

Submitted to

International Business Machines Market Intelligence White Plains, New York

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May 19, 1989

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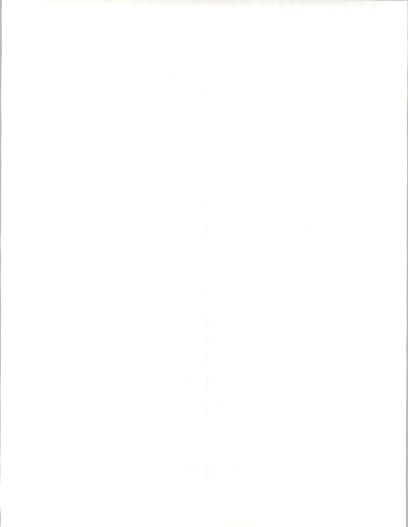


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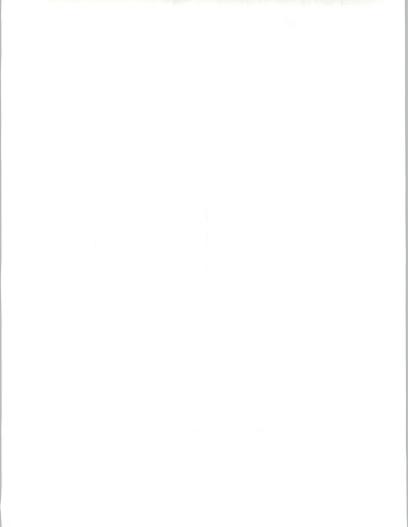


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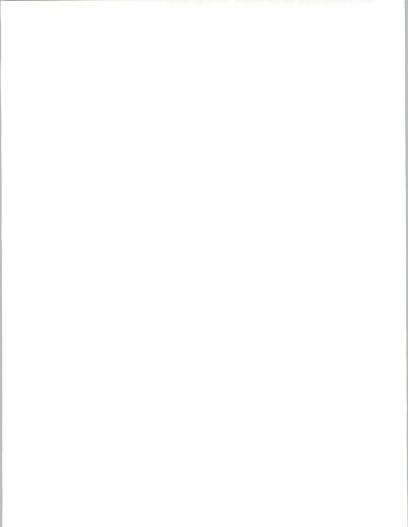
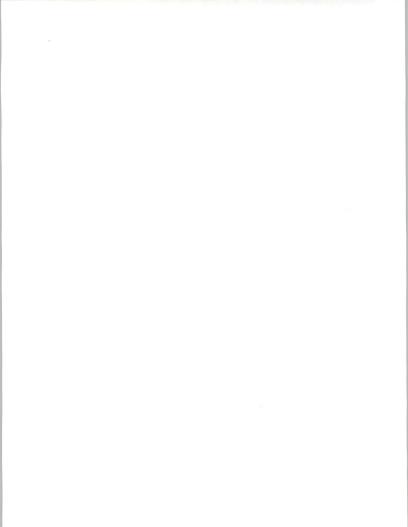


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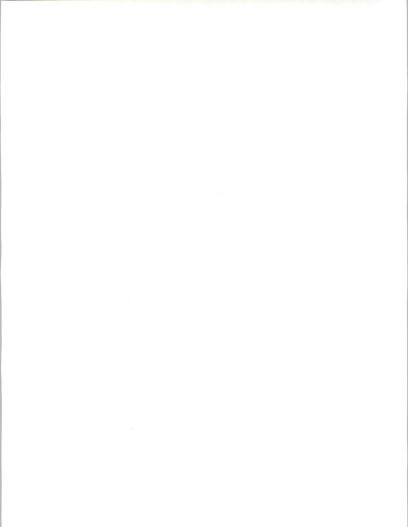
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Introduction



I Introduction

This chapter introduces the research conducted by INPUT for IBM Corporation in the professional services delivery mode. The introduction is divided into the following three sections:

A. ObjectivesB. ScopeC. Methodology

А

Objectives

The project's key objective is to re-state INPUT's market forecast for one delivery mode within the information services industry.

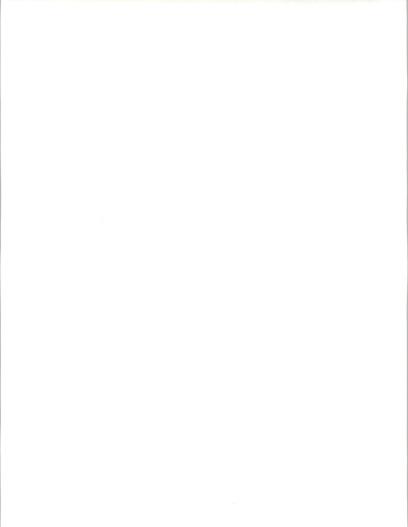
Specifically, this report looks at the professional services delivery mode for information services provided within the United States in 1988 and user expenditures for the same services forecast through 1993. This re-statement quantifies the market to reflect industry sectors and economic assumptions defined by IBM Corporation.

For its on-going program research INPUT uses two distinct delivery modes -- professional services and systems integration. For this research project, INPUT combined the four sub-modes from the professional services delivery mode with the non-hardware component of the systems integration market. In other words, expenditures for the hardware portion of systems integration projects have been "backed out."

In this context, the total size of the professional services market was not changed, except as follows:

- INPUT's inflation factor assumptions were subtracted from the INPUT forecast and, in their place, IBM's inflation factor assumptions were applied uniformly.
- A list of key applications, the development of which require professional services, was
 provided on a "best efforts" basis. This information is supplied for industry and delivery
 submode (consulting, software development, education and training, systems operations,
 and systems integration.)
- · A list of major vendors for each submode was provided.
- · A list of major vendors by industry segment was provided.

NOTE: The professional services category "Professional services facilities management" is now called "Systems operations."



B Scope

The scope of the project is defined as follows:

1. The forecasts are limited to the professional services delivery mode within the information services industry. Please refer to Appendix A.

The forecast uses 1987 as the base year and extends through 1993 and uses IBM's inflation factors instead of INPUT's.

The industry sectors contained in the forecast figures were defined by IBM and provided to INPUT when the project began.

4. The supporting data pertaining to key applications, major vendors, and large contracts awarded (all within the professional services delivery mode) was extracted from existing INPUT files. For this study, INPUT did not conduct primary research.

5. For its on-going program research INPUT uses two distinct delivery modes -professional services and systems integration. For this research project, INPUT combined the four sub-modes from the professional services delivery mode with the non-hardware component of the systems integration market. In other words, expenditures for the hardware portion of systems integration projects have been "backed out."

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Methodology

The methodology for recasting INPUT's forecast data is described below.

 INPUT created a series of 15 worksheets, one for each major industry sector, as defined by INPUT. Each worksheet contained the following information:

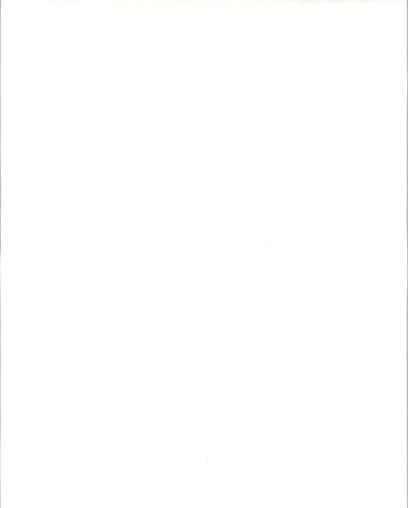
a. A list of the two-digit Standard Industrial Classification (SIC) codes that comprise the industry sub-sector (Please see Appendix B).

b. For each subsector, a definition of the IBM-defined industry sector (Please refer to Appendix D).

c. An algorithm was developed, where appropriate, for moving the INPUT-defined subsector data to the appropriate IBM-defined subsector.

d. The value to be moved was obtained through a combination of primary research and data from the U.S. Department of Commerce (1986 County Business Patterns). Pertinent data, the number of employees per subsector, was used to develop a "raw percentage" for each applicable industry sector or subsector.

e. Where necessary, an INPUT-defined adjustment factor was developed to reflect the appropriate professional services market potential. This adjustment was necessary when a subsector was divided to conform with IBM's market definition.



2. A computer program was written and used to:

a. Combine the professional services with the non-hardware portion of systems integration. This was done in order to be consistent with:

- · IBM's definition of professional services
- · Previous custom work by INPUT for IBM in this area

b. Delete the INPUT inflation factors from the original INPUT professional services market forecast.

c. Execute the algorithms to segment the INPUT data and recast it in the IBM format.

d. Apply the IBM-defined inflation factors.

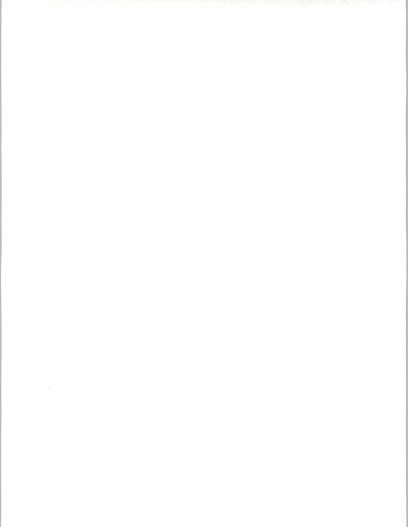
e. Create the new forecast data in the format defined by IBM for each of the 19 industry sectors.

f. Create the new forecast data for each of the five professional services delivery modes.

3. Some of the totals may not add up to their components due to rounding

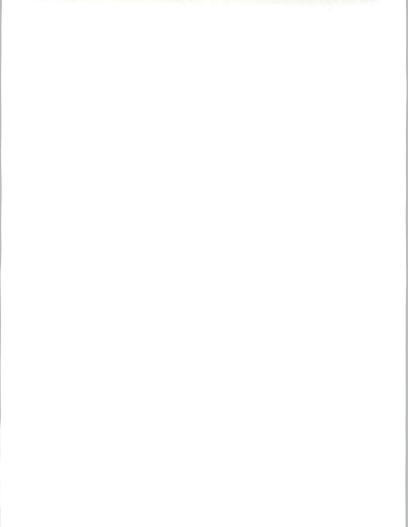
4. INPUT applied logic checks after each phase described in step 2, above, to ensure that the data appeared reasonable, consistent, and accurate.

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Professional Services Market Overview



II Professional Services Market Overview

This chapter presents summary information on the U.S. professional services market. The chapter is divided into:

- A. Industry Forecasts
- B. Delivery Sub-Mode Forecasts
- C. Key Applications
- D. Major Vendors

А

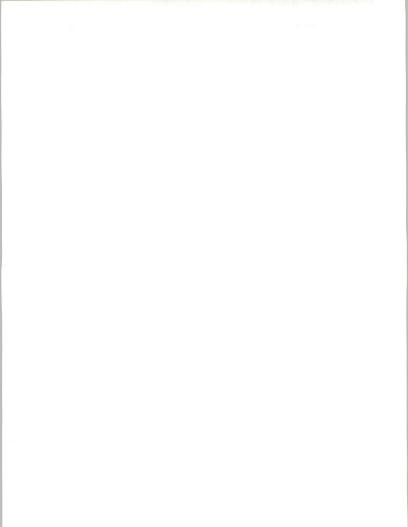
Industry Forecasts

1. 1988 Market Size by Industry

Industry	1988 Market Size (\$ Millions)
Federal government	\$4,265
Discrete manufacturing	2,840
State & local government	2,187
Finance	1,716
Process manufacturing	1,588
Insurance	1,298
Media	669
Retail distribution	637
Communications	580
Utilities	493
Wholesale distribution	478
Health	404
Securities	364
Transportation	201
Construction	118
Higher education	73
Schools	29
Consultants/accountants	20
Computer services	14

2. Forecast Growth Rate by Industry

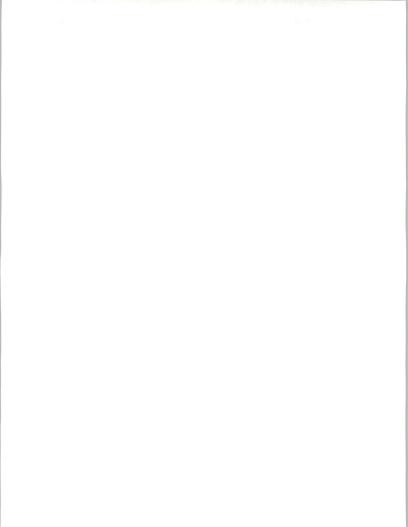
Industry	Growth Rate (CAGR Percent)
Retail distribution	23
Process manufacturing	22



Industry	Growth Rate (CAGR Percent)
Health	20
Discrete manufacturing	20
Finance	20
Securities	20
Consultants/accountants	20
Wholesale distribution	19
Computer services	19
State & local government	19
Media	19
Transportation	19
Insurance	18
Higher education	17
Construction	17
Communications	17
Utilities	16
Schools	15
Federal government	15

3. 1993 Market Size by Industry

Industry	1993 Forecast Market Size <u>(\$ Millions)</u>
Federal government	\$8,611
Discrete manufacturing	7,180
State & local government	5,268
Process manufacturing	4,280
Finance	4,249
Insurance	2,911
Retail distribution	1,830
Media	1,570
Communications	1,250
Wholesale distribution	1,120
Utilities	1,038
Health	1,025
Securities	901
Transportation	472
Construction	257
Higher education	162
Schools	55
Consultants/accountants	49
Computer services	33



INPUT

B

Delivery Sub-Mode Forecasts

The following five delivery modes, all related to professional services, are discussed in the order listed:

- Consulting
- · Software development
- · Education and training
- · Systems operations (formerly "facilities management")
- · Systems integration

Professional services, by INPUT's traditional definition, includes software development, consulting, education and training, and systems operations.

Systems integration typically includes a hardware component and a professional services portion. This analysis focuses only on the services portion, thus excluding the revenue contribution from hardware.

1. Consulting

1988 Size:	\$3,120 million
1988-1993 Growth Rate:	21%

2. Software Development

1988 Size: \$8,831 million 1988-1993 Growth Rate: 16%

3. Education and Training

1988 Size: \$1,960 1988-1993 Growth Rate: 19%

4. Systems Operations (Formerly: "Facilities management")

1988 Size:	\$1,151
1988-1993 Growth Rate:	12%

5. Systems Integration

1988 Size:	\$2,791
1988-1993 Growth Rate:	26%

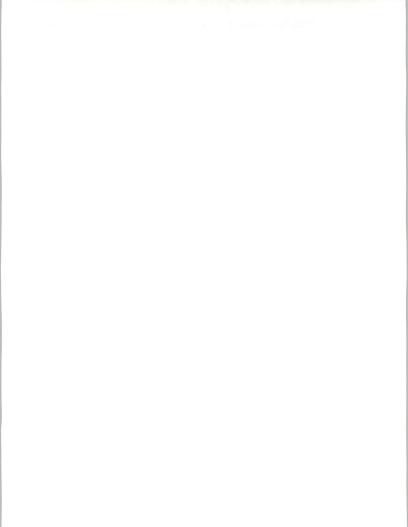


C Key Applications

This section lists the key applications using professional services in the 19-industry IBM model.

Each industry section (contained in Chapter III) will include at least three professional services applications. In this section, INPUT's goal is to identify the single major professional services application in each industry.

Industry	Key Application
Discrete Manufacturing	Manufacturing Resource Planning (MRP II)
Process Manufacturing	Process Control
Utilities	Marketing Information Systems
Construction	Cost Estimating Systems
Finance	Integrated Deposit Accounting
Securities	Risk Analysis
Distribution (Retail, Wholesale)	Customer Service
Insurance	Claims Handling/Customer Service
Insurance State & Local Government	Claims Handling/Customer Service Revenue Collection
	c .
State & Local Government	Revenue Collection
State & Local Government Health	Revenue Collection Patient Record Management
State & Local Government Health Communications	Revenue Collection Patient Record Management Customer Service
State & Local Government Health Communications Transportation	Revenue Collection Patient Record Management Customer Service Revenue Modelling/Sales Analysis
State & Local Government Health Communications Transportation Media	Revenue Collection Patient Record Management Customer Service Revenue Modelling/Sales Analysis Distribution Management Systems



Industry	Key Application	
Schools	Office Automation	

Schools

Federal Government

Records Management

D

Major Vendors

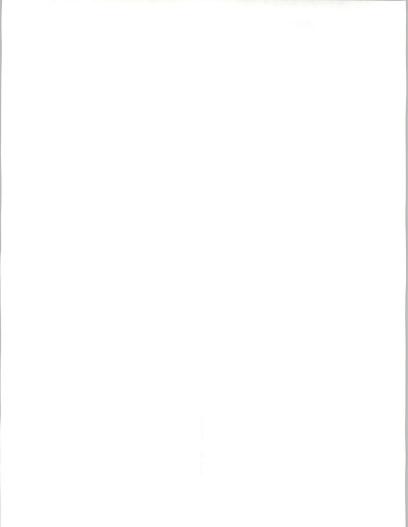
1. Major Vendors in Professional Services

Based on information in INPUT's database, the leading vendors of combined commercial/federal professional services and systems integration services are:

Vendor	Estimated 1988 Revenues <u>(\$ Millions)</u>
IBM	\$1,300
Andersen Consulting	650
GM/EDS	510
Unisys	450
Computer Sciences Corp.	345
DEC	300
AT&T	285
Science Applications Int'l Co.	275
National Education Corp.	200
Boeing Computer Services	175
Arthur D. Little	145
Computer Task Group	125
Planning Research Corp.	115
McDonnell Douglas Automation	100
SHL Systemhouse	95
Bechtel Group	85

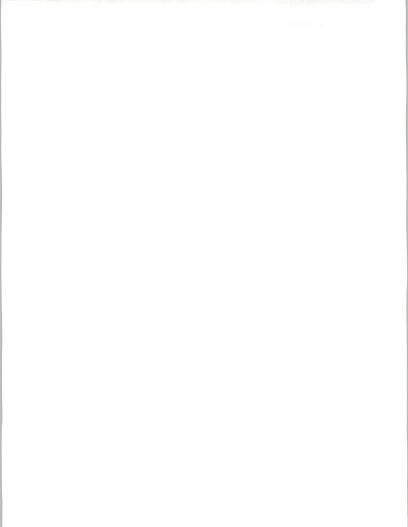
2. Top Vendors by Industry

Industry	Vendor	Estimated 1988 Revenues <u>(\$ Millions)</u>
Discrete manufacturing	IBM Andersen Consulting Unisys	235 180 70
Process manufacturing	IBM Andersen Consulting DEC	185 110 55



RE-ANALYSIS OF SELECTED INPUT DATA

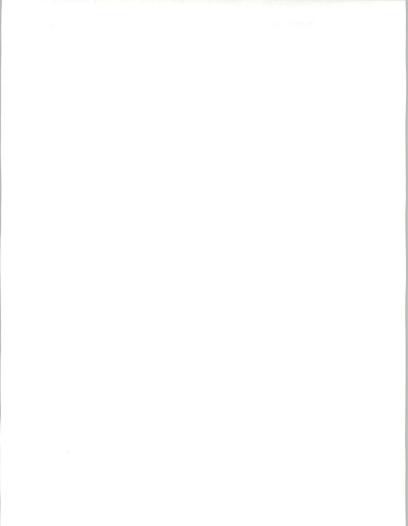
Industry	Vendor	Estimated 1988 Revenues <u>(\$ Millions)</u>
Utilities	Bechtel Andersen Consulting Arthur D. Little DEC	60 45 40 40
Construction	McDonnell Douglas Bechtel Group Computer Task Group IBM	15 15 10 10
Finance	AT&T IBM GM/EDS Unisys	50 40 30 30
Securities	AT&T IBM SIAC	85 75 40
Distribution (Retail, Wholesale)	Andersen Consulting GM/EDS IBM	90 40 25
Insurance	IBM Policy Management GM/EDS	150 65 35
State & local gov't	Arthur D. Little AT&T Unisys	45 40 35
Health	HBO & Company Arthur D. Little Andersen Consulting	45 40 35
Communications	DEC Andersen Consulting AGS/Nynex Computer Horizons	55 35 25 25
Transportation	IBM Unisys Andersen Consulting	40 30 25

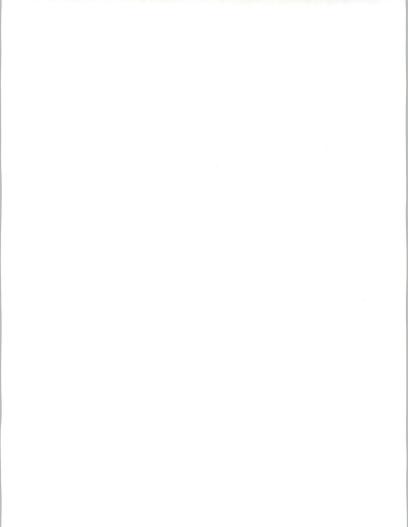


RE-ANALYSIS OF SELECTED INPUT DATA

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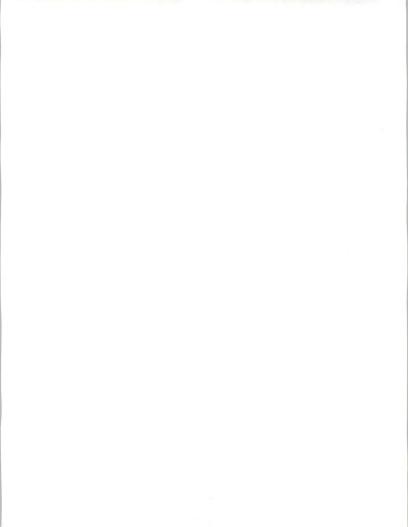
Industry	Vendor	Estimated 1988 Revenues (\$ Millions)
Media	IBM Andersen Consulting Ernst & Whinney	60 35 20
Consultants/accountants	IBM AT&T National Education Corp.	5 3 1
Computer Services	IBM DEC H-P	3 2 1
Higher Education	IBM Prime Systems & Computer Technology	18 7 4
Schools	IBM National Education Corp. Systems & Computer Technology	5 2 2
Federal government	IBM GM/EDS Computer Sciences Corp. SAIC	450 350 300 275







Industry Forecasts



III Industry Forecasts

This chapter discusses each IBM defined industry sector, divided into the following major sectors:

- Industrial
- · Service
- · General and Public
- · Education
- · Federal Government

Each industry sector section will contain the following information:

- 1. Industry characteristics
- a. Key SICs within the industry
- b. Industry sector size and growth rate
- c. Issues
- 2. Key applications by sub-mode (See NOTE)
- 3. Major vendors
- a. Estimated 1988 revenues
- b. Estimated 1988 market share
- c. Delivery sub-mode expertise in that industry
- d. Target vertical sub-markets
- 4. Secondary vendors
- 5. Leading vendors by sub-mode
- 6. "Up and coming" firms

NOTE: The professional services sub-modes include:

- Consulting
- · Software development
- · Education and training
- · Systems operations (formerly "facilities management")
- · Systems integration

See Appendix C for definitions.

This report is organized in the order of the IBM defined industry sectors (see Appendix D).



A Discrete Manufacturing

1. Industry Characteristics

a. Key SICs within the Industry

- Auto/truck/bus
- · Aircraft
- Electronics
- Instruments
- Metal

b. Industry Sector Size and Growth Rate

For professional services, in 1988 discrete manufacturing firms spent \$2,840 million, which is expected to grow at a CAGR of 20% through 1993.

c. Issues

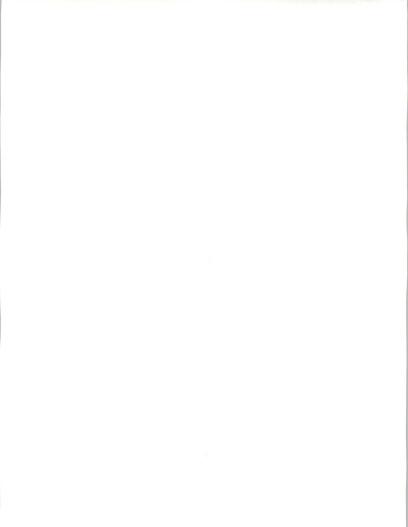
Computer-integrated manufacturing (CIM) is widely touted as the next phase in manufacturing firm automation. The goal is to link factory business applications with those in design/engineering and the factory floor. Given most of the current products available, CIM translates into links between any two of the three application areas (business, design/engineering, and factory floor).

Manufacturers must continue to closely monitor overall costs since other factors depend directly on cost control -- especially gross margin and the price of the company's stock.

Since it represents the ultimate execution of the manufacturing process, quality continues to receive a great deal of attention. In the last couple years, though, the concept of quality has spread beyond the final product to include the engineering and design steps necessary to efficiently and profitably manufacture the product.

Manufacturers are also focusing more attention on customer service and support. Since current customers are most likely to buy again, manufacturers are placing more emphasis on systems to improve pre- and post-sale support.

Application	Delivery Submodes
Inventory Management; Receiving; Warehousing	Software Development; Consulting; Systems Integration
MRP II	Software Development



Application	Delivery Submodes
CAD/CAE Networks	Consulting; Software Development; Systems Integration
Testing & Inspection	Software Development; Systems Integration
Order Entry/ Order Tracking	Consulting; Software Development
Plant Maintenance	Software Development; Consulting; Systems Integration

3. Major Vendors

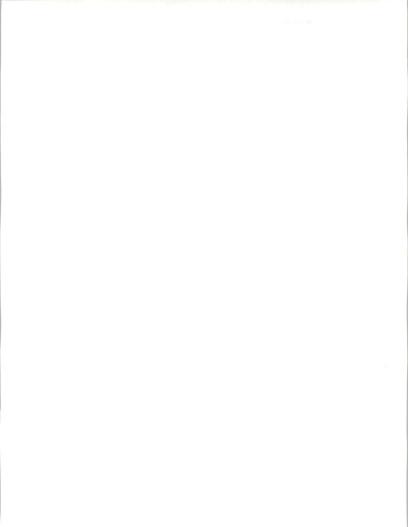
Vendor	Market <u>Revenues</u>	Share	Delivery Modes	Sub-Markets
IBM	\$235	8%	-SI -SW -Cons -E&T	- All
Andersen Consulting	\$180	6%	-SI -SW -Cons -E&T	- Mach. - Elect - Instr
Unisys	\$ 70	2%	-SI -SW -Cons -E&T	- Aeros - Autos

4. Secondary Vendors

DEC, GM/EDS, ASK Computer Systems, McAuto, Computer Task Group, Peat Marwick, Coopers & Lybrand, Boeing Computer Services, AGS/NYNEX, National Education Corp, AT&T.

5. Leading Vendors by Submode

Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 Market Share
Consulting	\$563	
Andersen Consulting IBM DEC	\$ 30 \$ 25 \$ 10	5% 4% 2%



Unisys; GM/EDS; CTG; Peat Marwick; Coopers & Lybrand; Touche Ross; AT&T; and Prime/Computervision represent 10% of the estimated market share with other vendors at 78%.

Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 <u>Market Share</u>
Software Development	\$1,575	
IBM Andersen Consulting Unisys	\$150 \$ 80 \$ 45	10% 5% 3%

GM/EDS; DEC; McAuto; AGS/Nynex; Peat Marwick; Computer Task Group; Coopers & Lybrand; Touche Ross; AT&T; and Boeing Computer Services represent 17% of the estimated 1988 market share with other vendors representing 66%.

\$341	
\$ 30	9%
+	6% 4%
	•••

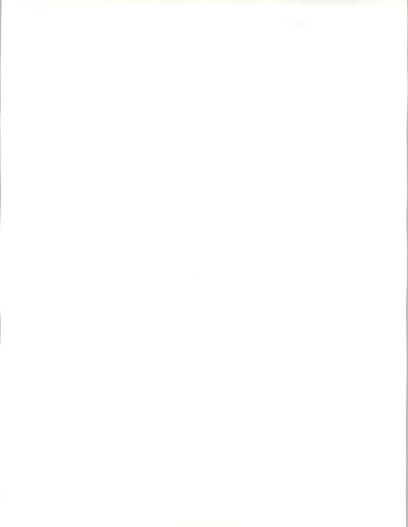
GM/EDS; AT&T; DEC; Unisys; Peat Marwick; and Prime/Computervision represent 14% of the estimated 1988 market share with other vendors representing 67%.

Systems Operations	\$55	
Boeing Computer Services	\$ 25	45%
Other vendors represent the remaining 554	%.	
Systems Integration	\$305	
Andersen Consulting IBM DEC	\$ 50 \$ 40 20	16% 13% 7%

Computer Task Group; McDonnell Douglas Auto.; Unisys; Peat Marwick; and Coopers & Lybrand represent 14% of the estimated 1988 market share with other vendors representing 50%.

6. "Up and Coming" Firms

Peat Marwick Main AGS/NYNEX Computer Task Group



В

Process Manufacturing

1. Industry Characteristics

a. Key SICs within the Industry

- Petroleum
- Chemicals
- · Stone, Glass, Clay
- Food
- · Primary Metals

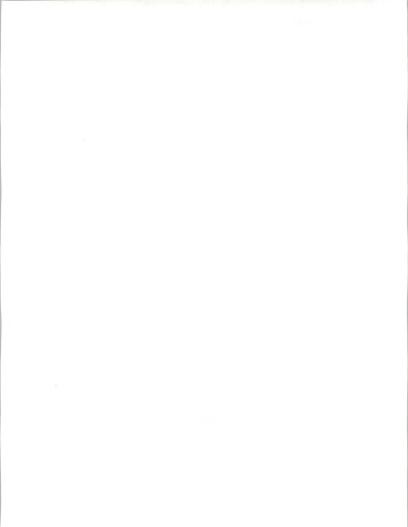
b. Industry Sector Size and Growth Rate

In 1988, process manufacturing spent \$1,588 million for professional services, which is expected to grow at a CAGR of 22% through 1993.

c. Issues

- Plant optimization: Manufacturers want to improve operations through improved plant floor layout, work flow planning, and easier physical plant maintenance.
- Decentralization is sweeping all segments of the process manufacturing industry. Fortune 1500 manufacturers are moving from fewer large plants with 1,000 employees to a greater number of small plants, each employing no more than 300. Economics of scale, raw material/customer location considerations, access to multiple modes of transportation, and the ability to diminish the power of a single union local are key contributing factors to this trend.
- Process manufacturers are implementing computer integrated manufacturing (CIM). As a result of better application software, process manufacturers are moving away from inhouse developed to third-party CIM solutions.

Application	Delivery Submode(s)
Process Control	Consulting; Software Development; Education & Training; Systems Integration
Maintenance Scheduling	Consulting; Software Development
Customer Service	Consulting; Software Development; Systems Integration
Lab Data Collection and Analysis	Consulting; Software Development; Systems Integration



3. Major Vendors

Vendor	Market <u>Revenues</u>	Share	Delivery Modes	Sub-Markets
IBM	\$185	12%	-SW -Cons -SI -E&T	- All
Andersen Consulting	\$110	7%	-SI -SW -Cons -E&T	- All
DEC	\$ 55	3%	-SW -Cons -E&T -SI	- All

4. Secondary Vendors

Bechtel; H-P; Computer Task Group; National Education Corp.; CSC; Peat Marwick; AT&T; Coopers & Lybrand; Touche Ross; ASK Computer Systems; Prime/CV

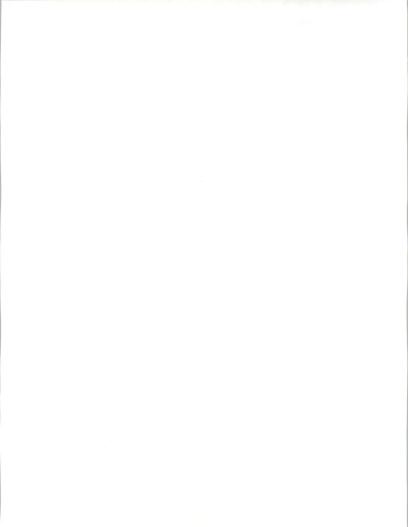
5. Leading Vendors by Submode

Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 Market Share
Consulting	\$338	
IBM Andersen Consulting DEC	\$ 25 \$ 15 \$ 10	7% 4% 3%

Hewlett-Packard; Touche Ross; Bechtel Group; Computer Task Group; AT&T; Peat Marwick; Coopers & Lybrand; ASK Computer Systems; and Prime/Computervision represent 20% of the 1988 market share with other vendors representing 65%.

Software Development	\$945	
IBM	\$110	12%
Andersen Consulting	\$ 60	6%
Bechtel	\$ 25	3%

DEC:Computer Task Group; Peat Marwick; Coopers & Lybrand; ASK Computer Systems; AT&T; Prime/Computervision; and Touche Ross represent 12% of the 1988 market share with other vendors representing 67%.



Education & Training	\$205		
National Education Corp. IBM	\$ 25 \$ 20	12% 10%	
Andersen Consulting	\$ 15	7%	

Computer Task Group; DEC; Hewlett-Packard; Peat Marwick; AT&T; Prime/Computervision; and ASK Computer Systems represent 17% of the 1988 market share with other vendors representing 53%.

Systems Operations	\$33	
Computer Sciences Corp.	\$ 15	45%

Other vendors represent the remaining 55%.

Vendor	Est. 1988 Rev. (<u>\$ Millions</u>)	Est. 1988 Market Share
Systems Integration	\$67	
IBM Andersen Consulting DEC	\$6 \$4 \$3	9% 6% 4%

Bechtel; Computer Task Group; and Hewlett-Packard represent 30% of the 1988 market share with other vendors representing 48%.

6. "Up and Coming" Firms

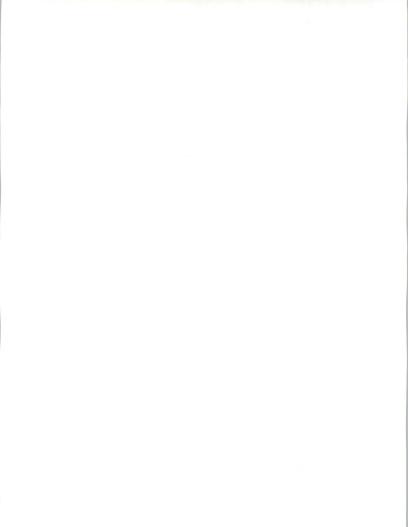
Computer Task Group AT&T Peat Marwick Bechtel

C Utilities

1. Industry Characteristics

a. Key SICs within the Industry

- · Electric utilities
- · Gas utilities



- · Water and sewage utilities
- · Combined utilities

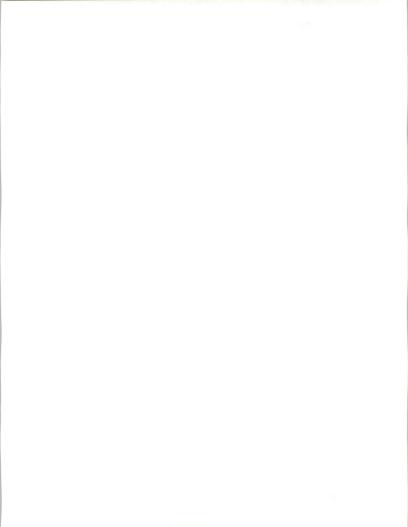
b. Industry Sector Size and Growth Rate

In 1988, utility firms' expenditures for professional services were \$493 million and are expected to grow at a CAGR of 16% through 1993.

c. Issues

- Electric and gas utilities want to upgrade their existing plants to maintain high utilization
 rates, rather than borrow funds in uncertain financial markets to construct new plants.
- Customer service is one area receiving a great deal of attention. Better systems for serving the customer help in two important ways. One, good customer information provides the basis for new marketing programs. Two, good relations with customers avoid problems with state and local regulatory agencies.
- Increasing direct and indirect labor costs are leading to automating of meter reading in addition to automated mapping of streets, underground pipes, and electric lines.
- Safety, especially in nuclear plants, remains an issue since the days of the Three Mile Island problem.

Application		Delivery	y Submode(s)	
Customer service		Softwar	Education and training; Software development; Consulting; Systems integration	
Marketing information systems			Software development; Consulting	
Mapping			Systems integration; Consulting; Software development	
3. Major Ven	iors			
Vendor	Market <u>Revenues</u>	Share	Delivery Modes	Sub-Markets
Bechtel	\$ 60	12%	-SI -Con -SW - Gas	- Elect
Andersen Consulting	\$ 45	9%	-SW -Con -SI -E&T	- All



 Arthur D.
 Stress
 Stres
 Stres

4. Secondary Vendors

Cap Gemini; Price Waterhouse; Computer Task Group; Babcock & Wilcox; E.I. International; Peat Marwick; Coopers & Lybrand; National Education Corp.

5. Leading Vendors by Submode

Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 Market Share
Consulting	\$88	
Arthur D. Little Bechtel Computer Task Group	\$ 15 \$ 5 \$ 5	17% 6% 6%

DEC; Andersen Consulting; Price Waterhouse; and Peat Marwick represent 23% of the 1988 market share with other vendors representing 49%.

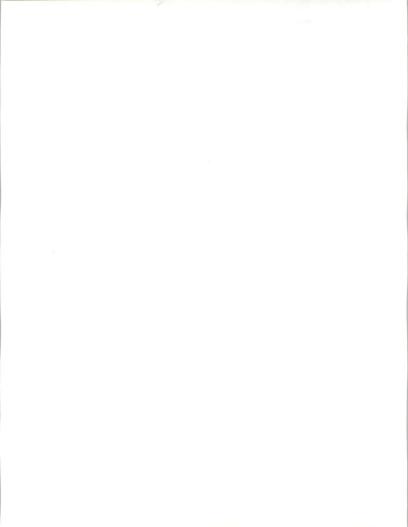
Software Development	\$248	
Cap Gemini	\$ 30	12%
Arthur D. Little	\$ 25	10%
Andersen Consulting	\$ 20	8%

Bechtel; Price Waterhouse; E.I. International; Computer Task Group; Babcock & Wilcox; DEC; Coopers & Lybrand; and Peat Marwick represent 31% of the 1988 market share with other vendors representing 39%.

Education & Training	\$54	
National Education Corp. DEC	\$10 \$5	19% 9%
Andersen Consulting	\$ 5	9%

Peat Marwick; and Coopers & Lybrand represent 7% of the 1988 market share with other vendors representing 56%.

Systems	Operations	\$9
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There are no major vendors in the INPUT data base.

Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 Market Share
Systems Integration	\$95	
Bechtel DEC Andersen Consulting	\$ 35 \$ 25 \$ 15	37% 26% 16%

Other vendors represent the remaining 21% of the 1988 market share.

6. "Up and Coming" Firms

None

D Construction

1. Industry Characteristics

a. Key SICs within the Industry

- · General contractors
- · Property managers and developers
- · Home and apartment builders
- · Mechanical/electrical/plumbing contractors
- · Architects and engineers
- · Road and heavy contractors

b. Industry Sector Size and Growth Rate

In 1988, user expenditures by construction firms for professional services were \$118 million and are expected to grow at a CAGR of 17% through 1993.

c. Issues

- As in other services businesses, competition is increasing, forcing firms to look for means to differentiate.
- Since construction and engineering/architecture service firms are highly labor intensive, labor cost control is important.
- Construction companies and the larger services firms need to improve their fixed asset utilization.



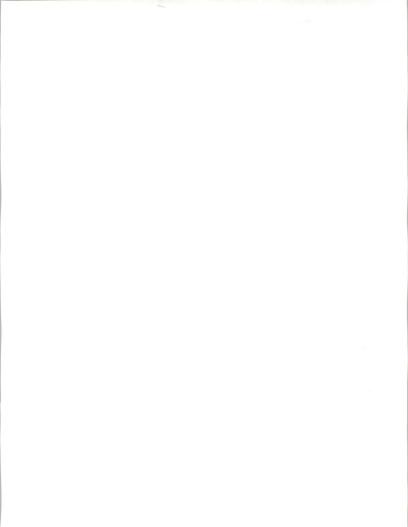
2. Key Applications by Subn	node
Application	Delivery Submodes
Cost estimating systems	Software development; Systems integration; Consulting; Education and training
Subcontractor reporting	Software development
Integrated project scheduling	Software development; Consulting; Education and training; Systems integration
CAD/CAM/CADD	Software development; Consulting; Education and training; Systems integration
Marketing data	Software development; Consulting; Education and training
Maintenance management	Software development; Consulting
Education and training	Consulting; Education and training
3. Major Vendors	

Revenues	Share	Delivery Modes	Sub-Markets
\$ 15	13%	-SI -SW -E&T -Cons	-All
\$ 15	13%	-SW -SI -Cons -E&T	-All
	\$ 15	\$ 15 13%	\$ 15 13% -SI -SW -E&T -Cons

4. Secondary Vendors

.

Computer Task Group; IBM; Fluor; Price Waterhouse; Rust International; Metier Mgmt.; General Instrument; MSA; SAS Institute; Information Builders; Project Software & Development; PMB Systems Engineering; AGS Management Systems



5. Leading Vendors by Submode

Vendor	Est. 1988 Rev. (<u>\$ Millions</u>)	Est. 1988 <u>Market Share</u>
Consulting	\$23	
McDonnell Douglas Auto. Price Waterhouse Fluor	\$ 4 \$ 4 \$ 3	17% 17% 13%

Bechtel; IBM; Rust International; and Computer Task Group represent 30% of the 1988 market share with other vendors representing 22%.

Software Development	\$63	
McDonnell Douglas Auto.	\$ 7	11%
Bechtel	\$ 7	11%
Computer Task Group	\$ 6	10%

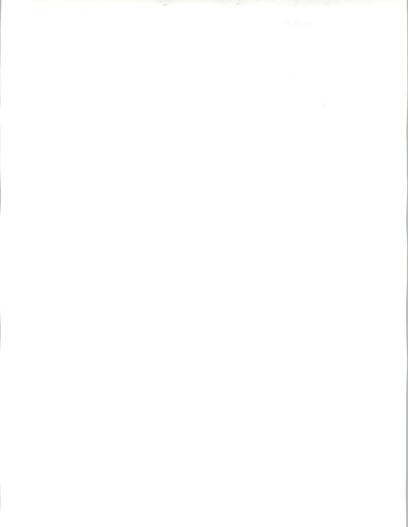
Fluor; IBM; Metier Management; Rust International; Price Waterhouse; General Instrument; Project Software & Development; PMB Systems Engineering; and AGS/NYNEX represent 37% of the 1988 market share with other vendors representing 31%.

Education & Training	\$14	
MSA	\$ 1	7%
SAS Institute	\$ 1	7%
Bechtel	\$ 1	7%

McDonnell Douglas Auto.; Information Builders; Fluor; General Instrument; IBM; Rust International; and Metier Management represent 44% of the 1988 market share with other vendors representing 35%.

Systems Operations	\$2	
General Instrument Corp.	\$ 1	50%

Other vendors represent the remaining 50%.



Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 Market Share
Systems Integration	\$16	
Bechtel Computer Task Group IBM	\$ 3 \$ 3 \$ 2	19% 19% 13%

Other vendors represent the remaining 59%.

6. "Up and Coming" Firms

Bechtel Fluor Rust International

Е

Finance

1. Industry Characteristics

a. Key SICs within the Industry

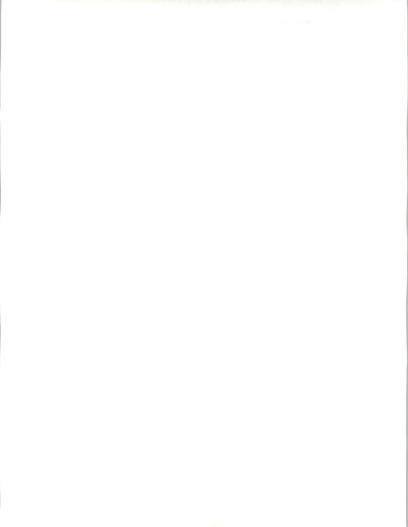
- Banks
- · Savings and loans
- · Credit Unions

b. Industry Sector Size and Growth Rate

In 1988, expenditures by financial firms for professional services were \$1,716 million and are expected to grow at a CAGR of 20% through 1993.

c. Issues

- · Deregulation
- · Customer service and marketing
- · Cost containment



2. Key Applications by Submode

Application	Delivery Submode(s)
Consumer loan tracking	Software development; Consulting; Systems integration
Consumer loan servicing	Software development; Consulting; Systems integration
Trust management services	Software development
Integrated deposit accounting	Systems integration; Software development

3. Leading vendors

Monters

Vendor	Revenues	Share	Delivery Modes	Sub-Markets
AT&T	\$ 50	3%	-SI -Cons -SW -E&T	-All
IBM	\$ 40	2%	-SW -Cons -E&T -SI	-All
GM/EDS	\$ 30	2%	-SI -Cons -SW	-All
Unisys	\$ 30	2%	-SI -SW	-All

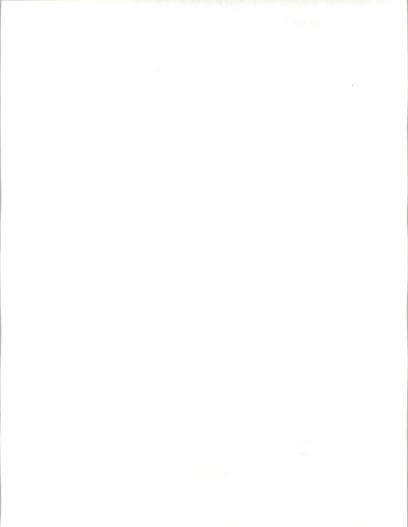
4. Secondary Vendors

NCR; American Management Systems; DEC; Price Waterhouse; Touche Ross; National Education Corp.

5. Leading Vendors by Submode

Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 Market Share
Consulting	\$354	
IBM Price Waterhouse AT&T	\$ 10 \$ 10 \$ 8	3% 3% 2%

GM/EDS; DEC; Unisys; and Touche Ross represent 5% of the 1988 market share with other vendors representing 87%.



IBM

Unisys; Touche Ross; DEC; Price Waterhouse; and GM/EDS represent 4% of the 1988 market share with other vendors representing 91%.

Est. 1988 Rev. (<u>\$ Millions)</u>	Est. 1988 <u>Market Share</u>
\$215	
\$5 \$5 \$5	2% 2% 2%
g	93%.
\$35	
\$ 25	71%
ng 29%	
\$123	
\$ 20 \$ 20 \$ 15	16% 16% 12%
	(\$ Millions) \$215 \$ 5 \$ 5 \$ 5 \$ 5 \$ 5 \$ 5 \$ 5 \$ 5 \$ 25 \$ 2

Other vendors represent the remaining 56%.

6. Up and Coming Vendors

Unisys Andersen Consulting



F Securities

1. Industry Characteristics

a. Key SICs within the Industry

- · Broker/Dealers
- Exchanges
- · Investments

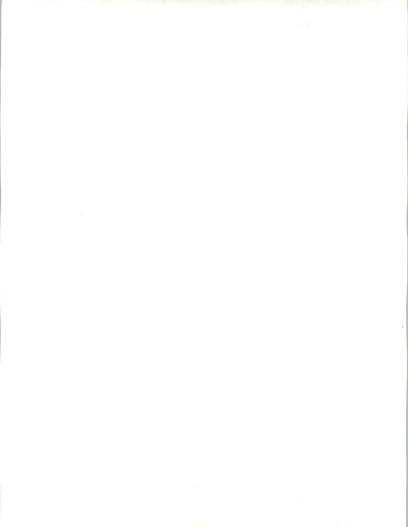
b. Industry Sector Size and Growth Rate

In 1988, securities firms' expenditures for professional services were \$364 million and are expected to grow at a CAGR of 20% through 1993.

c. Issues

- · Diversification beyond traditional products
- · Cost control
- · 24-hour global trading
- · Rapid information gathering, analysis, and action, especially in the trading area

Application	Delivery Submode(s)
Branch office support	Systems integration; Consulting; Software development
Back office	Systems integration; Software development; Education and training
Executing trades	Software development
Risk analysis	Software development; Consulting



3. Major Vendors

Vendor	Market <u>Revenues</u>	Share	Delivery Modes	Sub-Markets
AT&T	\$ 85	23%	-SI -SW	- Branch - Trades - Back
IBM	\$ 75	21%	-SI -SW -Con -E&T	- All
SIAC	\$ 40	11%	-Cons -SW -E&T	- Trades

4. Secondary Vendors

Andersen Consulting; AGS/NYNEX; GEIS Co; National Education Corp.; DST Systems; Computer Task Group; Computer Horizons; Teknekron Financial Services

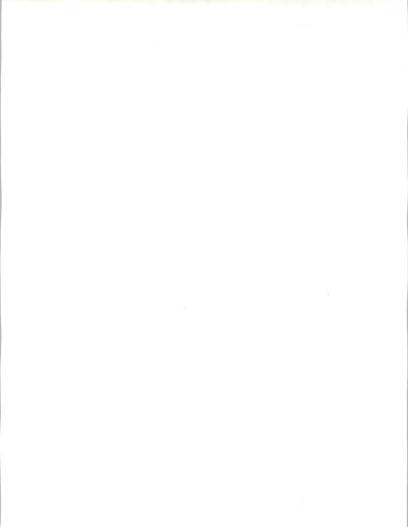
5. Leading Vendors by Submode

Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 Market Share
Consulting	\$75	
Securities Industry Automation Co. AT&T Andersen Consulting	\$ 15 \$ 10 \$ 5	20% 13% 7%

Other vendors represent the remaining 60%.

Software Development	\$210	
AT&T Securities Industry	\$ 60	29%
Automation Co. Andersen Consulting	\$ 15 \$ 15	7% 7%

AGS/NYNEX; DST, Inc.; Computer Horizons; Teknekron Financial Services; GE Information Services Co.; and Computer Task Group represent 15% of the 1988 market share with other vendors representing 42%.



Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 Market Share
Education & Training	\$46	
National Education Corp. Andersen Consulting AT&T	\$ 10 \$ 7 \$ 5	22% 15% 11%
Other vendors represent the remaining	ng 52%.	
Systems Operations	\$7	
There are no major vendors in the IN	VPUT data base.	
Systems Integration	\$26	
AT&T Securities Industry	\$ 5	19%
Securities Industry Automation Co. (SIAC) Andersen Consulting	\$ 3 \$ 3	12% 12%

Other vendors represent the remaining 57%.

6. Up and Coming Vendors

SIAC AGS/NYNEX

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Distribution (Retail/Wholesale)

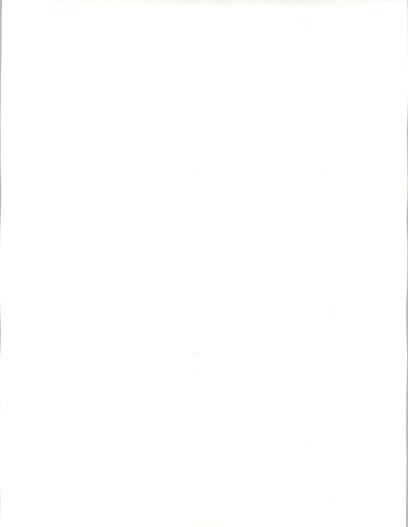
1. Industry Characteristics

a. Key SICs within the Industry

- Retail
 - Apparel
 - Leather
 - General Merchandise Retailers

Wholesale

- Durable Goods
- Repair Services
- Lodging
- Business Service



b. Industry Sector Size and Growth Rate

In 1988, the retail distribution industry spent \$637 million and the wholesale distribution industry spent \$478 million for professional services. These user expenditures are expected to grow, with retail growing at 23% and wholesale compounding at a 19% annual rate.

NOTE: This section discusses the combined wholesale/retail industry.

c. Issues

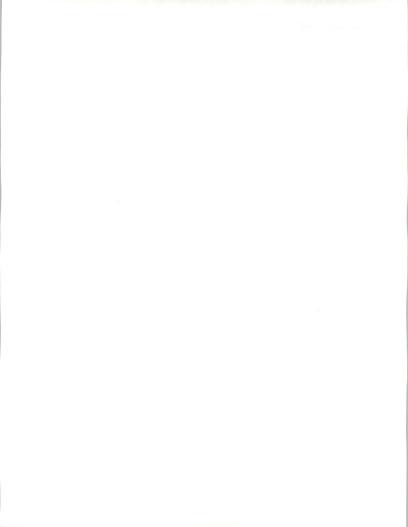
- Electronic linkage of wholesalers and/or retailers with manufacturers through electronic data interchange (EDI) is a major issue.
- Distributors of capital equipment must adjust to the changing demands brought on by Just-in-Time (JiT) manufacturing environments.
- Distributors must provide additional services to retailers in order to keep the retailer's business.

2. Key Applications by Submode

Application	Delivery Submode(s)
Automated warehouses	Systems integration
Customer service	Systems Integration; Software Development
Sales Tracking, Analysis and Order Processing	Systems Integration; Software Development

3. Major Vendors

Vendor	Market Revenues	Share	Delivery Modes	Sub-Markets
Andersen Consulting	\$ 90	8%	-SI -SW -Cons	-Gen'l Merch. -Lodging
GM/EDS	\$ 40	4%	-SI -SW -Cons	-Gen'l Merch. -Lodging -Food Whsle.
IBM	\$ 25	2%	-SI -SW -Cons -E&T	-Gen'l Merch. -Lodging -Food Whsle.



4. Secondary Vendors

CSC; SHL Systemhouse; American Software; AT&T; Unisys; Triad; National Education Corp.; CACI, Inc.; Touche Ross

5. Leading Vendors by Submode

Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 Market Share
Consulting	\$201	
Andersen Consulting CSC IBM	\$ 20 \$ 15 \$ 7	10% 7% 3%

GM/EDS; AT&T; American Software; SHL Systemhouse; and Unisys represent 14% of the 1988 market share with other vendors representing 65%.

Software Development	\$564	
Andersen Consulting GM/EDS	\$ 50 \$ 25	9%
SHL Systemhouse	\$ 25 12	4% 2%

American Software; IBM; Unisys; AT&T; and Touche Ross represent 5% of the 1988 market share with other vendors representing 80%.

Education & Training	\$122	
National Education Corp.	\$ 10	8%
Triad	\$ 10	8%
Computer Sciences	5	4%

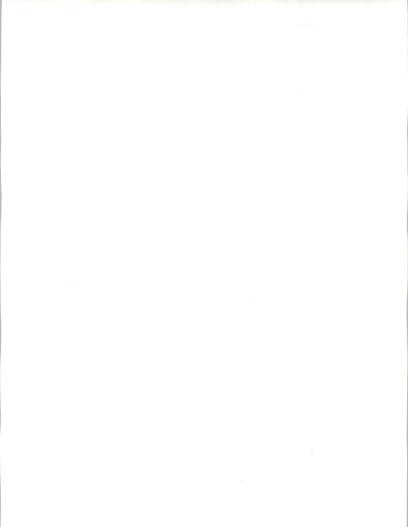
Andersen Consulting; IBM; AT&T; and Touche Ross represent 15% of the 1988 market share with other vendors representing 65%.

Systems	Operations	\$20
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There are no major firms in the INPUT data base.

Systems Integration	\$209	
Andersen Consulting	\$ 15	7%
IBM	\$ 10	5%
GM/EDS	\$ 10	5%

Other vendors represent the remaining 83%.



6. "Up and Coming" Firms

CACI SHL Systemhouse

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Insurance

1. Industry Characteristics

a. Key SICs within the Industry

- · Property and casualty
- Life
- Health

b. Industry Sector Size and Growth Rate

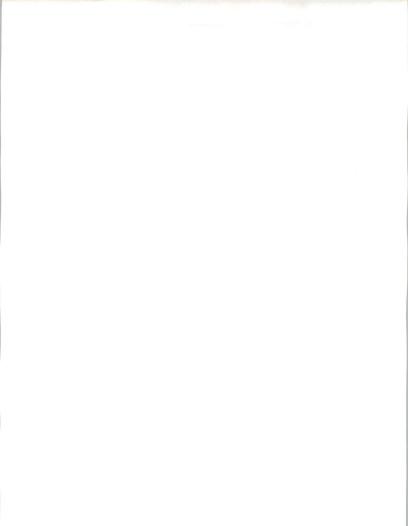
In 1988, user expenditures by the insurance industry for professional services were \$1,298 million and are expected to grow at a CAGR of 18% through 1993.

c. Issues

- The industry must continue to develop more products, focused to meet the needs of different insurance consumers.
- Successful carriers must have a sound distribution structure for their products, providing timely, accurate information to independent or captive brokers and agents.
- Carriers are under pressure, in some states, to control rates and rate increases. Extensive
 modeling and forecasting capabilities are needed to help justify rate changes.
- In addition to the pressure to provide timely, accurate responses to requests from agents and brokers, successful carriers provide high levels of support to the customer. Low rates won't overcome poor claims handling procedures or ineffective means of problem resolution.

2. Key Applications by Submode

Application	Delivery Submode(s)
Claims handling/ Customer service	Software Development; Systems Integration
Marketing	Software Development; Consulting; Education & Training; Systems Integration



Application	Delivery Submode(s)
Systems for Insurance Agents Offices	Software Development; Consulting; Systems Integration
Risk Analysis Systems	Software Development;

3. Major Vendors

Vendor	Market <u>Revenues</u>	Share	Delivery Modes	Sub-Markets
IBM	\$150	12%	-SW -Cons -E&T -SI	-Prop/Cas -Life -Health
Policy Management	\$ 65	5%	-E&T -Cons -SW	-Life -Prop/Cas
GM/EDS	\$ 35	3%	-SI -SW	-Prop/Cas -Life -Health

Consulting

4. Secondary Vendors

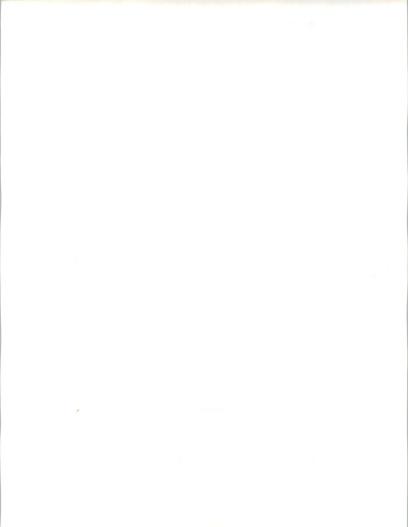
Andersen Consulting; Price Waterhouse; National Education Corp.; Touche Ross; AGS/NYNEX; Wang; Computer Horizons; Computer Task Group

5. Leading Vendors by Submode

Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 Market Share
Consulting	\$269	
IBM Policy Management Andersen Consulting	\$ 20 \$ 15 \$ 10	7% 6% 4%

Price Waterhouse; Touche Ross; and Wang represent 8% of the 1988 market share with other vendors representing 75%

Software Development	\$754	
IBM	\$ 90	12%
Policy Management	\$ 40	5%
AGS	\$ 10	1%



GM/EDS; AGS/NYNEX; Computer Task Group; Wang; Price Waterhouse; Computer Horizons; and Touche Ross represent 6% of the 1988 market share with other vendors representing 75%.

Education & Training	\$163	
National Education Corp.	\$ 15	9%
IBM	\$ 10	6%
Andersen Consulting	\$ 5	3%

Other vendors represent the remaining 82%.

Systems Operations	\$27
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There are no major firms in the INPUT data base.

Systems Integration	\$85	
IBM	\$ 15	18%
Policy Management	\$ 11	13%
GM/EDS	\$ 10	12%

Andersen Consulting; Price Waterhouse; National Education Corp.; AG\$/NYNEX; Wang; Touche Ross; Computer Task Group; and Computer Horizons represent 35% of the 1988 market share with other vendors representing 26%.

6. "Up and Coming" Firms

Wang Policy Management

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State & Local Government

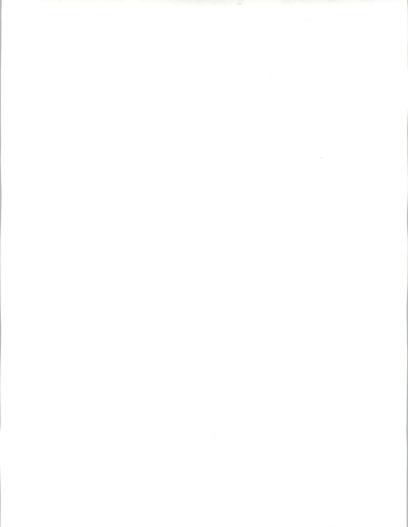
1. Industry Characteristics

a. Key SICs within the Industry

- · State government
- · City/County government

b. Industry Sector Size and Growth Rate

In 1988, user expenditures by state and local governments for professional services were \$2,187 million and are expected to grow at a CAGR of 19% through 1993.



c. Issues

- Timely, accurate revenue collection is increasingly important for state and, especially, local governments. Local governments must "pay as they go."
- Public safety (police, fire, paramedics, corrections), dispatch and scheduling areas have received more attention during the past two years and will continue to do so.
- Health and Human Services eligibility systems have received attention as states attempt to
 effectively implement welfare, food stamp, and medical care assistance.
- Like any employer, state and local governments must attract and retain employees. This
 is especially difficult to do at senior management and policy making levels.

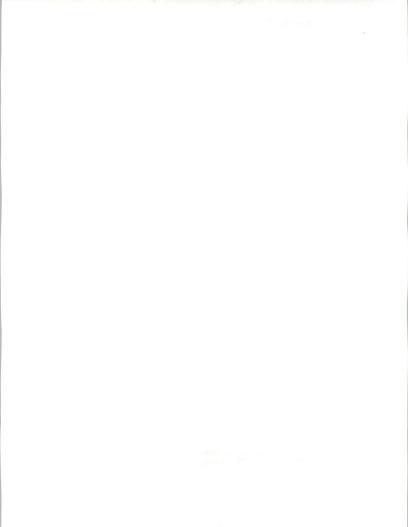
2. Key Applications by Submode

Application	Delivery Submode(s)
Revenue collection	Systems Integration; Software Development
Job bank/job matching	Software Development; Consulting
Caseload management	Software Development; Consulting
Vehicle inspections	Systems Integration
Manpower resource planning	Software Development
3. Major Vendors	
Market	

Vendor	Revenues	Share	Delivery Modes	Sub-Markets
Arthur D. Little	\$ 45	2%	-SW -Cons	-Local -State
AT&T	\$ 40	2%	-SW -Cons -SI -E&T	-State
Unisys	\$ 35	2%	-SW -Cons -SI	- Both

4. Secondary Vendors

Andersen Consulting; National Education Corp; SHL Systemhouse; Peat Marwick; Boeing Computer Services; Systems & Computer Technology; Touche Ross; Price Waterhouse;



DEC; Bechtel; Wang; OAO Corp.; American Management Systems; Computer Sciences Corp; Litton

5. Leading Vendors by Submode

Vendor	Est. 1988 Rev. (<u>\$ Millions</u>)	Est. 1988 <u>Market Share</u>
Consulting	\$433	
Arthur D. Little Andersen Consulting Unisys	\$ 30 \$ 10 \$ 5	7% 2% 1%

SHL Systemhouse; Price Waterhouse; AT&T; Touche Ross; Peat Marwick; DEC; Wang; Systems & Computer Technology; Bechtel; and Litton represent 8% of the 1988 market share with other vendors representing 82%.

Software Development	\$1,212	
Unisys	\$ 20	2%
AT&T	\$ 20	2%
Arthur D. Little	\$ 15	1%

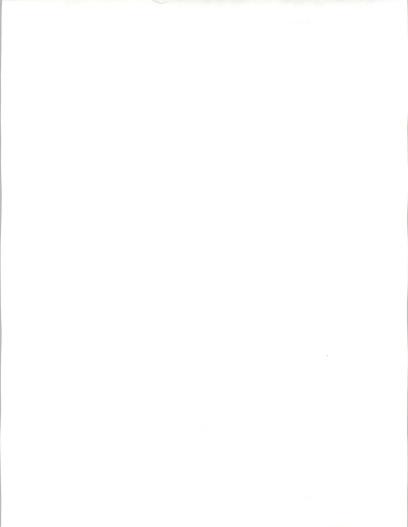
Andersen Consulting: Peat Marwick; Wang; SCT; Touche Ross; OAO; SHL Systemhouse; Bechtel; Litton Computer Services; DEC; and Price Waterhouse represent 10% of the 1988 market share with other vendors representing 85%.

Education & Training	\$263	
National Education Corp.	\$ 30 \$ 5	11% 2%
Andersen Consulting	\$ 5	2%

AT&T; Peat Marwick; and Price Waterhouse represent 4% of the 1988 market share with other vendors representing 81%.

Systems Operations	\$43	
Boeing Computer Services American Mgmt. Systems	\$15 \$5	35% 12%
SCT	\$ 5	12%

Other vendors represent the remaining 42%.



Systems Integration	\$237	
SHL Systemhouse	\$ 15	6%
AT&T	\$ 10	4%
Unisys	\$ 10	4%

Andersen Consulting; DEC; Bechtel; Peat Marwick; and Litton Computer Services represent 40% of the 1988 market share with other vendors representing 45%.

6. "Up and Coming" Firms

Arthur D. Little SCT SHL Systemhouse

J Health

1. Industry Characteristics

a. Key SICs within the Industry

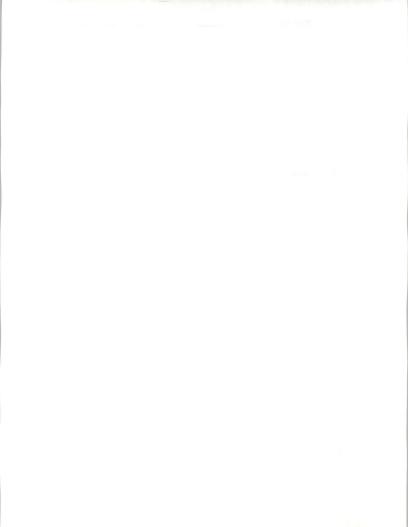
- · Hospitals/clinics
- Physicians
- HMOs
- · Nursing homes
- · Home health care
- Laboratories

b. Industry Sector Size and Growth Rate

In 1988, user expenditures by the health/medical industry for professional services were \$404 million and are expected to grow at a CAGR of 20% through 1993.

c. Issues

- As in other industries, consolidations of hospitals, HMOs, nursing homes, and laboratories are occurring more frequently.
- Cost control, related to the government's Diagnostic Related Groups (DRGs), remains a key industry issue.
- Information systems combining separate databases for personnel and administration, scheduling, integrated patient care, and laboratory reporting are necessary in 1990s health care environments.



2. Key Applications by Submode

Application	Delivery Submode(s)
Patient management	Systems Integration; Consulting; Software Development
Accounting/Financial Analysis	Software Development; Education & Training; Consulting
Patient Billing/Reimbursement	Software Development; Consulting; Education & Training
Laboratory Automation	Systems Integration; Consulting: Software Development

3. Major Vendors

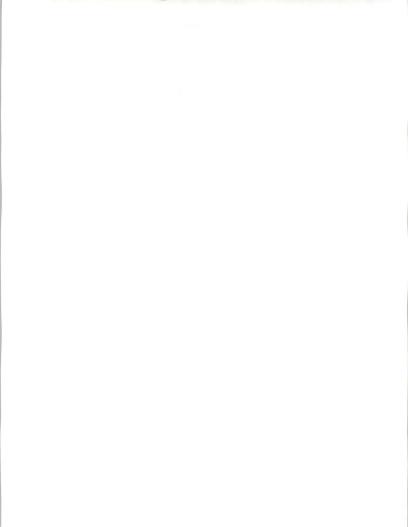
Vendor	Market <u>Revenues</u>	Share	Delivery Modes	Sub-Markets
HBO & Co.	\$ 45	11%	-SI -SysOps -SW -Cons	-Hospitals (incl. VA)
Arthur D. Little	\$ 40	10%	-SW -SI -Cons	-Hospitals
Andersen Consulting	\$ 35	9%	-SW -SI -Cons -E&T	-Hospitals

4. Secondary Vendors

Shared Medical Systems; DEC; Price Waterhouse; Pentamation; IBM; CAP Gemini America; Touche Ross; John Hancock Health Plans; Wang; National Education Corporation; Computer Sciences Corp.; Meditech; Ameritech

5. Leading Vendors by Submode

Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 Market Share
Consulting	\$69	
Arthur D. Little Price Waterhouse Touche Ross	\$ 15 \$ 5 \$ 4	22% 7% 6%



HBO & Co.; Andersen Consulting; Pentamation; Wang; DEC; Shared Medical Systems; Meditech; IBM; and Amerilech represent 35% of the 1988 market share with other vendors representing 30%.

Software Development	\$192	
HBO & Co. Andersen Consulting	\$ 15 \$ 15	8% 8%
CAP Gemini America	\$ 15	0 70

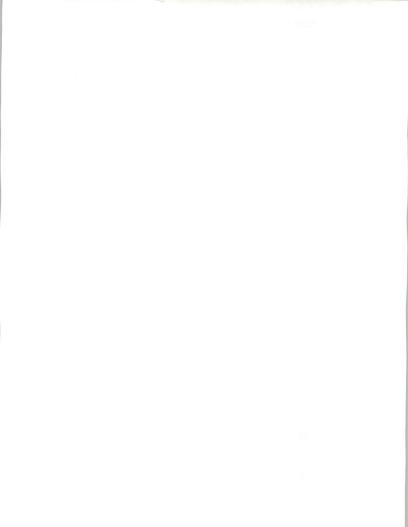
Arthur D. Little; DEC; Shared Medical Systems; Price Waterhouse; Wang; IBM; Pentamation; Touche Ross; John Hancock Health Plans; Mediucch; and Ameritech represent 3% of the 1988 market share with other vendors representing 44%.

Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 Market Share
Education & Training	\$42	
National Ed. Corp. Andersen Consulting IBM	\$ 10 \$ 5 \$ 3	24% 12% 7%

DEC; Price Waterhouse; and Shared Medical Systems represent 13% of the 1988 market share with other vendors representing 43%.

Systems Operations	\$7	
HBO & Company	\$ 2 \$ 1	29% 14%
Shared Medical Systems John Hancock Health Plans	\$ 1 <\$1	14% 6%
Pentamation	< \$ 1	3%
Other vendors represent the remaining	g 48%.	
Systems Integration	\$95	
Andersen Consulting	\$ 10	11%
HBO & Co.	\$ 5	5%
Arthur D. Little	\$ 5	5%

DEC; IBM; CSC; Price Waterhouse; and Ameritech represent 18% of the 1988 market share with other vendors representing 61%.



6. "Up and Coming" Firms

CAP Gemini America John Hancock Health Plans Arthur D. Little

К

Communications

1. Industry Characteristics

a. Key SICs within the Industry

- · AT&T and Regional Bell Operating Companies (RBOCs)
- · Local Telephone Companies
- · Communications carriers
- Satellites
- · Cable television plant and equipment

b. Industry Sector Size and Growth Rate

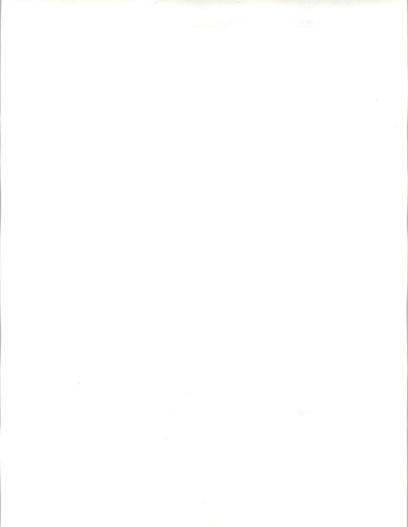
In 1988, user expenditures by the communications industry for professional services were \$580 million and are expected to grow at a CAGR of 17% through 1993.

c. Issues

- Manufacturers/service providers must introduce new services to maintain revenue growth.
- Although it has been more than 10 years since Judge Green's historic ruling on the breakup of AT&T, uncertainty about the limits of products and services continues.

2. Key Applications by Submode

Application	Delivery Submode(s)
Customer service	Education and training; Software development
Marketing information	Software development; Consulting
Long-range planning	Consulting; Software development; Education & training



3. Major Vendors

Vendor	Market <u>Revenues</u>	Share	Delivery Modes	Sub-Markets
DEC	\$ 55	9%	-SW -Cons -SI -E&T	- Tel.Cos. - RBOC - Cable TV
Andersen Consulting	\$ 35	6%	-SI -E&T -SW	- All
AGS/NYNEX	\$ 25	4%	-SW -Cons	- Tel. Cos. - Carriers
Computer Horizons	\$ 25	4%	-SW - All	

4. Secondary Vendors

American Management Systems; IBM; Unisys; Computer Sciences; CAP Gemini America; Computer Task Group; Auxco/Cincinnati Bell; GTE; National Education Corporation

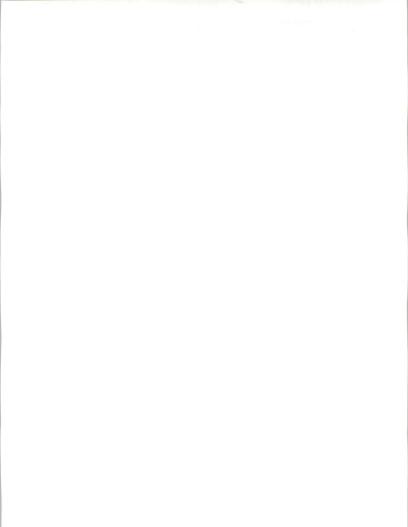
5. Leading Vendors by Submode

Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 Market Share
Consulting	\$114	
Andersen Consulting DEC CSC	\$ 15 \$ 10 \$ 10	13% 9% 9%

Unisys; AGS/NYNEX; IBM; and Auxco/Cincinnati Bell represents 16% of the 1988 market share with other vendors representing 53%.

Software Development	\$319	
DEC	\$ 30	9%
Computer Horizons	\$ 25	8%
AGS/NYNEX	\$ 20	6%

Cap Gemini; Andersen Consulting; Unisys; Computer Task Group; Auxco/Cincinnati Bell; and IBM represent 16% of the 1988 market share with other vendors representing 60%.



Education & Training	\$69	
National Education Corp	\$ 10	14%
Andersen Consulting	\$ 5	7%
DEC	\$ 5	7%

CSC; IBM; Unisys; and Auxco/Cincinnati Bell represent 16% of the 1988 market share with other vendors representing 55%.

Systems Operations	\$11	
American Mgmt. Systems GTE	\$ 3 \$ 2	27% 18%
Other vendors represent the remaining	55%.	

Systems Integration	\$67	
DEC	\$ 10	15%
IBM	\$ 8	12%
Andersen Consulting	\$ 5	7%

Other vendors represent the remaining 66%.

6. "Up and Coming" Firms

Auxco/Cincinnati Bell Computer Horizons American Management Systems Bell Atlantic

L

Transportation

1. Industry Characteristics

a. Key SICs within the Industry

- Airlines
- Rail
- Truck
- · Water
- Bus/Taxi
- · Other

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1

b. Industry Sector Size and Growth Rate

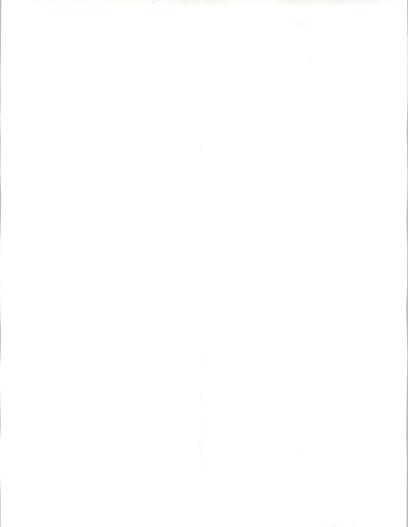
In 1988, user expenditures by the transportation industry for professional services were \$201 million and are expected to grow at a CAGR of 19% through 1993.

c. Issues

- Increased competition and more international trading are forcing firms to develop intermodal transportation methods.
- As the manufacturing environment has adopted Just-in-Time (JiT) manufacturing methodologies, transportation carriers must adjust their services (as well as schedules, equipment, and operations) to better serve manufacturing customers.
- Deregulation is also forcing transportation firms, especially scheduled air carriers, to continually adjust operations and prices to comply with new restrictions and requirements.

2. Key Applications by Submode

Application	Delivery Submodes
Revenue modelling/ sales analysis	Software development; Consulting
Customer service	Systems integration; Consulting; Software development; Education and training
Integrated maintenance systems	Software development; Systems integration
Application	Delivery Submodes
Automated warehouse and logistics systems	Systems integration; Consulting; Software development; Education and training
Terminal/cargo management	Software development; Consulting



3. Major Vendors

Vendor	Market <u>Revenues</u>	Share	Delivery Modes	Sub-Markets
IBM	\$ 40	20%	-SW -SI -Cons -E&T	-Air -Rail -Truck
Unisys	\$ 30	15%	-SW -SI -Cons	-Air -Truck
Andersen Consulting	\$ 25	12%	-SW -SI -Cons -E&T	- All

4. Secondary Vendors

Arthur D. Little; Computer Horizons; Boeing Computer Services; National Education Corporation; Intermetrics; Computer Dynamics

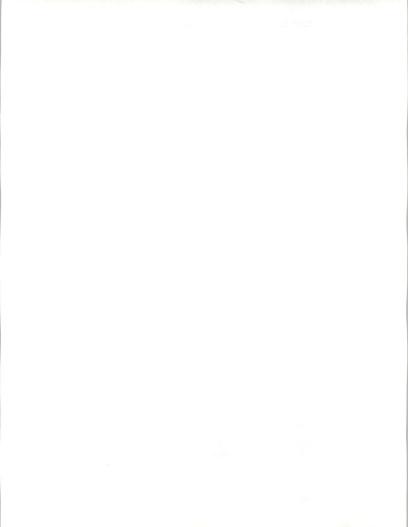
5. Leading Vendors by Submode

Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 <u>Market Share</u>
Consulting	\$32	
Arthur D. Little Andersen Consulting IBM	\$6 \$4 \$3	19% 13% 9%

Unisys; Computer Horizons; and Intermetrics represent 31% of the 1988 market share with other vendors representing 28%.

Vendor	Est. 1988 Rev. (<u>\$ Millions)</u>	Est. 1988 Market Share
Software Development	\$89	
IBM Unisys	\$ 23 \$ 15	26% 17%
Andersen Consulting	\$ 10	11%

Computer Horizons; Computer Dynamics; Arthur D. Little; and Intermetrics represent 22% of the 1988 market share with other vendors representing 24%.



Education & Training	\$19	
National Education Corp. Andersen Consulting IBM	\$ 10 \$ 3 \$ 2	53% 16% 11%
Other vendors represent the remaining 21%		
Systems Operations	\$3	
Boeing Computer Services	\$ 1	33%
Other vendors represent the remaining 66%		
Systems Integration	\$58	
IBM Unisys Andersen Consulting	\$ 10 \$ 10 \$ 7	17% 17% 12%

Other vendors represent the remaining 54%.

6. "Up and Coming" Firms

Unisys Computer Dynamics Computer Horizons

Μ

Media

1. Industry Characteristics

a. Key SICs within the Industry

- Publishers
- Printers
- · Associations
- · Entertainment/leisure
- · Radio/television stations
- · Cable television programs

b. Industry Sector Size and Growth Rate

In 1988, user expenditures for professional services by the media were \$669 million and are expected to grow at a CAGR of 19% through 1993.



c. Issues

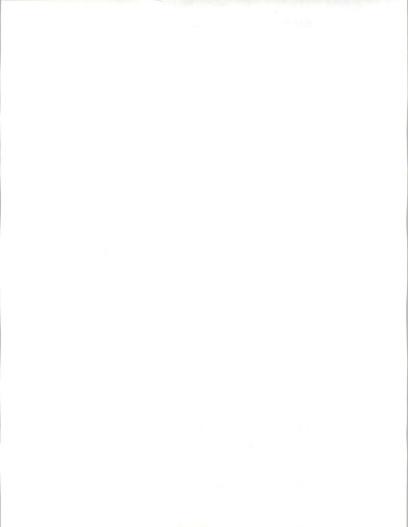
- Control of production and distribution costs is always important. A few tenths of a
 percent improvement in both areas yields a great difference in the bottom line.
 Substituting in-house publishing for outside assistance is highly cost effective.
- Subscriber list management is increasingly important since publishers want to maintain their base and minimize marketing expenses of attracting new readers.
- · Productivity of telemarketing staff members must be increased.
- Media firms survive on marketing. Improved marketing information and analysis tools are crucial to these firms' success.

Application	Delivery Submodes
Audience/readership information/ analysis system Telemarketing system	Software development; Consulting; Systems integration Software development; Consulting; Education and training
Distribution management System	Software development; Systems integration Systems operations
Mail list management System	Software development
Desktop/integrated Publishing	Systems integration; Consulting; Software development; Education and training

2. Key Applications by Submode

3. Major Vendors

Vendor	Market <u>Revenues</u>	Share	Delivery Modes	Sub-Markets
IBM	\$ 60	9%	-SW -Cons -SI -E&T	- All
Andersen Consulting	\$ 35	5%	-E&T -Cons -SW -SI	- All
Ernst & Whinney	\$ 20	3%	-SW -Cons -SI	- Publishing - Printing - Ent/Leisure



4. Secondary Vendors

Deloitte Haskins; National Education Corp; Compugraphic; Sterling Software

5. Leading Vendors by Submode

Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 Market Share
Consulting	\$131	
IBM Ernst & Whinney Andersen Consulting	\$ 10 \$ 5 \$ 5	8% 4% 4%

Deloitte Haskins; Compugraphic; and Perot Systems represent 5% of the 1988 market share with other vendors representing 80%.

Software Development	\$368	
IBM Ernst & Whinney	\$ 30 \$ 10	8% 3%
Andersen Consulting	\$ 10	3% 3%

Deloitte Haskins; Compugraphic; Sterling Software; and Perot Systems represent 5% of the 1988 market share with other vendors representing 81%.

Education & Training	\$80	
National Education Corp.	\$ 15	19%
Andersen Consulting	\$ 10	13%
IBM	\$ 5	6%

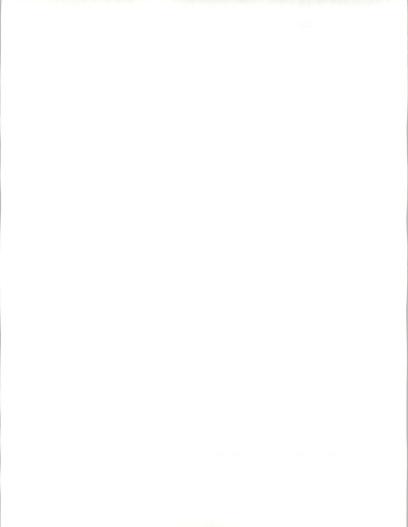
Other vendors represent the remaining 62%.

Systems	Operations	\$13
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There are no major vendors listed in the INPUT data base.

Systems Integration	\$77	
IBM	\$ 15	19%
Andersen Consulting	\$ 10	13%
Ernst & Whinney	\$ 5	6%

Other vendors represent the remaining 61%.



6. "Up and Coming" Firms

Perot Systems

Ν

Consultants

1. Industry Characteristics

a. Key SICs within the Industry

- · Management consultants
- Accountants

b. Industry Sector Size and Growth Rate

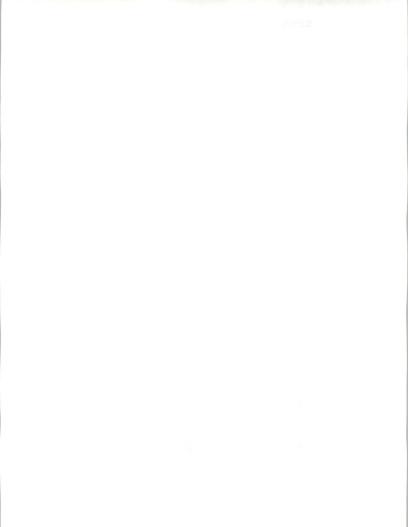
In 1988, user expenditures for professional services by consultants and accountants were \$20 million and are expected to grow at a CAGR of 20% through 1993.

c. Issues

- Revenue in these two professions depends on the number of hours billed. A major goal is to reduce non-billable hours, outside of training and continuing professional education.
- With the declining birth rate and fewer college graduates, firms compete vigorously for new employees, which must also be retained after they receive their professional credentials or three years of experience.
- Internal communication through office automation is necessary as firms expand their geographic coverage.

2. Key Applications by Submode

Application	Delivery Submodes
Office automation	Education and training; Software development
Project management	Education and training; Consulting; Software development; Systems integration
Desktop/integrated publishing	Software development; Systems integration; Consulting



3. Major Vendors

Vendor	Market <u>Revenues</u>	Share	Delivery Modes	Sub-Markets
IBM	\$ 5	25%	-E&T -Con -SW	- All
AT&T National	\$ 3	15%	-SW -E&T	- All
Ed. Corp	\$ 1	5%	-E&T	- All

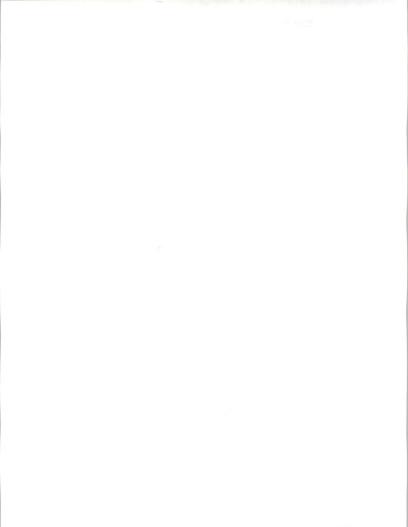
4. Secondary Vendors

DEC; Apple; Andersen Consulting

5. Leading Vendors by Submode

Vendor	Est. 1988 Rev. (<u>\$ Millions)</u>	Est. 1988 <u>Market Share</u>
Consulting	\$4	
IBM	\$ 1	25%
Other vendors represent the remaini	ng 75%.	
Software Development	\$11	
AT&T IBM DEC	\$ 2 \$ 1 < \$ 1	18% 9% 7%
Other vendors represent the remaining	ng 66%	
Education & Training	\$ 2	
IBM Apple AT&T	\$ 1 < \$ 1 < \$ 1	50% 10% 8%

Other vendors represent the remaining 32%.



Vendor		Est. 1988 Rev. (\$ Millions)	Est. 1988 Market Share
Systems	Operations	\$0 (due to rounding)	

There are no major firms listed in the INPUT data base.

Systems Integration \$3

There are no major firms listed in the INPUT data base.

6. "Up and Coming" Firms

Apple

0

Computer Services

1. Industry Characteristics

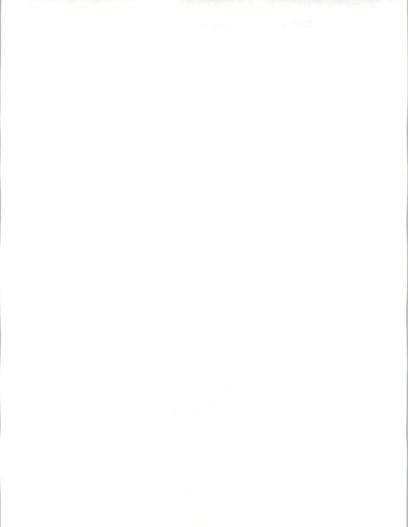
- a. Key SICs within the Industry
- · Processing service firms
- · Software vendors
- · Professional service firms

b. Industry Sector Size and Growth Rate

In 1988, user expenditures for professional services by the computer services industry were \$14 million and are expected to grow at a CAGR of 19% through 1993.

c. Issues

- · Attract and retain qualified personnel.
- Aggressively control costs.
- Develop added value services to retain customers; alternatively, reduce the migration of customers to microcomputers and workstations.
- Marketing, marketing, marketing (software and services vendors) emphasizing distribution channels, pricing, and selection of hardware platforms and/or operating systems.



2. Key Applications by Submode

Application	Delivery Submodes
Marketing information	Software development; Consulting; Systems integration
Customer service	Software development; Consulting; Systems integration
Employee training	Education and training

3. Major Vendors

Vendor	Market <u>Revenues</u>	Share	Delivery Modes	Sub-Markets
IBM	\$ 3	21%	-E&T -Cons -SW	- All
DEC	\$ 2	14%	-E&T -Cons -SW	- All
H-P	\$ 1	9%	-E&T -Cons -SW	- All

4. Secondary Vendors

Prime; Wang; Data General; Apple; Compaq

5. Leading Vendors by Submode

Vendor	Est. 1988 Rev. (<u>\$ Millions</u>)	Est. 1988 Market Share
Consulting	\$ 2	
IBM DEC Unisys	\$ 1 <\$ 1 <\$ 1	50% 19% 12%

Other vendors represent the remaining 19%.

Software Development \$7

There are no major firms listed in the INPUT data base.

Education & Training \$2

There are no major firms listed in the INPUT data base.



Systems Operations (due to rounding)

There are no major firms listed in the INPUT data base.

Systems Integration

There are no major firms listed in the INPUT data base.

6. "Up and Coming" Firms

None identified at this time.

Р

Higher Education

1. Industry Characteristics

a. Key SICs within the Industry

- Universities
- Two-Year Colleges
- Four-Year Colleges
- Libraries and Other

b. Industry Sector Size and Growth Rate

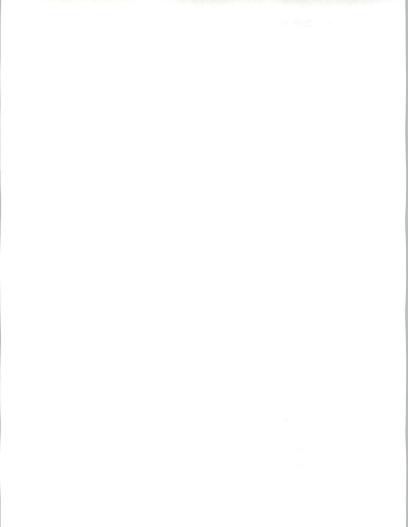
In 1988, user expenditures for professional services by colleges and universities were \$73 million and are expected to grow at a CAGR of 17% through 1993.

\$0

\$3

c. Issues

- · Student loan accounting and management received increased attention in view of Bank of America's recent problems with their portfolio. Public institutions which self fund and monitor student loans and repayment are especially concerned.
- Many colleges and universities are in the midst of projects to provide integrated campus communications and computer services for staff and students.
- At all institutions of higher education, fund raising is a major issue and one major criterion for evaluating the effectiveness of the administration.
- · Colleges and universities must work extremely hard to attract and retain professors and key administrators, in light of competition from firms in the private sector.
- Managing physical assets is an issue of growing importance.



2. Key Applications by Submode

Application		Delive	Delivery Submodes		
Integrated communications		System	Systems integration; Consulting		
Alumni development			Software development; Consulting; Systems integration		
Benefits planning and administration			Software development; Consulting; Systems integration		
Application		Delive	Delivery Submodes		
EEO compliance monitoring and reporting			Software development; Consulting		
Desktop/integrated publishing		Consul	Software development; Consulting; Education & training		
3. Major Vendors		20000	ion of training		
Vendor	Market <u>Revenues</u>	Share	Delivery Modes	Sub-Markets	
IBM	\$18	25%	-SW -Cons -SI	- All	
Prime	\$ 5	7%	-E&T -SW -Cons -SI	- All	
Systems & Computer	\$4	5%	-SysOps -SW -Cons	- All	

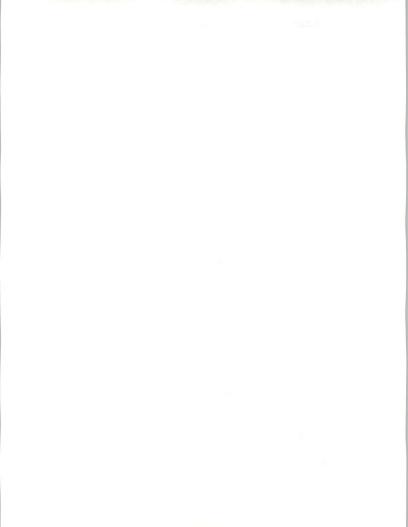
4. Secondary Vendors

Technology

American Management Systems; DEC; Information Associates/MSA; William M. Mercer Meidinger Hansen

5. Leading Vendors by Submode

Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 Market Share
Consulting	\$10	
IBM SCT	\$ 5 \$ 2	50% 20%



INPUT

Other vendors represent the remaining 30%.

Software Development	\$28	
IBM Prime	\$5 \$3	$18\% \\ 11\%$
SCT	\$ 2	7%

Other vendors represent the remaining 64%.

Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 Market Share
Education & Training	\$6	
IBM DEC	\$3 <\$1	50% 14%
National Education Corp	<\$ 1	12%

Other vendors represent the remaining 24%.

Systems	Operations	\$1
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There are no major firms listed in the INPUT data base.

Systems Integration	\$27	
IBM Prime	\$5 \$2	19% 7%
DEC	\$ 1	4%

Other vendors represent the remaining 70%.

6. "Up and Coming" Firms

SCT OnLine Computer Library Center (OCLC)

Q

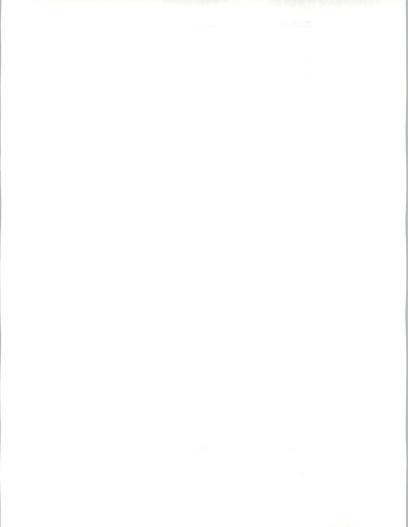
Schools

1. Industry Characteristics

a. Key SICs within the Industry

· Elementary and Secondary Schools

Vocational Schools (Non-Profit)



- · Correspondence, Business, Vocational Schools (Profit Making)
- · Elementary/Secondary Regional School Centers

b. Industry Sector Size and Growth Rate

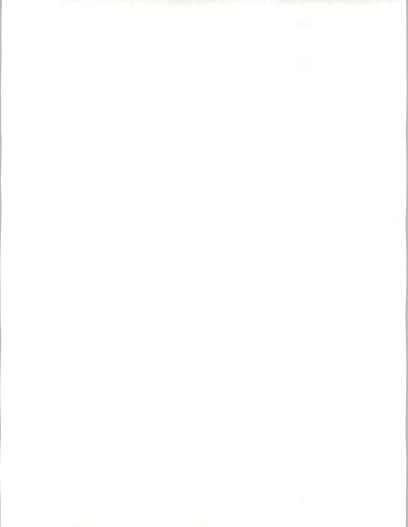
In 1988, user expenditures for professional services by elementary and secondary schools were \$29 million and are expected to grow at a CAGR of 17% through 1993.

c. Issues

- · Attract and retain teachers
- · Compliance with laws, such as EEO, busing, and financial reporting.
- · Facilities maintenance and upgrades to fixed assets.
- · Improve the quality of education through additional computer assistance.

2. Key Applications by Submode

Application	Delivery Submodes
Desktop/integrated publishing	Software development Education and training
Office automation	Software development; Consulting; Systems integration; Education and training
Integrated student accounting	Software development; Consulting; Systems integration
Special education monitoring & management	Software development; Consulting
Vehicle maintenance and operations	Software development Consulting; Systems integration
Training & education (for teachers, etc.)	Consulting; Education and training



3. Major Vendors

Vendor	Market <u>Revenues</u>	Share	Delivery Modes	Sub-Markets
IBM	\$ 5	17%	-SW -E&T -SI -Cons	- All
Nat'l Ed. Corp.	\$ 2	7%	-E&T	- All
Sys. & Computer Tech.	\$ 2	7%	-SysOps -SW -Cons	- Admin.

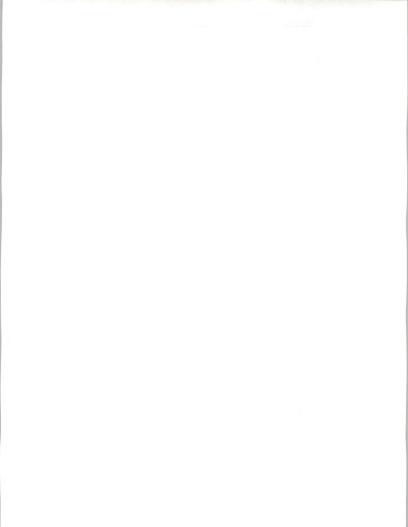
4. Secondary Vendors

Pentamation; On Line Computer Library Center (OCLC); DEC; American Management Systems

5. Leading Vendors by Submode

Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 <u>Market Share</u>
Consulting	\$4	
IBM Pentamation OCLC	\$ 1 <\$ 1 <\$ 1	25% 14% 8%
Other vendors represent the rem	aining 53%.	
Software Development	\$12	
IBM Pentamation SCT	2 <\$1 <\$1	17% 7% 6%
Other vendors represent the rem	aining 69%.	
Education & Training	\$ 3	
National Education Corp IBM DEC	<\$2 <\$1 <\$1	45% 16% 7%
Other vendors represent the rem	aining 32%	

Systems	Operations	\$ 0
		(due to rounding)



Pentamation	< \$ 1	NM
SCT	< \$ 1	NM
AMS	< \$ 1	NM
NM = Not Meaningful		
Systems Integration	\$ 9	
IBM	\$ 2	22%
DEC	< \$ 1	10%

Other vendors represent the remaining 68%.

6. "Up and Coming" Firms

Pentamation

R

Federal Government

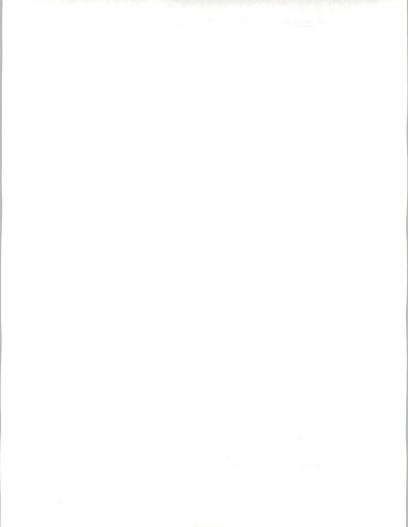
1. Industry Characteristics

a. Key SICs within the Industry

- · Foreign affairs/Special operations
- NASA/Treasury/Federal Reserve Board/IRS
- Energy/TVA/Commerce
- Education
- PX/BX
- International Support (Consulate, Embassies, UN)
- · Regulatory/Veterans Administration
- Labor/GSA/Smithsonian
- Army
- Navy
- · Air Force
- · Health
- FAA/Transportation
- · Security/Defense Intelligence
- · Interior/Agriculture
- Executive/Legislative
- Justice/Judiciary

b. Industry Sector Size and Growth Rate

In 1988, user expenditures for professional services by the federal government were \$4,265 million and are expected to grow at a CAGR of 15% through 1993.



c. Issues

- · Reduce the federal budget deficit.
- · Cost control/reduce waste.
- · Improved information for executive & legislature.
- · Attract & retain personnel, especially senior-level.

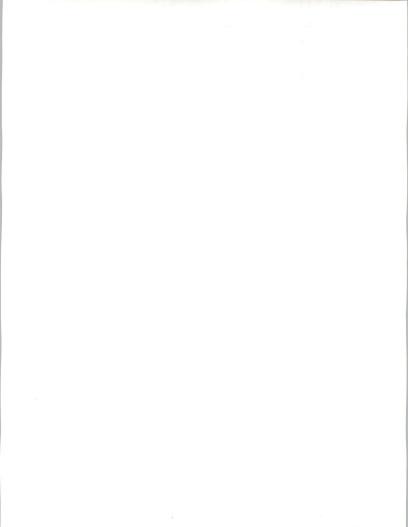
2. Key Applications by Submode

Application	Delivery Submodes
Office automation	Software development; Consulting; Systems integration; Education and training
Integrated logistics management	Software development; Consulting; Systems integration
Records management (IRS, VA, SEC, FBI, CIA, HHS)	Systems integration; Software development; Consulting
Mapping (DoD; DoT)	Software development; Systems integration; Consulting

3. Major Vendors

Vendor	Market <u>Revenues</u>	Share	Delivery Modes	Sub-Markets
IBM	\$450	11%	-SW -SI -Cons -E&T	- DoD - Civilian - E/L/J
GM/EDS	\$350	8%	-SW -Cons -E&T	- DoD - Civilian - E/L/J
CSC	\$300	7% -E&T	-SW -SysOp -Cons	- DoD - Civilian
SAIC	\$275	6%	-Cons -SW -SI	- DoD - Civilian

NOTE: E/L/J = Exec/Legis/Judic



4. Secondary Vendors

Grumman; Unisys/SDC; Boeing Computer Services; PRC/Emhart; BDM International/Ford; TRW; McDonnell Douglas Automation; Martin Marietta Data Systems; Logicon; AT&T; SHL Systemhouse; DEC

5. Leading Vendors by Submode

Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 Market Share
Consulting	\$422	
SAIC Unisys IBM	\$100 \$40 \$25	24% 9% 6%

GM/EDS; Boeing Computer Services; BDM International; Grumman represent 20% of the 1988 market share with other vendors representing 41%.

Software Development	\$1,284	
IBM	\$175	14%
SAIC	\$175	14%
CSC	\$160	12%

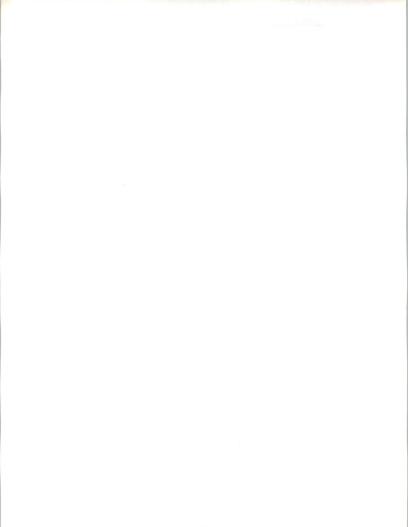
GM/EDS; Unisys; Grumman; PRC; and BDM International/Ford represent 41% of the 1988 market share with other vendors representing 21%.

Education & Training	\$327	
IBM	\$40	12%
GM/EDS	\$30	9%
Boeing Comp. Services	\$25	8%

CSC; McDonnell Douglas; Unisys; and Logicon represent 12% of the 1988 market share with other vendors representing 59%.

Systems Operations	\$925	
Boeing Comp Services	\$ 45	5%
Computer Sciences Corp	\$ 20	2%
McDonnell Douglas Auto.	\$ 15	1%

Other vendors represent the remaining 92%.



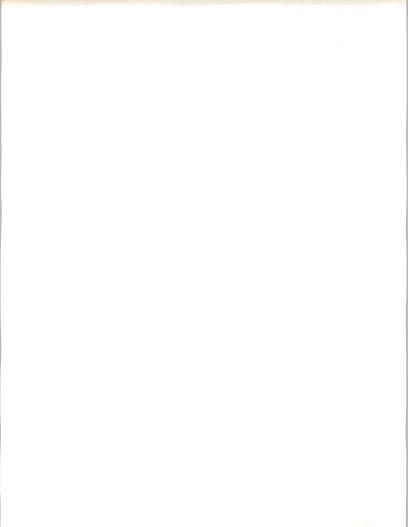
RE-ANALYSIS OF SELECTED INPUT DATA

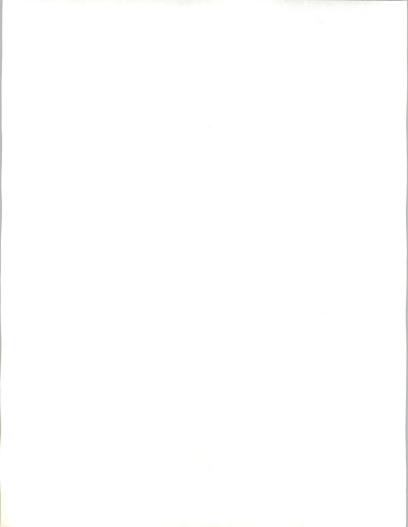
Vendor	Est. 1988 Rev. (\$ Millions)	Est. 1988 Market Share
Systems Integration	\$1,308	
IBM GM/EDS Grumman	\$210 \$175 \$115	16% 13% 8%

Other vendors represent the remaining 63%.

6. "Up and Coming" Firms

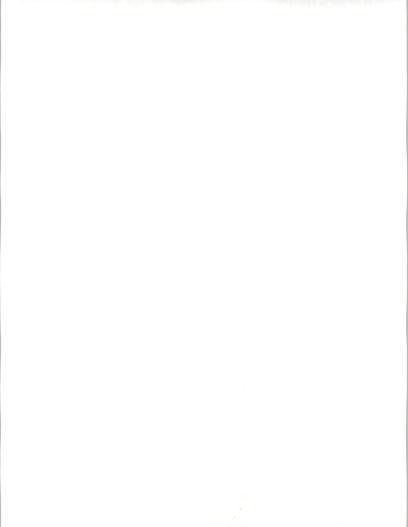
SHL Systemhouse McDonnell Douglas Automation







Conclusions



IV Conclusions

This chapter, which summarizes INPUT's research for IBM on the professional services/systems integration market, is presented in three parts:

- · Key opportunities
- · Major competitors
- Open issues

A

Key Opportunities

Professional services/systems integration represents a major market and delivery mode opportunity. The following three areas represent exciting opportunities for vendors:

- · Education and training
- · Software development
- · Systems integration

1. Education and Training

The goal is for education and training to move from a reactive posture to a proactive posture. In other words, users needing to know about new technologies, strategies, products, and services should be able to turn first to education and training, rather than consulting.

In this situation, education and training offers more general information and education, where consulting continues to offer customized information. Training is broadened to include senior Information Technology (IT) management.

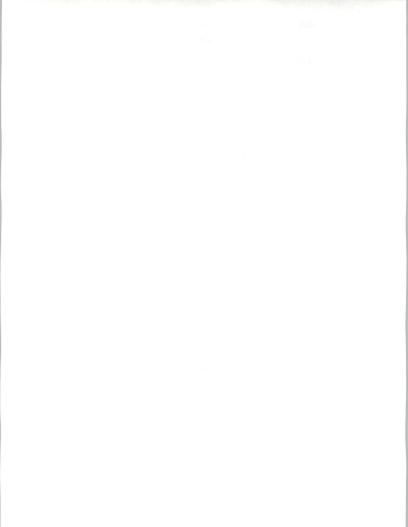
Specific examples of proactive education and training opportunities include:

- · Software development methodologies
- · Introduction to new systems
- · Introduction of new technical concepts to managers
- Introduction of Computer Integrated Manufacturing
 - CIM and IT implications for JiT inventory environments
 - Strategic role of IT

2. Software Development

Software development, although a mature segment, offers new opportunities such as:

- · New operating systems
- · Conversions from one operating system to another, especially to UNIX
- Use of 4GL methodologies for application development
- · Development of specific scientific/technical applications



3. Systems Integration

Systems integration is clearly not a fad. It is a necessary step in the maturation of computing environments. While the desktop, department, and corporate computers were envisioned to operate in certain well-defined roles, the advent of new, high-speed microprocessors, networks, and workstations have clearly disrupted the long-standing model of the computing world.

Systems integration, then, is genuinely needed to re-tie everything into integrated systems or, at least, bandage the old models of the computing world into more effective systems.

Specific areas of opportunity in systems integration include:

- True Computer Integrated Manufacturing (CIM), linking factory islands of automation through an integrated,central database.
- · Office automation systems, with linkages moving to the departmental level.
- Networks of workstations integrated with minicomputers and mainframes, as well as moving workstations into factory floor applications.
- Major integrated systems will be needed by the federal and state governments. The older generations of systems will be replaced, most likely with UNIX-based products, and previously separate applications will begin to integrate to realize significant operating improvements.

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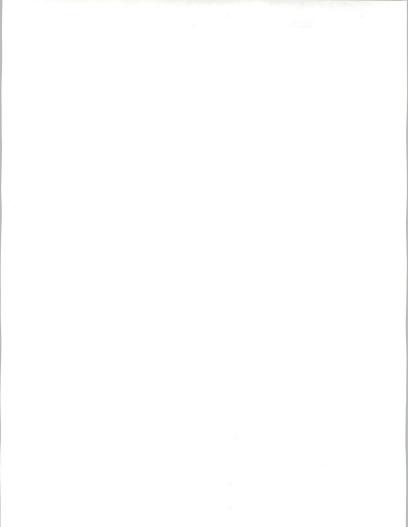
Major Competitors

1. Leading Professional Services/Systems Integration Vendors

Before providing a recap of leading vendors, it is appropriate to note that IBM has a leadership position in 10 of the 19 industries and occupies the number two position in two other industries.

Major competitors are listed below:

Vendor	Estimated 1988 Revenues
Andersen Consulting	650
GM/EDS	510
Unisys	450
Computer Sciences Corp.	345
DEC	300
AT&T	285



RE-ANALYSIS OF SELECTED INPUT DATA

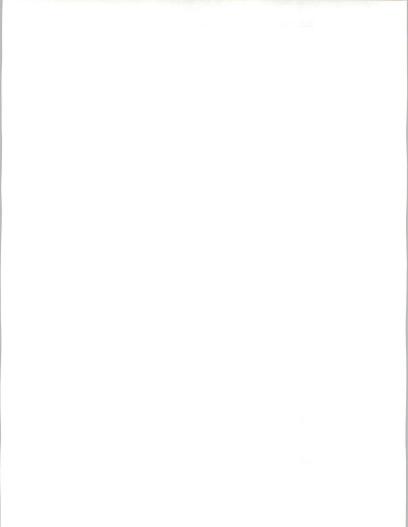
Vendor	Estimated 1988 Revenues
Science Applications Int'l	275
National Education Corp.	200
Boeing Computer Services	175
Arthur D. Little	145
Computer Task Group	125
Planning Research Corp.	115
McDonnell Douglas Automation	100
SHL Systemhouse	95
Bechtel	85

Admittedly, this list is long. However, to evaluate IBM's position relative to each professional services sub-mode (education and training, consulting, software development, systems operations, and the professional services portion of systems integration) requires a complete listing of vendors.

With the possible exception of Canada-based SHL Systemhouse, all competitors listed are well-funded, have established client relationships, and have access to hardware/software/ program management products. They, too, are in professional services for the long haul.

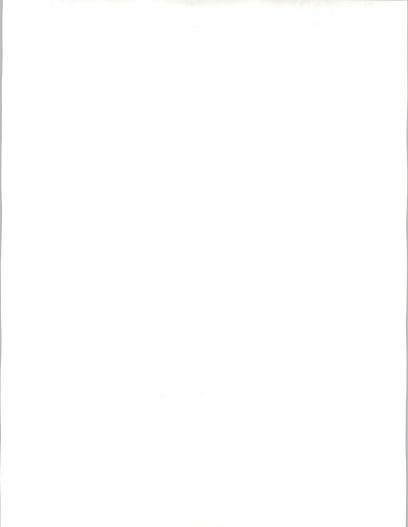
Industry Vendor	1988 Revenues (\$ Millions)
Discrete manufacturing IBM	235
Andersen Consulting	180
Unisys	70
Process manufacturing IBM	185
Andersen Consulting	110
DEC	55
Utilities Bechtel	60
Andersen Consulting	45
Arthur D. Little	40
DEC	40
Construction McDonnell Douglas	15
Bechtel Group	15
Computer Task Group	10
IBM	10
Finance AT&T	50
IBM	40

2. Top Vendors by Industry



RE-ANALYSIS OF SELECTED INPUT DATA

Industry	Vendor	Estimated 1988 Revenues <u>(\$ Millions)</u>
	GM/EDS Unisys	30 30
Securities	AT&T IBM SIAC	85 75 40
Distribution (Retail, Wholesale)	Andersen Consulting GM/EDS IBM	90 40 25
Insurance	IBM Policy Management GM/EDS	150 65 35
State & local gov't	Arthur D. Little AT&T Unisys	45 40 35
Health	HBO & Company Arthur D. Little Andersen Consulting	45 40 35
Communications	DEC Andersen Consulting AGS/Nynex Computer Horizons	55 35 25 25
Transportation	IBM Unisys Andersen Consulting	40 30 25
Media	IBM Andersen Consulting Ernst & Whinney	60 35 20



RE-ANALYSIS OF SELECTED INPUT DATA

INPUT

Industry	Vendor	Estimated 1988 Revenues <u>(\$ Millions)</u>
Consultants	IBM AT&T National Education C	5 3 orp. 1
Computer Services	IBM DEC H-P	3 2 1
Higher Education	IBM Prime Systems & Computer Technology	18 7 4
Schools	IBM National Education C Systems & Computer Technology	
Federal government	IBM GM/EDS Computer Sciences C SAIC	450 350 Jorp. 300 275

С

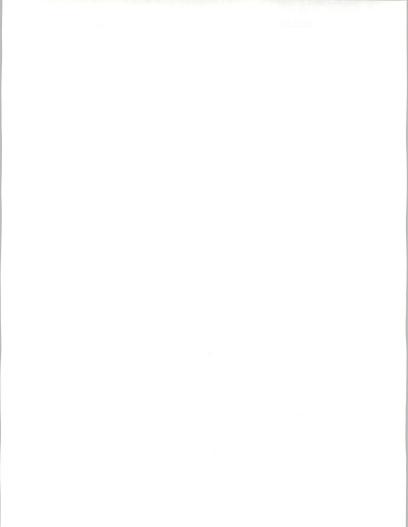
Open Issues

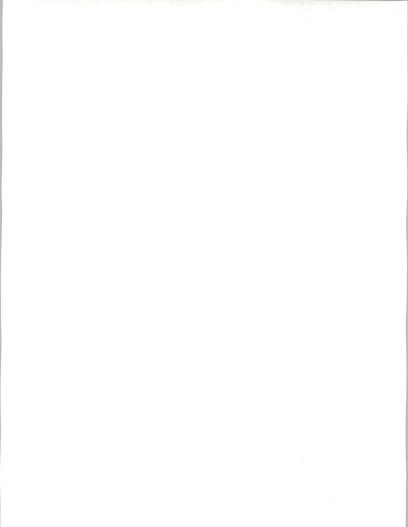
1. Assumptions

- Mergers and acquisition activity will continue, although will more likely involve medium and small firms in nearly every industry.
- Definitions differ for systems integration and professional services on a vendor-tovendor basis. To the extent possible, INPUT has reconciled these differences.
- Vendors tend to "fudge" the financial reporting of systems integration/ professional services jobs. An eight-year \$40 million job is seldom divided into \$5 million increments; rather the entire amount is "promoted" in the first year.

2. Items for Further Investigation

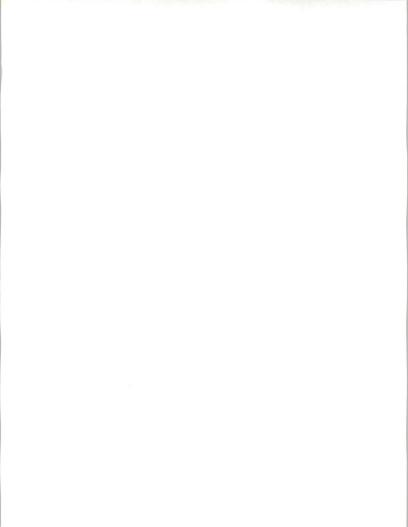
INPUT has not identified areas requiring further investigation.







Appendix



Appendix A

Appendix A contains a series of tables that present the primary data associated with this project. The tables are listed below and are briefly described.

Table 1. INPUT Forecast With Inflation by Industry Mode

This table is similar to previously published INPUT data. The non-hardware portion of Systems Integration has been added to remain consistent with previous work for IBM in the Professional Services area.

Table 2. INPUT Forecast Without Inflation by Industry Mode

This is similar to Table 1 but the effects of inflation, as predicted by INPUT, have been removed.

Table 3. IBM Forecast Without Inflation by Industry Mode

This information represents the repackaged, or restructured, forecast data, presented by industry segment, as defined by IBM. Please note that Table 7 contains the basic "crosswalk" guidelines that were used in the restructuring process.

Table 4. IBM Forecast With Inflation by Industry Mode

This is Table 3 data, but with the inflation factors, as defined by IBM, added to each cell.

Table 5. IBM Forecast With Inflation by Mode of Delivery

This table contains the same data as presented in Table 4, shown by mode of delivery (within the context of Professional Services) as opposed to the industry segment data contained in Table 4.

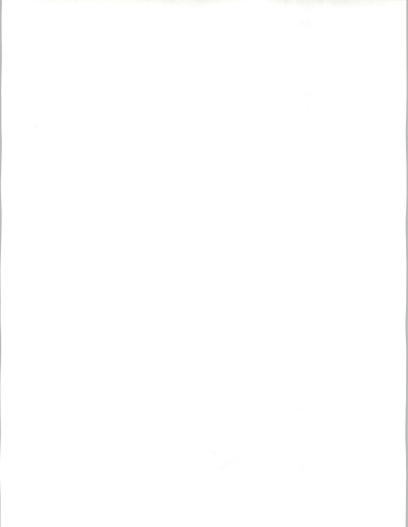
Table 6. IBM Forecast with Inflation by Mode of Delivery and Industry

This table is similar to Table 5 except that all five service modes are presented by industry.

Table 7. Industry Sector Crosswalk

This table illustrates the basic approach that was taken in restructuring the data presented in Table 3. In order to understand the intent of the information contained in the table, it should be viewed from the perspective of the IBM sectors. For example, the IBM defined Manufacturing sector is comprised of data from INPUT's:

- Discrete Manufacturing Sector
- · Process Manufacturing Sector
- · Wholesale Distribution Sector



- · Services Sector
- · Other Industries Sector

Additionally, for example, IBM's Transportation Sector is comprised of data from INPUT's:

- Transportation Sector
 Services Sector
- · Other Industries Sector

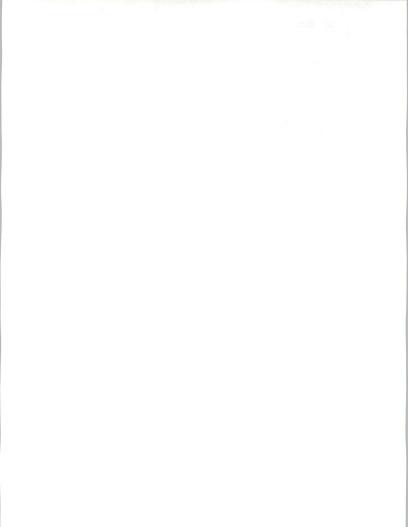


Table 1

SEGMENTATION	1987 (\$M)	1988 (\$M)	1989 (\$M)	1990 (\$M)	1991 (\$M)	1992 (\$M)	1993 (\$M)	'88-'93 CAGR (%)
DISCRETE MANUFACTURING PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	2459 270 128 51 48 25 18 2729	3122 375 175 72 67 36 25 3497	3742 481 227 90 82 51 31 4223	4452 620 290 115 104 73 38 5072	5293 805 379 147 130 104 45 6098	6273 1037 482 185 164 148 58 7310	7431 1344 622 235 206 210 71 8775	19 29 27 25 42 23 20
PROCESS MANUFACTURING PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT INGMITICONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	1222 44 20 7 7 5 6 1266	1491 55 25 8 8 7 7 1546	1833 72 33 10 10 9 10 1905	2237 94 43 13 15 11 12 2331	2728 115 53 16 19 13 14 2843	3316 137 63 19 22 16 17 3453	4029 171 78 24 28 20 21 4200	22 25 26 25 28 23 25 22
TRANSPORTATION PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	145 50 23 9 12 3 3 195	166 69 32 13 16 4 235	196 82 39 15 18 5 5 278	229 102 49 18 22 7 7 331	267 130 64 21 27 9 9 397	311 157 80 24 30 12 11 468	363 191 99 28 35 15 14 554	17 23 25 17 17 30 28 19
UTILITIES PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	371 78 43 11 15 4 5 449	423 101 56 14 19 5 7 524	477 135 75 19 24 8 9 612	534 174 97 24 29 11 13 708	596 227 130 30 35 15 17 823	665 285 160 38 44 20 23 950	740 364 207 47 52 27 31 1104	29 30 27 22

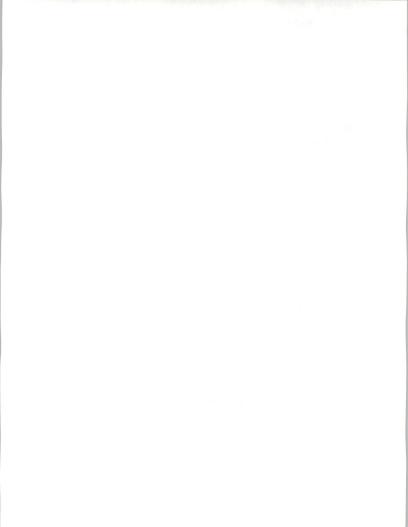


Table 1 (Continued)

SEGMENTATION	1987 (\$M)	1988 (\$M)	1989 (\$M)	1990 (\$M)	1991 (\$M)	1992 (\$M)	1993 (\$M)	'88-'93 CAGR (%)
TELECOMMUNICATIONS PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	613 71 37 13 14 5 3 684	679 89 46 16 17 6 4 768	813 104 54 18 20 7 5 917	936 125 66 21 23 8 7 1061	1086 144 76 23 27 10 8 1230	1255 169 90 26 31 12 10 1424	1455 203 110 30 36 14 13 1658	16 18 19 13 16 18 27 17
RETAIL DISTRIBUTION PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGN/INTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	140 61 26 13 11 6 4 201	180 86 37 18 16 9 6 266	216 122 53 25 23 13 8 338	257 175 78 37 32 18 10 432	306 246 112 51 44 25 14 552	362 346 159 70 61 37 19 708	429 481 222 98 84 53 24 910	19 41 43 40 39 43 32 28
WHOLESALE DISTRIBUTION PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	238 57 25 12 11 5 4 295	281 69 30 15 13 6 5 350	331 89 40 19 17 7 6 420	387 108 48 23 20 9 8 495	452 133 60 28 25 10 9 585	527 160 74 33 30 12 11 687	613 200 94 40 37 15 14 813	17 24 26 22 23 20 23 18
BANKING AND FINANCE PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	1602 102 38 22 22 10 9 1704	1907 146 55 32 32 14 13 2053	2247 213 83 46 44 22 18 2460	2628 312 118 67 65 36 26 2940	3071 452 172 95 91 57 37 3523	3577 651 246 136 129 88 52 4228	4165 927 348 191 178 137 73 5092	17 45 43 41 58 41 20

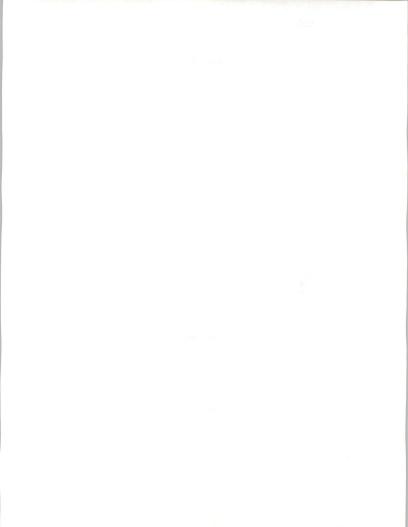


Table 1 (Continued)

SEGMENTATION	1987 (\$M)	1988 (\$M)	1989 (\$M)	1990 (\$M)	1991 (\$M)	1992 (\$M)	1993 (\$M)	'88-'93 CAGR (%)
INSURANCE PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGN/INTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	1047 60 21 13 17 6 4 1107	1204 84 29 18 24 8 5 1288	1419 103 36 21 29 11 6 1522	1660 128 43 27 36 15 7 1788	1939 157 51 34 45 19 8 2096	2259 191 59 42 56 25 9 2450	2630 264 80 58 78 38 10 2894	17 26 23 26 27 37 15 18
MEDICAL PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	260 70 32 10 11 10 8 330	299 93 43 13 14 13 10 392	355 123 56 18 19 17 13 478	419 155 70 23 24 22 16 574	494 200 93 29 30 28 20 694	581 248 109 38 39 36 26 829	682 315 137 48 50 47 33 997	18 28 26 30 29 29 27 21
EDUCATION PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	52 33 14 7 2 3 85	59 36 15 8 3 4 95	70 45 19 9 9 4 4 115	82 51 22 10 10 5 4 133	96 58 26 11 10 7 4 154	111 66 30 12 11 9 4 177	130 82 38 14 12 14 4 212	17 18 20 13 10 41 3 17
SERVICES PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGN/INTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	103 13 5 3 2 1 1 116	117 19 8 4 3 2 2 136	138 25 11 5 4 3 3 163	162 31 13 7 5 3 3 193	189 44 19 9 7 4 5 233	220 58 27 11 9 5 6 278	256 81 38 15 13 7 8 337	17 34 37 30 34 28 32 20



Table 1 (Continued)

SEGMENTATION	1987 (\$M)	1988 (\$M)	1989 (\$M)	1990 (\$M)	1991 (\$M)	1992 (\$M)	1993 (\$M)	'88-'93 CAGR (%)
FEDERAL GOVERNMENT PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGN/INTEGRATION PROJECT INGM/T/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	2552 1117 525 191 150 126 125 3669	2908 1287 605 220 173 145 144 4195	3278 1588 743 280 220 185 160 4866	3667 1973 895 350 272 282 174 5640	4101 2392 1103 448 346 298 197 6493	4531 2894 1322 556 428 374 214 7425	5004 3468 1568 684 523 462 231 8472	11 22 21 25 25 26 10 15
STATE & LOCAL GOVERNMENT PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT INGMITICONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	1655 161 71 23 31 18 18 1816	1937 235 104 33 46 26 26 2172	2322 290 126 42 60 33 29 2612	2762 352 152 54 72 42 32 3114	3284 436 186 70 90 54 36 3720	3892 522 220 90 105 68 39 4414	4610 632 263 114 126 87 42 5242	22 27
OTHER INDUSTRY-SPECIFIC PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	260 40 17 8 8 3 4 300	288 46 19 10 10 3 4 334	345 58 25 12 11 5 5 403	397 68 30 14 12 7 5 465	460 79 37 15 13 9 5 539	532 95 44 17 15 14 5 627	617 113 52 19 17 19 6 730	20 22 15 12 43 6
GRAND TOTAL PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	2226 1026 392 365 228 215	15061 2791 1279 493 465 287 266 17852	17782 3530 1620 629 590 380 311 21312	20809 4468 2014 803 741 549 361 25277	24362 5617 2561 1027 938 662 428 29979	28412 7016 3165 1297 1174 876 504 35428	33154 8836 3956 1645 1475 1165 595 41990	26 25 27 26 32 17

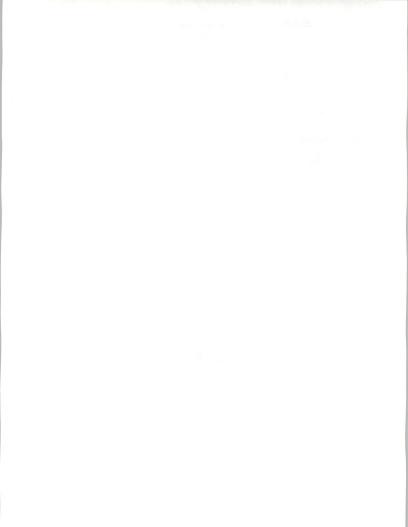


Table 2

		1988 (\$M) 1.0340 1.0340			(\$M) 1.0500	1992 (\$M) 1.0450 1.2568	1993 (\$M) 1.0450 1.3134	'88-'93 CAGR (%)
DISCRETE MANUFACTURING PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGN/INTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	2459 270 128 51 48 25 18 2729	3019 363 169 70 65 35 24 3382	3430 441 208 83 75 47 28 3871	3887 541 253 100 91 64 33 4428	4401 669 315 122 108 86 37 5070	4991 825 384 147 130 118 46 5816	5658 1023 474 179 157 160 54 6681	13 23 23 21 19 36 17 15
PROCESS MANUFACTURING PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGN/INTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	1222 44 20 7 5 6 1266	1442 53 24 8 7 7 1495	1680 66 30 9 9 8 9 1746	1953 82 38 11 13 10 2035	2268 96 44 13 16 11 22364	2638 109 50 15 18 13 14 2747	3068 130 59 18 21 15 16 3198	16 20 19 22 18 19 16
TRANSPORTATION PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	145 50 23 9 12 3 195	161 67 31 13 15 4 4 227	180 75 36 14 17 5 255	200 89 43 16 19 6 289	222 108 53 17 22 7 7 330	247 125 64 19 24 10 9 372	276 145 75 21 27 11 11 422	11 17 19 11 11 24 22 13
UTILITIES PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	371 78 43 11 15 4 5 449	409 98 54 14 18 5 7 507	437 124 69 17 22 7 8 561	466 152 85 21 25 10 11 618	496 189 108 25 29 12 14 684	529 227 127 30 35 16 18 756	563 277 158 36 40 21 24 841	7 23 24 21 17 34 28 11

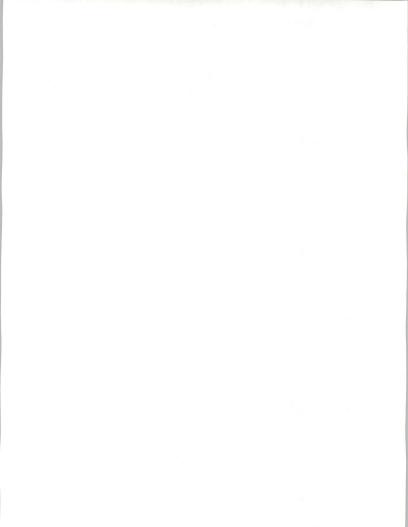


Table 2 (Continued)

		1988 (\$M) 1.0340 1.0340			(\$M) 1.0500	1992 (\$M) 1.0450 1.2568	1993 (\$M) 1.0450 1.3134	'88-'93 CAGR (%)
TELECOMMUNICATIONS PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	613 71 37 13 14 5 3 684	657 86 44 15 16 6 4 743	745 95 50 17 18 6 5 841	817 109 58 18 20 7 6 926	903 120 63 19 22 8 7 1023	999 134 72 21 25 10 8 1133	1108 155 84 23 27 11 10 1262	11 12 13 8 11 13 21 11
RETAIL DISTRIBUTION PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMTCONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	140 61 26 13 11 6 4 201	174 83 36 17 15 9 6 257	198 112 49 23 21 12 7 310	224 153 68 32 28 16 9 377	254 205 93 42 37 21 12 459	288 275 127 56 49 29 15 563	327 366 169 75 64 40 18 693	13 35 36 34 33 36 26 22
WHOLESALE DISTRIBUTION PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	238 57 25 12 11 5 4 295	272 67 29 15 13 6 5 338	303 82 37 17 16 7 6 385	338 94 42 20 17 8 7 432	376 110 50 23 21 9 8 486	419 127 59 26 24 10 9 547	467 152 72 30 28 11 11 619	11 18 20 16 18 15 17 13
BANKING AND FINANCE PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	1602 102 38 22 22 10 9 1704	1844 141 53 31 31 14 13 1985	2060 195 76 42 40 20 17 2255	2294 272 103 58 57 31 23 2567	2553 376 143 79 76 47 31 2929	2846 518 196 108 103 70 41 3364	3171 706 265 145 136 104 56 3877	11 38 36 34 50 35 14

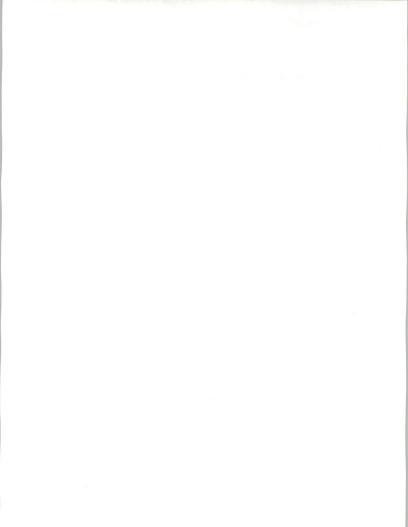


Table 2 (Continued)

		1988 (\$M) 1.0340 1.0340			(\$M) 1.0500	1992 (\$M) 1.0450 1.2568	1993 (\$M) 1.0450 1.3134	'88-'93 CAGR (%)
INSURANCE PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGN/INTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	1047 60 21 13 17 6 4 1107	1164 81 28 17 23 8 5 1246	1301 94 33 19 27 10 5 1395	1449 111 38 24 31 13 6 1561	1612 130 42 28 37 16 6 1742	1797 152 47 33 45 20 7 1949	2002 201 61 44 59 29 8 2204	11 20 17 20 21 30 10 12
MEDICAL PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	260 70 32 10 11 10 8 330	289 90 42 13 14 13 10 379	325 113 51 17 17 16 12 438	366 135 61 20 21 19 14 501	411 166 77 24 25 23 17 577	462 197 87 30 31 29 21 660	519 240 104 37 38 36 25 759	12 22 20 24 23 23 21 15
EDUCATION PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	52 33 14 7 2 3 85	35 15 7 7 2 3	64 41 17 8 8 4 4 105	72 45 19 9 4 3 116	80 48 22 9 8 6 3 128	88 53 24 10 9 7 3 141	99 62 29 11 9 11 3 161	12 12 15 8 5 34 -2 12
SERVICES PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGN/INTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	103 13 5 3 1 1 116	18 8 4 3 2 2	127 23 10 5 4 2 2 149	141 27 11 6 4 3 168	157 37 16 7 6 3 4 194	175 46 21 9 7 4 5 221	195 62 29 11 10 5 6 257	11 27 30 24 28 22 26 14

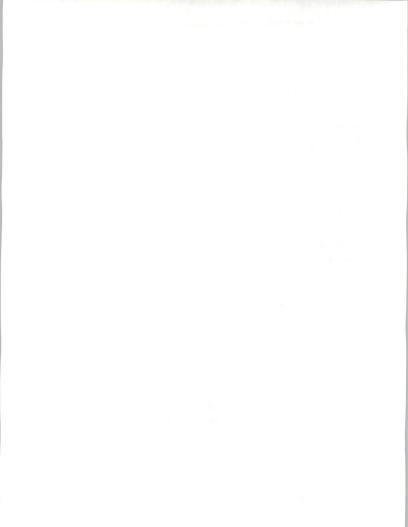


Table 2 (Continued)

				1990 (\$M) 1.0500 1.1454	(\$M) 1.0500	1992 (\$M) 1.0450 1.2568	1993 (\$M) 1.0450 1.3134	'88-'93 CAGR (%)
FEDERAL GOVERNMENT PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	2552 1117 525 191 150 126 125 3669	2812 1245 585 213 167 140 139 4057	3005 1456 681 257 202 170 147 4461	3201 1723 781 306 237 246 152 4924	3410 1989 917 373 288 248 164 5399	3605 2303 1052 442 341 298 170 5908	3810 2641 1194 521 398 352 176 6451	6 16 15 20 19 20 5 10
STATE & LOCAL GOVERNMENT PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT INGMITICONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	1655 161 71 23 31 18 18 1816	1873 227 101 32 44 25 25 2101	2129 266 116 39 55 30 27 2394	2411 307 133 47 63 37 28 2719	2731 363 155 58 75 45 30 3093	3097 415 175 72 84 54 31 3512	3510 481 200 87 96 66 32 3991	13 16 15 22 17 21 5 14
OTHER INDUSTRY-SPECIFIC PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	260 40 17 8 8 3 4 300	279 45 19 9 3 4 323	316 53 23 11 10 5 5 369	347 59 26 12 10 6 4 406	382 66 31 12 11 7 4 448	423 76 35 14 12 11 4 99	470 86 40 14 13 14 5 556	11 14 16 9 7 36 1
GRAND TOTAL PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGN/INTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	2226 1026 392	14566 2699 1237 477 450 277 257 17265	16301 3236 1485 577 541 348 285 19537	18167 3901 1758 701 647 479 315 22068	20256 4671 2130 854 780 551 356 24927	22607 5582 2518 1032 934 697 401 28189	25244 6728 3012 1253 1123 887 453 31971	12 20 19 21 20 26 12 13

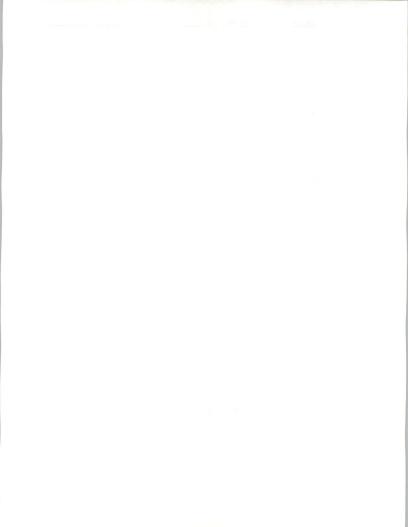


Table 3

IBM SEGMENTATION	1987 (\$M)	1988 (\$M)	1989 (\$M)	1990 (\$M)	1991 (\$M)	1992 (\$M)	1993 (\$M)	'88-'93 CAGR (%)
DISCRETE MANUFACTURING PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	1986 219 103 41 39 20 15 2205	2435 293 137 56 52 28 20 2728	2766 357 168 67 61 38 23 3122	3133 438 204 81 73 51 27 3571	3547 541 255 99 87 70 31 4088	4022 667 310 119 105 95 38 4689	4558 828 383 145 127 129 44 5386	13 23 21 19 35 18 15
PROCESS MANUFACTURING PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT INGMITICONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	1239 53 25 8 6 6 1292	1461 64 30 10 10 7 7 1525	1699 80 37 12 12 9 10 1779	1971 99 46 14 16 11 12 2070	2284 117 55 17 19 13 13 2402	2653 136 64 20 22 15 15 2788	3079 163 77 24 27 18 18 3243	16 20 21 20 22 20 19 16
UTILITIES PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	347 73 40 10 14 4 5 420	383 91 51 13 17 5 6 474	409 116 64 16 21 7 8 525	436 142 79 20 24 9 11 578	464 176 101 23 27 12 13 640	495 212 119 28 33 15 17 707	527 259 147 33 37 19 22 786	28
CONSTRUCTION PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMTCONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	91 14 6 3 1 1 105	97 16 7 3 3 1 2 113	111 19 8 4 2 2 129	121 21 9 4 2 2 142	134 23 11 4 3 1 157	148 26 12 5 4 4 1 175	164 30 14 5 5 2 195	14 16 9 7 36 1

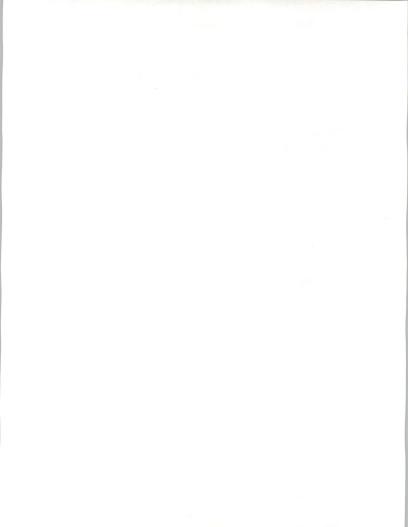


Table 3 (Continued)

IBM SEGMENTATION	1987 (\$M)	1988 (\$M)	1989 (\$M)	1990 (\$M)	1991 (\$M)	1992 (\$M)	1993 (\$M)	'88-'93 CAGR (%)
FINANCE PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	1330 85 32 19 19 8 8 1415	1531 118 45 26 26 11 11 1649	1710 163 64 35 34 17 14 1873	1904 227 86 49 47 26 19 2131	2119 313 119 66 63 39 26 2433	2362 431 163 90 85 58 35 2793	2632 588 221 121 113 86 46 3220	11 38 38 36 34 50 34 14
SECURITIES PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	282 18 7 4 2 2 300	325 25 9 5 2 2 349	363 34 13 7 7 4 3 397	404 48 18 10 10 6 4 452	449 66 25 14 13 8 5 516	501 91 34 19 18 12 7 592	558 124 47 26 24 18 10 682	11 38 36 34 50 35 14
RETAIL DISTRIBUTION PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGN/INTEGRATION PROJECT MGMTCONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	404 84 38 17 15 9 6 489	497 115 51 23 21 12 8 612	566 150 67 30 27 16 10 716	642 198 90 40 35 21 12 841	729 260 119 52 45 28 15 989	827 342 157 67 59 40 19 1169	940 447 206 88 76 54 23 1386	31 32 30 29 36 23
WHOLESALE DISTRIBUTION PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MOMTICONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	332 71 31 15 13 6 403	374 85 37 18 16 7 459	419 105 46 22 20 9 8 523	466 122 54 26 22 11 9 587	517 145 65 30 26 12 10 662	577 170 79 34 31 15 12 747	642 207 97 41 37 18 15 849	19 21 17 18 20 17

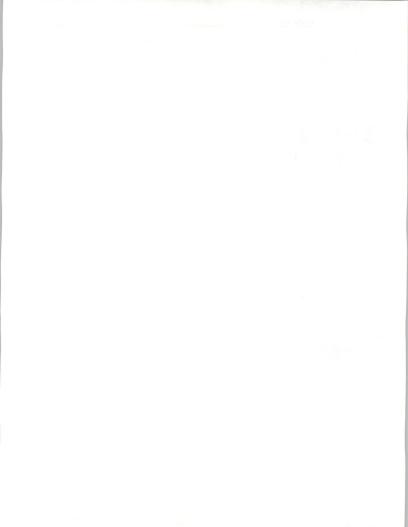
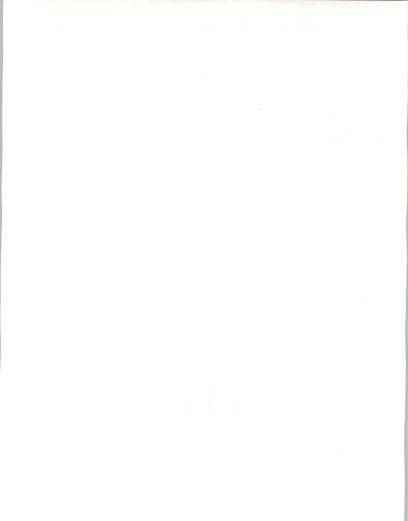
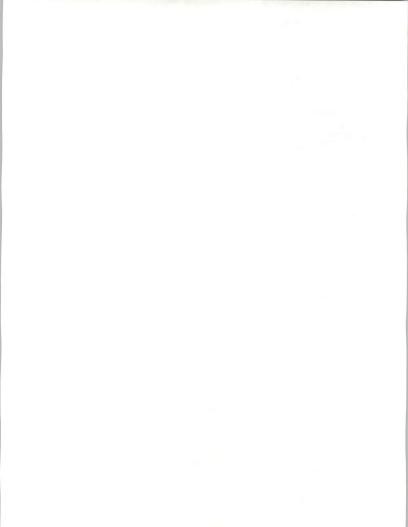


Table 3 (Continued)

IBM SEGMENTATION	1987 (\$M)	1988 (\$M)	1989 (\$M)	1990 (\$M)	1991 (\$M)	1992 (\$M)	1993 (\$M)	'88-'93 CAGR (%)
INSURANCE PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGN/INTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	1048 60 21 13 17 6 4 1108	1165 81 28 17 23 8 5 1247	1302 94 33 19 27 10 5 1396	1450 112 38 24 31 13 6 1562	1613 130 43 28 37 16 6 1744	1799 152 47 33 45 20 7 1951	2004 202 61 44 59 29 8 2206	11 20 17 20 21 30 10 12
STATE/LOCAL GOVERNMENT PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	1655 161 71 23 31 18 18 1816	1873 227 101 32 44 25 25 2101	2129 266 116 39 55 30 27 2394	2411 307 133 47 63 37 28 2719	2731 363 155 58 75 45 30 3093	3097 415 175 72 84 54 31 3512	3510 481 200 87 96 66 32 3991	13 16 15 22 17 21 5 14
HEALTH PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MOMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	267 71 33 10 11 10 8 338	297 91 42 13 14 13 10 388	334 115 52 17 18 16 12 449	375 137 62 21 21 19 14 513	421 169 79 25 25 24 17 590	474 201 88 31 32 29 21 675	532 244 106 37 39 36 26 777	22 20 24 23 23 21
COMMUNICATIONS PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGN/INTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	460 53 28 10 10 4 2 513	493 65 33 12 12 4 3 557	559 72 37 12 14 5 3 630	613 82 43 14 15 5 5 695	677 90 47 15 17 6 5 767	749 101 54 16 18 7 6 850	831 116 63 17 21 8 7 947	13 8 11 13 21



IBM SEGMENTATION	1987 (\$M)	1988 (\$M)	1989 (\$M)	1990 (\$M)	1991 (\$M)	1992 (\$M)	1993 (\$M)	'88-'93 CAGR (%)
TRANSPORTATION PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	124 42 19 8 10 2 2 166	138 56 26 10 13 3 193	154 63 30 11 14 4 217	171 74 36 13 16 5 5 246	190 90 44 15 19 6 280	212 104 53 16 20 8 7 316	237 121 63 18 22 10 9 358	11 17 19 11 11 24 22 13
MEDIA PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	495 59 28 11 11 5 4 554	568 74 35 14 14 6 5 643	645 88 42 16 16 8 6 733	720 103 49 19 18 10 6 824	806 122 59 22 20 13 7 928	904 145 69 25 24 18 8 1049	1016 174 83 29 28 24 10 1189	12 19 15 15 31 14 13
CONSULTANTS PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMTCONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	15 2 1 0 0 0 17	17 3 1 0 0 19	18 3 1 1 0 0 22	21 4 2 1 0 0 25	23 5 1 1 0 1 28	26 7 3 1 1 1 1 32	28 9 4 2 1 1 37	11 27 30 24 28 22 26 14
COMPUTER SERVICES PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMTCONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	10 2 1 0 0 0 12	11 3 1 0 0 13	12 3 1 1 0 0 15	13 4 1 1 0 0 17	15 4 2 1 1 0 0 19	17 5 2 1 1 1 2 2 22	19 7 3 1 1 1 25	12 22 25 18 19 27 18 14



IBM SEGMENTATION	1987 (\$M)	1988 (\$M)	1989 (\$M)	1990 (\$M)	1991 (\$M)	1992 (\$M)	1993 (\$M)	'88-'93 CAGR (%)
HIGHER EDUCATION PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT INGMIT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	40 25 10 5 2 2 65	44 26 11 5 2 3 70	49 31 13 6 3 3 80	55 33 14 7 7 3 88	61 36 16 7 6 4 2 97	68 39 18 7 7 5 2 107	76 47 22 8 7 8 2 123	12 12 15 8 5 34 -2 12
SCHOOLS PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	17 8 3 2 2 1 1 25	19 9 4 2 1 1 27	21 10 4 2 1 1 31	23 11 5 2 2 1 1 34	26 12 5 2 1 1 38	29 13 6 2 2 2 1 42	32 16 7 3 2 3 1 48	11 12 15 8 5 34 -2 12
FEDERAL GOVERNMENT PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	2577 1126 529 193 152 126 125 3703	2840 1256 591 215 170 141 140 4097	3036 1469 687 259 205 170 147 4505	3236 1738 789 308 241 247 153 4975	3449 2008 926 376 292 249 165 5457	3648 2325 1063 446 345 299 172 5973	3858 2666 1207 525 403 354 178 6524	15 20 19 20 5
GRAND TOTAL PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MEMTCONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	12719 2226 1026 392 365 228 215 14945	14566 2699 1237 477 450 277 257 17265	16301 3236 1485 577 541 348 285 19537	18167 3901 1758 701 647 479 315 22068	20256 4671 2130 854 780 551 356 24927	22607 5582 2518 1032 934 697 401 28189	25244 6728 3012 1253 1123 887 453 31971	20 19 21 20

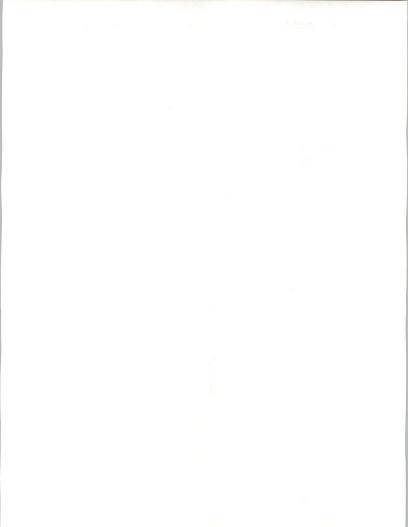
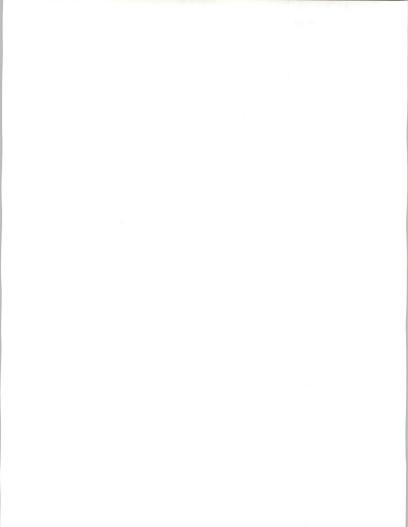


Table 4

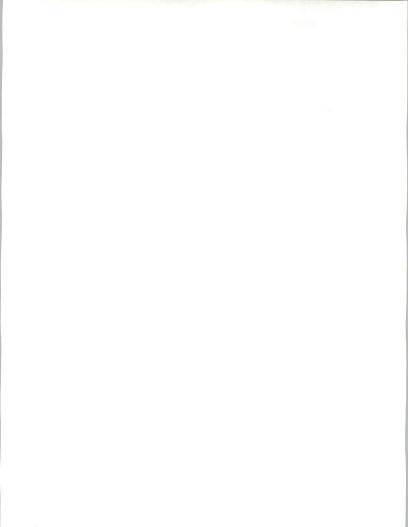
			(\$M) 1.0500	1990 (\$M) 1.0460 1.1433	(\$M) 1.0490	1992 (\$M) 1.0490 1.2581	1993 (\$M) 1.0490 1.3198	'88-'93 CAGR (%)
DISCRETE MANUFACTURING PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMTCONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	1986 219 103 41 39 20 15 2205	2534 305 142 59 55 29 21 2840	3023 390 184 73 66 41 25 3413	3582 500 234 93 84 59 31 4082	4254 649 305 119 105 83 37 4903	5060 839 390 150 133 119 47 5899	6016 1092 506 191 168 170 58 7108	19 29 27 25 42 23 20
PROCESS MANUFACTURING PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	1239 53 25 8 6 6 1292	1521 67 31 10 10 8 8 1588	1857 87 41 13 13 10 11 1944	2253 114 53 16 18 12 13 2367	2740 141 66 20 23 15 16 2880	3337 171 80 25 28 19 19 3508	4064 216 101 31 35 24 24 4280	22 26 27 25 28 25 25 25 22
UTILITIES PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGN/INTEGRATION PROJECT MGMTCONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	347 73 40 10 14 4 5 420	398 95 53 13 18 5 7 493	447 127 70 18 22 7 8 574	499 162 91 22 27 10 12 661	556 212 121 28 32 14 16 767	623 267 150 36 41 19 22 889	696 342 195 44 49 25 29 1038	12 29 30 27 22 40 35 16
CONSTRUCTION PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGN/INTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	91 14 6 3 3 1 105	101 16 7 3 3 1 2 118	121 20 9 4 2 2 141	139 24 10 5 4 2 2 162	161 28 13 5 5 3 2 188	186 33 15 6 5 5 2 220	217 40 18 7 6 7 2 257	16 20 22 15 12 43 6 17



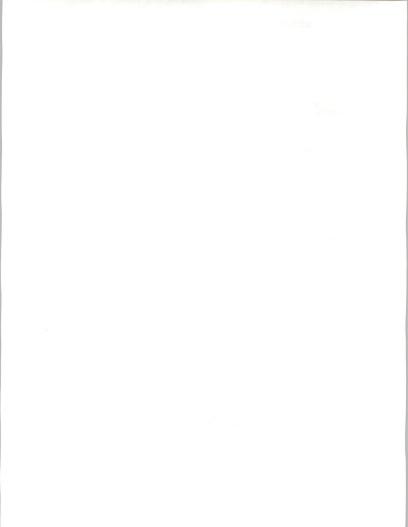
			(\$M) 1.0500			1992 (\$M) 1.0490 1.2581	1993 (\$M) 1.0490 1.3198	'88-'93 CAGR (%)
FINANCE						0070		17
PROFESSIONAL SERVICES SYSTEMS INTEGRATION	1330 85	1593 123	1869 178	2177 260	2542 376	2972 543	3474 775	45
SOFTWARE DEVELOPMENT	32	46	70	98	143	206	292	44
DESIGN/INTEGRATION	19	27	38	56	79	113	160	
PROJECT MGMT/CONSULTING	19	27	37	54	75	107	149	
SOFTWARE PRODUCTS	8 8	12 11	18 15	30 22	47 31	73 43	114 61	57 41
OTHER SERVICES	1415	1716	2047	2437	2917	3515	4249	20
TOTAL	1415	1710	2047	2407	2317	3313	4245	20
SECURITIES								
PROFESSIONAL SERVICES	282	338	396	462	539	630	737	
SYSTEMS INTEGRATION	18	26	38	55	79	115	164	
SOFTWARE DEVELOPMENT DESIGN/INTEGRATION	7	10 6	15 8	21 12	30 17	43 24	62 34	
PROJECT MGMT/CONSULTING	4		8	11	16	24	31	43
SOFTWARE PRODUCTS	2	ž	4	6	10	16	24	
OTHER SERVICES	2	2	3	5	6	9	13	
TOTAL	300	364	434	516	618	745	901	20
RETAIL DISTRIBUTION								
PROFESSIONAL SERVICES	404	518	619	734	874	1041	1240	19
SYSTEMS INTEGRATION	84		164	227	312	430	590	
SOFTWARE DEVELOPMENT	38	53	73	103	143	198	272	
DESIGN/INTEGRATION	17		33	46	62	84	116	
PROJECT MGMT/CONSULTING			30	41	54	74 50	100 71	35 42
SOFTWARE PRODUCTS OTHER SERVICES	9	12 8	17 11	24 13	34 18	50 24	30	
TOTAL	489		782	961	1186	1471	1830	
TOTAL		00,						
WHOLESALE DISTRIBUTION								
PROFESSIONAL SERVICES	332		458	532	620	725	847	
SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT	71 31	89 38	114 51	139 61	173 78	214 99	273 128	
DESIGN/INTEGRATION	15		24	30	36	43		
PROJECT MGMT/CONSULTING			21	25	32	39		
SOFTWARE PRODUCTS	6	8	10	12	15	18	24	
OTHER SERVICES	6		8	10	13	15	19	
TOTAL	403	478	572	671	794	940	1120	19



		1988 (\$M) 1.0410 1.0410			(\$M) 1.0490	1992 (\$M) 1.0490 1.2581	1993 (\$M) 1.0490 1.3198	'88-'93 CAGR (%)
INSURANCE PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	1048 60 21 13 17 6 4 1108	1213 85 29 18 24 8 5 1298	1423 103 36 21 29 11 6 1526	1658 128 43 27 36 15 7 1786	1935 156 51 34 45 19 8 2092	2263 191 59 42 56 25 9 2454	2645 266 81 58 78 38 10 2911	17 26 22 26 27 36 15 18
STATELOCAL GOVERNMENT PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGN/INTEGRATION PROJECT MGMTCONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	1655 161 71 23 31 18 18 1816	1950 237 105 33 46 26 26 2187	2327 291 126 42 60 33 29 2617	2757 351 152 54 72 42 32 3108	3275 435 185 70 90 54 36 3710	3896 523 220 90 105 68 39 4419	4632 635 264 115 127 87 42 5268	19 22 20 28 22 27 10 19
HEALTH PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGN/INTEGRATION PROJECT MGMTCONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	267 71 33 10 11 10 8 338	309 95 44 13 14 13 10 404	365 125 57 18 19 17 13 490	429 157 71 23 24 22 16 586	505 203 94 30 30 28 20 708	596 253 111 39 40 36 26 849	703 322 140 49 51 48 34 1025	28 26 30 29 29 29
COMMUNICATIONS PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGN/INTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	460 53 28 10 10 4 2 513	67 35	611 78 41 14 15 5 4 689	701 94 16 17 6 5 794	812 108 57 17 20 7 6 920	942 127 68 20 23 9 8 1069	1097 153 83 23 27 11 10 1250	18 19 13 16 18 27



				(\$M) 1.0460	(\$M)	1992 (\$M) 1.0490 1.2581	1993 (\$M) 1.0490 1.3198	'88-'93 CAGR (%)
TRANSPORTATION								
PROFESSIONAL SERVICES	124	143	168	196 85	228 108	267 131	312 160	17 22
SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT	42 19	58 27	69 33	41	53	67	83	22
DESIGN/INTEGRATION	8	11	13	15	17	20	23	17
PROJECT MGMT/CONSULTING	10	13	15	18	22	25	29	17
SOFTWARE PRODUCTS	2	3	4	6	8	10	13	31
OTHER SERVICES	2	3	4	6	7	9	12	28
TOTAL	166	201	237	281	336	397	472	19
MEDIA								
PROFESSIONAL SERVICES	495	592	705	824	967	1138	1340	18
SYSTEMS INTEGRATION	59	77	96	118	146	182	230	
SOFTWARE DEVELOPMENT	28	36	46	56	70	87	110	
DESIGN/INTEGRATION	11	15	18	22	26	31	39	21
PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS	11 5	15 6	17 9	21 12	24 16	30 23	36 32	
OTHER SERVICES	4	5	9	7	8	10	13	
TOTAL	554	669	801	942	1113	1320	1570	
CONSULTANTS								
PROFESSIONAL SERVICES SYSTEMS INTEGRATION	15 2	17 3	20 4	24	28 6	32 8	38 12	
SOFTWARE DEVELOPMENT	2	3	4	5	3	o 4	6	
DESIGN/INTEGRATION	ó	1	1	1	1	2	2	
PROJECT MGMT/CONSULTING	ŏ	ó	i	1	1	1	2	
SOFTWARE PRODUCTS	0	0	0	0	1	1	1	28
OTHER SERVICES	0	0	0	0	1	1	1	32
TOTAL	17	20	24	28	34	41	49	20
COMPUTER SERVICES								
PROFESSIONAL SERVICES	10	11	13	15	18	21	24	17
SYSTEMS INTEGRATION	2	3	3	4	5	7	9	28
SOFTWARE DEVELOPMENT	1	1	1	2	2	3	4	
DESIGN/INTEGRATION	0	1	1	1	1	1	2	
PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS	0		1	1	1	1	1	25 33
OTHER SERVICES	0	0	0	0	1	1	1	
TOTAL	12		17	19	23	28	33	



				1990 (\$M) 1.0460 1.1433	(\$M) 1.0490	1992 (\$M) 1.0490 1.2581	1993 (\$M) 1.0490 1.3198	'88-'93 CAGR (%)
HIGHER EDUCATION PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	40 25 10 5 2 2 65	46 27 11 6 2 3 73	54 34 14 7 3 3 87	63 38 16 7 4 3 101	73 43 20 8 7 5 3 117	85 50 23 9 8 7 3 135	100 62 29 11 9 11 3 162	17 18 20 13 10 41 3 17
SCHOOLS PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	17 8 3 2 1 1 25	19 9 4 2 1 1 29	23 11 5 2 2 1 1 34	27 13 5 3 2 1 1 39	31 14 7 3 2 2 1 46	36 17 8 3 2 1 53	42 21 10 4 3 4 1 63	17 18 20 13 10 41 3 17
FEDERAL GOVERNMENT PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MEMTCONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	2577 1126 529 193 152 126 125 3703	2957 1308 615 224 177 147 146 4265	3319 1606 751 283 224 186 161 4924	3700 1987 902 353 275 283 175 5688	4136 2408 1111 450 350 299 198 6544	4590 2925 1337 561 434 376 216 7515	5092 3519 1593 692 532 467 235 8611	11 22 21 25 25 26 10 15
GRAND TOTAL PROFESSIONAL SERVICES SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	12719 2226 1026 392 365 228 215 14945	15163 2809 1288 497 468 289 268 17972	17818 3537 1623 630 591 380 312 21354	20771 4460 2010 802 740 548 361 25231	24295 5602 2554 1024 936 661 427 29896	28442 7023 3168 1298 1175 877 504 35465	33316 8879 3975 1653 1482 1171 598 42195	17 26 25 27 26 32 17 19

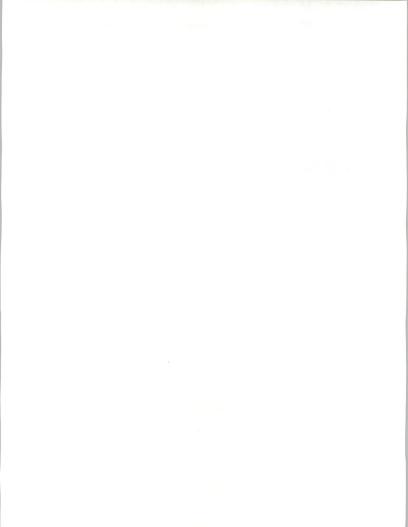


Table 5

IBM FORECAST WITH INFLATION BY DELIVERY MODE

SEGEMENTATION	1987 (\$M)	1988 (\$M)	1989 (\$M)	1990 (\$M)	1991 (\$M)	1992 (\$M)	1993 (\$M)	'88-'93 CAGR (%)
FEDERAL GOVERNMENT PROFESSIONAL SERVICES SOFTWARE DEVELOPMENT CONSULTING EDUCATION & TRAINING SYSTEMS INTEGRATION FACILITIES MANAGEMENT SUB-TOTAL	1093 378 304 1126 803 3703	1284 422 327 1308 925 4265	1446 478 386 1606 1009 4924	1621 536 447 1987 1097 5688	1831 611 488 2408 1206 6544	2035 687 561 2925 1308 7515	2270 771 620 3519 1431 8611	12 13 14 22 9 15
COMMERICAL PROFESSIONAL SERVICES SOFTWARE DEVELOPMENT CONSULTING EDUCATION & TRAINING SYSTEMS INTEGRATION FACILITIES MANAGEMENT SUB-TOTAL	6445 2135 1331 1100 231 11242	7585 2710 1644 1502 267 13708	8860 3346 1967 1931 326 16430	10271 4065 2338 2473 397 19543	11929 4938 2815 3194 476 23352	13951 5985 3345 4099 571 27950	16310 7251 3996 5361 667 33584	22
GRAND TOTAL PROFESSIONAL SERVICES SOFTWARE DEVELOPMENT CONSULTING EDUCATION & TRAINING SYSTEMS INTEGRATION SYSTEMS OPERATIONS GRAND TOTAL	7538 2513 1634 2226 1034 14945	8869 3132 1970 2809 1192 17972	10306 3824 2353 3537 1335 21354	11891 4601 2786 4460 1493 25231	13759 5550 3304 5602 1682 29896	15986 6672 3906 7023 1878 35465	18580 8022 4616 8879 2098 42195	19

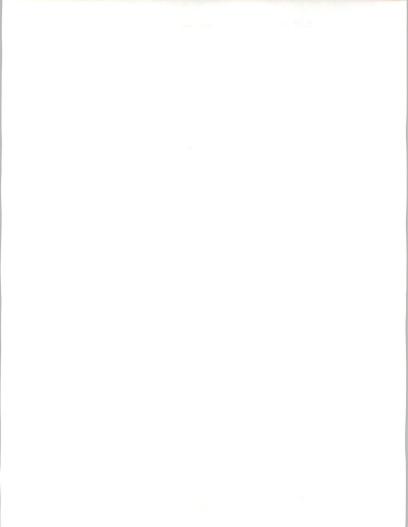


Table 6

IBM SEGMENTATION	1987 (\$M)	1988 (\$M)	1989 (\$M)	1990 (\$M)	1991 (\$M)	1992 (\$M)	1993 (\$M)	'88-'93 CAGR (%)
DISCRETE MANUFACTURING								
PROFESSIONAL SERVICES	1986	2534	3023	3582	4254	5060	6016	19
SOFTWARE DEVELOPMENT	1262	1575	1847	2155	2517	2960	3477	17
CONSULTING	418	563	698	853	1042	1270	1545	22
EDUCATION & TRAINING	261	341	410	491	594	710	852	20
SYSTEMS OPERATION	45	55	68	83	100	121	142	21
SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT	219 103	305 142	390 184	500 234	649 305	839 390	1092 506	29 29
DESIGN/INTEGRATION	41	59	73	234	119	150	191	29
PROJECT MGMT/CONSULTING	39	55	66	84	105	133	168	25
SOFTWARE PRODUCTS	20	29	41	59	83	119	170	42
OTHER SERVICES	15	21	25	31	37	47	58	23
TOTAL	2205	2840	3413	4082	4903	5899	7108	20
PROCESS MANUFACTURING								
PROFESSIONAL SERVICES	1239	1521	1857	2253	2740	3337	4064	22
SOFTWARE DEVELOPMENT	788	945	1135	1356	1621	1952	2349	20
CONSULTING	261	338	428	537	671	837	1044	25
EDUCATION & TRAINING	163	205	252	309	383	468	575	23
SYSTEMS OPERATION	28	33	42	52	65	80	96	24
SYSTEMS INTEGRATION	53	67	87	114	141	171	216	
SOFTWARE DEVELOPMENT DESIGN/INTEGRATION	25	31 10	41	53	66 20	80 25	101	27 25
PROJECT MGMT/CONSULTING	8 8	10	13 13	16 18	20	25 28	31 35	25
SOFTWARE PRODUCTS	6	8	10	12	15	19	24	25
OTHER SERVICES	6	8	11	13	16	19	24	25
TOTAL	1292	1588	1944	2367	2880	3508	4280	22
UTILITIES								10
PROFESSIONAL SERVICES SOFTWARE DEVELOPMENT	347 221	398 248	447 273	499 300	556 329	623 364	696 402	12 10
CONSULTING	73	248	103	119	329 136	364 156	402	15
EDUCATION & TRAINING	46	54	61	68	78	87	98	13
SYSTEMS OPERATION	40	9	10	12	13	15	16	14
SYSTEMS INTEGRATION	73	95	127	162	212	267	342	29
SOFTWARE DEVELOPMENT	40	53	70	91	121	150	195	30
DESIGN/INTEGRATION	10	13	18	22	28	36	44	27
PROJECT MGMT/CONSULTING	14	18	22	27	32	41	49	22
SOFTWARE PRODUCTS	4	5	7	10	14	19	25	40
OTHER SERVICES	5	7	8	12	16	22	29	
TOTAL	420	493	574	661	767	889	1038	16

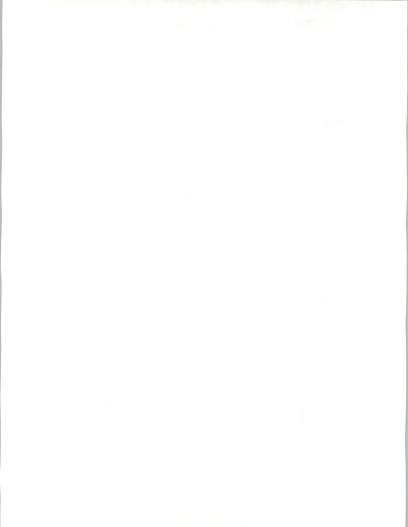
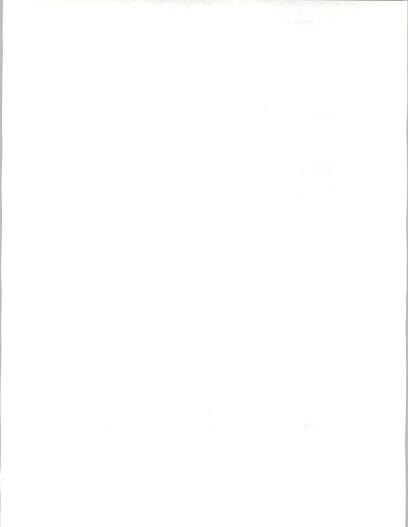
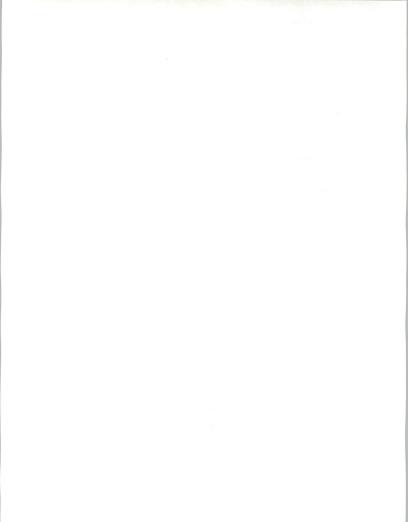


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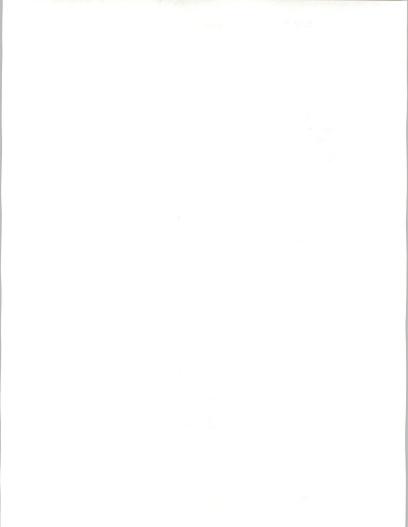
IBM	1987	1988	1989	1990	1991	1992	1993	'88-'93
SEGMENTATION	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	CAGR (%)
CONSTRUCTION PROFESSIONAL SERVICES SOFTWARE DEVELOPMENT CONSULTING EDUCATION & TRAINING SYSTEMS OPERATION SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINITEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	91 58 19 12 2 14 6 3 3 1 1 105	101 63 23 14 2 16 7 3 3 1 2 118	121 74 28 16 3 20 9 4 4 2 2 141	139 83 33 19 3 24 10 5 4 2 2 162	161 95 39 22 4 28 13 5 5 3 2 188	186 109 47 26 4 33 15 6 5 5 2 220	217 125 56 31 5 40 18 7 6 7 2 257	16 15 20 18 20 22 15 12 43 6 17
FINANCE	1330	1593	1869	2177	2542	2972	3474	17
PROFESSIONAL SERVICES	845	990	1142	1310	1504	1738	2007	15
SOFTWARE DEVELOPMENT	280	354	431	518	623	746	892	20
CONSULTING	175	215	253	298	355	417	492	18
EDUCATION & TRAINING	30	35	42	51	60	71	82	19
SYSTEMS OPERATION	85	123	178	260	376	543	775	45
SYSTEMS INTEGRATION	32	46	70	98	143	206	292	44
SOFTWARE DEVELOPMENT	19	27	38	56	79	113	160	43
DESIGNINTEGRATION	19	27	37	54	75	107	149	41
PROJECT MGMTCONSULTING	8	12	18	30	47	73	114	57
SOFTWARE PRODUCTS	8	11	15	22	31	43	61	41
OTHER SERVICES	1415	1716	2047	2437	2917	3515	4249	20
SECURITIES PROFESSIONAL SERVICES SOFTWARE DEVELOPMENT CONSULTING EDUCATION & TRAINING SYSTEMS OPERATION SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGN/INTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	282 179 59 37 6 18 7 4 4 2 2 300	338 210 75 46 7 26 10 6 2 2 364	396 242 91 54 9 38 15 8 4 3 434	462 278 110 63 11 55 21 12 11 6 5 516	539 319 132 75 13 79 30 17 16 10 618	630 369 158 88 15 115 43 24 23 16 9 745	737 426 189 104 17 164 62 34 31 24 13 901	20 18 19 45 45 43 41 58



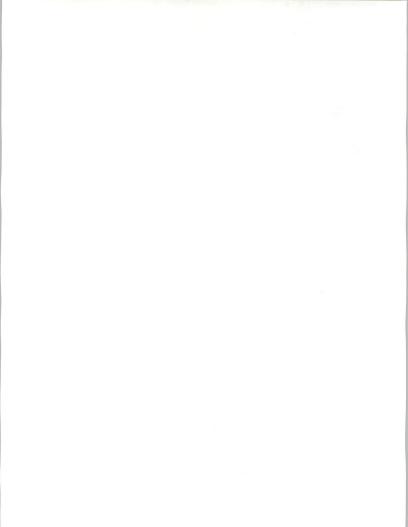
IBM SEGMENTATION	1987 (\$M)	1988 (\$M)	1989 (\$M)	1990 (\$M)	1991 (\$M)	1992 (\$M)	1993 (\$M)	'88-'93 CAGR (%)
RETAIL DISTRIBUTION								
PROFESSIONAL SERVICES	404	518	619	734	874	1041	1240	19
SOFTWARE DEVELOPMENT	257	322	378	442	517	609	717	17
CONSULTING	85	115	143	175	214	261	319	23
EDUCATION & TRAINING	53	70	84	101	122	146	176	20
SYSTEMS OPERATION	9	11	14	17	21	25	29	21
SYSTEMS INTEGRATION	84	120	164	227	312	430	590	38
SOFTWARE DEVELOPMENT	38	53	73	103	143	198	272	39
DESIGN/INTEGRATION	17	24	33	46	62	84	116	37
PROJECT MGMT/CONSULTING	15	22	30	41	54	74	100	35
SOFTWARE PRODUCTS	9	12	17	24	34	50	71	42
OTHER SERVICES	6	8	11	13	18	24	30	29
TOTAL	489	637	782	961	1186	1471	1830	23
WHOLESALE DISTRIBUTION								
PROFESSIONAL SERVICES	332	389	458	532	620	725	847	17
SOFTWARE DEVELOPMENT	211	242	280	320	367	424	489	15
CONSULTING	70	86	106	127	152	182	218	20
EDUCATION & TRAINING	44	52	62	73	87	102	120	18
SYSTEMS OPERATION	8	9	10	12	15	17	20	19
SYSTEMS INTEGRATION	71	89	114	139	173	214	273	25
SOFTWARE DEVELOPMENT	31	38	51	61	78	99	128	27
DESIGN/INTEGRATION	15	19	24	30	36	43	54	23
PROJECT MGMT/CONSULTING	13	17	21	25	32	39	49	24
SOFTWARE PRODUCTS	6	8	10	12	15	18	24	25
OTHER SERVICES	6	7	8	10	13	15	19	23
TOTAL	403	478	572	671	794	940	1120	19
INSUBANCE								
PROFESSIONAL SERVICES	1048	1213	1423	1658	1935	2263	2645	17
SOFTWARE DEVELOPMENT	666	754	870	998	1145	1324	1528	15
CONSULTING	221	269	328	395	474	568	679	20
EDUCATION & TRAINING	137	163	193	227	270	317	374	18
SYSTEMS OPERATION	24	27	32	39	46	54	63	19
SYSTEMS INTEGRATION	60	85	103	128	156	191	266	26
SOFTWARE DEVELOPMENT	21	29	36	43	51	59	81	22
DESIGN/INTEGRATION	13	18	21	27	34	42	58	26
PROJECT MGMT/CONSULTING	17	24	29	36	45	56	78	27
SOFTWARE PRODUCTS	6	8	11	15	19	25	38	36
OTHER SERVICES	4	5	6	7	8	9	10	15
TOTAL	1108	1298	1526	1786	2092	2454	2911	18



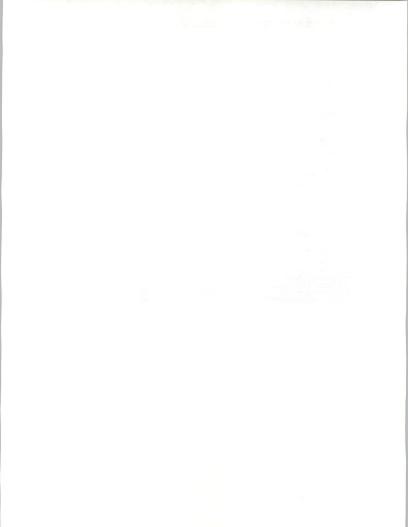
IBM SEGMENTATION	1987 (\$M)	1988 (\$M)	1989 (\$M)	1990 (\$M)	1991 (\$M)	1992 (\$M)	1993 (\$M)	'88-'93 CAGR (%)
STATE/LOCAL GOVERNMENT PROFESSIONAL SERVICES	1655	1950	2327	2757	3275	3896	4632	19
SOFTWARE DEVELOPMENT	1052	1212	1422	1659	1938	2279	2677	17
CONSULTING EDUCATION & TRAINING	348 217	433 263	537 316	657 378	802 457	978 546	1190 656	22 20
SYSTEMS OPERATION	38	43	52	64	77	93	110	21
SYSTEMS INTEGRATION	161	237	291	351	435	523	635	22
SOFTWARE DEVELOPMENT	71	105	126	152	185	220	264	20
DESIGN/INTEGRATION	23	33	42	54	70	90	115	28
PROJECT MGMT/CONSULTING	31	46	60	72	90	105	127	22
SOFTWARE PRODUCTS	18	26	33	42	54	68	87 42	27 10
OTHER SERVICES	18 1816	26 2187	29 2617	32 3108	36 3710	39 4419	42 5268	19
TOTAL	1010	2107	2017	3100	3710	4415	5200	15
HEALTH								
PROFESSIONAL SERVICES	267	309	365	429	505	596	703	18
SOFTWARE DEVELOPMENT	170	192	223	258	299	349	406	
CONSULTING	56	69	84	102	124	150	180	21
EDUCATION & TRAINING SYSTEMS OPERATION	35 6	42 7	50 8	59 10	71 12	84 14	99 17	19 20
SYSTEMS OPERATION SYSTEMS INTEGRATION	71	95	125	157	203	253	322	
SOFTWARE DEVELOPMENT	33	44	57	71	94	111	140	26
DESIGN/INTEGRATION	10	13	18	23	30	39	49	
PROJECT MGMT/CONSULTING	11	14	19	24	30	40	51	29
SOFTWARE PRODUCTS	10	13	17	22	28	36	48	29
OTHER SERVICES	8	10	13	16	20	26	34	
TOTAL	338	404	490	586	708	849	1025	20
COMMUNICATIONS								
PROFESSIONAL SERVICES	460	513	611	701	812	942	1097	16
SOFTWARE DEVELOPMENT	292	319	373	422	481	551	634	
CONSULTING	97	114	141	167	199	236	282	
EDUCATION & TRAINING	60	69	83	96	113	132	155	
SYSTEMS OPERATION	10	11	14	16	19	23	26	
SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT	53 28	67 35	78 41	94 49	108 57	127 68	153 83	18 19
DESIGN/INTEGRATION	10	12	14	49 16	17	20	23	
PROJECT MGMT/CONSULTING	10	13	15	17	20	20	23	
SOFTWARE PRODUCTS	4	5	5	6	7	9	11	
OTHER SERVICES	2	3	4	5	6	8	10	
TOTAL	513	580	689	794	920	1069	1250	17



IBM SEGMENTATION	1987 (\$M)	1988 (\$M)	1989 (\$M)	1990 (\$M)	1991 (\$M)	1992 (\$M)	1993 (\$M)	'88-'93 CAGR (%)
TRANSPORTATION PROFESSIONAL SERVICES SOFTWARE DEVELOPMENT CONSULTING EDUCATION & TRAINING SYSTEMS OPERATION SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMT/CONSULTING SOFTWARE PRODUCTS OTHER SERVICES	124 79 26 16 3 42 19 8 10 2 2	143 89 32 19 3 58 27 11 13 3 3	168 103 39 23 4 69 33 13 15 4 4	196 118 47 27 5 85 41 15 18 6 6	228 135 56 32 5 108 53 17 22 8 7	267 156 67 37 6 131 67 20 25 10	312 180 80 44 7 160 83 23 29 13 12	17 15 20 18 19 22 25 17 17 31 28
TOTAL	166	201	237	281	336	9 397	472	19
MEDIA PROFESSIONAL SERVICES SOFTWARE DEVELOPMENT CONSULTING EDUCATION & TRAINING SYSTEMS OPERATION SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMTCONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	495 314 104 65 11 59 28 11 11 5 4 554	592 368 131 80 13 77 36 15 15 6 5 669	705 431 163 96 46 18 17 9 6 801	824 495 196 113 19 118 56 22 21 12 7 942	967 572 237 135 23 146 70 26 24 16 8 1113	1138 666 286 160 27 182 87 31 30 23 10 1320	1340 775 344 190 32 230 110 39 36 32 13 1570	18 16 21 19 20 24 25 21 20 38 20 38 20
CONSULTANTS PROFESSIONAL SERVICES SOFTWARE DEVELOPMENT CONSULTING EDUCATION & TRAINING SYSTEMS OPERATION SYSTEMS INTEGRATION SOFTWARE DEVELOPMENT DESIGNINTEGRATION PROJECT MGMTCONSULTING SOFTWARE PRODUCTS OTHER SERVICES TOTAL	15 10 2 0 2 1 0 0 0 0 17	17 11 4 2 0 3 1 1 0 0 20	20 12 5 3 0 4 2 1 1 0 0 24	24 14 6 3 1 5 2 1 1 0 0 28	28 16 7 4 1 6 3 1 1 1 34	32 19 8 5 1 8 4 2 1 1 1 41	38 22 10 5 1 12 6 2 2 1 1 49	17 15 20 18 19 34 37 30 34 28 32 20



IBM SEGMENTATION	1987 (\$M)	1988 (\$M)	1989 (\$M)	1990 (\$M)	1991 (\$M)	1992 (\$M)	1993 (\$M)	'88-'93 CAGR (%)
COMPUTER SERVICES								
PROFESSIONAL SERVICES	10	11	13	15	18	21	24	17
SOFTWARE DEVELOPMENT	6	7	8	9	11	12	14	15
CONSULTING	2	2	3	4	4	5	6	20
EDUCATION & TRAINING	1	2	2	2	3	3	3	18
SYSTEMS OPERATION	0	0	0	0	0	1	1	19
SYSTEMS INTEGRATION	2	3	3	4	5	7	9	28
SOFTWARE DEVELOPMENT	1	1	1	2	2	3	4	31
DESIGN/INTEGRATION	0	1	1	1	1	1	2	24
PROJECT MGMT/CONSULTING	0	0	1	1	1	1	1	25
SOFTWARE PRODUCTS	0	0	0	0	1	1	1	33
OTHER SERVICES	0	0	0	0	1	1	1	23
TOTAL	12	14	17	19	23	28	33	19
HIGHER EDUCATION								
PROFESSIONAL SERVICES	40	46	54	63	73	85	100	17
SOFTWARE DEVELOPMENT	25	28	33	38	43	50	58	15
CONSULTING	8	10	12	15	18	21	26	21
EDUCATION & TRAINING	5	6	7	9	10	12	14	18
SYSTEMS OPERATION	1	1	1	1	2	2	2	19
SYSTEMS INTEGRATION	25	27	34	38	43	50	62	18
SOFTWARE DEVELOPMENT DESIGN/INTEGRATION	10 5	11 6	14 7	16 7	20 8	23 9	29 11	20 13
PROJECT MGMT/CONSULTING	5	6	7	7	7	8	9	10
SOFTWARE PRODUCTS	2	2	3	4	5	7	11	41
OTHER SERVICES	2	3	3	3	3	3	3	3
TOTAL	65	73	87	101	117	135	162	17
TOTAL	05	75	07	101	,	155	102	17
SCHOOLS								
PROFESSIONAL SERVICES	17	19	23	27	31	36	42	
SOFTWARE DEVELOPMENT	11	12	14	16	18	21	24	
CONSULTING EDUCATION & TRAINING	4 2	4	5 3	6	8 4	9 5	11	20
SYSTEMS OPERATION	0	0	1	4	4	5	6 1	18 19
SYSTEMS OPERATION	8	9	11	13	14	17	21	19
SOFTWARE DEVELOPMENT	3	9	5	5	7	8	10	
DESIGN/INTEGRATION	2	2	2	3	3	3	4	
PROJECT MGMT/CONSULTING	2	2	2	2	2	3	4	
SOFTWARE PRODUCTS	1	1	1	1	2	2	4	
OTHER SERVICES	i	1	i	1	1	1	4	3
TOTAL	25	29	34	39	46	53	63	17
			0.	50	.0	00	00	• •



IBM SEGMENTATION	1987 (\$M)	1988 (\$M)	1989 (\$M)	1990 (\$M)	1991 (\$M)	1992 (\$M)	1993 (\$M)	'88-'93 CAGR (%)
FEDERAL GOVERNMENT								
PROFESSIONAL SERVICES	2577	2957	3319	3700	4136	4590	5092	11
SOFTWARE DEVELOPMENT	1093	1284	1446	1621	1831	2035	2270	12
CONSULTING	378	422	478	536	611	687	771	13
EDUCATION & TRAINING	304	327	386	447	488	561	620	14
SYSTEMS OPERATION	803	925	1009	1097	1206	1308	1431	9
SYSTEMS INTEGRATION	1126	1308	1606	1987	2408	2925	3519	22
SOFTWARE DEVELOPMENT	529	615	751	902	1111	1337	1593	21
DESIGN/INTEGRATION	193	224	283	353	450	561	692	25
PROJECT MGMT/CONSULTING	152	177	224	275	350	434	532	25
SOFTWARE PRODUCTS	126	147	186	283	299	376	467	26
OTHER SERVICES TOTAL	125 3703	146 4265	161 4924	175 5688	198 6544	216 7515	235 8611	10
TOTAL	3703	4265	4924	2000	6544	/515	0011	15
GRAND TOTAL								
PROFESSIONAL SERVICES	12719	15163	17818	20771	24295	28442	33316	17
SOFTWARE DEVELOPMENT	7538	8869	10306	11891	13759	15986	18580	16
CONSULTING	2513	3132	3824	4601	5550	6672	8022	21
EDUCATION & TRAINING	1634	1970	2353	2786	3304	3906	4616	19
SYSTEMS OPERATION	1034	1192	1335	1493	1682	1878	2098	12
SYSTEMS INTEGRATION	2226	2809	3537	4460	5602	7023	8879	26
SOFTWARE DEVELOPMENT	1026	1288	1623	2010	2554	3168	3975	25
DESIGN/INTEGRATION	392	497	630	802	1024	1298	1653	27
PROJECT MGMT/CONSULTING	365	468	591	740	936	1175	1482	26
SOFTWARE PRODUCTS	228	289	380	548	661	877	1171	32
OTHER SERVICES	215	268	312	361	427	504	598	17
TOTAL	14945	17972	21354	25231	29896	35465	42195	19

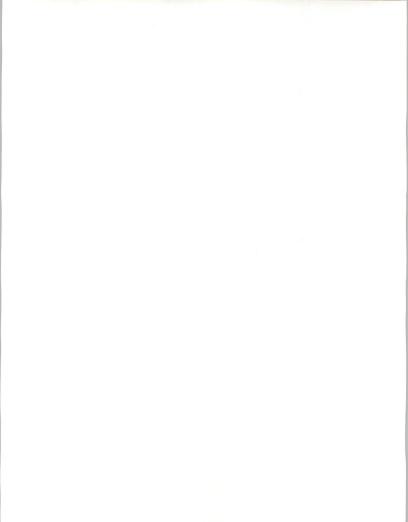


Table 7a

INDUSTRY SECTOR CROSSWALK

INPUT SECTORS	IBM SECTORS									State/
	Manuf. M	Process P	Util. U	Construct	Finance F	Sec'ties S	Ret.Dist. D	Whl.Dist. J	Insur. N	Loc. Gov.
DISCRETE MANUFACTURING	х	х					х			
PROCESS MANUFACTURING	х	х					х			
TRANSPORTATION		х								
UTILITIES		х	х							
TELECOMMUNICATIONS										
WHOLESALE DISTRIBUTION	х	х						х		
RETAIL DISTRIBUTION		х					х	х		
BANKING & FINANCE					х	х				
INSURANCE									х	
MEDICAL										
EDUCATION										
SERVICES	х		х		х			х	х	
FEDERAL GOVERNMENT										
STATE/LOCAL GOVERNMENT										х
OTHER INDUSTRIES	х			х				х		

INPUT

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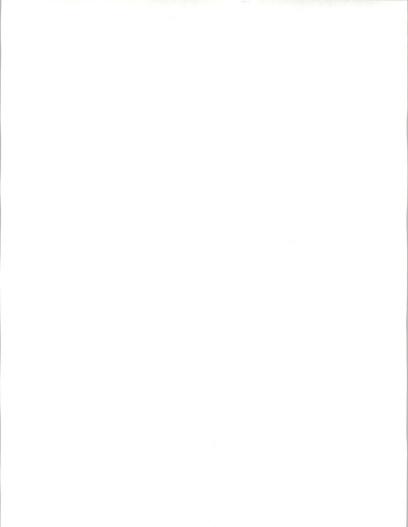


Table 7b

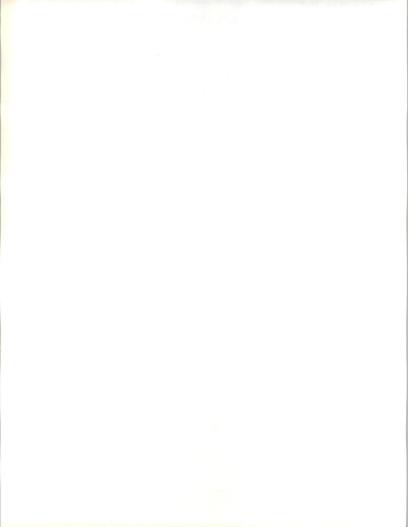
INDUSTRY SECTOR CROSSWALK

INPUT SECTORS				IBM	I SECTORS	Camp	Lliebor		
	Health H	Comm. A	Transp. T	Media K	Consult. C	Comp. Servs. B	Higher Ed. E	Schools R	Fed. Gov. Y
DISCRETE MANUFACTURING				x					
PROCESS MANUFACTURING									
TRANSPORTATION			x						x
UTILITIES									
TELECOMMUNICATIONS		х		x					
WHOLESALE DISTRIBUTION									
RETAIL DISTRIBUTION									
BANKING & FINANCE									
INSURANCE									
MEDICAL	х								
EDUCATION	х					х	х	х	
SERVICES	x		х	х	x	х	х		
FEDERAL GOVERNMENT									x
STATE/LOCAL GOVERNMENT									
OTHER INDUSTRIES			х	х			х	х	

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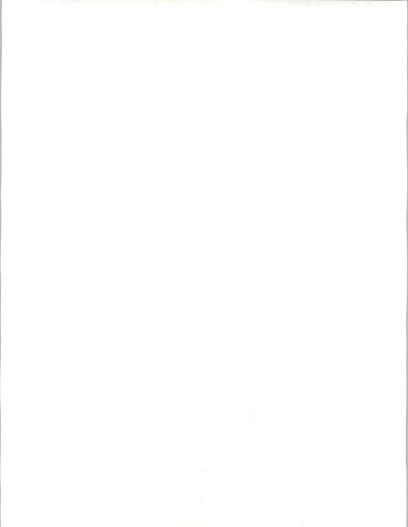
INPUT

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Appendix: INPUT-Defined Industry Sectors



Appendix B: INPUT-Defined Industry Sectors

EXHIBIT B-1

INDUSTRY SECTOR	INDUSTRY SIC	INDUSTRY NAME
Discrete Manufacturing	23 25 27 31 34 35 36 37 38 39	Apparel Furniture Printing Leather Metal Machinery Electronics Transportation Scientific and Control Instruments Miscellaneous
Process Manufacturing	10 11 12 13 14 20 21 22 24 26 28 29 30 32 33	Metal Mining Anthracite Mining Coal Mining Oil and Gas Extraction Mining/Quarrying of Non-Metallic Minerals, except Fuels Food Products Tobacco Textile Products Lumber and Wood Products Paper Products Chemicals Petroleum Rubber and Plastics Stone, Glass, Clay Primary Metals
Transportation	40 41 42 43 44 45 46 47	Railroads Local Transit Motor Freight U.S. Postal Service Water Transportation Air Pipelines Transportation Services

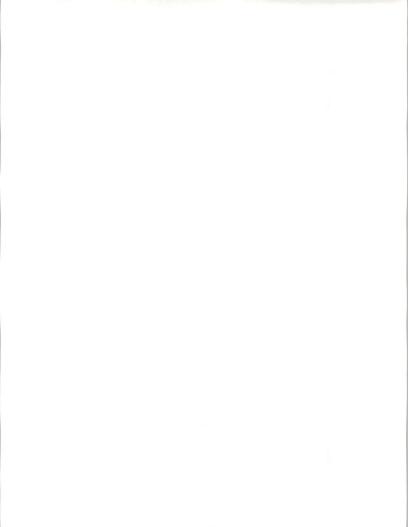


EXHIBIT B-1 (Cont.)

INDUSTRY	SECTOR	DEFINITIONS
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INDUSTRY SECTOR	INDUSTRY SIC	INDUSTRY NAME
Utilities	49	Electric, Gas, and Sanitary
Telecommunications	48	Communications
Wholesale Distribution	50	Durable Goods
	51	Nondurable Goods
Retail Distribution	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
Banking and Finance	60	Banks
0	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
Education	82	Educational Services

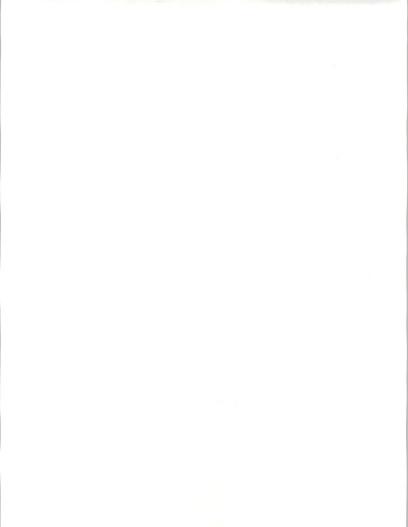


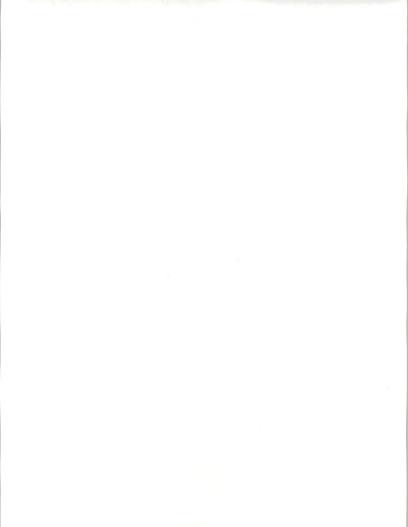
EXHIBIT B-1 (Cont.)

INDUSTRY SECTOR	INDUSTRY SIC	INDUSTRY NAME
Services	72 73	Personal Services Business Services (Excluding Information Services Companies Themselves)
	89 66	Miscellaneous Services Combinations of Real Estate, Insurance, Loans, Law Offices
	81 76	Legal Services Miscellaneous Repair
Federal Government	N/A	As Appropriate
State and Local Government	N/A	As Appropriate
Other Industries	01-09 15-17 70	Agriculture, Forestry, and Fishing Construction Hotels, Rooming Houses, Camps,
	75	and Other Lodging Places Automotive Repair, Services, and Garages
	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

INDUSTRY SECTOR DEFINITIONS



INPUT





Appendix: Relevant INPUT Definitions



Appendix C: Relevant INPUT Definitions

Definitions used by INPUT to describe the Information Services Industry.

Information Services - Computer-related services involving one or more of the following:

- Processing of computer-based applications using vendor computers (called "processing services")
- Network-oriented services or functions such as value-added networks, electronic mail, electronic document interchange, on-line data bases, news data bases, videotex
- Products and services that assist users in performing functions on their own computers or vendor computers (called "software products" or "professional services")
- Services that utilize a combination of hardware and software, integrated into a total system (called "turnkey systems" and/or "systems integration")

A

User Expenditures

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

Noncaptive Information Services User Expenditures - Expenditures paid for information services provided by a vendor that is not part of the same parent corporation as the user

Captive Information Services User Expenditures - Expenditures received from users who are part of the same parent corporation as the vendor.

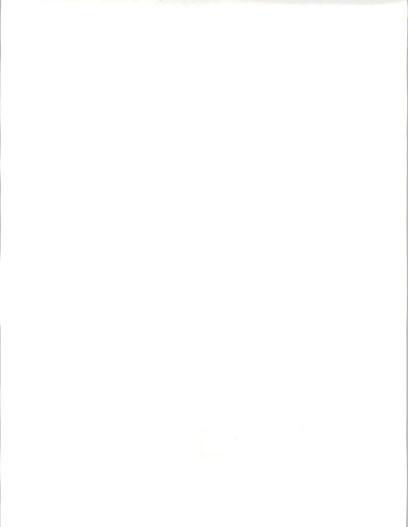
B

Delivery Modes

1. Processing Services

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

- Transaction Processing Services Updates client-owned data files by entry of specific business activity, such as sales order, inventory receipt, cash disbursement, etc. Transactions may be entered in one of three modes.
 - Interactive Characterized by the interaction of the user with the system, primarily for
 problem-solving timesharing, but also for data entry and transaction processing; the
 user is on-line to the program/files. Computer response is usually measured in seconds
 or fractions of a second.



- 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. Computer response is measured in minutes or hours.
- User Site Hardware Services (USHS) Those offerings provided by processing services vendors that place programmable hardware at the user's site rather than at the vendor's data center. Some vendors in the federal government market provide this service under the label of distributed data services. USHS offers:

° Access to a communications network

° Access through the network to the RCS vendor's larger computers

° Local management and storage of a data base subset that will service local terminal users via the connection of a data base processor to the network.

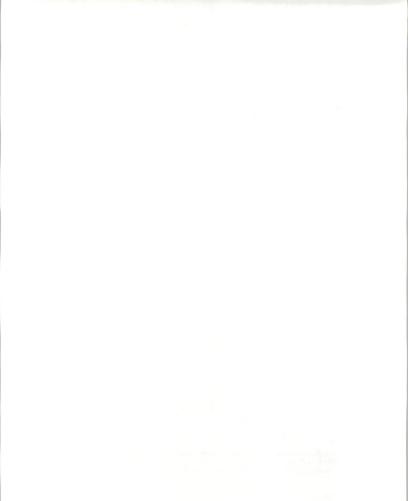
° Significant software as part of the service

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

- Utility Processing Vendor provides access to basic software tools, enabling the users to develop their own problem solutions such as language compilers assemblers, DBMS, sorts scientific library routines, and other systems software.
- "Other" Processing Services Include computer output microfilm, other data output services, data entry services, disaster recovery and backup services.
- Systems Operations (Processing) Also referred to as "resource management," facilities
 management, or "OOCO" (contractor-owned, contractor-operated). Systems control is
 the management of all or part of a user's data processing functions under a long-term
 contract of not less than one year. This would include remote computing and batch
 services. To qualify, the contractor must directly plan, control, operate, and own the
 facility provided to the user—either onsite, through communications lines, or in a mixed
 mode.

Processing services are further differentiated as follows:

- Cross-industry services involve the processing of applications that are targeted to specific
 user departments (e.g., finance, personnel, sales) but that cut across industry lines. Most
 general-ledger, accounts receivable, payroll, and personnel applications fall into 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 use, then the service is
 industry-specific (see below).
- Industry-specific services provide processing for particular functions or problems unique to an industry or industry group. Specialty applications can be either business or scientific in orientation. Examples of industry-specialty applications are seismic data



processing, numerically controlled machine tool software development, and demand deposit accounting.

2. Network Services

Network services include a wide variety of network-based functions and operations. Their common thread is that none of these functions could be performed without network involvement. Network services is divided into two major segments: network applications and electronic information systems.

a. Network Applications

The network applications segment is composed of three subsets:

- Value-Added Networks (VANs) VANs typically involve common carrier network transmission facilities that are augmented with computerized switches. These networks have become associated with packet-switching technology because the public VANs that have received the most attention (e.g., Telenet and TYMNET) employ packet-switching techniques. However, other added data service features, such as store-and-forward message switching, terminal interfacing, error detection and correction, and host computer interfacing, are of equal importance.
- Electronic Data Interchange (EDI) EDI is the application-to-application electronic communications between organizations, based on established business document standards.
- Electronic Mail (E-Mail) Transmission of messages across an electronic mail network managed by a services vendor.

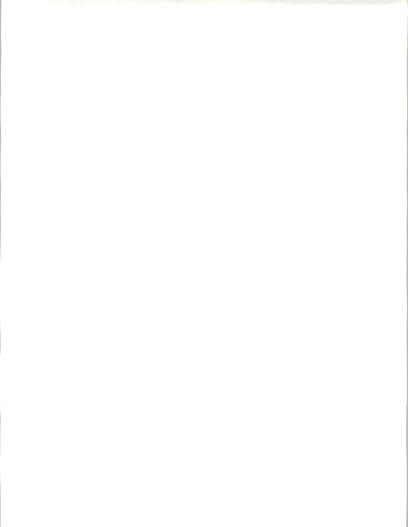
b. Electronic Information Services

Electronic information services are data bases that provide specific terminal-based inquiry such as stock prices, legal precedents, economic indicators, medical diagnosis, airline schedules, current news stories, automobile valuations, etc. Users typically inquire into and extract information from these data bases but do not update them.

3. Software Products

This category includes user purchases of applications and systems software packages for in-house computer systems. Included are lease and purchase expenditures, as well as expenditures for work performed by the vendor to implement or maintain the package at the user's sites.

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



There are several subcategories of software products, as indicated below.

a. Applications Software Products

Applications software products perform functions directly related to solving user's business or organizational need. The products can be:

- Cross-Industry Products Used in multiple-industry applications as well as the federal government sector. Examples are payroll, inventory control, and financial planning.
- Industry-Specific Products Used only in a specific industry sector, such as banking and finance, transportation, or discrete manufacturing. Examples are demand deposit accounting, airline scheduling, material resource planning, and insurance claim management.

b. Systems Software Products

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

- System Control Products Function during applications program execution to manage the computer system's resources. Examples include operating systems, communication monitors, emulators, spoolers, network control, library control, windowing, access control.
- Data Center Management Products Used by operations personnel to manage the computer system's resources and personnel more effectively. Examples include performance measurement, job accounting, computer operations scheduling, utilities, capacity management.
- Applications Development Products Used to prepare applications for execution by assisting in designing, programming, testing, and related functions. Examples include traditional programming languages, 4GLs, sorts, productivity aids, assemblers, compilers, data dictionaries, data base management systems, report writers, project control and CASE systems.

4. Turnkey Systems

A turnkey system is an integration of systems and applications software with CPU hardware and peripherals, packaged as a single application (or set of applications) solution. The value added by the vendor is primarily in the software and support. Most CAD/CAM systems and many small-business systems are turnkey systems. This does not include specialized hardware systems such as word processors, cash registers, or process control systems, nor does it include Embedded Computer Resources for military applications. Turnkey systems may be either custom or packaged systems.



A Company of the second se

- Hardware vendors that combine software with their own general-purpose hardware are not classified by INPUT as turnkey vendors. Their software revenues are included the appropriate software category.
- · Turnkey systems revenue is divided into two categories.
 - Industry-Specific Systems Systems that serve a specific function for a given industry sector, such as automobile dealer parts inventory, medical recordkeeping, or discrete manufacturing control systems
 - Cross-Industry Systems Systems that provide a specific function that is applicable to a
 wide range of industry sectors, such as financial planning systems, payroll systems, or
 personnel management systems
- · Revenue includes hardware, software, and support functions.

5. Systems Integration (SI)

Systems integration (SI) is the delivery of complex, multidisciplinary multivendor systems, incorporating some or all of these products or services: systems design, programming, integration, equipment, communication networks, installation, education and training, SIrelated professional services, and system acceptance. Systems integration contracts typically include custom software, take more than a year to complete, and involve a prime contractor assuming full risk and accepting full responsibility.

6. Professional Services

This category includes consulting, education and training, software development, and systems operations as defined below.

- Software Development Development of a software system on a custom basis. It includes one or more of the following: user requirements definition, system design, contract programming, documentation.
- Education and Training Products and/or services related to information systems and services for the user, including computer-aided instruction (CAI), computer-based education (CBE), and vendor instruction of user personnel in operations, programming, and maintenance.
- Consulting Services Information systems and/or services management consulting, project assistance (technical and/or management), feasibility analyses, and costeffectiveness trade-off studies.
- Systems Operations (Professional Services) This is a counterpart to systems operations (processing services) except the computing equipment is owned or leased by the client, not by the vendor. The vendor provides the staff to operate, maintain, and manage the client's facility.



C Equipment/Computer Systems

1. Equipment

Equipment includes all computer and telecommunications equipment that can be separately acquired with or without installation by the vendor and not acquired as part of an integrated system.

- Peripherals Includes all input, output, communications, and storage devices (other than main memory) that can be connected locally to the main processor and generally cannot be included in other categories such as terminals
- Input Devices Includes keyboards, numeric pads, card readers, light pens and track balls, tape readers, position and motion sensors, and analog-to-digital converters
- Output Devices Includes printers, CRTs, projection television screens, micrographics processors, digital graphics, and plotters
- Communication Devices Includes modems, encryption equipment, special interfaces, and error control
- Storage Devices Includes magnetic tape (reel, cartridge, and cassette), floppy and hard disks, solid state (integrated circuits), and bubble and optical memories
- · Terminals Three types of terminals are described below:
 - User-Programmable Also called intelligent terminals, including:
 - ° Single-station or standalone
 - ° Multistation shared processor
 - ° Teleprinter
 - ° Remote batch

- User Nonprogrammable

- ^o Single-station
- ^o Multistation shared processor
- ° Teleprinter

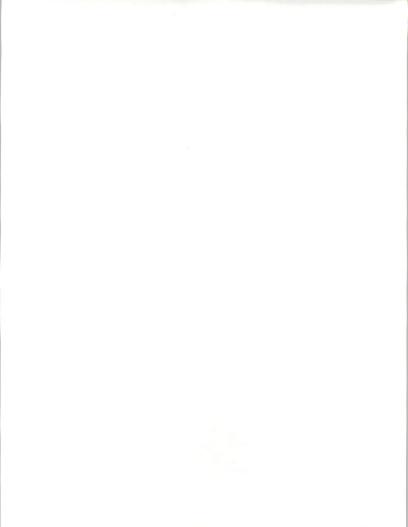
 Limited Function - Originally developed for specific needs, such as point-of-sale (POS), inventory data collection, controlled access, and other applications.

2. Computer Systems

Computer systems include all processors from microcomputers to supercomputers. Computer systems may require type- or model-unique operating software to be functional, but this category excludes applications software and peripheral devices.

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- Microcomputer (Price below \$15,000) Combines all of the CPU, memory, and peripheral functions of an 8- or 16-bit computer on a chip in the form of:
 - Integrated circuit package
 - Plug-in board with more memory and peripheral circuits
 - Console including keyboard and interfacing connectors
 - Personal computer with at least one external storage device directly addressable by the CPU
- Workstation (Price between \$10,000 and \$100,000) An integrated multifunctional workstation capable of routine higher-speed communications with mini and mainframe computers and of performing complex local processing. While similar to microcomputers, the workstation typically will have 16- or 32-bit architectures, plus greater graphics and integrated communications capabilities.
- Minicomputer (Price between \$15,000 and \$350,000) Usually a 16- or 32-bit computer. May represent a portion of a larger system or a complete stand-alone system by itself.
 - Personal business computer
 - Small laboratory computer
 - Nodal computer in a distributed data network, remote data collection network, or connected network, or connected to remote microcomputers
- Mainframe (Price above \$350,000) Typically a 32- or 64-bit computer with extensive applications software and a number of peripherals in standalone or multiple-CPU configurations for business (administrative, personnel, and logistics) applications; also called a general-purpose computer.
- Supercomputer High-powered processors with numerical processing throughout that is significantly greater than the fastest general-purpose computers, with capacities in the vicinity of 10-50 million floating point operations per second (MFLOPS).
 Supercomputers fit in one of two categories:
 - Real Time Generally used for signal processing in military applications.
 - Non-Real Time For scientific use in one of three configurations:
 - Parallel processors
 - ° Pipeline processor
 - Vector processor
- Embedded Computer Dedicated computer system designed and implemented as an integral part of a weapon, weapon system, or platform, critical to a military or intelligence mission such as command and control, cryptological activities, or intelligence activities. Characterized by military specifications (MIL SPEC) appearance and operation, limited but reprogrammable applications software, and permanent or semipermanent interfaces. May vary in capacity from microcomputers to parallel processor computer systems.



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Telecommunications

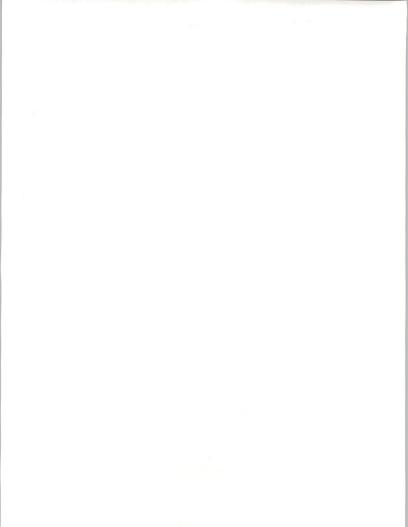
1. Networks

Networks are the electronic interconnections between sites or locations that may incorporate links between central computer sites and remote locations and switching and/or regional data processing nodes. Network services typically are provided on a leased basis by a vendor to move data, voice, video, or textual information between locations. Networks can be categorized in several different ways.

- Common Carrier Network A public access network, such as provided by AT&T, consisting of conventional voice-grade circuits and regular switching facilities accessed through dial-up calling with leased or user-owned modems for transfer rates between 150 and 1200 baud
- Value-Added Network (VAN) (See listing under Section B.2, Delivery Modes.)
- Local Area Network (LAN) Limited-access network between computing resources in a relatively small (but not necessarily contiguous) area, such as a building, complex of buildings, or buildings distributed within a metropolitan area. Uses one of two signaling methods.
 - Baseband Signaling using digital waveforms on a single frequency band, usually at voice frequencies and bandwidth, and limited to a single sender at any given moment. When used for local-area networks, typically implemented with TDM to permit multiple access.
 - Broadband Transmission facilities that use frequencies greater than normal voicegrade, supported in local-area networks with RF modems and AC signaling. Also known as wideband. Employs multiplexing techniques that increase carrier frequency between terminals to provide:
 - Multiple (simultaneous) channels via FDM (Frequency Division Multiplexing)
 - ° Multiple (time-sequenced) channels via TDM (Time Division Multiplexing)
 - High-speed data transfer rate via parallel mode at rates of up to 96,000 baud (or higher, depending on media)

2. Transmission Facilities

Transmission facilities include wire, carrier, coaxial cable, microwave, optical fiber, satellites, cellular radio, and marine cable operating in one of two modes, depending on the vendor and the distribution of the network.



- Mode may be either:
 - Analog Transmission or signal with continuous-waveform representation, typified by AT&Ts predominantly voice-grade DDD network and most telephone operating company distribution systems
 - Digital Transmission or signal using discontinuous, discrete quantities to represent data, which may be voice, data, record, video, or text, in binary form
- · Media May be any of the following:
 - Wire Varies from earlier single-line teletype networks, to two-wire standard telephone (twisted pair), to four-wire full- duplex balanced lines
 - Carrier A wave, pulse train, or other signal suitable for modulation by an information-bearing signal to be transmitted over a communications system, used in multiplexing applications to increase network capacity
 - Coaxial Cable A cable used in HF (high-frequency) and VHF (very high frequency), single-frequency, or carrier-based systems; requires frequent reamplification (repeaters) to carry the signal any distance
 - Microwave UHF (ultra-high-frequency) multichannel, point-to-point, repeated radio transmission; also capable of wide frequency channels
 - Optical Fiber Local signal distribution systems employed in limited areas, using lighttransmitting glass fibers and TDM for multichannel applications
 - Communications Satellites Synchronous earth-orbiting systems that provide point-topoint, two-way service over significant distances without intermediate amplification (repeaters), but requiring suitable groundstation facilities for up- and down-link operation
 - Cellular Radio Network of fixed, low-powered two-way radios that are linked by a computer system to track mobile phone/data set units. Each radio serves a small area called a cell. The computer switches service connections to the mobile unit from cell to cell.

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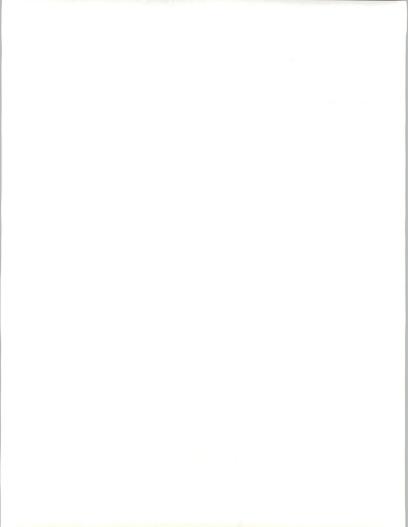
Other Considerations

When questions arise about the proper place to count certain user expenditures, INPUT addresses them from the user's viewpoint. Expenditures are then categorized according to what users perceive they are buying.

The standard industrial classification (SIC) codes are used to define the economic activity contained in generic sectors such as process manufacturing, insurance, or transportation.



The specific industries (and their SIC codes) included under these generic industry sectors are detailed in the exhibit.





Appendix: IBM-Defined Industry Sectors



Appendix D: IBM-Defined Industry Sectors

Industrial Sector

1.	Discrete manufacturing	Μ
2.	Process manufacturing	Р
3.	Utilities	U
4.	Construction	I

Service Sector

5.	Finance	F
6.	Securities	S
7.	Retail Distribution	D
8.	Wholesale Distribution	J
9.	Insurance	N

General and Public Sector

10.	State & Local Government	G
11.	Health	H
12.	Communications	A
13.	Transportation	Т
14.	Media	K
15.	Consultants	C
16.	Computer Services	В
17.	Higher Education	E
	0	

Education

18.	Schools		F
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Federal Government

 Federal Government Y

