UTILITIES SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

| DELIVERY MODE | USER EXPENDITURES | | | | | | AAGR FORECAST IN '81 REPORT | AAGR FORECAST IN '82 REPORT |
|---|---|---|---|---|---|---|---|---|
| | 1981 FORECAST OF '81 MARKET | 1982 REPORT OF '81 MARKET | DIFFERENCE AS % OF 1981 MARKET | 1981 FORECAST OF '87 MARKET | 1982 FORECAST OF '87 MARKET | DIFFERENCE AS % OF 1982 FORECAST | | |
| REMOTE COMPUTING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 80 | 81 | 1 | 192 | 175 | -9 | 16 | 14 |
| INDUSTRY SPECIFIC | 105 | 106 | 1 | 329 | 252 | -31 | 22 | 16 |
| UTILITY MARKET | 111 | 114 | 3 | 209 | 215 | 3 | 11 | 12 |
| SUBTOTAL | 296 | 301 | 2 | 740 | 642 | -15 | 17 | 14 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | |
| FUNCTION SPECIFIC | 2 | 2 | 0 | 2 | 2 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 2 | 2 | 0 | 2 | 2 | 0 | 0 | 0 |
| UTILITY MARKET | 8 | 8 | 0 | 15 | 14 | -7 | 11 | 11 |
| SUBTOTAL | 12 | 12 | 0 | 18 | 18 | -1 | 7 | 8 |
| BATCH PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 37 | 41 | 11 | 59 | 66 | 11 | 8 | 8 |
| INDUSTRY SPECIFIC | 11 | 13 | 18 | 14 | 20 | 32 | 3 | 7 |
| UTILITY MARKET | 20 | 24 | 20 | 21 | 34 | 37 | 0 | 7 |
| SUBTOTAL | 68 | 78 | 15 | 94 | 120 | 22 | 5 | 8 |
| TOTAL PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 119 | 124 | 4 | 257 | 243 | -6 | 14 | 12 |
| INDUSTRY SPECIFIC | 118 | 121 | 3 | 338 | 274 | -23 | 20 | 15 |
| UTILITY MARKET | 139 | 146 | 5 | 248 | 263 | 6 | 10 | 11 |
| SUBTOTAL | 376 | 391 | 4 | 855 | 780 | -10 | 15 | 13 |
| SOFTWARE PRODUCTS | | | | | | | | |
| SYSTEMS SOFTWARE | 88 | 90 | 2 | 455 | 404 | -13 | 32 | 29 |
| APPLICATIONS SOFTWARE | 33 | 40 | 21 | 118 | 218 | 46 | 22 | 32 |
| SUBTOTAL | 121 | 130 | 7 | 584 | 622 | 6 | 30 | 30 |
| PROFESSIONAL SERVICES | | | | | | | | |
| EDUCATION SERVICES | NA | 13 | NA | NA | 46 | NA | NA | 25 |
| CONSULTING SERVICES | NA | 18 | NA | NA | 58 | NA | NA | 24 |
| PROGRAMMING & ANALYSIS | 163 | 145 | -11 | 602 | 444 | -36 | 25 | 21 |
| FACILITIES MANAGEMENT | 7 | 7 | 0 | 19 | 18 | -5 | 18 | 18 |
| SUBTOTAL | 170 | 183 | 8 | 633 | 566 | -12 | 25 | 22 |
| GRAND TOTAL | 667 | 704 | 6 | 2059 | 1968 | -5 | 21 | 19 |

EXHIBIT C-6

BANKING AND FINANCE SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

| DELIVERY MODE | USER EXPENDITURES | | | | | | AAGR FORECAST IN '81 REPORT | AAGR FORECAST IN '82 REPORT |
|---|---|---|---|---|---|---|---|---|
| | 1981 FORECAST OF '81 MARKET | 1982 REPORT OF '81 MARKET | DIFFERENCE AS % OF 1981 MARKET | 1981 FORECAST OF '87 MARKET | 1982 FORECAST OF '87 MARKET | DIFFERENCE AS % OF 1982 FORECAST | | |
| REMOTE COMPUTING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 85 | 88 | 4 | 198 | 202 | 2 | 15 | 16 |
| INDUSTRY SPECIFIC | 819 | 842 | 3 | 2570 | 2540 | -1 | 21 | 21 |
| UTILITY MARKET | 52 | 55 | 6 | 110 | 118 | 7 | 13 | 15 |
| SUBTOTAL | 956 | 985 | 3 | 2855 | 2860 | 0 | 20 | 20 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | |
| FUNCTION SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 397 | 535 | 35 | 1266 | 1392 | 9 | 22 | 18 |
| UTILITY MARKET | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 397 | 535 | 35 | 1266 | 1392 | 9 | 22 | 18 |
| BATCH PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 161 | 186 | 16 | 253 | 297 | 15 | 8 | 7 |
| INDUSTRY SPECIFIC | 569 | 658 | 16 | 741 | 1005 | 26 | 4 | 7 |
| UTILITY MARKET | 12 | 16 | 33 | 23 | 26 | 11 | 12 | 9 |
| SUBTOTAL | 742 | 860 | 16 | 1013 | 1328 | 24 | 5 | 7 |
| TOTAL PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 246 | 274 | 11 | 456 | 499 | 9 | 11 | 10 |
| INDUSTRY SPECIFIC | 1785 | 2035 | 14 | 4540 | 4937 | 8 | 17 | 16 |
| UTILITY MARKET | 64 | 71 | 11 | 134 | 144 | 7 | 13 | 14 |
| SUBTOTAL | 2095 | 2380 | 14 | 5104 | 5580 | 9 | 16 | 16 |
| SOFTWARE PRODUCTS | | | | | | | | |
| SYSTEMS SOFTWARE | 113 | 117 | 4 | 753 | 792 | 5 | 37 | 38 |
| APPLICATIONS SOFTWARE | 393 | 495 | 26 | 1286 | 3794 | 66 | 18 | 43 |
| SUBTOTAL | 506 | 612 | 21 | 2023 | 4586 | 56 | 23 | 42 |
| PROFESSIONAL SERVICES | | | | | | | | |
| EDUCATION SERVICES | NA | 20 | NA | NA | 72 | NA | NA | 26 |
| CONSULTING SERVICES | NA | 36 | NA | NA | 132 | NA | NA | 26 |
| PROGRAMMING & ANALYSIS | 252 | 227 | -10 | 1074 | 763 | -41 | 28 | 24 |
| FACILITIES MANAGEMENT | 28 | 28 | 0 | 80 | 62 | -29 | 20 | 15 |
| SUBTOTAL | 280 | 311 | 11 | 1193 | 1029 | -16 | 28 | 24 |
| GRAND TOTAL | 2881 | 3303 | 15 | 8525 | 11195 | 24 | 19 | 24 |

EXHIBIT C-7

INSURANCE SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

| DELIVERY MODE | USER EXPENDITURES | | | | | | AAGR FORECAST IN '81 REPORT | AAGR FORECAST IN '82 REPORT |
|---|---|---|---|---|---|---|---|---|
| | 1981 FORECAST OF '81 MARKET | 1982 REPORT OF '81 MARKET | DIFFERENCE AS % OF 1981 MARKET | 1981 FORECAST OF '87 MARKET | 1982 FORECAST OF '87 MARKET | DIFFERENCE AS % OF 1982 FORECAST | | |
| REMOTE COMPUTING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 89 | 90 | 1 | 219 | 215 | -2 | 16 | 17 |
| INDUSTRY SPECIFIC | 102 | 104 | 2 | 292 | 228 | -28 | 20 | 15 |
| UTILITY MARKET | 22 | 23 | 5 | 41 | 41 | 00 | 11 | 11 |
| SUBTOTAL | 213 | 217 | 2 | 560 | 484 | -16 | 18 | 15 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | |
| FUNCTION SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 363 | 275 | -24 | 1092 | 629 | -74 | 21 | 16 |
| UTILITY MARKET | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 363 | 275 | -24 | 1092 | 629 | -74 | 21 | 16 |
| BATCH PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 24 | 26 | 8 | 36 | 37 | 4 | 7 | 6 |
| INDUSTRY SPECIFIC | 84 | 96 | 14 | 120 | 147 | 18 | 6 | 7 |
| UTILITY MARKET | 11 | 14 | 27 | 15 | 22 | 31 | 5 | 8 |
| SUBTOTAL | 119 | 136 | 14 | 170 | 206 | 17 | 6 | 7 |
| TOTAL PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 113 | 116 | 3 | 250 | 252 | 1 | 14 | 15 |
| INDUSTRY SPECIFIC | 549 | 475 | -13 | 1494 | 1004 | -49 | 19 | 14 |
| UTILITY MARKET | 33 | 37 | 12 | 56 | 63 | 11 | 9 | 10 |
| SUBTOTAL | 695 | 628 | -10 | 1813 | 1319 | -37 | 18 | 14 |
| SOFTWARE PRODUCTS | | | | | | | | |
| SYSTEMS SOFTWARE | 132 | 138 | 5 | 854 | 802 | -6 | 37 | 34 |
| APPLICATIONS SOFTWARE | 264 | 332 | 26 | 781 | 1905 | 59 | 17 | 35 |
| SUBTOTAL | 396 | 470 | 19 | 1631 | 2707 | 40 | 25 | 35 |
| PROFESSIONAL SERVICES | | | | | | | | |
| EDUCATION SERVICES | NA | 13 | NA | NA | 39 | NA | NA | 22 |
| CONSULTING SERVICES | NA | 29 | NA | NA | 103 | NA | NA | 26 |
| PROGRAMMING & ANALYSIS | 209 | 188 | -10 | 765 | 528 | -45 | 25 | 20 |
| FACILITIES MANAGEMENT | 52 | 52 | 0 | 123 | 105 | -18 | 16 | 13 |
| SUBTOTAL | 261 | 282 | 8 | 874 | 775 | -13 | 23 | 19 |
| GRAND TOTAL | 1352 | 1380 | 2 | 4348 | 4801 | 9 | 21 | 24 |

EXHIBIT C-8

MEDICAL SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

| DELIVERY MODE | USER EXPENDITURES | | | | | | AAGR FORECAST IN '81 REPORT | AAGR FORECAST IN '82 REPORT |
|---|---|---|---|---|---|---|---|---|
| | 1981 FORECAST OF '81 MARKET | 1982 REPORT OF '81 MARKET | DIFFERENCE AS % OF 1981 MARKET | 1981 FORECAST OF '87 MARKET | 1982 FORECAST OF '87 MARKET | DIFFERENCE AS % OF 1982 FORECAST | | |
| REMOTE COMPUTING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 19 | 19 | 0 | 69 | 55 | -25 | 25 | 19 |
| INDUSTRY SPECIFIC | 180 | 186 | 3 | 608 | 544 | -12 | 23 | 20 |
| UTILITY MARKET | 8 | 9 | 13 | 22 | 20 | -10 | 19 | 15 |
| SUBTOTAL | 207 | 214 | 3 | 699 | 619 | -13 | 23 | 20 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | |
| FUNCTION SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 240 | 213 | -11 | 729 | 685 | -6 | 20 | 22 |
| UTILITY MARKET | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 240 | 213 | -11 | 729 | 685 | -6 | 20 | 22 |
| BATCH PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 28 | 31 | 11 | 63 | 64 | 1 | 15 | 12 |
| INDUSTRY SPECIFIC | 159 | 185 | 16 | 199 | 303 | 34 | 3 | 8 |
| UTILITY MARKET | 10 | 12 | 20 | 11 | 16 | 34 | 0 | 5 |
| SUBTOTAL | 197 | 228 | 16 | 274 | 383 | 28 | 5 | 9 |
| TOTAL PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 47 | 50 | 6 | 134 | 119 | -13 | 20 | 15 |
| INDUSTRY SPECIFIC | 579 | 584 | 1 | 1498 | 1532 | 2 | 17 | 18 |
| UTILITY MARKET | 18 | 21 | 17 | 33 | 36 | 7 | 11 | 10 |
| SUBTOTAL | 644 | 655 | 2 | 1652 | 1687 | 2 | 17 | 17 |
| SOFTWARE PRODUCTS | | | | | | | | |
| SYSTEMS SOFTWARE | 63 | 65 | 3 | 509 | 392 | -30 | 43 | 35 |
| APPLICATIONS SOFTWARE | 93 | 129 | 39 | 561 | 1215 | 54 | 33 | 45 |
| SUBTOTAL | 156 | 194 | 24 | 1069 | 1607 | 33 | 37 | 42 |
| PROFESSIONAL SERVICES | | | | | | | | |
| EDUCATION SERVICES | NA | 0 | NA | NA | 0 | NA | NA | 0 |
| CONSULTING SERVICES | NA | 11 | NA | NA | 27 | NA | NA | 18 |
| PROGRAMMING & ANALYSIS | 94 | 84 | -11 | 271 | 243 | -12 | 19 | 21 |
| FACILITIES MANAGEMENT | 6 | 5 | -17 | 12 | 9 | -28 | 12 | 9 |
| SUBTOTAL | 100 | 100 | 0 | 286 | 279 | -3 | 19 | 20 |
| GRAND TOTAL | 900 | 949 | 5 | 3065 | 3573 | 14 | 22 | 26 |

EXHIBIT C-9

EDUCATION SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

| DELIVERY MODE | USER EXPENDITURES | | | | | | AAGR FORECAST IN '81 REPORT | AAGR FORECAST IN '82 REPORT |
|---|---|---|---|---|---|---|---|---|
| | 1981 FORECAST OF '81 MARKET | 1982 REPORT OF '81 MARKET | DIFFERENCE AS % OF 1981 MARKET | 1981 FORECAST OF '87 MARKET | 1982 FORECAST OF '87 MARKET | DIFFERENCE AS % OF 1982 FORECAST | | |
| REMOTE COMPUTING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 21 | 22 | 5 | 35 | 35 | -1 | 9 | 9 |
| INDUSTRY SPECIFIC | 10 | 11 | 10 | 17 | 16 | -9 | 10 | 8 |
| UTILITY MARKET | 24 | 25 | 4 | 35 | 32 | -10 | 7 | 5 |
| SUBTOTAL | 55 | 58 | 5 | 86 | 83 | -4 | 8 | 7 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | |
| FUNCTION SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 20 | 18 | -10 | 70 | 38 | -83 | 25 | 14 |
| UTILITY MARKET | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 20 | 18 | -10 | 70 | 38 | -83 | 25 | 14 |
| BATCH PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 18 | 19 | 6 | 26 | 24 | -9 | 7 | 4 |
| INDUSTRY SPECIFIC | 27 | 30 | 11 | 42 | 39 | -7 | 8 | 5 |
| UTILITY MARKET | 15 | 16 | 7 | 15 | 18 | 14 | 0 | 3 |
| SUBTOTAL | 60 | 65 | 8 | 84 | 81 | -3 | 6 | 4 |
| TOTAL PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 39 | 41 | 5 | 61 | 59 | -4 | 8 | 7 |
| INDUSTRY SPECIFIC | 57 | 59 | 4 | 125 | 93 | -34 | 15 | 9 |
| UTILITY MARKET | 39 | 41 | 5 | 49 | 50 | 1 | 4 | 4 |
| SUBTOTAL | 135 | 141 | 4 | 243 | 202 | -20 | 11 | 7 |
| SOFTWARE PRODUCTS | | | | | | | | |
| SYSTEMS SOFTWARE | 38 | 40 | 5 | 110 | 121 | 9 | 19 | 21 |
| APPLICATIONS SOFTWARE | 30 | 37 | 23 | 75 | 132 | 43 | 15 | 24 |
| SUBTOTAL | 68 | 77 | 13 | 183 | 253 | 28 | 17 | 23 |
| PROFESSIONAL SERVICES | | | | 0 | | | | |
| EDUCATION SERVICES | NA | 0 | NA | NA | 0 | NA | NA | 0 |
| CONSULTING SERVICES | NA | 12 | NA | NA | 22 | NA | NA | 14 |
| PROGRAMMING & ANALYSIS | 88 | 79 | -10 | 258 | 150 | -72 | 21 | 13 |
| FACILITIES MANAGEMENT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 88 | 91 | 3 | 258 | 172 | -50 | 21 | 13 |
| GRAND TOTAL | 291 | 309 | 6 | 697 | 627 | -11 | 16 | 14 |

EXHIBIT C-10

RETAIL DISTRIBUTION SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

| DELIVERY MODE | USER EXPENDITURES | | | | | | AAGR FORECAST IN '81 REPORT | AAGR FORECAST IN '82 REPORT |
|---|---|---|---|---|---|---|---|---|
| | 1981 FORECAST OF '81 MARKET | 1982 REPORT OF '81 MARKET | DIFFERENCE AS % OF 1981 MARKET | 1981 FORECAST OF '87 MARKET | 1982 FORECAST OF '87 MARKET | DIFFERENCE AS % OF 1982 FORECAST | | |
| REMOTE COMPUTING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 46 | 47 | 2 | 167 | 125 | -34 | 25 | 19 |
| INDUSTRY SPECIFIC | 358 | 362 | 1 | 991 | 822 | -21 | 19 | 16 |
| UTILITY MARKET | 38 | 40 | 5 | 102 | 73 | -39 | 19 | 12 |
| SUBTOTAL | 442 | 449 | 2 | 1276 | 1020 | -25 | 20 | 16 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | |
| FUNCTION SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 15 | 13 | -13 | 41 | 18 | -129 | 21 | 6 |
| UTILITY MARKET | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 15 | 13 | -13 | 40 | 18 | -120 | 20 | 6 |
| BATCH PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 76 | 86 | 13 | 161 | 153 | -5 | 14 | 10 |
| INDUSTRY SPECIFIC | 101 | 114 | 13 | 115 | 138 | 17 | 2 | 3 |
| UTILITY MARKET | 30 | 34 | 13 | 32 | 43 | 27 | 0 | 5 |
| SUBTOTAL | 207 | 234 | 13 | 308 | 334 | 8 | 7 | 6 |
| TOTAL PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 122 | 133 | 9 | 329 | 278 | -18 | 19 | 13 |
| INDUSTRY SPECIFIC | 474 | 489 | 3 | 1125 | 978 | -15 | 16 | 13 |
| UTILITY MARKET | 68 | 74 | 9 | 131 | 116 | -13 | 12 | 9 |
| SUBTOTAL | 664 | 696 | 5 | 1576 | 1371 | -15 | 16 | 13 |
| SOFTWARE PRODUCTS | | | | | | | | |
| SYSTEMS SOFTWARE | 70 | 71 | 1 | 501 | 382 | -31 | 40 | 33 |
| APPLICATIONS SOFTWARE | 97 | 135 | 39 | 605 | 935 | 35 | 35 | 39 |
| SUBTOTAL | 167 | 206 | 23 | 1104 | 1317 | 16 | 37 | 37 |
| PROFESSIONAL SERVICES | | | | | | | | |
| EDUCATION SERVICES | NA | 7 | NA | NA | 15 | NA | NA | 16 |
| CONSULTING SERVICES | NA | 18 | NA | NA | 42 | NA | NA | 16 |
| PROGRAMMING & ANALYSIS | 133 | 117 | -12 | 575 | 217 | -165 | 31 | 12 |
| FACILITIES MANAGEMENT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 133 | 142 | 7 | 580 | 274 | -112 | 31 | 13 |
| GRAND TOTAL | 964 | 1044 | 8 | 3257 | 2962 | -10 | 23 | 20 |

EXHIBIT C-11

WHOLESALE DISTRIBUTION SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

| DELIVERY MODE | USER EXPENDITURES | | | | | | AAGR FORECAST IN '81 REPORT | AAGR FORECAST IN '82 REPORT |
|---|---|---|---|---|---|---|---|---|
| | 1981 FORECAST OF '81 MARKET | 1982 REPORT OF '81 MARKET | DIFFERENCE AS % OF 1981 MARKET | 1981 FORECAST OF '87 MARKET | 1982 FORECAST OF '87 MARKET | DIFFERENCE AS % OF 1982 FORECAST | | |
| REMOTE COMPUTING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 63 | 65 | 3 | 153 | 119 | -29 | 17 | 11 |
| INDUSTRY SPECIFIC | 115 | 118 | 3 | 326 | 258 | -26 | 20 | 14 |
| UTILITY MARKET | 27 | 27 | 0 | 61 | 39 | -56 | 16 | 7 |
| SUBTOTAL | 205 | 210 | 2 | 553 | 416 | -33 | 19 | 13 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | |
| FUNCTION SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 35 | 32 | -9 | 109 | 56 | -95 | 23 | 11 |
| UTILITY MARKET | 5 | 4 | -20 | 12 | 7 | -72 | 17 | 10 |
| SUBTOTAL | 40 | 36 | -10 | 120 | 63 | -90 | 22 | 11 |
| BATCH PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 133 | 149 | 12 | 297 | 296 | 0 | 15 | 11 |
| INDUSTRY SPECIFIC | 58 | 65 | 12 | 63 | 79 | 21 | 1 | 3 |
| UTILITY MARKET | 98 | 112 | 14 | 114 | 105 | -8 | 3 | 0 |
| SUBTOTAL | 289 | 326 | 13 | 476 | 480 | 1 | 9 | 7 |
| TOTAL PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 196 | 214 | 9 | 872 | 415 | -110 | 32 | 11 |
| INDUSTRY SPECIFIC | 208 | 215 | 3 | 506 | 393 | -29 | 17 | 11 |
| UTILITY MARKET | 130 | 143 | 10 | 186 | 151 | -23 | 7 | 2 |
| SUBTOTAL | 534 | 572 | 7 | 1121 | 959 | -17 | 14 | 9 |
| SOFTWARE PRODUCTS | | | | | | | | |
| SYSTEMS SOFTWARE | 64 | 66 | 3 | 535 | 389 | -38 | 44 | 35 |
| APPLICATIONS SOFTWARE | 151 | 205 | 36 | 977 | 1512 | 35 | 36 | 39 |
| SUBTOTAL | 215 | 271 | 26 | 1540 | 1901 | 19 | 39 | 38 |
| PROFESSIONAL SERVICES | | | | | | | | |
| EDUCATION SERVICES | NA | 7 | NA | NA | 13 | NA | NA | 13 |
| CONSULTING SERVICES | NA | 12 | NA | NA | 27 | NA | NA | 14 |
| PROGRAMMING & ANALYSIS | 107 | 95 | -11 | 471 | 196 | -140 | 31 | 14 |
| FACILITIES MANAGEMENT | 2 | 2 | 0 | 6 | 4 | -44 | 21 | 11 |
| SUBTOTAL | 109 | 116 | 6 | 479 | 240 | -100 | 31 | 14 |
| GRAND TOTAL | 858 | 959 | 12 | 3094 | 3100 | 0 | 24 | 23 |

EXHIBIT C-12

FEDERAL GOVERNMENT SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

| DELIVERY MODE | USER EXPENDITURES | | | | | | AAGR FORECAST IN '81 REPORT | AAGR FORECAST IN '82 REPORT |
|---|---|---|---|---|---|---|---|---|
| | 1981 FORECAST OF '81 MARKET | 1982 REPORT OF '81 MARKET | DIFFERENCE AS % OF 1981 MARKET | 1981 FORECAST OF '87 MARKET | 1982 FORECAST OF '87 MARKET | DIFFERENCE AS % OF 1982 FORECAST | | |
| REMOTE COMPUTING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 116 | 119 | 3 | 273 | 229 | -20 | 16 | 12 |
| INDUSTRY SPECIFIC | 35 | 37 | 6 | 104 | 82 | -27 | 21 | 15 |
| UTILITY MARKET | 273 | 278 | 2 | 636 | 491 | -30 | 16 | 11 |
| SUBTOTAL | 424 | 434 | 2 | 997 | 801 | -25 | 16 | 12 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | |
| FUNCTION SPECIFIC | 40 | 38 | -5 | 75 | 56 | -35 | 12 | 7 |
| INDUSTRY SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| UTILITY MARKET | 47 | 42 | -11 | 173 | 247 | 30 | 23 | 31 |
| SUBTOTAL | 87 | 80 | -8 | 247 | 303 | 19 | 18 | 24 |
| BATCH PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 10 | 12 | 20 | 12 | 17 | 28 | 3 | 6 |
| INDUSTRY SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| UTILITY MARKET | 47 | 53 | 13 | 49 | 68 | 27 | 0 | 5 |
| SUBTOTAL | 57 | 65 | 14 | 63 | 85 | 26 | 1 | 5 |
| TOTAL PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 166 | 169 | 2 | 355 | 301 | -18 | 14 | 11 |
| INDUSTRY SPECIFIC | 35 | 37 | 6 | 104 | 82 | -27 | 21 | 15 |
| UTILITY MARKET | 367 | 373 | 2 | 842 | 806 | -4 | 15 | 14 |
| SUBTOTAL | 568 | 579 | 2 | 1348 | 1189 | -13 | 16 | 13 |
| SOFTWARE PRODUCTS | | | | | | | | |
| SYSTEMS SOFTWARE | 323 | 331 | 2 | 1941 | 1786 | -9 | 35 | 34 |
| APPLICATIONS SOFTWARE | 11 | 14 | 27 | 33 | 54 | 40 | 19 | 24 |
| SUBTOTAL | 334 | 345 | 3 | 1992 | 1840 | -8 | 35 | 33 |
| PROFESSIONAL SERVICES | | | | | | | | |
| EDUCATION SERVICES | NA | 68 | NA | NA | 264 | NA | NA | 28 |
| CONSULTING SERVICES | NA | 145 | NA | NA | 336 | NA | NA | 16 |
| PROGRAMMING & ANALYSIS | 1120 | 928 | -17 | 5099 | 2434 | -109 | 31 | 18 |
| FACILITIES MANAGEMENT | 339 | 337 | -1 | 595 | 544 | -9 | 10 | 9 |
| SUBTOTAL | 1459 | 1478 | 1 | 5592 | 3578 | -56 | 27 | 16 |
| GRAND TOTAL | 2361 | 2402 | 2 | 8923 | 6607 | -35 | 26 | 19 |

EXHIBIT C-13

STATE AND LOCAL GOVERNMENT SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

| DELIVERY MODE | USER EXPENDITURES | | | | | | AAGR FORECAST IN '81 REPORT | AAGR FORECAST IN '82 REPORT |
|---|---|---|---|---|---|---|---|---|
| | 1981 FORECAST OF '81 MARKET | 1982 REPORT OF '81 MARKET | DIFFERENCE AS % OF 1981 MARKET | 1981 FORECAST OF '87 MARKET | 1982 FORECAST OF '87 MARKET | DIFFERENCE AS % OF 1982 FORECAST | | |
| REMOTE COMPUTING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 25 | 25 | 0 | 75 | 57 | -31 | 21 | 15 |
| INDUSTRY SPECIFIC | 12 | 13 | 8 | 39 | 26 | -52 | 24 | 12 |
| UTILITY MARKET | 37 | 38 | 3 | 94 | 53 | -78 | 19 | 7 |
| SUBTOTAL | 74 | 76 | 3 | 213 | 136 | -57 | 21 | 11 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | |
| FUNCTION SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 10 | 9 | -10 | 40 | 15 | -164 | 29 | 11 |
| UTILITY MARKET | 23 | 20 | -13 | 51 | 35 | -45 | 15 | 10 |
| SUBTOTAL | 33 | 29 | -12 | 95 | 50 | -90 | 21 | 11 |
| BATCH PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 18 | 20 | 11 | 29 | 31 | 8 | 8 | 8 |
| INDUSTRY SPECIFIC | 21 | 24 | 14 | 39 | 39 | 1 | 11 | 9 |
| UTILITY MARKET | 42 | 51 | 21 | 51 | 82 | 38 | 2 | 9 |
| SUBTOTAL | 81 | 95 | 17 | 118 | 152 | 22 | 6 | 9 |
| TOTAL PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 43 | 45 | 5 | 106 | 88 | -20 | 17 | 12 |
| INDUSTRY SPECIFIC | 43 | 46 | 7 | 118 | 80 | -47 | 20 | 10 |
| UTILITY MARKET | 102 | 109 | 7 | 194 | 170 | -14 | 12 | 8 |
| SUBTOTAL | 188 | 200 | 6 | 416 | 338 | -23 | 15 | 10 |
| SOFTWARE PRODUCTS | | | | | | | | |
| SYSTEMS SOFTWARE | 106 | 110 | 4 | 391 | 337 | -16 | 25 | 21 |
| APPLICATIONS SOFTWARE | 30 | 37 | 23 | 86 | 130 | 34 | 18 | 25 |
| SUBTOTAL | 136 | 147 | 8 | 486 | 467 | -4 | 24 | 22 |
| PROFESSIONAL SERVICES | | | | | | | | |
| EDUCATION SERVICES | NA | 47 | NA | NA | 120 | NA | NA | 18 |
| CONSULTING SERVICES | NA | 109 | NA | NA | 230 | NA | NA | 15 |
| PROGRAMMING & ANALYSIS | 949 | 786 | -17 | 3797 | 1451 | -162 | 29 | 12 |
| FACILITIES MANAGEMENT | 7 | 7 | 0 | 18 | 16 | -14 | 18 | 14 |
| SUBTOTAL | 956 | 949 | -1 | 3859 | 1817 | -112 | 29 | 13 |
| GRAND TOTAL | 1280 | 1296 | 1 | 4821 | 2622 | -84 | 27 | 14 |

EXHIBIT C-14

SERVICES SECTOR - DATABAST RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

| DELIVERY MODE | USER EXPENDITURES | | | | | | AAGR FORECAST IN '81 REPORT | AAGR FORECAST IN '82 REPORT |
|---|---|---|---|---|---|---|---|---|
| | 1981 FORECAST OF '81 MARKET | 1982 REPORT OF '81 MARKET | DIFFERENCE AS % OF 1981 MARKET | 1981 FORECAST OF '87 MARKET | 1982 FORECAST OF '87 MARKET | DIFFERENCE AS % OF 1982 FORECAST | | |
| REMOTE COMPUTING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 145 | 148 | 2 | 318 | 311 | -2 | 14 | 14 |
| INDUSTRY SPECIFIC | 375 | 377 | 1 | 1297 | 972 | -33 | 24 | 18 |
| UTILITY MARKET | 71 | 70 | -1 | 224 | 131 | -71 | 23 | 12 |
| SUBTOTAL | 591 | 595 | 1 | 1853 | 1414 | -31 | 22 | 16 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | |
| FUNCTION SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 5 | 4 | -20 | 17 | 7 | -142 | 25 | 11 |
| UTILITY MARKET | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 5 | 4 | -20 | 17 | 7 | -142 | 25 | 11 |
| BATCH PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 74 | 84 | 14 | 185 | 143 | -29 | 18 | 9 |
| INDUSTRY SPECIFIC | 182 | 208 | 14 | 235 | 302 | 22 | 4 | 6 |
| UTILITY MARKET | 20 | 21 | 5 | 21 | 25 | 17 | 0 | 4 |
| SUBTOTAL | 276 | 313 | 13 | 434 | 470 | 8 | 8 | 7 |
| TOTAL PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 219 | 232 | 6 | 493 | 454 | -9 | 15 | 12 |
| INDUSTRY SPECIFIC | 562 | 589 | 5 | 1529 | 1281 | -19 | 19 | 14 |
| UTILITY MARKET | 91 | 91 | 0 | 239 | 156 | -53 | 19 | 10 |
| SUBTOTAL | 872 | 912 | 5 | 2254 | 1891 | -19 | 18 | 13 |
| SOFTWARE PRODUCTS | | | | | | | | |
| SYSTEMS SOFTWARE | 41 | 42 | 2 | 263 | 224 | -17 | 37 | 33 |
| APPLICATIONS SOFTWARE | 69 | 95 | 38 | 327 | 641 | 49 | 28 | 38 |
| SUBTOTAL | 110 | 137 | 25 | 581 | 865 | 33 | 31 | 37 |
| PROFESSIONAL SERVICES | | | | | | | | |
| EDUCATION SERVICES | NA | 0 | NA | NA | 0 | NA | NA | 0 |
| CONSULTING SERVICES | NA | 6 | NA | NA | 14 | NA | NA | 16 |
| PROGRAMMING & ANALYSIS | 28 | 25 | -11 | 115 | 55 | -109 | 29 | 15 |
| FACILITIES MANAGEMENT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 28 | 31 | 11 | 115 | 69 | -67 | 29 | 15 |
| GRAND TOTAL | 1010 | 1080 | 7 | 2966 | 2825 | -5 | 20 | 18 |

EXHIBIT C-15

OTHER SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

| DELIVERY MODE | USER EXPENDITURES | | | | | | AAGR FORECAST IN '81 REPORT | AAGR FORECAST IN '82 REPORT |
|---|---|---|---|---|---|---|---|---|
| | 1981 FORECAST OF '81 MARKET | 1982 REPORT OF '81 MARKET | DIFFERENCE AS % OF 1981 MARKET | 1981 FORECAST OF '87 MARKET | 1982 FORECAST OF '87 MARKET | DIFFERENCE AS % OF 1982 FORECAST | | |
| REMOTE COMPUTING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 52 | 54 | 4 | 130 | 110 | -18 | 17 | 14 |
| INDUSTRY SPECIFIC | 210 | 218 | 4 | 617 | 574 | -7 | 20 | 18 |
| UTILITY MARKET | 76 | 77 | 1 | 199 | 127 | -57 | 19 | 10 |
| SUBTOTAL | 338 | 349 | 3 | 936 | 811 | -15 | 19 | 16 |
| PROCESSING FACILITIES MANAGEMENT | | | | | | | | |
| FUNCTION SPECIFIC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INDUSTRY SPECIFIC | 9 | 8 | -11 | 24 | 14 | -69 | 19 | 10 |
| UTILITY MARKET | 5 | 4 | -20 | 13 | 8 | -59 | 18 | 11 |
| SUBTOTAL | 14 | 12 | -14 | 37 | 22 | -67 | 19 | 10 |
| BATCH PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 109 | 123 | 13 | 233 | 222 | -5 | 14 | 11 |
| INDUSTRY SPECIFIC | 129 | 144 | 12 | 192 | 191 | 00 | 7 | 6 |
| UTILITY MARKET | 22 | 25 | 14 | 26 | 34 | 25 | 2 | 5 |
| SUBTOTAL | 260 | 292 | 12 | 452 | 447 | -1 | 10 | 8 |
| TOTAL PROCESSING SERVICES | | | | | | | | |
| FUNCTION SPECIFIC | 161 | 177 | 10 | 363 | 332 | -9 | 15 | 12 |
| INDUSTRY SPECIFIC | 348 | 370 | 6 | 833 | 779 | -7 | 16 | 14 |
| UTILITY MARKET | 103 | 106 | 3 | 236 | 169 | -40 | 16 | 9 |
| SUBTOTAL | 612 | 653 | 7 | 1453 | 1280 | -13 | 16 | 13 |
| SOFTWARE PRODUCTS | | | | | | | | |
| SYSTEMS SOFTWARE | 37 | 38 | 3 | 340 | 219 | -55 | 47 | 34 |
| APPLICATIONS SOFTWARE | 68 | 86 | 26 | 399 | 616 | 35 | 33 | 41 |
| SUBTOTAL | 105 | 124 | 18 | 730 | 835 | 13 | 38 | 39 |
| PROFESSIONAL SERVICES | | | | | | | | |
| EDUCATION SERVICES | NA | 7 | NA | NA | 18 | NA | NA | 19 |
| CONSULTING SERVICES | NA | 18 | NA | NA | 42 | NA | NA | 16 |
| PROGRAMMING & ANALYSIS | 151 | 134 | -11 | 628 | 247 | -154 | 30 | 12 |
| FACILITIES MANAGEMENT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 151 | 159 | 5 | 634 | 307 | -106 | 30 | 13 |
| GRAND TOTAL | 868 | 936 | 8 | 2792 | 2422 | -15 | 22 | 19 |

## B. SOFTWARE PRODUCTS

- The 1982 software products market was 16% stronger than INPUT forecast, as shown in Exhibit C-1.

- This increase was primarily caused by the surge in applications software product expenditures. Systems software was almost exactly as INPUT predicted.

- Factors contributing to the strong 1982 growth in applications software products included:

  - Faster obsolescence of existing software due to major structural changes in organizations caused by the economic and political environment.

  - Especially rapid growth of smaller computers that help end users become more comfortable with automated applications solutions.

  - Softening of the "not invented here" attitude due to recession-induced budget pressures.

  - Rapid emergence of more flexible and user friendly applications products.

- Industries that accepted applications software products more rapidly than anticipated in 1982 include discrete manufacturing, process manufacturing, transportation, medical, retail, wholesale, and services, as shown in Exhibits C-2 through C-4, C-8, and C-10 through C-12.

- These industries are, after a slow start, finally beginning to incorporate automation as a strategic management tool.

- Competitive pressures are forcing increased use of applications software in spite of the recessionary economy.

- The five-year growth rates for the applications software product market have been raised from a 27% AAGR to a 40% AAGR in recognition of the strength and longevity of demand stimulation factors such as those outlined above.

- Two industries receiving especially large upward adjustments in their five-year AAGRs are banking and finance, as shown in Exhibit C-6, and insurance, as shown in Exhibit C-7. These industries are undergoing major, long-term transformations due to economic, regulatory, and technological changes.

- The five-year AAGR for the systems software products market has been adjusted downward slightly from 38% to 35%, as was shown in Exhibit C-1, in recognition that more user expenditures will flow to "ready-to-go" applications software products. This crossover will be stimulated by such factors as:

  - End-user preference for software that requires minimal technical understanding of the computer process.

  - The urgency of the need for automation solution which favors preprogrammed products.

- Medical, retail, and wholesale industry sectors have had their five-year AAGR for systems software decreased the most, as was shown in Exhibits C-8, C-10, and C-11.

  - These sectors are comprised of an especially large number of very small establishments.

- Management in these organizations is highly receptive to software product solutions requiring minimal computer expertise.

## C. PROFESSIONAL SERVICES

- INPUT's estimate of the 1981 market was within 5% of the final figure, as was shown in Exhibit C-1.

- For the first time, this year's Annual Report has divided the nonfacilities management aspect of professional services into three categories: programming/analysis, consulting, and education services.

- The programming and analysis part of professional services required the most downward adjustment for 1981 (14%).
  - This was caused, in part, by the separation of consulting and education into distinct entities.
  - The majority of the revision, however, was due to significantly weakened demand in two of the largest industry sectors - federal and state and local government - due to severe budget pressures.

- The five-year AAGR for professional services has been reduced from 29% to 18%, as was shown in Exhibit C-1. This adjustment recognizes:
  - The continuing impact of the economic downturn on this delivery mode through 1984.
  - The extremely rapid acceptance of applications software products, which will continue to increase as a major alternative to professional services.

# APPENDIX D: INFORMATION SERVICES INDUSTRY PERFORMANCE, 1970 - 1987

## APPENDIX D: INFORMATION SERVICES INDUSTRY PERFORMANCE, 1970-1987

- Clients have requested a historical perspective as well as a forecast of the information services industry. This section has been prepared in response to these requests.

- The historical perspectives have been produced using the following methodology:

  - 1982 data have been reconciled with INPUT's first 1976 market assessment, then extrapolated from 1976 back to 1970.

  - Data for each year have been made compatible with current definitions of information services type and mode of delivery.

  - Each year's data have been adjusted backwards based on:

    . Knowledge of the information services industry market today.

    . Knowledge of previous years' markets.

- In 1976, INPUT first estimated a base of $5.4 billion for the computer services industry; this was subsequently adjusted from additional research and market definition changes to a base of $7.6 billion. The five-year growth rate originally forecasted was 16% per year through 1981, compared to a four-year

experienced growth rate of 19%. This difference is explained largely by inflation rate differences.

- INPUT assumed an inflation rate of 5% to 7% for the 1975-1981 forecast.

- The actual inflation rate was in the range of 8% to 10% for that period.

- This shows that INPUT's long-range forecast of the information services industry was reasonably accurate.

- The inflation rate of 6% for the current forecast is very important since the forecast is in current dollars.

- Major changes in the inflation rate and other economic conditions will be reflected in major changes in the rate of growth of the information services industry.

- In any event, the industry will continue to enjoy significant real growth over the next five years.

- The historical and forecast data are presented in several formats in Exhibits D-1 through D-3.

EXHIBIT D-1

INFORMATION SERVICES INDUSTRY
PERFORMANCE SUMMARY,
1970-1982

| INFORMATION SERVICE | INFORMATION SERVICES MARKET | | |
|---|---|---|---|
| | 1970 ($ millions) | 1982 ($ millions) | 1970-1982 AAGR (percent) |
| Processing Services | | | |
| RCS | $ 540 | $ 5,683 | 22% |
| Batch | 1,060 | 4,188 | 12 |
| FM | 390 | 1,537 | 12 |
| Total Processing | $1,990 | $11,408 | 16% |
| Software Products | | | |
| Systems | 150 | 2,574 | 27 |
| Applications | 100 | 2,913 | 32 |
| Total Software | $ 250 | $ 5,487 | 29% |
| Professional Services | 930 | 5,543 | 16 |
| Subtotal | $3,170 | $22,438 | 18% |
| Integrated Systems | * | 3,481 | N/A |
| Grand Total | N/A | $25,919 | N/A |

* Not Measured
N/A = Not Applicable

EXHIBIT D-2

TOTAL INFORMATION SERVICES MARKET,
1970-1987

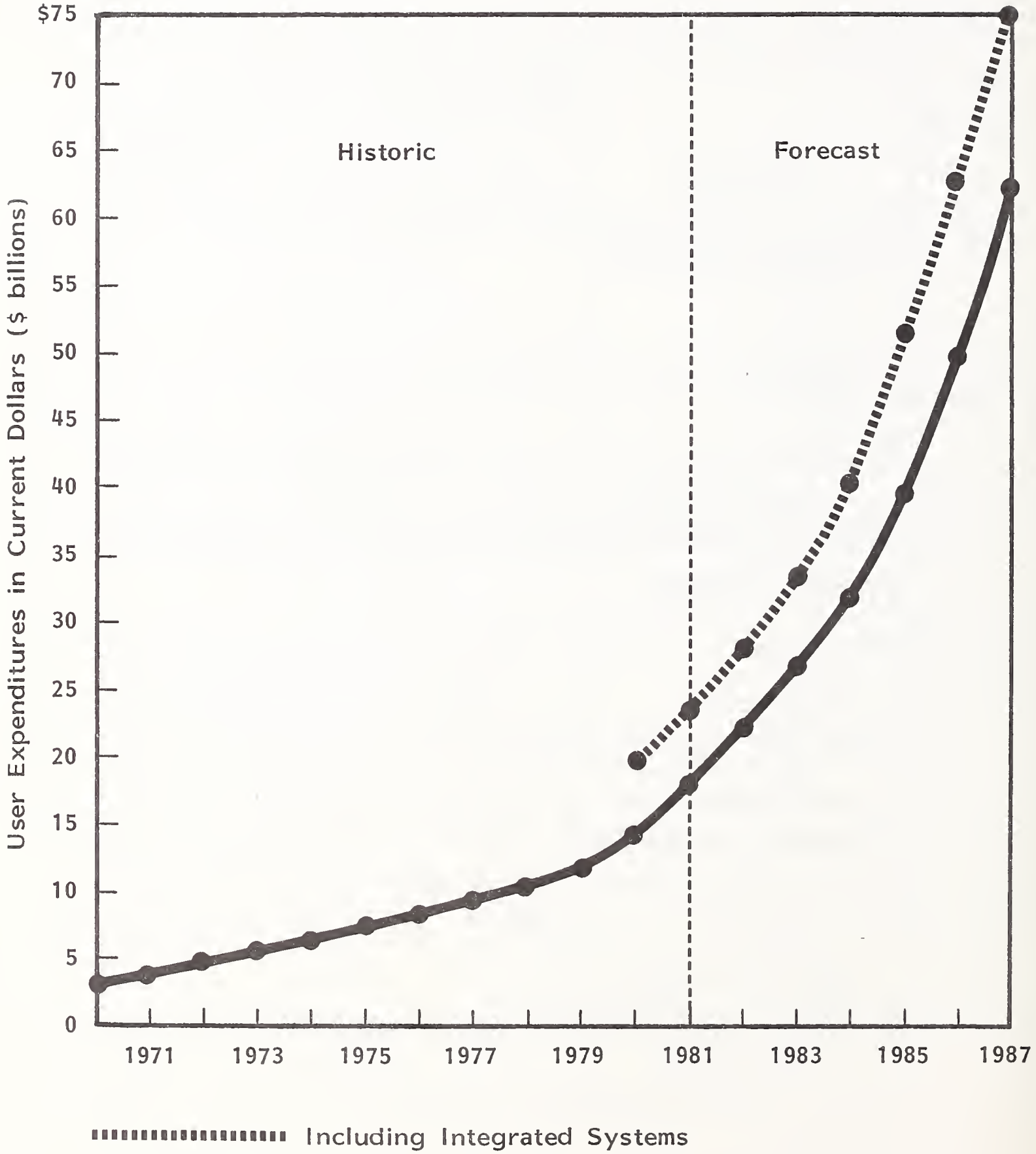


EXHIBIT D-3

INFORMATION SERVICES INDUSTRY YEARLY PERFORMANCE AND FORECAST,*
1970-1987

| INFORMATION SERVICE | ($ millions) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
| Processing Services RCS | $ 540 | $ 670 | $ 840 | $1,030 | $1,260 | $1,560 | $1,980 | $2,390 | $2,940 | $3,528 |
| Batch | 1,060 | 1,170 | 1,290 | 1,410 | 1,560 | 1,710 | 1,880 | 2,020 | 2,300 | 2,486 |
| FM | 390 | 450 | 510 | 590 | 670 | 770 | 880 | 1,030 | 1,230 | 1,223 |
| Software Products Systems | 150 | 210 | 270 | 330 | 390 | 490 | 590 | 720 | 890 | 1,152 |
| Applications | 100 | 140 | 170 | 210 | 270 | 320 | 390 | 480 | 590 | 720 |
| Professional Services | 930 | 1,070 | 1,190 | 1,340 | 1,500 | 1,690 | 1,910 | 2,160 | 2,480 | 2,932 |
| Subtotal** | $3,170 | $3,710 | $4,270 | $4,910 | $5,650 | $6,540 | $7,630 | $8,800 | $10,430 | $12,041 |

* 1982-1987 Information Services Forecast

** Integrated Systems Not Included In This Table Prior to 1980

Continued

EXHIBIT D-3 (Cont.)

INFORMATION SERVICES INDUSTRY YEARLY PERFORMANCE AND FORECAST,*
1970-1987

| INFORMATION SERVICE | ($ millions) | | | | | | | | AAGR 1970-1987 (percent) |
|---|---|---|---|---|---|---|---|---|---|
| | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | |
| Processing Services RCS | $ 4,126 | $ 5,117 | $ 5,683 | $ 6,426 | $ 7,441 | $ 8,733 | $10,393 | $12,356 | 20% |
| Batch | 3,091 | 3,829 | 4,188 | 4,645 | 5,124 | 5,617 | 6,102 | 6,572 | 11 |
| FM | 1,121 | 1,344 | 1,537 | 1,794 | 2,107 | 2,494 | 2,952 | 3,494 | 14 |
| Software Products Systems | 1,401 | 1,974 | 2,574 | 3,401 | 4,626 | 6,357 | 8,646 | 11,667 | 29 |
| Applications | 1,325 | 2,191 | 2,913 | 3,999 | 5,714 | 8,007 | 11,266 | 15,856 | 35 |
| Professional Services | 3,751 | 4,993 | 5,543 | 6,277 | 7,284 | 8,644 | 10,403 | 12,543 | 17 |
| Subtotal | $14,815 | $19,448 | $22,438 | $26,542 | $32,296 | $39,852 | $49,762 | $62,488 | 19 |
| Integrated Systems | 2,157 | 2,884 | 3,481 | 4,248 | 5,490 | 7,253 | 9,492 | 12,430 | N/A |
| Grand Total | $16,972 | $22,332 | $25,919 | $30,787 | $37,786 | $47,105 | $59,254 | $74,918 | N/A |

* 1982-1987 Information Services Forecast . N/A = Not Applicable

# APPENDIX E: RELATED INPUT REPORTS

APPENDIX E: RELATED INPUT REPORTS

# 1976-1982 INFORMATION SERVICES INDUSTRY PROGRAM (ISIP)

## ANNUAL REPORTS

| | Year |
|---|---|
| • U.S. Information Services Markets, 1982-1987 (Annual Report) | |
| Vol. 1 - Processing Services and Integrated Systems | 1982 |
| Vol. 2 - Software Products and Professional Services | 1982 |
| • ISIP 1981 Annual Report | 1981 |
| • ISIP 1980 Annual Report | 1980 |
| • ISIP 1979 Annual Report | 1979 |
| • ISIP 1978 Annual Report | 1978 |
| • ISIP 1977 Annual Report | 1977 |
| • ISIP 1976 Annual Report | 1976 |

## 1982 REPORTS

- Personal Computer Software Opportunities
- New Processing Opportunities in Banking
- Market Opportunities in Discrete Manufacturing
- Market Opportunities in Network Services
- Directory of Leading U.S. Computer Services Vendors

## 1981 REPORTS

### MARKET STUDIES

- Opportunities for Business Graphics Services and Software
- The Merging of Hardware, Software, and Services
- Computer Services Opportunities in Energy Markets
- Impact of Communications Developments on Information Services Vendors
- Market Trends in Professional Services
- Personal Computer Use in Large Companies

### MANAGEMENT BRIEFS

- Information Services in 1990
- Banking and Finance Industry Trends: Impact on Computer Services
- Directory of Leading U.S. Computer Services Firms
- Information Services Industry Opportunities in Hardware Services

## 1980 REPORTS

- Computer Services Markets For Insurance Agents and Brokers
- Market Opportunities for Data Base Services
- Marketing Applications Software Products
- Trends in Computer Services Pricing
- Trends in Delivery of Remote Computing Services
- Improving Sales Productivity in the Computer Services Industry

## 1979 REPORTS

- Sales and Sales Support Training
- Computer Services Market in Banking and Finance
- Opportunities in Education Services
- Opportunities in Marketing Systems Software Products
- Computer Services Markets in Government Funded Health Insurance

- Office of the Future: Opportunities for Service Companies
- Turnkey Systems Opportunities, 1979-1984

## 1978 REPORTS

- Acquisition Strategies for Computer Services Companies
- Financial Management and Planning Services and Software Markets
- Opportunities in User Site Hardware Services
- Distributed Data Processing Systems: Applications, Performance, and Architecture
- Trends in Services and Software Pricing
- Computer Services Markets in Hospitals
- Data Base Management Systems Software Markets
- Remote Computing Services Markets in Europe
- Computer Services in Federal Government Energy Programs

## 1977 REPORTS

- Computer Services Markets in Correspondent Banking
- Small Business Computers: Their Impact on Processing Services
- Plug Compatible Mainframes: The New Hardware Economics
- Impact of Marketing Compensation Plans in the Computer Services Industry
- Computer Services Markets in the Savings and Loan Industry
- Computer Services Markets in the Wholesale Industry - Petroleum, Petrochemical, Food, and Electrical/Electronic
- Computer Services Markets in the Discrete Manufacturing Industry
- Opportunities for Investment in the Computer Services Industry
- Remote Computing Services Markets Based on Data Base Management Systems

## 1976 REPORTS

- EDP Plans and Budgets for 1977
- Computer Services Markets in the Services Industries. Part I - Accountants, Lawyers, Consultants
- Computer Services Markets in the Services Industries. Part II - Architects, Engineers, Research and Development Organizations
- Remote Computing Services Markets for Economic and Financial Data Bases
- Computer Services Markets in the Food Processing Industry

## INDUSTRY SURVEYS

| | |
|---|---|
| • Sixteenth Annual ADAPSO Survey of the Computer Services Industry - 1982 | 7/82 |
| • Fifteenth Annual ADAPSO Survey of the Computer Services Industry - 1981 | 7/81 |
| • Fourteenth Annual ADAPSO Survey of the Computer Services Industry - 1980 | 7/80 |
| • Thirteenth Annual ADAPSO Survey of the Computer Services Industry - 1979 | 7/79 |
| • Twelfth Annual ADAPSO Survey of the Computer Services Industry - 1978 | 7/78 |

## 1982 MULTICLIENT STUDIES

| | |
|---|---|
| • Opportunities in Financial Planning Systems Markets: 1982-1987 | 12/82 |
| • Computer Output Services Markets, 1981-1986 | 3/82 |

## 1981 MULTICLIENT STUDIES

| | |
|---|---|
| • Improving the Productivity of Engineering and Manufacturing Using CAD/CAM | 12/81 |
| • Western European Opportunities for On-Line Data Base Services | 6/81 |

## 1980 MULTICLIENT STUDIES

| | |
|---|---|
| • Strategies for Competing in the IBM Compatible Marketplace | 2/80 |
| • Selling Personal Computers to Large Companies | 10/80 |
| • Productivity Improvement, 1980-1983 | 12/80 |
| • Opportunities in Digital Communications Services Market Information: A Study of User Networks and Needs | 11/80 |

## OTHER INPUT SUBSCRIPTION PROGRAMS

- Company Analysis and Monitoring Program (CAMP) for the Information Services Industry
- Field Service Program (FSP)
- Management Planning Program in Information Systems (ISP)
- Residual Value Forecasting Program
- Technology and Management Issues Program