INFORMATION SERVICES INDUSTRY

ANNUAL EXECUTIVE PRESENTATION

1989

INPUT

About INPUT

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

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

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

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

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INFORMATION SERVICES INDUSTRY DIRECTIONS

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Market Research and Consultancy

Information Services Industry

15 Years in Business

100 Employees

California, New York, Washington D.C.,

London, Paris Offices

Primary Research Emphasis

Senior Executives Experienced in Information Services

Forecast from Comprehensive Data Base

NOTES:

MPRE89-2a,b

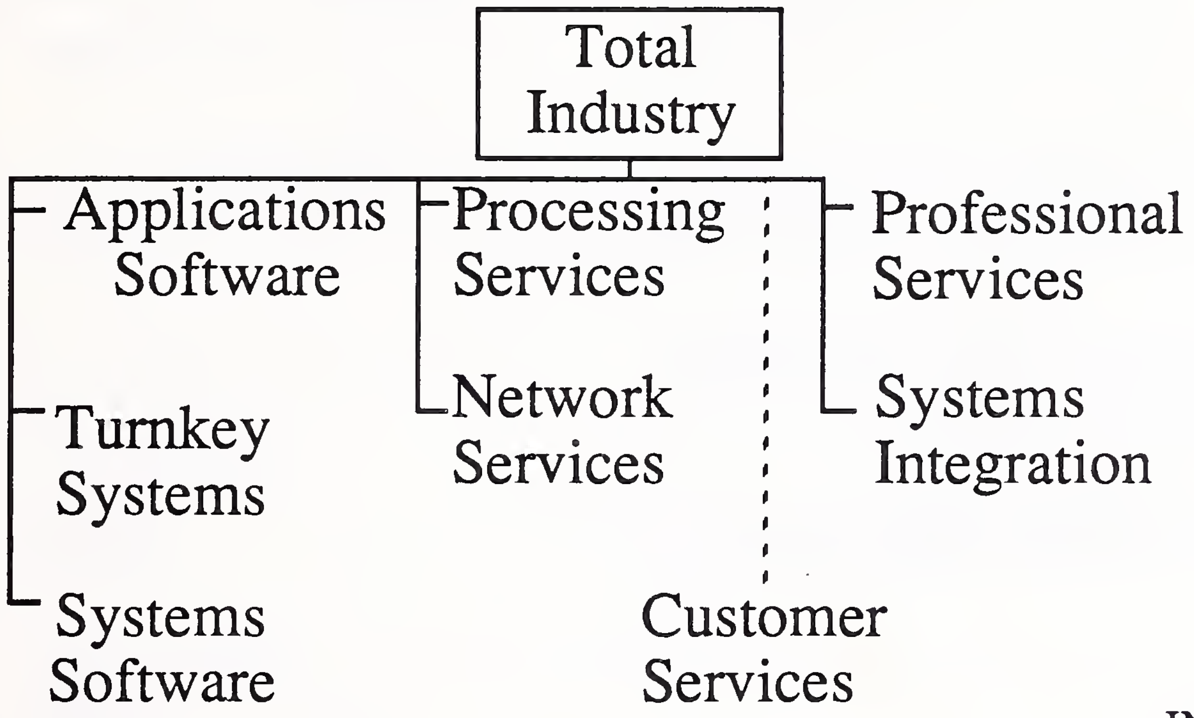
Information Services
Industry Trends

INPUT

NOTES:

JJ88-DW1-11

Information Services Industry Structure



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JJ88-RG1-10

MPRE89-4

Key Trends for the 1990s

- Products & Services Markets Blurring
- Changing Market Structure
- Internationalization
- Standards
- Vendor Reactions

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NOTES:

JJ88-DW1-12

MPRE89-5

Products & Services Markets Blurring

Traditional Competitors Are Changing:

- Traditional Product Companies Adding Services
- Traditional Service Companies Adding Products (Arthur Andersen, Peat Marwick)

New Competitors Emerge with "Solution Services"

- McKesson
- AMR
- John Deere
- Weyerhaeuser
- Bechtel
- CNB

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NOTES:

MPRE89-6a,b

"Blurring" of Offerings Reflects
Changing Market Structure

- Systems Integration Continues to Emerge
- Interorganization Services Becoming Critical
- Computer Companies Emphasizing Communications
- Communications Companies Adding Computer Units

INPUT

NOTES:

MPRE89-7

"Blurring" of Offerings Reflects

Changing Market Structure

New Technologies Will Create Additional Changes

- Image Processing
- Integrated Voice/Data
- High-Performance Digital Communications
- Object-Oriented Programming
- Personal Systems (IWS) Power

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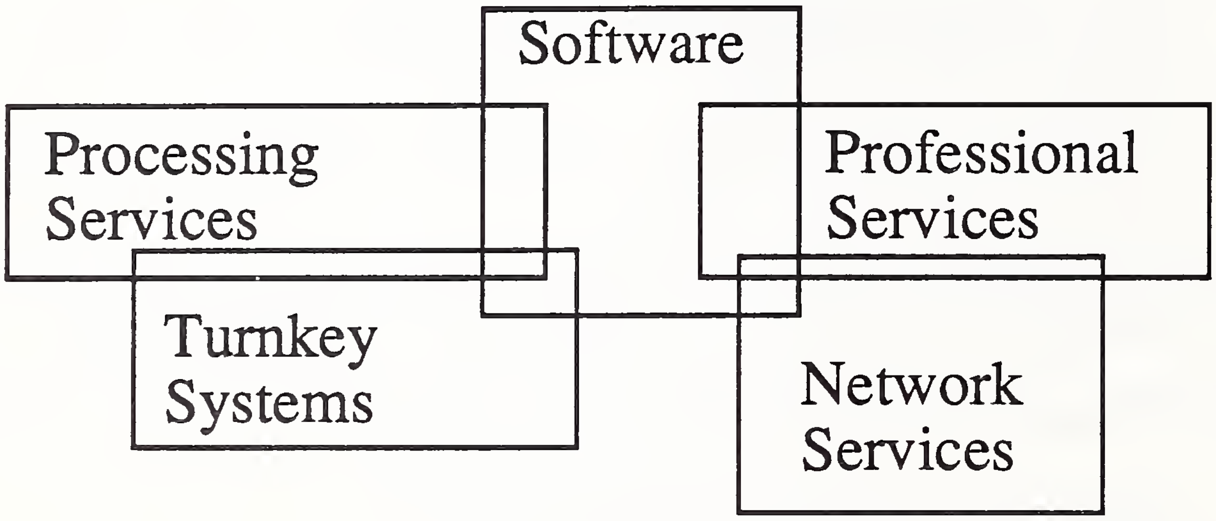
NOTES:

MPRE89-8a,b

IS Market Structure—1980s

INPUT's View



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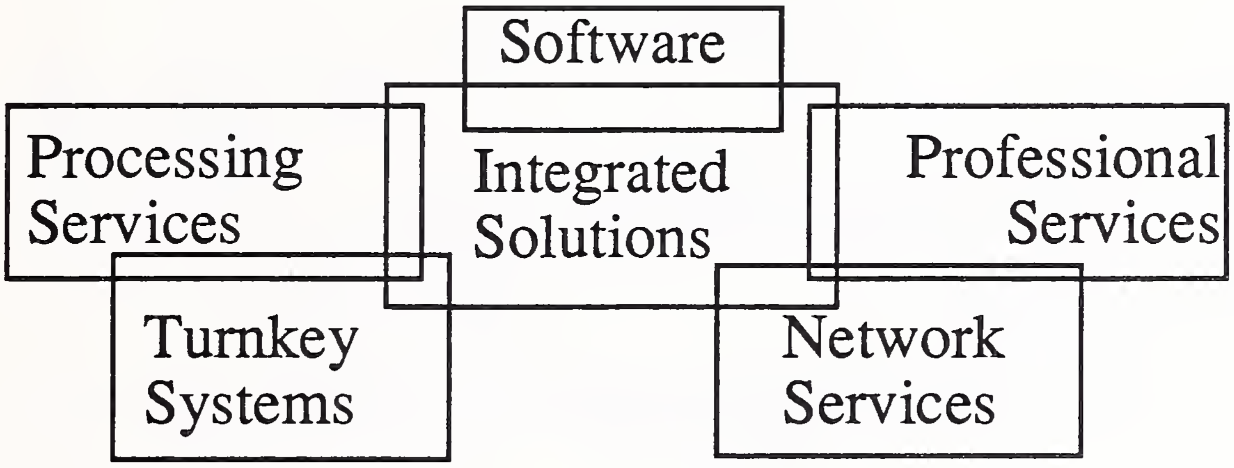
JJ88-DW1-16

IS Market Structure—1990s

A Different View



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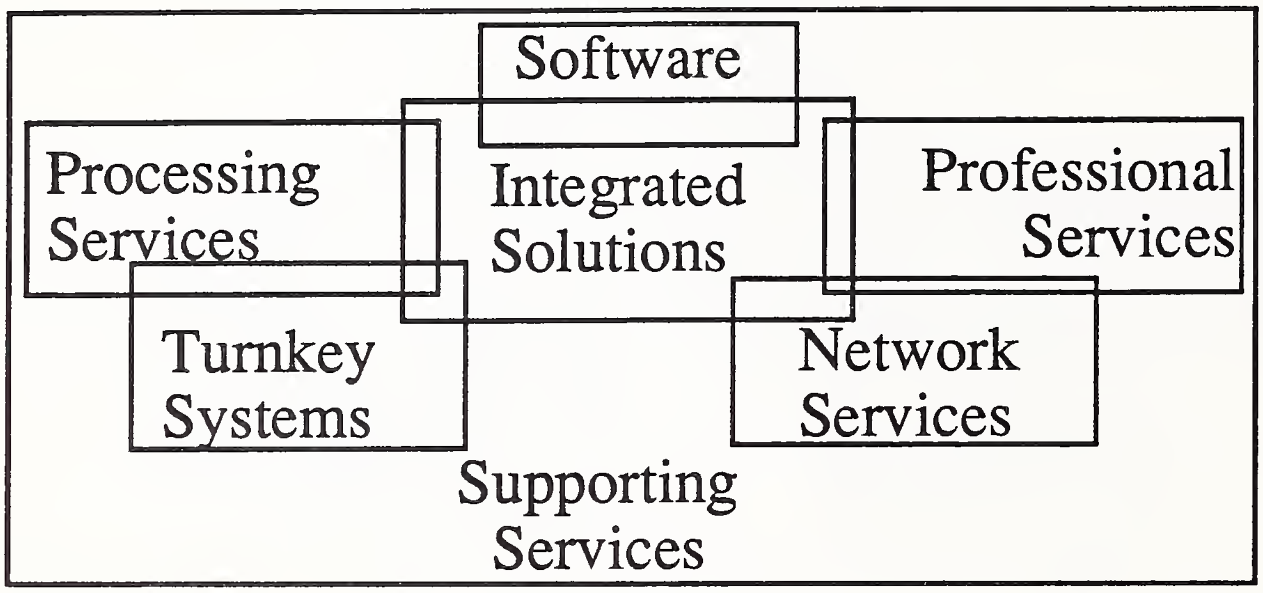
JJ88-DW1-17

MPRE89-10

IS Market Structure—1990s

Emphasis on Supporting Services



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JJ88-DW1-18

MPRE89-11

Internationalization
A Dominant Trend in the '90s

- Collapsing Market Barriers
  - Europe
  - North America
- Growing Market Interest/Participation
  - Pacific Rim
- Internationalization of Buyer Requirements

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NOTES:

JJ88-DW1-19

Internationalization

- U.S. Computer Manufacturers Ahead Now
- U.S. Information Services Companies Falling Behind
- Competition Coming to U.S.:
  - Cap Gemini
  - Sema - Cap
  - SDL Scicon
- Japanese Vendor Interest

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NOTES:

MPRE89-13ab

Standards

- Evolving, Conflicting
- Problems

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NOTES:

MPRE89-14

Standards

Driven by:

- Internationalization
- Buyer's Integration Requirements
- Dominant Providers/Coalitions

Focused on:

- Bridging the Technical Interface
- Rationalizing the Human Interface

HUMATICS ™

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NOTES:

JJ88-DW1-21

MPRE89-15

Standards

- OSF vs. UNIX Int'l
- MCA vs. EISA
- Graphical Interfaces
- OSI
- X/OPEN
- SAA
- SQL

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NOTES:

MPRE89-16

Standards Battle

OSI NM Standards

Vendor 'Standards'
- Netview, IBM
- UNMA, AT&T
- NetPartner, AT&T
- Other Vendors

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MPRE89-295

Open Software Foundation

- IBM
- Hewlett-Packard
- Digital Equipment
- Siemens
- More

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MPRE89-17a

Rival Group: UNIX Int'l

- AT&T
- Sun
- Unisys
- NCR
- More

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MPRE89-17b

Two UNIX Standards Are Developing

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MPRE89-17c

Standards Are Evolving

Long-Range Implications

- More Comprehensive Global Networks of Diverse Computers
- Graphics-Based User Interface
- Fewer Hardware Manufacturers

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NOTES:

MAAP-82a

MPRE89-18

Standards Are Evolving

Long-Range Implications

- Diminishing Importance of Proprietary Operating Systems
- Systems Integration a Key to Success
- Ease of Program Customization

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NOTES:

MPRE89-19

Vendor Reactions

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JJ88-DW1-23

MPRE89-20

Current Examples Portend 1990s Trends

- IBM
- Oracle
- Andersen Consulting
- Computer Associates
- Digital Equipment

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NOTES:

MPRE89-21

IBM as an Example

Software Products	ASD, SAA, AS/400
Network Services	INS
Processing Services	Product Support
Systems Integration	SID
Customer Service	TPM

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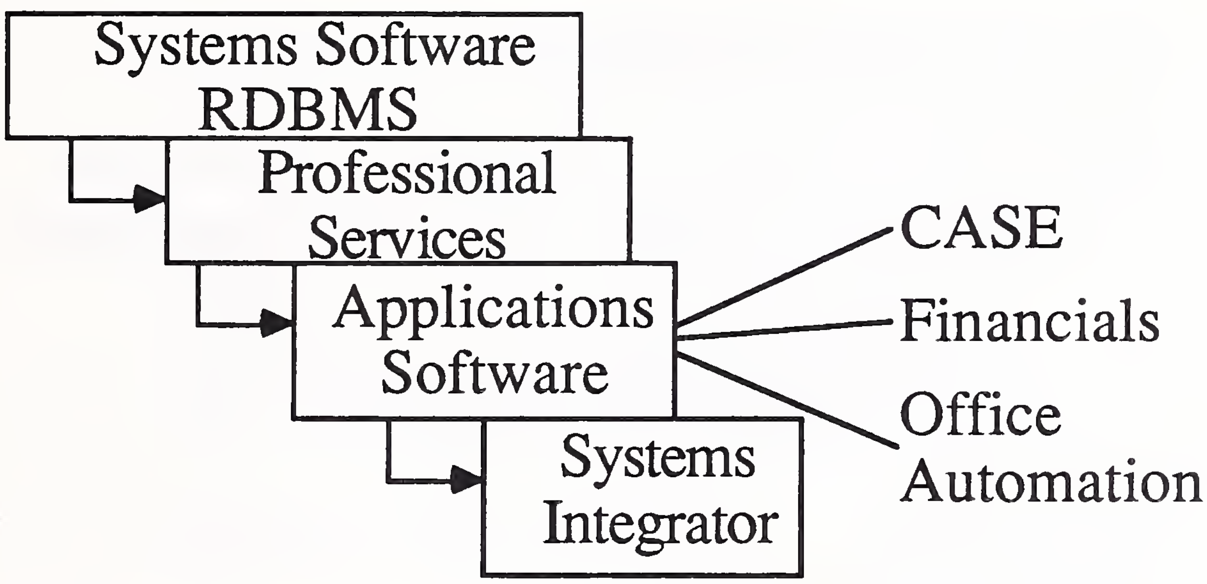
NOTES:

MPRE89-339

Oracle as an Example



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JJ88-DW1-26

MPRE89-22

Andersen Consulting

- Management Consulting
- Software Development
  - Software Products
    - Education
      - Systems Integration

Software Products:

- Mac-Pac
- Foundation
- DCS

$1.5 Billion
14,000 Professionals

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NOTES:

MPRE89-23

Computer Associates

- Largest Software Merger - UCCEL
- Pursued Cullinet
- Made Offer for MSA
- Strategy—Growth by Acquisition
- Porting Products to DEC and Others
- Alliance with Unisys

INPUT

NOTES:

MPRE89-24a

Computer Associates

- Resources Allocated to
  - Future Integration Plans
  - Customer Support for Current Products

INPUT

NOTES:

MPRE89-24b

Digital Equipment

- Equipment
  - Software Products
    - Professional Services
      - Systems Integration / Enterprise Services — Alliances (Apple, CIM) Network Systems Architecture
        - Network Services — Europe

INPUT

NOTES:

JJ88-DW1-29

MPRE89-25a,b

Summing It Up

- Broadening Product Strategies
- Emphasis on "Solution" Niches
- Focus on Quality & Service

Accomplished through:

- Self-Funded Expansion
- Consolidation—Partnering/Acquisitions

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NOTES:

JJ88-DW1-24

Consolidation in the Industry

A Dominant Industry Phenomenon in the 1990s:

- A Smaller Number of Larger Vendors
- Providing a Broader Range of Integrated Offerings
- Supported by Smaller Niche Vendors
- Targeted at Providing Solutions

INPUT

NOTES:

JJ88-DW1-30

MPRE89-27

1988 Mergers and Acquisitions

- Transactions
  - 434 in 1988
  - Up 21% Over 1987
- Value
  - $8.4 Billion
  - Up 70% Over 1988

Source: Broadview Associates

INPUT

NOTES:

MPRE89-28

1988 Mergers/Acquisitions

Delivery Mode	Vendors
Processing/ Network Services	TRW/Chilton
	EDS/MTECH
	D&B/Interactive Data
	D&B/IMS International
	FFMC/FDMC
Software Products	IBM/Spectrum
	Informix/Innovative Software
	Apple/Network Innovations
	Apple/Orion Network
	Computer Associates/ADR
	SPC/Office Solutions

INPUT

NOTES:

JJ88-DW1-31A,B

MPRE89-29a,b

1988 Mergers/Acquisitions

Delivery Mode	Vendors
Professional Services	Ford Aerospace/BDM Intl
	NYNEX/AGS
	Oracle/Falcon
	Emhart/Advanced Technology/PRC
	CSC/Index
Turnkey Systems	Unisys/Convergent
	Prime/Computervision

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NOTES:

MAAP-35ab

MPRE89-30a,b

Alliances

- Digital/Apple
- Ashton-Tate/Microsoft/SYBASE
- Relational Technology/
  Computer Task Group
- CAI/UNISYS
- IBM/Metaphor (Equity)
- CASE (Numerous)

INPUT

NOTES:

JJ88-DW1-33

MPRE89-31

Industry Slowdown Looming?

- 1989 Earnings Shortfalls
  - IBM
  - DEC
  - Apple
  - Unisys
  - Prime
  - Microsoft
- 1-2Q Duration?

INPUT

NOTES:

MPRE89-31a

Impact of Equipment Slowdown on Information Services

- Information Services will Lag Equipment

- Selective Downturn
  - Mainframe-Related
  - Minicomputer-Related

INPUT

NOTES:

MPRE89-31b

Impact of Equipment Slowdown (Short-Term)

	Change in Growth Rate
Processing Services	
- Transaction Processing	↑
- Systems Operations (FM)	↑
Network Services	
- On-Line Data Bases	—
Software Products	↓

INPUT

NOTES:

MPRE89-31c

Impact of Equipment Slowdown (Short-Term)

	Change in Growth Rate
Turnkey Systems	↓
Professional Services	
- Consulting	↑
- Software Development	↑
- Education/Training	↓
- Systems Operations	↑
Systems Integration	↓

INPUT

NOTES:

MPRE89-31d

Five-Year Outlook

- End Users Will Control the Major Purchase Decisions
- Systems Integration Expands as Solutions Grow in Complexity
- Internationalism Is Here
- Technology Continues to Create Opportunities

INPUT

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MPRE89-32

Five-Year Outlook

- Shorter Product Life Cycle Calls for Fast Response
- Vendor Versatility a Key to Growth
- Everybody Needs Strategic Partners

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NOTES:

MPRE89-33

Conclusions

- Services (People) Will Be the Key
  - Recruiting
  - Motivation
  - Compensation
  - Training
- Targeted, Disciplined Marketing
- Have Platforms that Serve All Markets
- Develop 'Critical Mass' in Target Markets
- Seek Leverage from Standards

INPUT

NOTES:

MAAP-91b

MPRE89-34

Information Services Industry Forecast 1988-1993

INPUT

NOTES:

MPRE89-35

Research Methodology

Vendor Surveys

Analysis Bottoms-Up

- 500 Largest
- Revenues: Current/ Prior Years
- Growth Rates
- Industries
- Delivery Mode (7)
- Industry Sector (22)

INPUT

NOTES:

MAAP-36

Research Methodology

Adjustments

- Large Companies-by Name
- Small Companies-Average
- Calendarization
- Captive Revenues

Integrate

- Delivery Mode
- Industry

Convert Base Year Revenues

- Vendor $ to User Exp.

INPUT

NOTES:

MAAP-36.1

MPRE89-37

Research Methodology

Project 5-Year Growth

Annual Forecasts Reports (5)

- User Surveys
- Technology
- Economics
- Vendor Activity
- Industry Trends
- Driving Forces
- Inhibiting Forces

INPUT

NOTES:

MPRE89-38

All INPUT Forecasts Are for U.S. Non-Captive User Expenditures, in Current Period Dollars.

INPUT

NOTES:

JJ88-RG1-14

MPRE89-39

GNP Nominal Growth Rate Assumptions (Percent)

	1987A	1988A	1989E	1993E
Real GNP	3.4	3.8	2.8	3.0
*GNP Deflator	3.3	3.4	5.5	4.5
Nominal GNP	6.7	7.2	8.3	7.5

*Year-to-Year Comparisons

INPUT

NOTES:

MAAP-56

MPRE89-40

Growth Rates By Delivery Mode
(Percent)

Processing Services

	1987A	1988E	1989E	1993E
Real Growth	11.0	7.9	7.0	6.9
Price Deflator	3.0	4.1	5.0	4.1
Nominal Growth	14.0	12.0	12.0	11.0

INPUT

NOTES:

MAAP-57a

MPRE89-41

Growth Rates By Delivery Mode (Percent)

Network Services

	1987A	1988E	1989E	1993E
Real Growth	25.0	20.9	20.0	17.9
Price Deflator	3.0	4.1	5.0	4.1
Nominal Growth	28.0	25.0	25.0	22.0

INPUT

NOTES:

MAAP-57b

MPRE89-42

Growth Rates By Delivery Mode (Percent)

Applications Software

	1987A	1988E	1989E	1993E
Real Growth	20.7	19.5	16.5	15.0
Price Deflator	3.3	4.5	5.5	4.5
Nominal Growth	24.0	24.0	22.0	18.0

INPUT

NOTES:

MAAP-57d

MPRE89-43

Growth Rates By Delivery Mode (Percent)

Systems Software

	1987A	1988E	1989E	1993E
Real Growth	26.7	17.5	16.5	14.5
Price Deflator	3.3	4.5	5.5	4.5
Nominal Growth	30.0	22.0	22.0	19.0

INPUT

NOTES:

MAAP-57c

MPRE89-44

Growth Rates By Delivery Mode
(Percent)

Turnkey Systems

	1987A	1988E	1989E	1993E
Real Growth	9.3	9.7	8.2	6.7
Price Deflator	1.7	2.3	2.8	2.3
Nominal Growth	11.0	12.0	11.0	9.0

INPUT

NOTES:

MAAP-57e

MPRE89-45

Growth Rates by Delivery Mode
(Percent)

Professional Services

	1987A	1988E	1989E	1993E
Real Growth	17.4	13.4	12.6	12.4
Price Deflator	2.6	3.6	4.4	3.6
Nominal Growth	20.0	17.0	17.0	16.0

INPUT

NOTES:

MAAP-57g

MPRE89-46

Growth Rates By Delivery Mode (Percent)

Systems Integration

	1987A	1988E	1989E	
Real Growth	37.7	21.8	21.1	21.8
Price Deflator	2.3	3.2	3.9	3.2
Nominal Growth	40.0	25.0	25.0	25.0

INPUT

NOTES:

MAAP-57f

MPRE89-47

Vertical/Cross-Industry Markets

- "Office Systems" Category Added

- 6 Delivery Modes Forecast for Each Vertical/Cross-Industry Market

- Subcategories for Selected Verticals

Banking	Manufacturing
- Commercial Banks	- CAD/CAE
- Savings/Thrifts	- Manufacturing Control
- Brokerage	
- Other	

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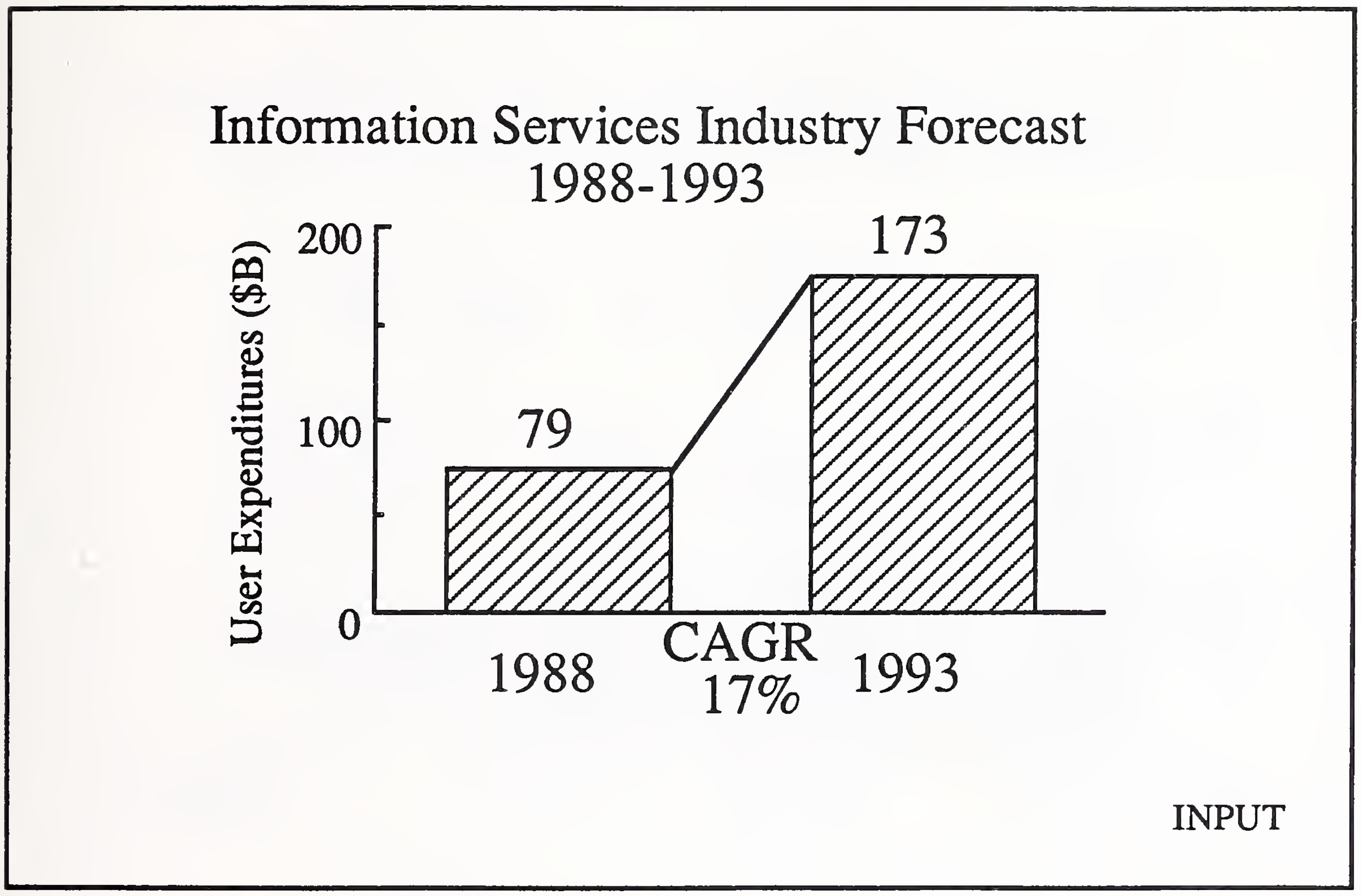
JJ88-RG1-12a,b

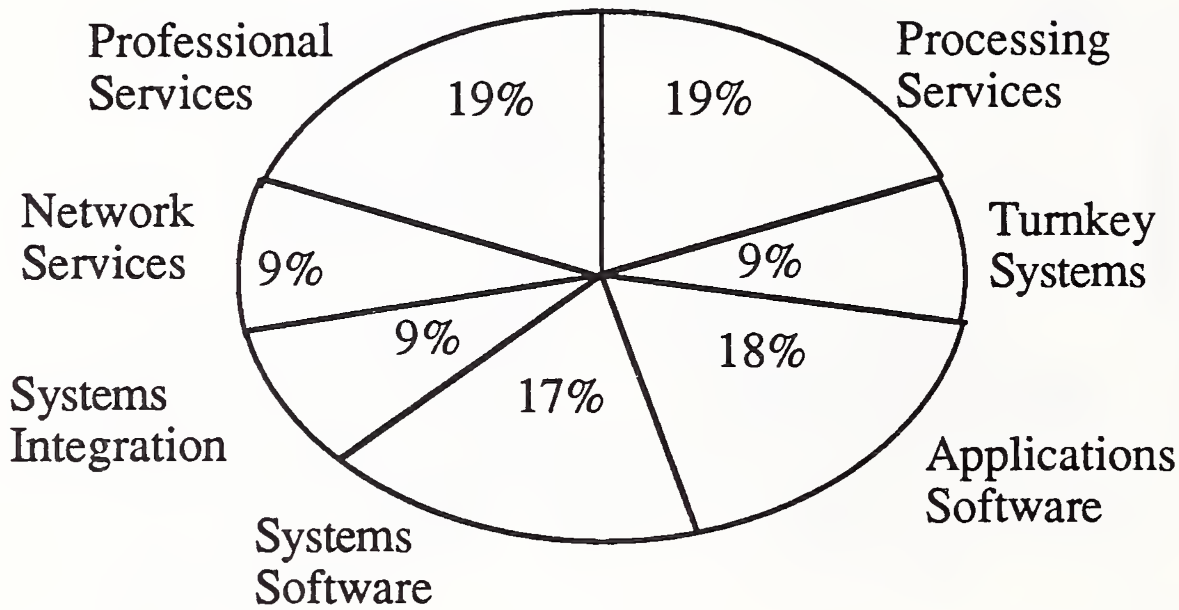
MPRE89-50a,b



NOTES:

MPRE89-51

Projected Information Services Markets by Mode of Service—1993



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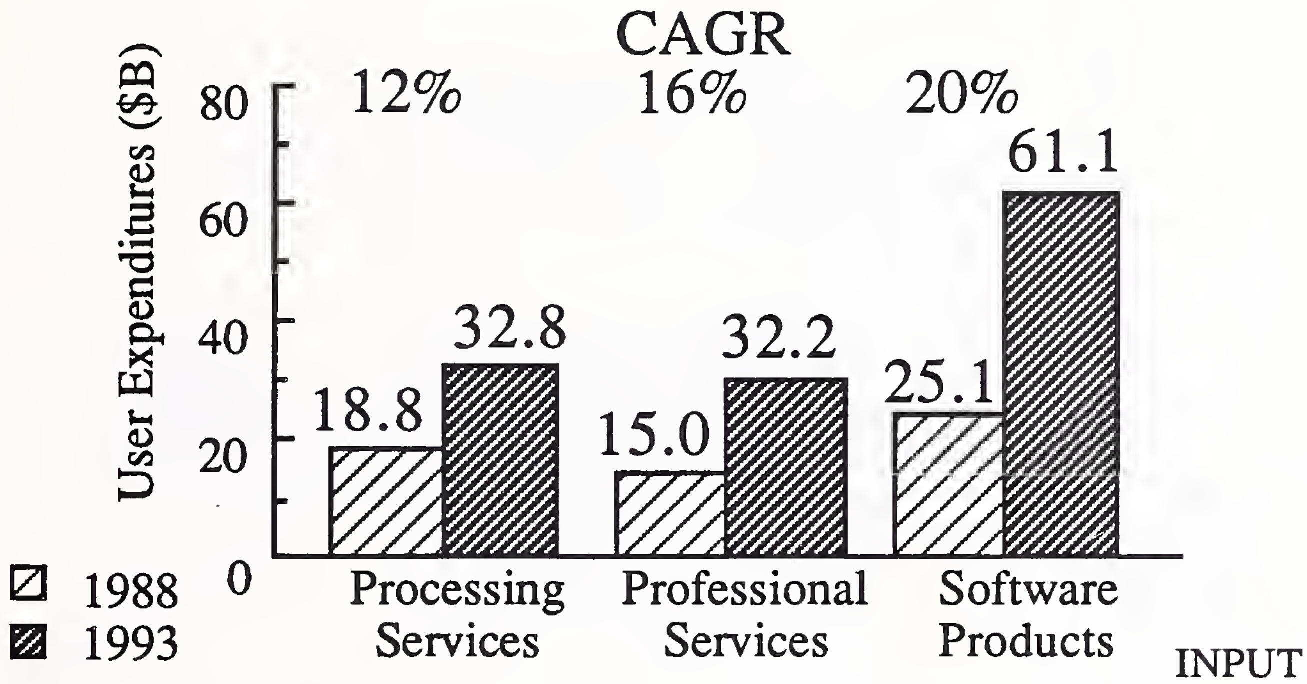
NOTES:

JJ88-DW1-29

MPRE89-52

Information Services Industry Forecast by Delivery Modes,1988-1993



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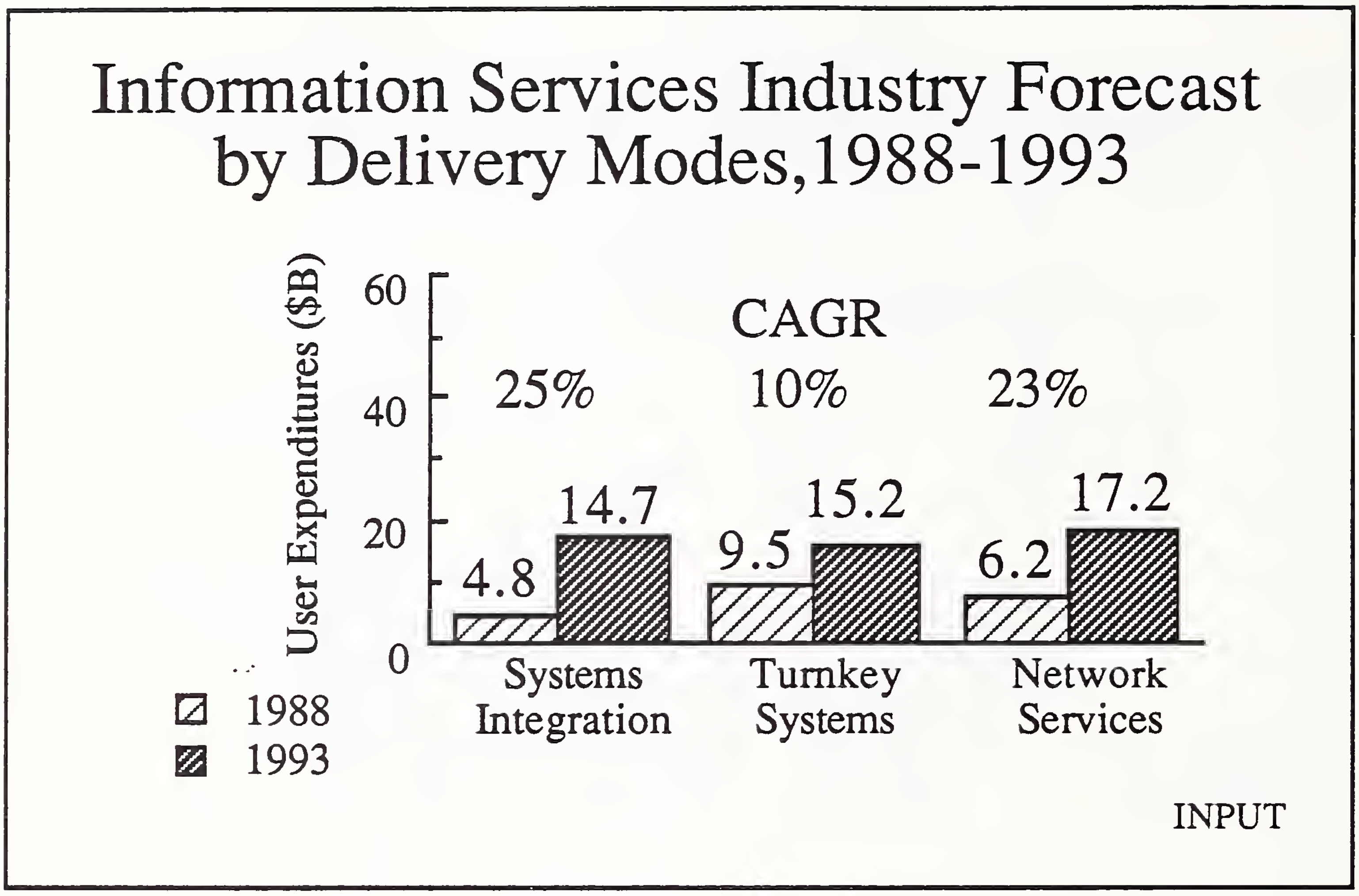
MAAP-39

MPRE89-53



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MAAP-40

MPRE89-54

Preliminary Results

1989 Forecast Activity

330 Interviews of
Information Services Vendors

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MPRE89-54a

Preliminary Results
1989 Vendor Survey

Delivery Mode	# of Respondents	1987-1988 Revenue Growth (%)
Processing Services	47	13
Network Services	20	35
Application Software	152	25
Systems Software	48	30
Turnkey Systems	63	20
Systems Integration	23	31
Professional Services	91	23

INPUT

NOTES:

MPRE89-54b

Incremental Industry Expenditures by Delivery Mode, 1988-1993

Delivery Mode	$B Added over 5-Yr Period
Total Software	38
- Systems Products	20
- Applications Products	18
Professional Services	18
Processing Services	14

INPUT

NOTES:

MPRE89-55

Incremental Industry Expenditures by Delivery Mode, 1988-1993

Delivery Mode	$B Added Over 5-Yr Period
Network Services	12
Systems Integration	11
Turnkey Systems	6
Total	99

INPUT

NOTES:

JJ88-RDW-7b

MPRE89-56

Information Services Leading Vendors

Vendors	1988 U.S. Revenues ($B)*	Market Share (Percent)
IBM	5.7	7
** EDS	1.7	2
ADP	1.6	2
DEC	1.3	2
Unisys	1.2	2
CSC	1.0	1

Top Ten Vendors=20% of Industry Total

* INPUT Estimates ** Non-GM Business

INPUT

NOTES:

JJ88-RDW-8a

MPRE89-57

Information Services Leading Vendors

Vendors	1988 U.S. Revenues ($B)*	Market Share (Percent)
Andersen Consulting	1.0	1
McDonnell Douglas	0.9	1
CDC	0.9	1
Computer Associates	0.7	1

Top Ten Vendors=20% of Industry Total

* INPUT Estimates

INPUT

NOTES:

MPRE89-58

IN

Leading Independent Information Services Vendors

Vendors	1988 U.S. Revenues ($B)*
ADP	1.6
CSC	1.0
Computer Assoc.	0.7
Intergraph	0.7
Lotus	0.4
Shared Medical	0.4
Microsoft	0.3
Oracle	0.3
MSA	0.2
Compugraphics	0.2

* INPUT Estimates

INPUT

NOTES:

JJ88-RDW-9a

MPRE89-59a,b

Worldwide Markets-1987

	$ Billions				
	U.S.	Europe	Japan	Others	Total
Computer Equip.	54	33	28	6	121
Maintenance	12	8	6	1	27
Software	20	9	8	4	41
Computer Svcs.*	47	23	10	2	82
Total	133	73	52	13	271

* Processing Services, Network Services, Professional Services, Systems Integration

INPUT

NOTES:

MPRE89-59c

Worldwide Markets-1992

	$ Billions				
	U.S.	Europe	Japan	Others	Total
Computer Equip.	88	50	50	12	200
Maintenance	16	13	7	2	38
Software	51	24	28	12	115
Computer Svcs.*	97	52	24	4	177
Total	252	139	109	30	530

* Processing Services, Network Services, Professional Services, Systems Integration

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MPRE89-59d

Software Products

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MPRE89-61

Software Product Environment

- User Needs
- Technology
- Business Environment
- Complementary Services

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MAAP-2

MPRE89-62

User Needs

- Application Sophistication
- Heterogeneous Hardware/Environment
- Dynamic Connectivity/Cooperative Processing
- Resource Sharing/Groupware
- Productivity: User and Programming
- Workstation Support
- Image Processing

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NOTES:

JJ88-DW2-3

MPRE89-63

Technology Impacts

- New Platforms/Devices
  - AS/400, PS/2, Parallel Processors, Supercomputers
- Networking/LANs
- Improved Resources
  - Memory, Storage, MIPS
- On-Line Transaction Processing

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NOTES:

JJ88-DW2-4a

Technology Impacts

- Operating Systems
  - UNIX, Pick, OS/2, MS/DOS
- Server/Client Relationships
- Cooperative Processing
- Image Processing

NOTES:

MPRE89-65

Leading Software Market Trends

- Mergers/Acquisitions
- Alliances
- Open Systems Architectures
- Products and Services Markets Blurring
- Cooperative Processing Models

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MPRE89-317a

Leading Software Market Trends

- Standards
- Internationalization
- Company-wide Project Management Software
- Bundled Solutions

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NOTES:

MPRE89-317b

Complementary Services

- Consulting
- Education & Training
- Software Development
- Systems Integration
- Software Integration

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JJ88-DW2-5

Software Products Market Forecast

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JJ88-DW2-7

MPRE89-67

Software Products

Systems Software	Applications Software
• Mainframe	• Mainframe
• Mini	• Mini
• Micro/Workstation	• Micro/Workstation

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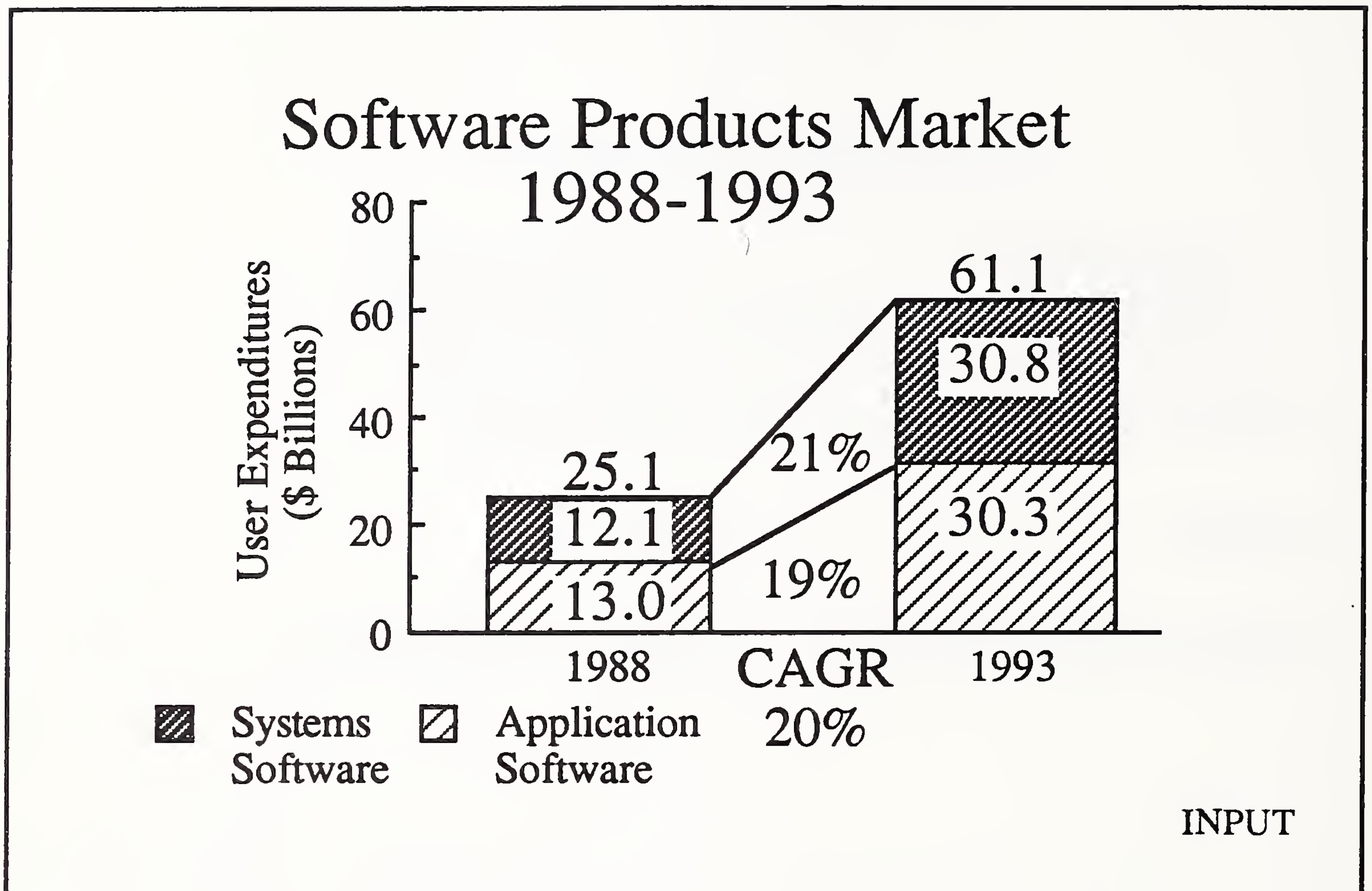
NOTES:

MAAP-1a

MPRE89-68



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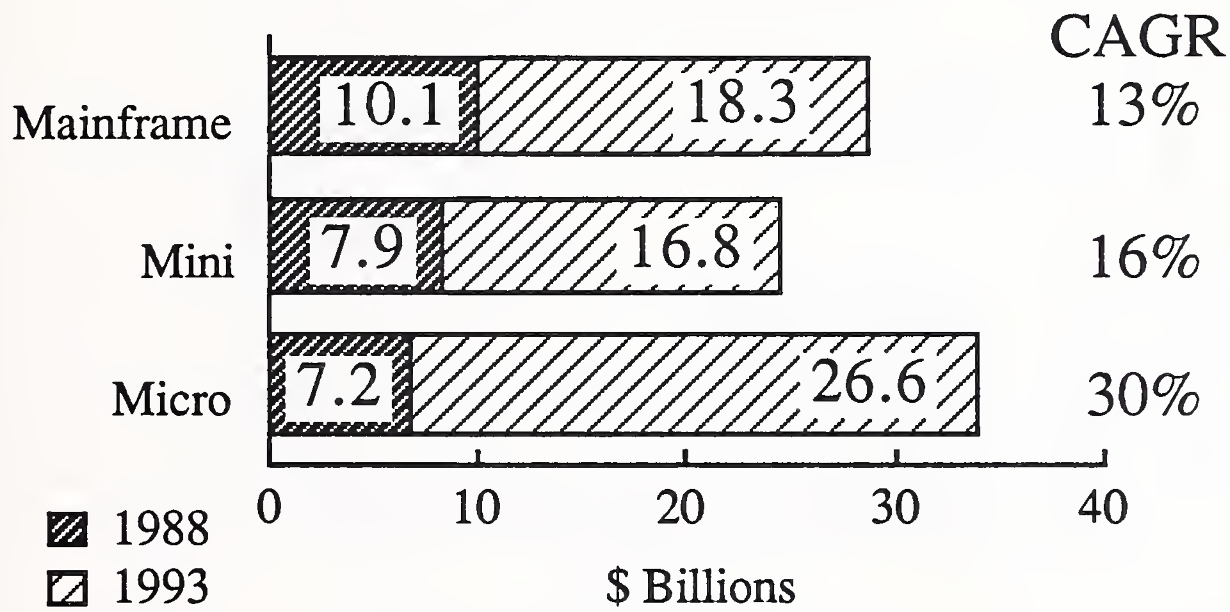
MPRE89-70

Software Products Market by Platform Type, 1988-1993



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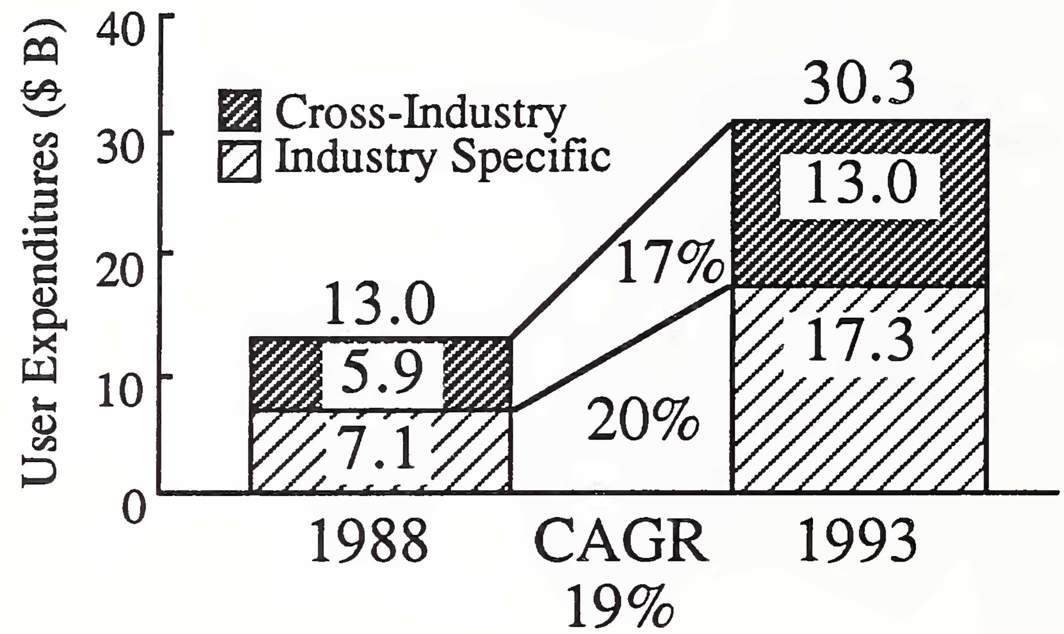
NOTES:

MPRE89-79

Applications Software Market Submodes 1988-1993



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NOTES:

MPRE89-71

Applications Software Products Market—Driving Forces

- CPU Population Growth
- Standards (Evolving)
- Workstation Power
- Industry-Specific Thrusts
- EIS/Other Emerging Niches
- Application Complexity

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NOTES:

MAAP-5ab

MPRE89-72a,b

Applications Software Products Market—Inhibiting Forces

- Mainframe Saturation
- Declining Price per Copy
- Product Life Cycles
- Crowded Market Niches

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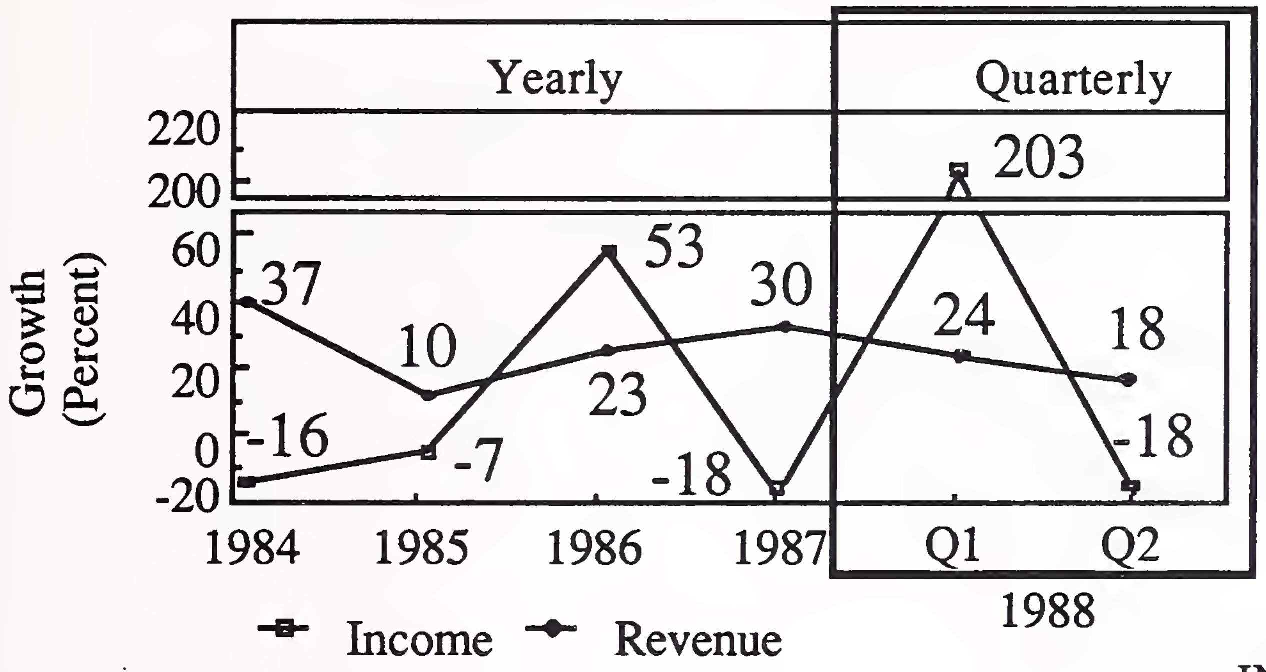
NOTES:

MAAP-6

MPRE89-73

Public Application Software Products Vendors



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NOTES:

MPRE89-351

Major Vendors' Shares of Applications Software Market—1988

Company Name	1988 US Revenue ($ M)*	Market Share (%)
IBM	930	7
Lotus Development Corp.	400	3
Digital Equipment Corp.	240	2
Computer Associates	190	2

* INPUT Estimates

INPUT

NOTES:

MAAP-7a

MPRE89-74

Major Vendors' Shares of Applications Software Market—1988

Company Name	1988 US Revenue ($ M)*	Market Share (%)
Dun & Bradstreet Corp.	200	1
Management Science America, Inc.	200	1
Unisys Corp.	190	1

* INPUT Estimates

INPUT

NOTES:

MAAP-7b

MPRE89-75

Major Vendors' Shares of Applications Software Market—1988

Company Name	1988 US Revenue ($ M)*	Market Share (%)
Hewlett-Packard	150	1
Microsoft	120	1
Word Perfect Corp.	120	1

* INPUT Estimates

INPUT

NOTES:

MAAP-7a

MPRE89-76

Major Vendors' Shares of Applications Software Market—1988

Company Name	1988 US Revenue ($ M)*	Market Share (%)
Wang Laboratories	110	1
Ashton-Tate	110	1

* INPUT Estimates

INPUT

NOTES:

MAAP-7d

MPRE89-77

Software Products

Systems Software

- Application Development Tools
- Data Center Management
- Systems Control

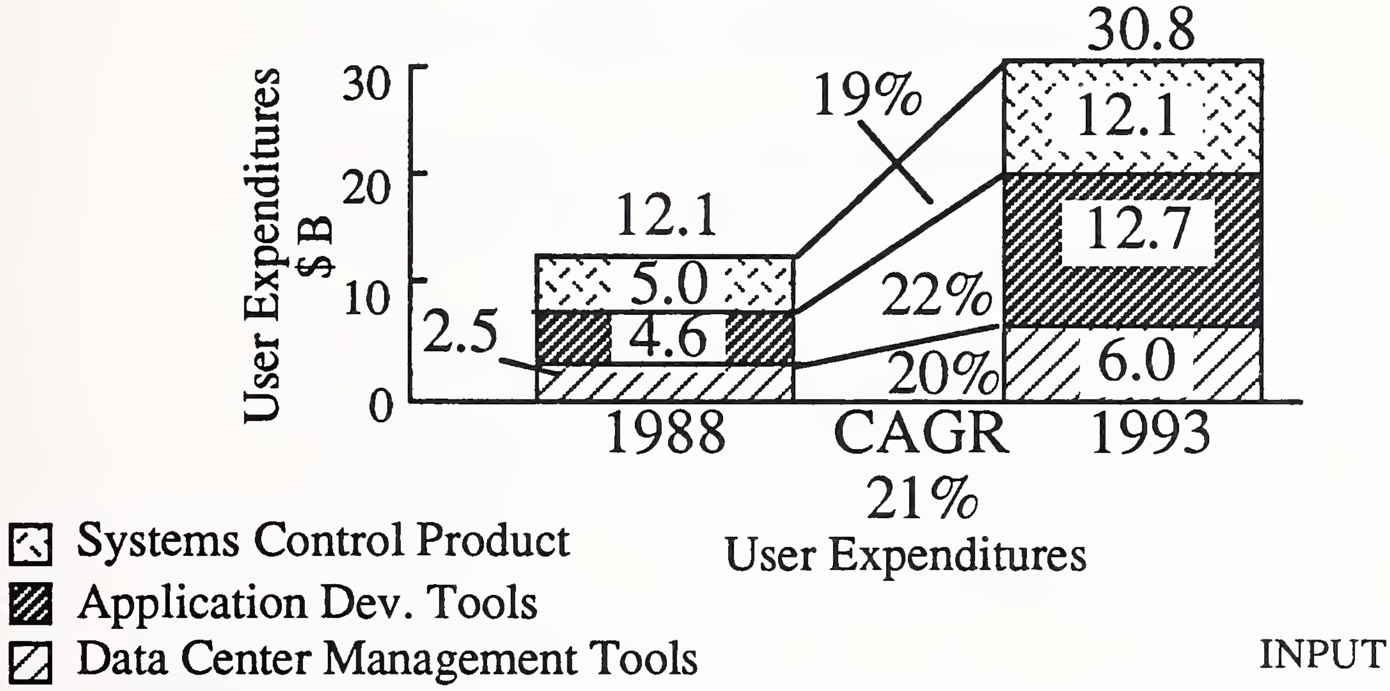
INPUT

NOTES:

MAAP-1b

MPRE89-69

Systems Software Market by Submode, 1988 - 1993



INPUT

NOTES:

MPRE89-78

Systems Software Products Market—Driving Forces

- Cooperative Processing
- Image Processing
- CASE/4GL
- Standards (SQL/UNIX, Others)
- Consolidation

INPUT

NOTES:

MAAP-11c

Systems Software Products Market—Driving Forces

- PC Development Environments
- Staging for New Applications Software Growth
- Data Center Management Tools
- RDBMS
- Expert Systems

INPUT

NOTES:

MPRE89-81

Systems Software Products Market—Driving Forces

- SAA
- Graphical Interfaces
- RDBMS (a Commodity)

INPUT

NOTES:

MAAP-11b

MPRE89-82

Systems Software Products Market—Inhibiting Forces

- Mainframe Saturation
- Competition and Price Pressures
- Declining Software Price per Copy
- AS/400 DBMS Reduces Market for Independents

INPUT

NOTES:

MAAP-12

MPRE89-83

Major Vendors' Shares of Systems Software Market—1988

Company Name	1988 US Revenue ($ M)*	Market Share (%)
IBM Corporation	2,800	23
Digital Equipment Corp.	900	7
Computer Associates	570	5
Unisys Corp.	500	4
Hewlett-Packard	230	2

* INPUT Estimates

INPUT

NOTES:

MPRE89-84,85

Major Vendors' Shares of Systems Software Market—1988

Company Name	1988 US Revenue ($ M)*	Market Share (%)
Ashton-Tate	200	2
Microsoft	180	1
Wang Laboratories	170	1
NCR Corporation	160	1
Novell, Inc.	150	1
Cincom Systems	140	1

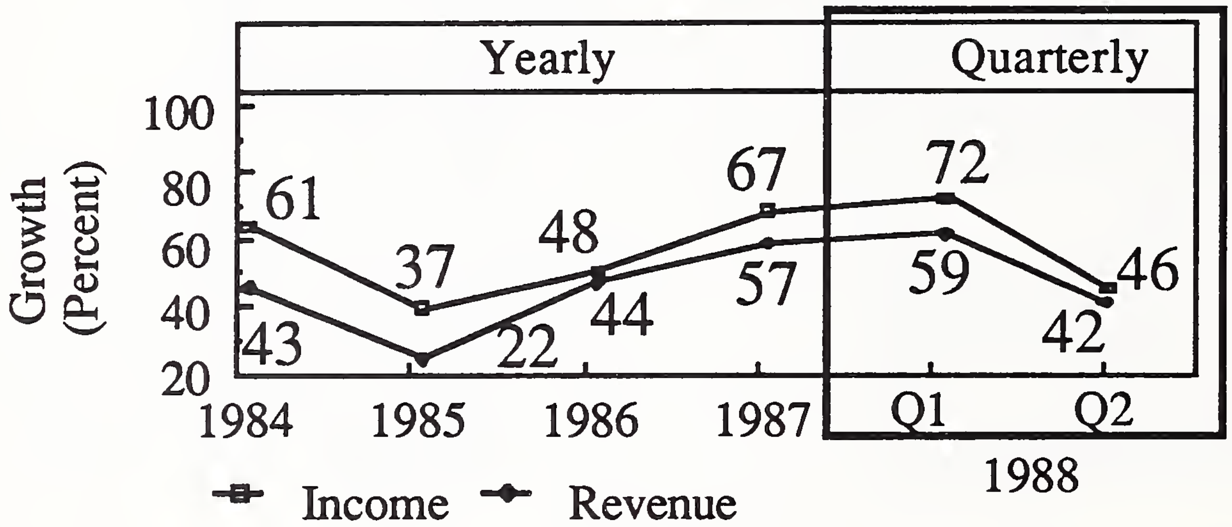
* INPUT Estimates

INPUT

NOTES:

MPRE89-86,87

Public Systems Software Products Vendors



INPUT

NOTES:

MPRE89-88

IBM Actions
-Major-

- New Line of Business: Applications Solutions

- AS/400 Midrange System
  - 1st SAA Announcement
  - Software Announcement
  - Applications

INPUT

NOTES:

JJ88-DW2-25a

IBM Actions—Major

- OS/2 and OS/2E
- Applications Systems Division (ASD)
  - Internal and External Responsibility for SW
  - 6,000 Employees
  - Aggressive Third-Party Program
  - Internal Focus
  - CIM
  - Office Systems
  - Customer Information File

INPUT

NOTES:

JJ88-DW2-25b

MPRE89-90a,b

SAA

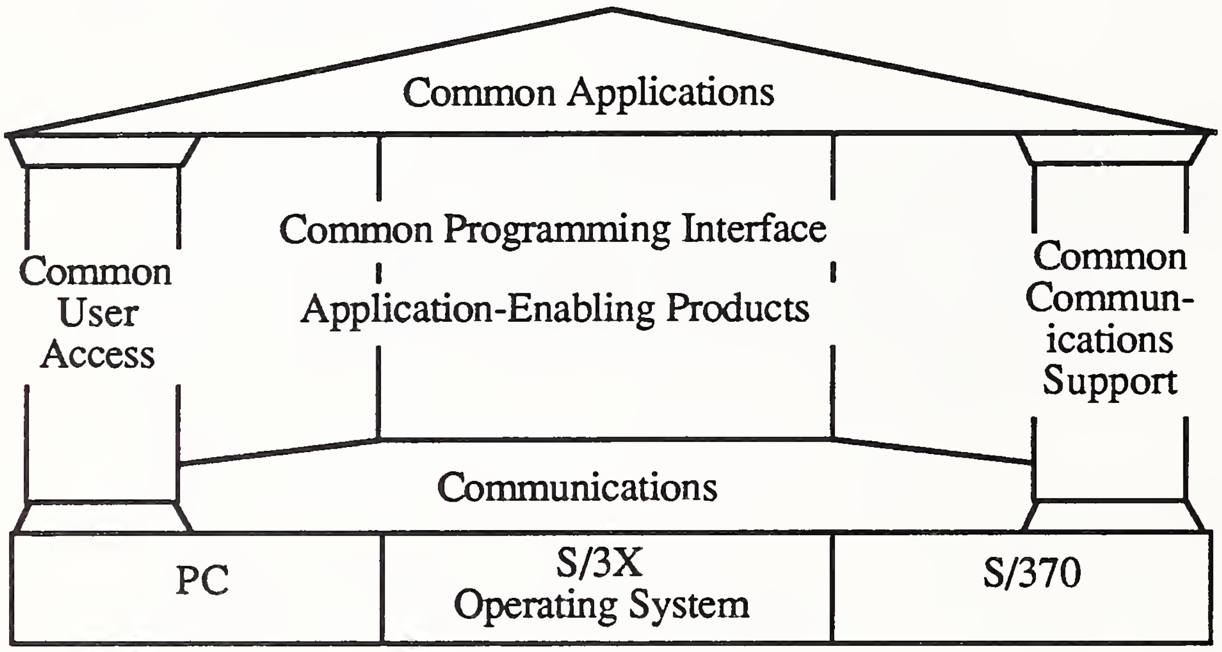
- Single Most Important Event Unfolding in Software Products Market

INPUT

NOTES:

JJ88-DW2-27b

SAA—What Is It?



INPUT

NOTES:

JJ88-DW2-28

MPRE89-92

SAA Shortfall

- Moving Target
- All Platforms/OS Not Covered
- All Languages Not Covered
- Networking Limitations
- Lack of Documentation
- Missing Important Application-Enabling Components

INPUT

NOTES:

JJ88-DW2-30

MPRE89-93

SAA—When?

Official Announcement	3/17/87
Marketing Efforts	Continuous
<u>Hardware Platforms</u>	
PS/2: O/S 1.1	3Q88
S/3X (AS/400)	2Q88
S/370	4Q89*
S/? (Next System)	4Q90*

* INPUT Estimate

INPUT

NOTES:

JJ88-DW2-31

SAA—Conclusions

SAA Will:

- Drive Product Consolidation
- Be a User Requirement
- Drive New Applications/Products
- Drive Software Pricing
- Reshape the Software Industry

INPUT

NOTES:

JJ88-DW2-33

Open Software Foundation

Background

- Sun/AT&T Form Strategic Relationship
- Other UNIX-Oriented Vendors Band Together in Response

INPUT

NOTES:

JJ88-DW2-35a

MPRE89-96

Open Software Foundation
-Formation-

<u>Result</u>

- Not-for-Profit Group
- Seven Original Founders
  - Apollo, Groupe-Bull, DEC, HP, IBM, Nixdorf, Siemens
- $13.5M over 3 Years for Sponsors
- $25K/Year for Associates

INPUT

NOTES:

JJ88-DW2-35b

Alliances

- CASE Vendors
  - Front-End/Back-End
- Relational Technology/Computer Task Group /Westinghouse
- Cullinet/SHL Systemhouse

INPUT

NOTES:

MPRE89-98

Alliances

- CAI/Unisys
- Ashton-Tate/Microsoft/Sybase
- DEC/Apple

INPUT

NOTES:

MPRE89-99

New/Hot Software Areas

- CASE/Development Tools
- AI—Rejuvenated
- Data Center Management
- UNIX
- Image Processing
- DSS/EIS

INPUT

NOTES:

MPRE89-100

CASE
(Computer-Assisted Systems Engineering)

Market and Opportunity

INPUT

NOTES:

JJ88-DT4-1

MPRE89-103

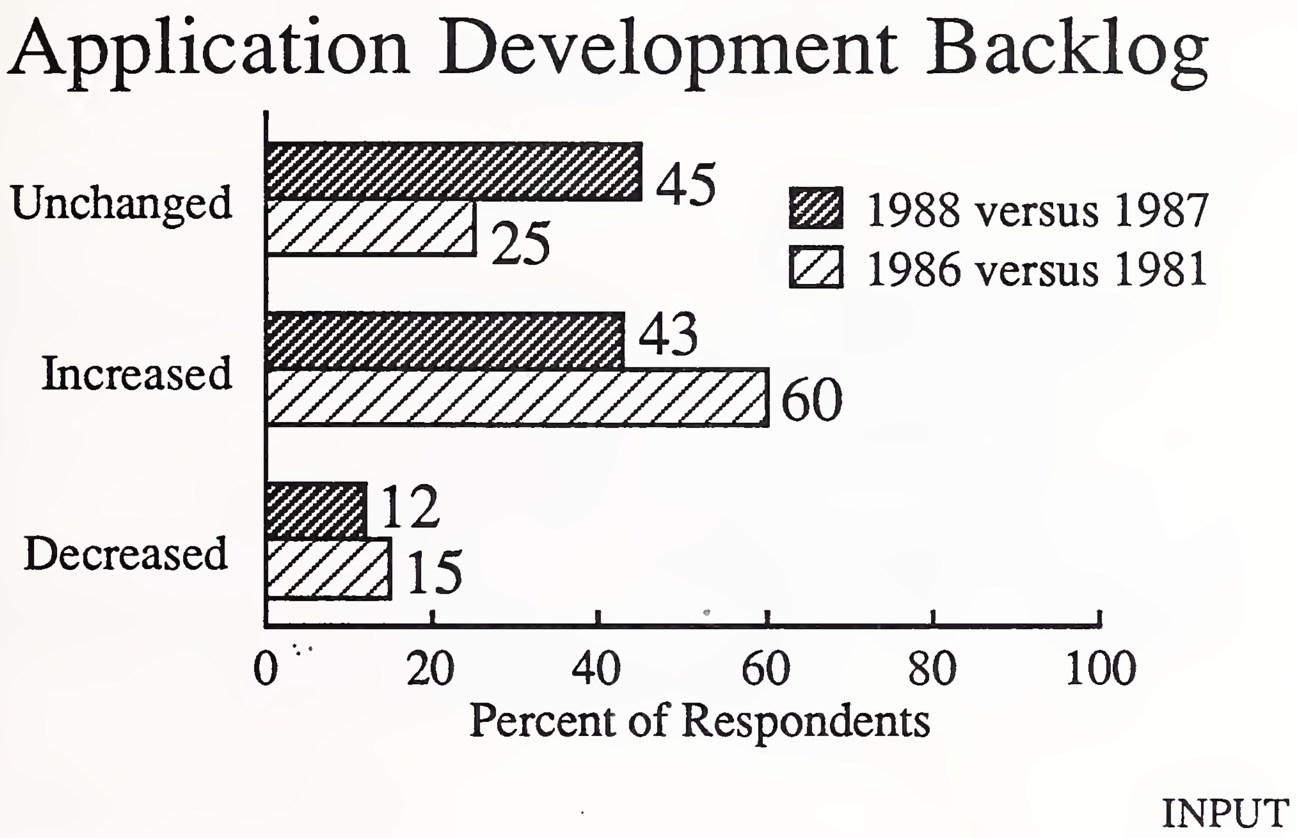
CASE Opportunity
Software Crisis

	Software Development			
	In-House		Products	
	Small	Large	Small	Large
Systems Software				
	Small	Large	Small	Large
Applications Software				

INPUT

NOTES:

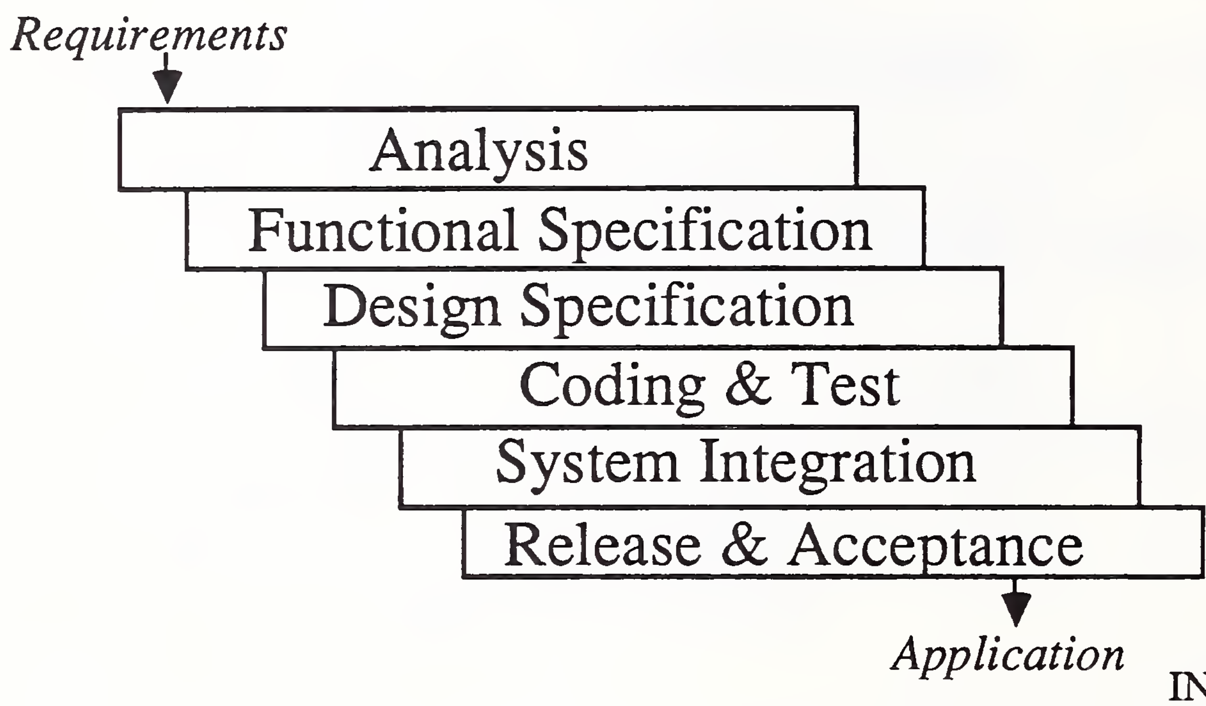
JJ88-DT4-5



NOTES:

MPRE89-296

Development Lifecycle
The CASE Opportunity



INPUT

NOTES:

JJ88-DT4-6

MPRE89-105

CASE Tools

New Development

Lifecycle Management	
Design	Code Generation
Documentation	

Maintenance

- Translators
- Analyzers
- Comparators
- Restructurers

INPUT

NOTES:

JJ88-DT4-16

MPRE89-106

CASE - User Perspective

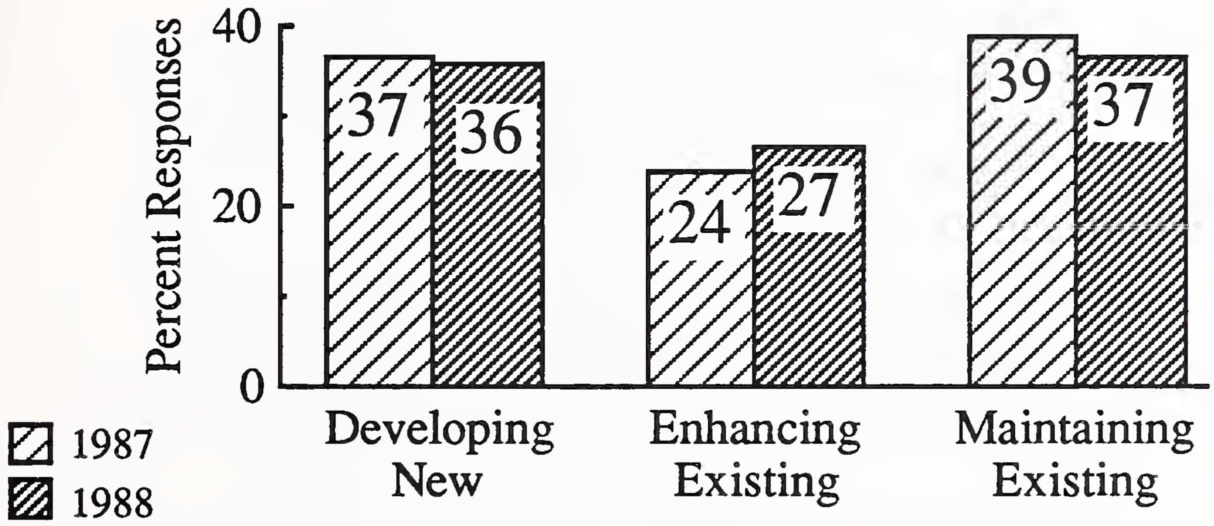
- Backlog Problem Not Improving
- Productivity Problem Real
- Concern About Discipline Requirements
- Cautious About CASE

INPUT

NOTES:

JJ88-DT4-8

Application Development Resources: Allocation of Internal Resources

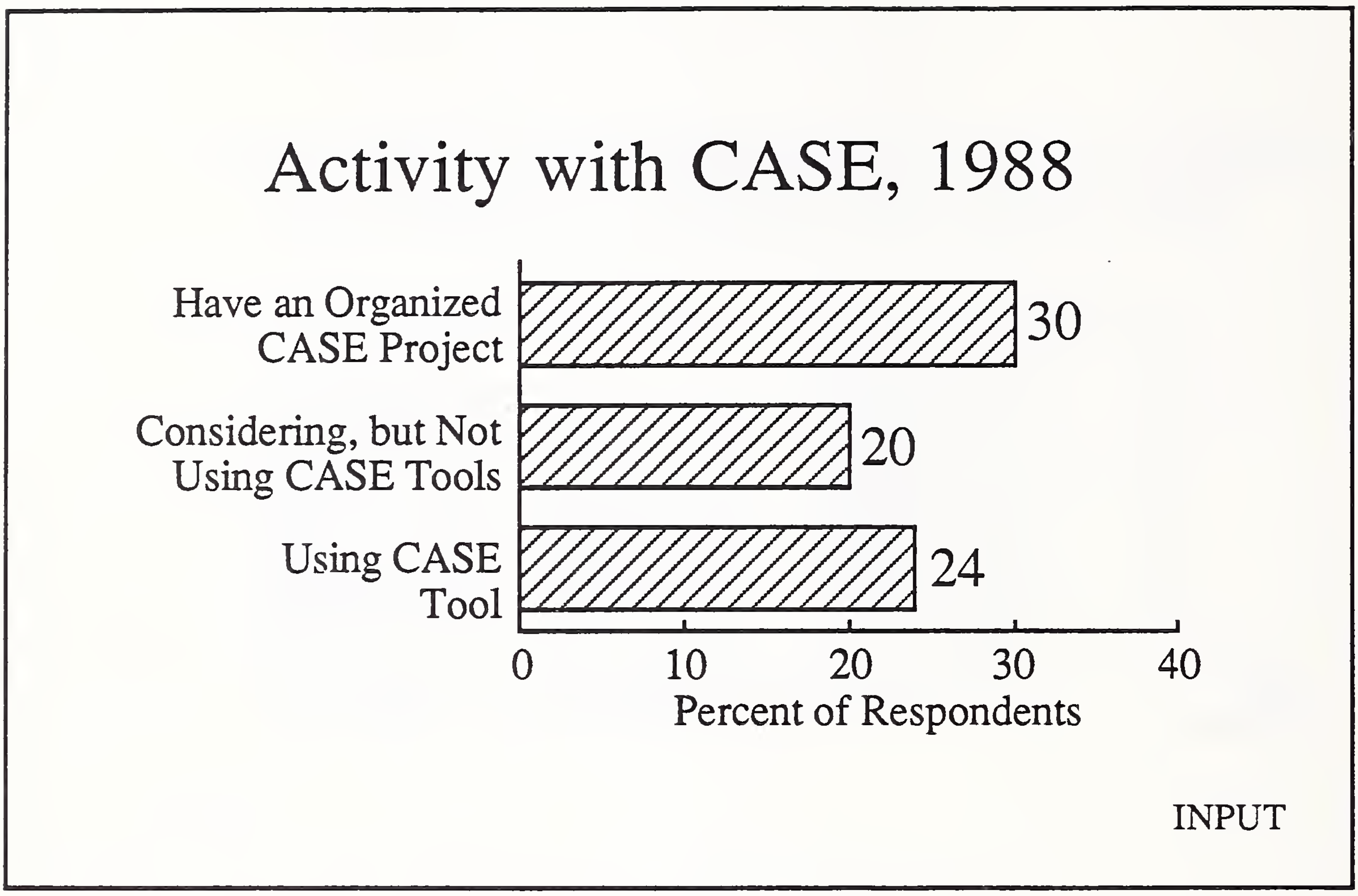


INPUT

NOTES:

JJ88-DT4-11

MPRE89-108



NOTES:

MPRE89-298

CASE—User Perspective Summary

- Real Productivity Problem
- Lingering Resistance to Disciplined Development Processes
- Two Problems
  - Existing Applications - 2/3rds
  - New Development - 1/3rd
- Slow to Become Systems Engineers

INPUT

NOTES:

JJ88-DT4-15A,B

MPRE89-110a,b

Market Status

- Remains in Emerging Phase
  - 3% to 5% Penetration
  - Rapid Growth - 100% a Year for 1985-87
  - No Dominant Vendors
- User Caution
  - Pilot Versus General Use
  - Wait and See Attitude

INPUT

NOTES:

JJ88-DT4-22

MPRE89-111

Market Status

- Large Vendor Population
  - 40+ Active & 40+ Announced Vendors
  - Potential of Hundreds

INPUT

NOTES:

MPRE89-112

Vendor Alliances Professional Services-Front End

Arthur Young	KnowledgeWare
Coopers & Lybrand	NASTEC
Deloitte Haskins & Sells	Index Technology

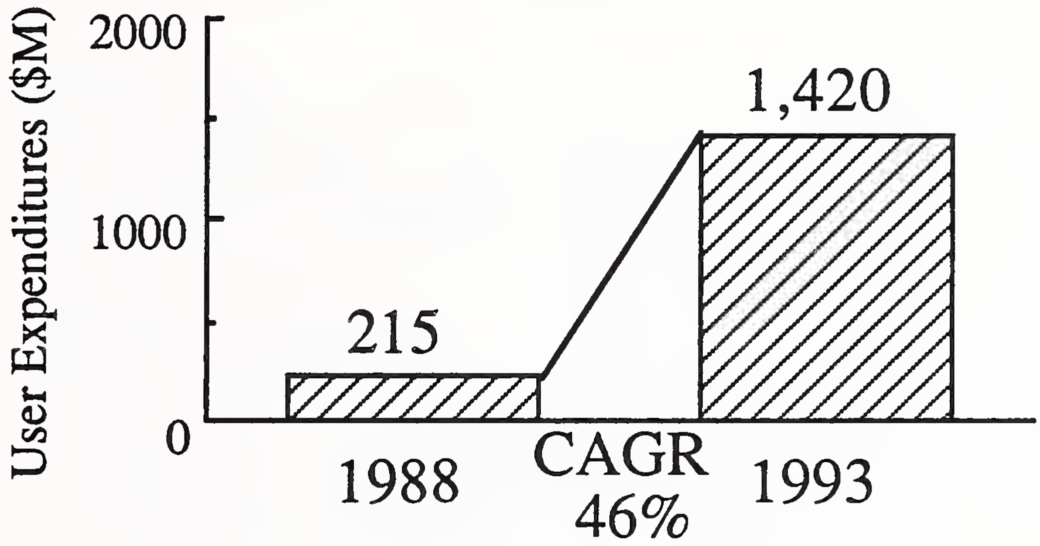
INPUT

NOTES:

JJ88-DT4-29

MPRE89-113

CASE Market, 1988-1993

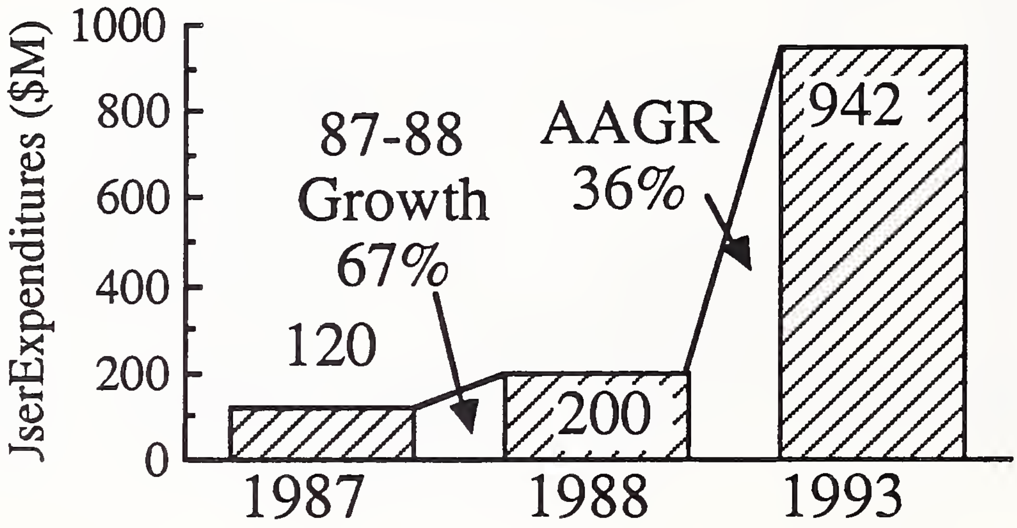


INPUT

NOTES:

MPRE89-297

CASE Market Forecast, 1987-1993
Front-End Usage Expenditures



INPUT

NOTES:

JJ88-DT4-34

MPRE89-114

Leading CASE Vendors

- Index Technology
  The Largest Vendor, One of the First, with a Front-End Focus
- KnowledgeWare
  The First U.S.-Based Front-End Tool Developer to Introduce a Code Generator

INPUT

NOTES:

MPRE89-299a

Leading CASE Vendors

- Cadre Technologies
  A Real-Time Systems CASE Vendor
  Trying to Enter the IS Market

INPUT

NOTES:

MPRE89-299b

Emerging CASE Vendors

- Bachman Information Systems
  The First to Truly Address
  Re-Engineering

- Softlab
  An Established German Vendor
  Entering the U.S. Market

INPUT

NOTES:

MPRE89-300a

Emerging CASE Vendors

- Texas Instruments
  A Full I-CASE Vendor with a
  Very Specific Solution

- Andersen Consulting
  A Professional Services Company
  Applying Technology to its Proven
  Methodology

INPUT

NOTES:

MPRE89-300b

CASE—Future Directions

- I-CASE
- Professional Services Companies' Critical Role
- CASE Support Services
- Repository Element Key
- End-User CASE

INPUT

NOTES:

MPRE89-318

AI—Revisited & Rejuvenated

- New Players
  - Neuron Data, Natural Language
- Old Players
  - Teknowledge—Withdraws Direct Marketing
  - Language Group—Niche Oriented
  - Intellicorp—Major Agreement with IBM

INPUT

NOTES:

JJ88-DW2-42a

AI—Revisited & Rejuvenated

- Front-End Applications
  e.g., ADR's—Mindover
  Verity—Text Retrieval
  etc. . .

INPUT

NOTES:

JJ88-DW2-42b

MPRE89-102

Summary & Conclusions

INPUT

NOTES:

JJ88-DW2-44

Software Vendor Profile for Success

- Large Installed Base
- Heterogeneous Hardware Support
- Applications/Systems Product Basket
- Hardware Independence
- Strong Financial Resources

INPUT

NOTES:

JJ88-DW2-45

Turnkey Systems/ VARs

Market Forecast & Trends

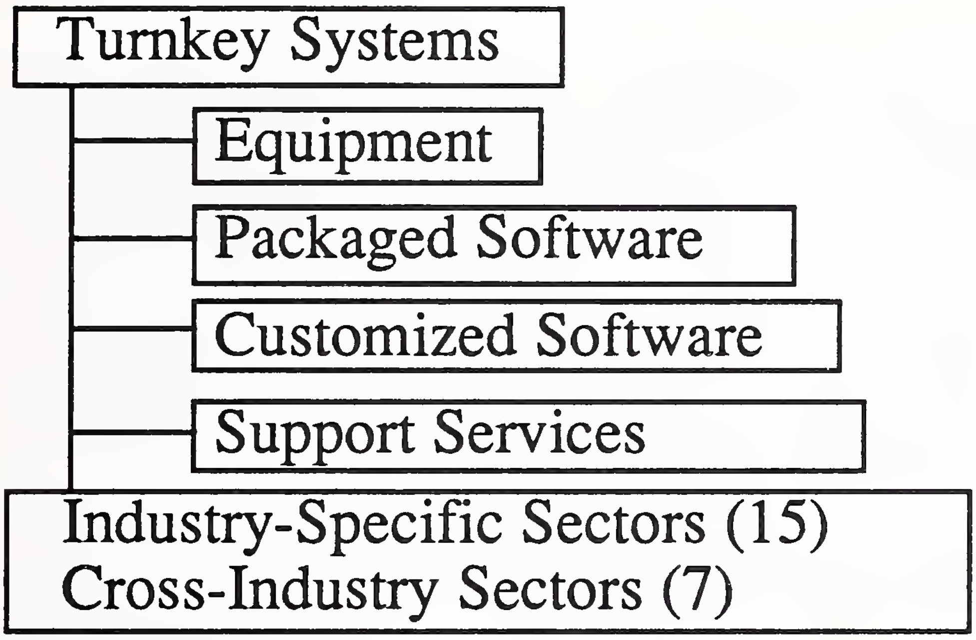
INPUT

NOTES:

JJ88-RG2-1

MPRE89-117

Turnkey Systems Market Structure

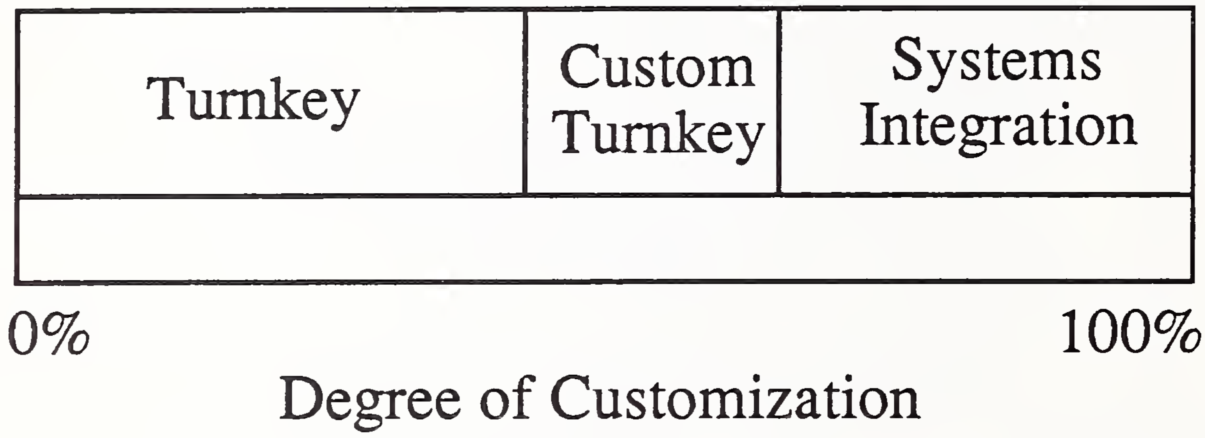


INPUT

NOTES:

MPRE89-118

The Customization Spectrum



INPUT

NOTES:

MAAP-17

MPRE89-119

Differences Between System Integrators and Turnkey System Vendors

Systems Integrators	Turnkey Systems
Strategic Design & Consulting	Tactical Consulting
Multi-Year Effort	Single Year Time Span
High Level Complexity	Modest Complexity

INPUT

NOTES:

JJ88-RG2-5a

MPRE89-120

Differences Between System Integrators and Turnkey System Vendors

Systems Integration	Turnkey Systems
SW Development	Software Products
High Cost	Moderate Cost
Large Project Management Skills	

INPUT

NOTES:

JJ88-RG2-5b

MPRE89-121

Similarities Between System Integrators and Turnkey Systems Vendors

Prime Contractors Role

Multiple Vendors Involved

Equipment Delivery

Software Customization

Installation, Training, and Support

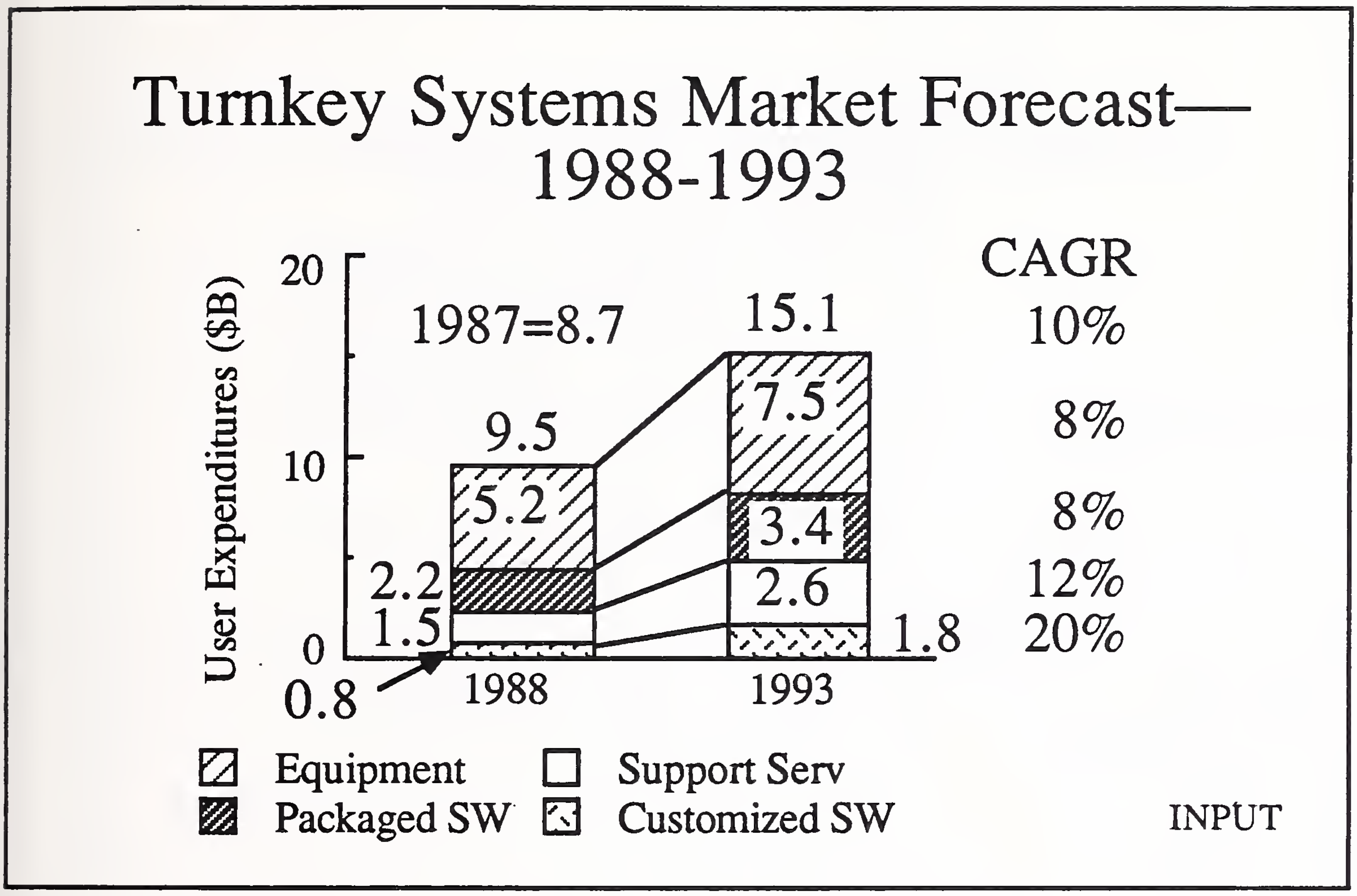
Post-Installation Support

INPUT

NOTES:

JJ88-RG2-5c

MPRE89-122



NOTES:

MPRE89-123

Platform Types: Turnkey Systems Equipment

	Total Equipment Shipped (Percent)	
	1987	1993 (Est.)
Mainframe	12	5
Minicomputer	63	35
Micro/ Workstation	25	60

INPUT

NOTES:

JJ88-RG2-9

MPRE89-124

Selected Computer Systems Vendors Turnkey Products

- IBM's SolutionPacs
- IBM's AS/400 Office
- DEC's Solution Systems
- Unisys' Purchase of Convergent, a Leading VAR

INPUT

NOTES:

JJ88-RG2-10

MPRE89-125

Turnkey Systems Market—Driving Forces

- Micro-Based Solutions
- Customization
- Growth of Support Services
- Software Applications Required
- Account Control at Low End of Spectrum

INPUT

NOTES:

MAAP-19

MPRE89-126

Turnkey Systems Market—
Inhibiting Forces

- Shift to Software Vendor Role
- Hardware Vendors Writing Software
- Cash Flow/Prime Contractor Expenses and Resources

INPUT

NOTES:

MAAP-20

MPRE89-127

Major Vendors' Shares of Turnkey Systems Market—1988

Company Name	1988 US Revenue ($ M)*	Market Share (%)
Intergraph	700	7
Prime/Computervision	600	6
Reynolds & Reynolds Company (The)	260	3

* INPUT Estimates

INPUT

NOTES:

MPRE89-128

Major Vendors' Shares of Turnkey Systems Market—1988

Company Name	1988 US Revenue ($ M)*	Market Share (%)
McDonnell Douglas Information Systems Group	250	3
Compugraphic Corp.	240	3

* INPUT Estimates

INPUT

NOTES:

MPRE89-129

Major Vendors' Shares of Turnkey Systems Market—1988

Company Name	1988 US Revenue ($ M)*	Market Share (%)
Automatic Data Processing, Inc.	230	2
National Computer Sys.	230	2
Schlumberger	220	2

* INPUT Estimates

INPUT

NOTES:

MPRE89-130

Major Vendors' Shares of Turnkey Systems Market—1988

Company Name	1988 US Revenue ($ M)*	Market Share (%)
ISC Systems Corp.	160	2
Bolt, Beranek and Newman, Inc.	150	2
Convergent Tech.	140	1

* INPUT Estimates

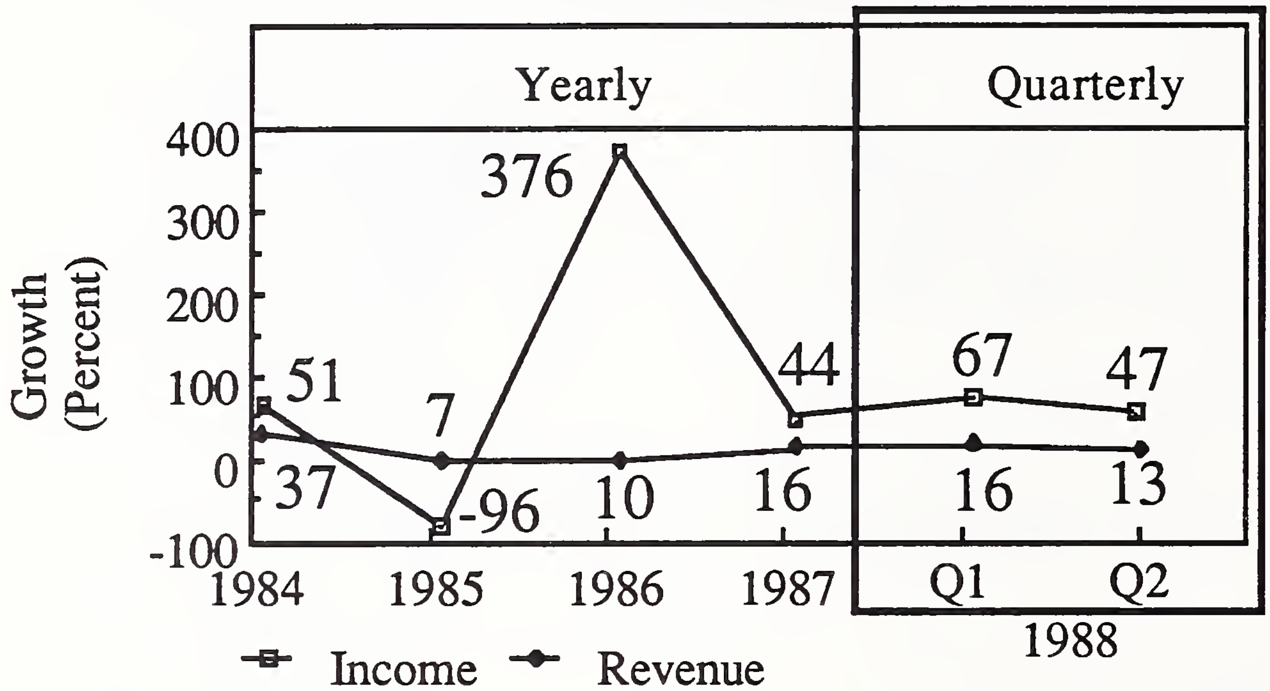
INPUT

NOTES:

MAAP-21d

MPRE89-131

Public Turnkey Systems Vendors



INPUT

NOTES:

MPRE89-132

Vendor Strategies

Increase Typical System Size/Price
- Enhance Product Offering
- Sell Larger Systems

Expand Industry Coverage
- Related Opportunities within Current Industry
- New/Additional Industry Markets

INPUT

NOTES:

MPRE89-133

Expanding Services

Provide New/Additional Services

- Consulting
- Customized Programming
- Additional Training/Education
- Data-Center Management

INPUT

NOTES:

JJ88-RG2-20

Vendor Strategies

Third-Party Application Software Developers

- Cross-Matching
  - Complements VAR Product
  - Opens New Prospects
- Cross-Industry
  - Adds Value
  - Enhances Relationship

INPUT

NOTES:

JJ88-RG2-23

MPRE89-135

Most Successful Applications Areas for Turnkey/VARs

- CAD/CAM/CAE
- Automotive Dealer and Distribution Systems
- Health Care/Medical Systems
- Banking/Finance Processing Applications

INPUT

NOTES:

JJ88-RG2-26a

Most Successful Applications Areas for Turnkey/VARs

- Telecommunications
- Legal Applications
- MRP Systems

INPUT

NOTES:

JJ88-RG2-26b

MPRE89-137

Conclusions/Recommendations

- Become a Multi-Regional Turnkey Systems/VAR
- Increase Content of Industry-Specific Application Software
- Resell Proprietary Applications
- Increase Repeat Business to 50-60% Range

INPUT

NOTES:

JJ88-RG2-29a

MPRE89-138

Conclusions/Recommendations

- Look to Installed Base as a Key Asset
- Focus on Ongoing Revenue Streams
- Emphasize Value-Added Services such as Software Maintenance, Consulting, Education, and Training

INPUT

NOTES:

JJ88-RG2-29b

Conclusions/Recommendations

- Increase Emphasis on Follow-On Products
- Develop Strategic Alliances
- Take Advantage of New Applications Development Tools

INPUT

NOTES:

JJ88-RG2-29c

MPRE89-140

Conclusions/Recommendations

- Explore UNIX-based Hardware Platforms
- Develop Applications around Industry Standards
- Increase Emphasis on Network Integration

INPUT

NOTES:

JJ88-RG2-29d

SI Market Definition

Integrated Solution to a
Multidisciplinary Information
Systems Requirement

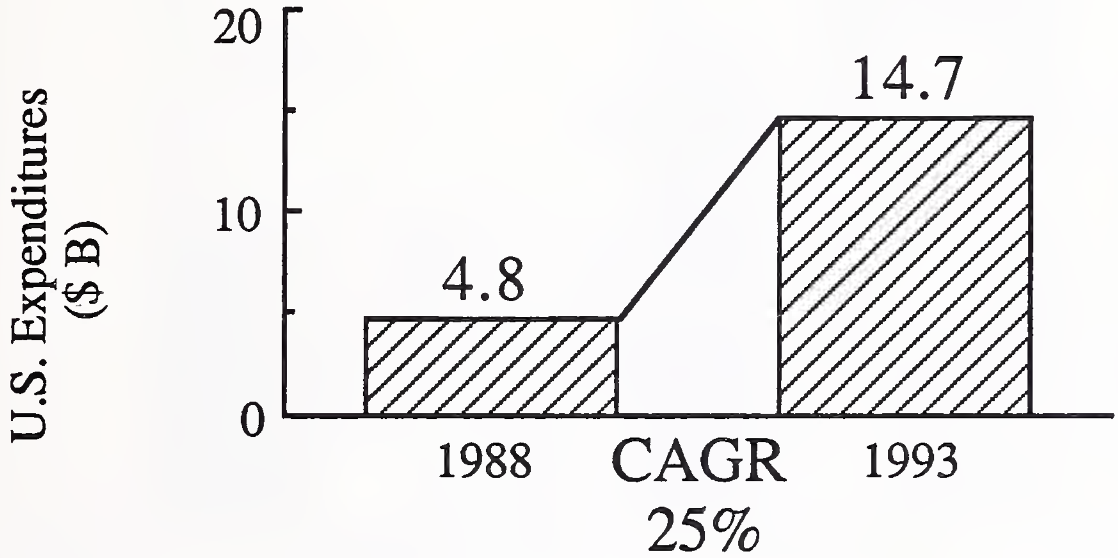
INPUT

NOTES:

JJ88-JF2-2

MPRE89-142

Systems Integration Market Forecast

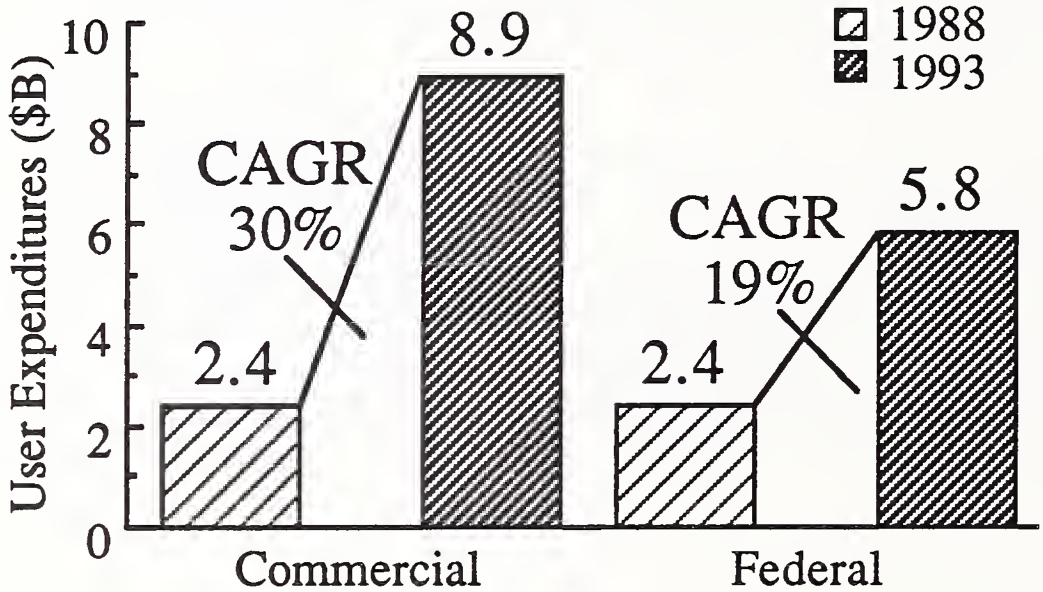


NOTES:

SIOS-11

MPRE89-340

Systems Integration Market Forecast

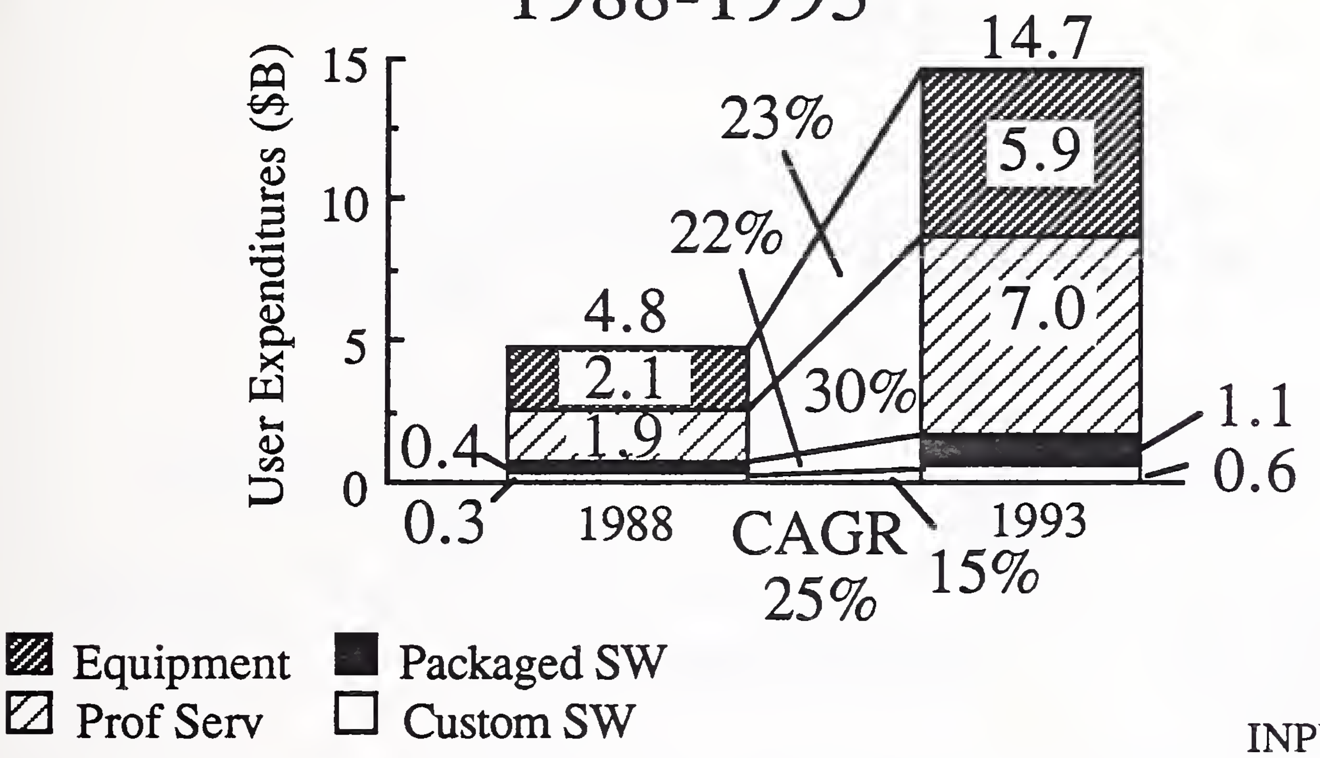


INPUT

NOTES:

MPRE89-354

Systems Integration Component Groups, 1988-1993

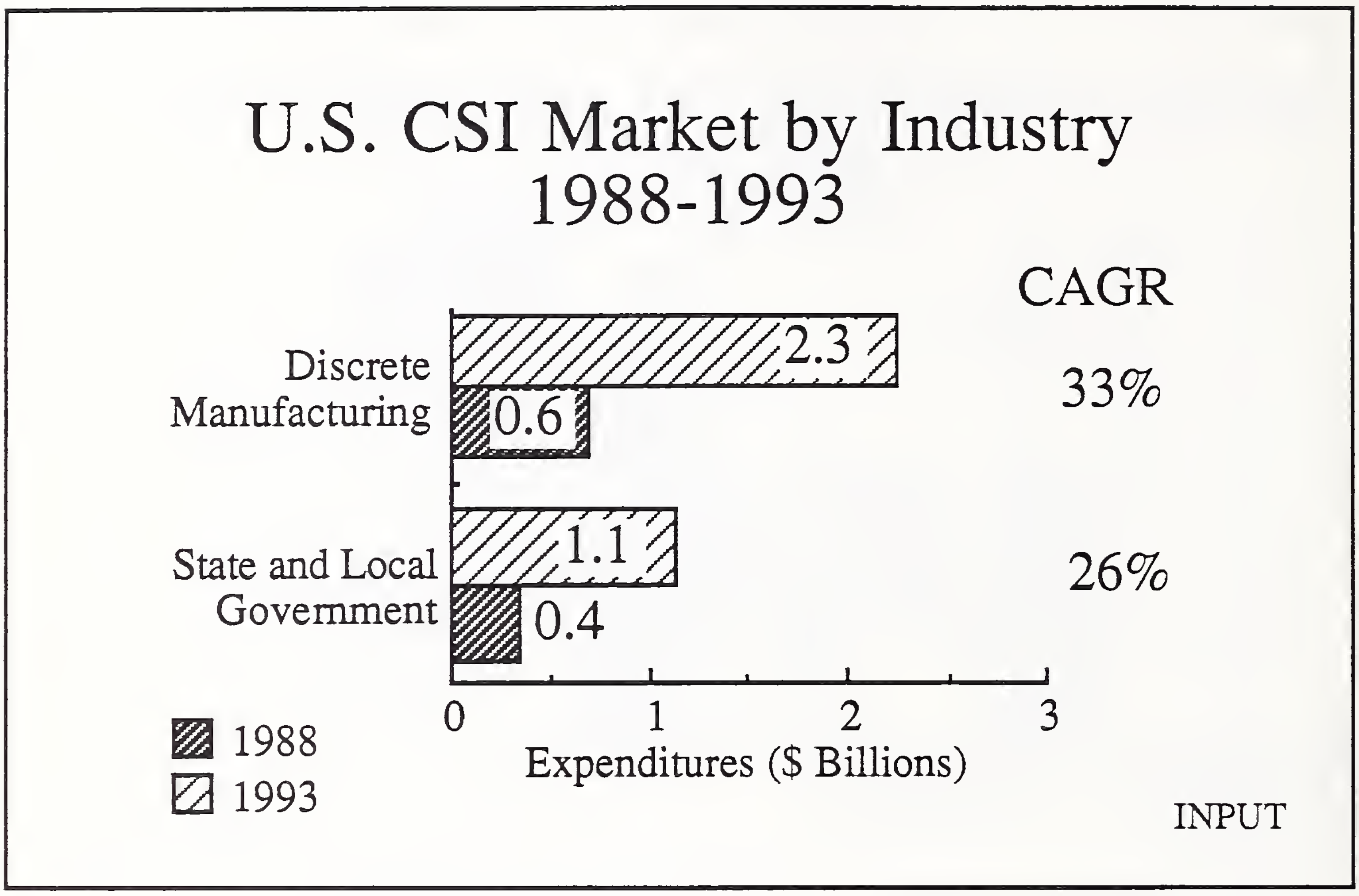


INPUT

NOTES:

MAAP-24

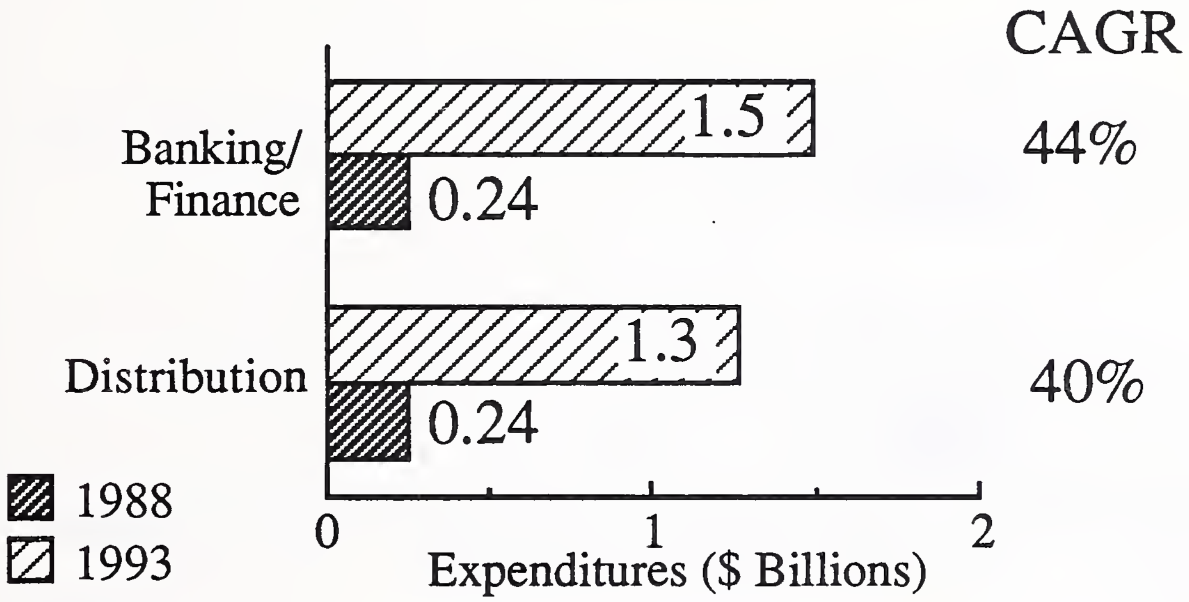
MPRE89-145



NOTES:

MPRE89-146

Expenditures by Industry 1988-1993

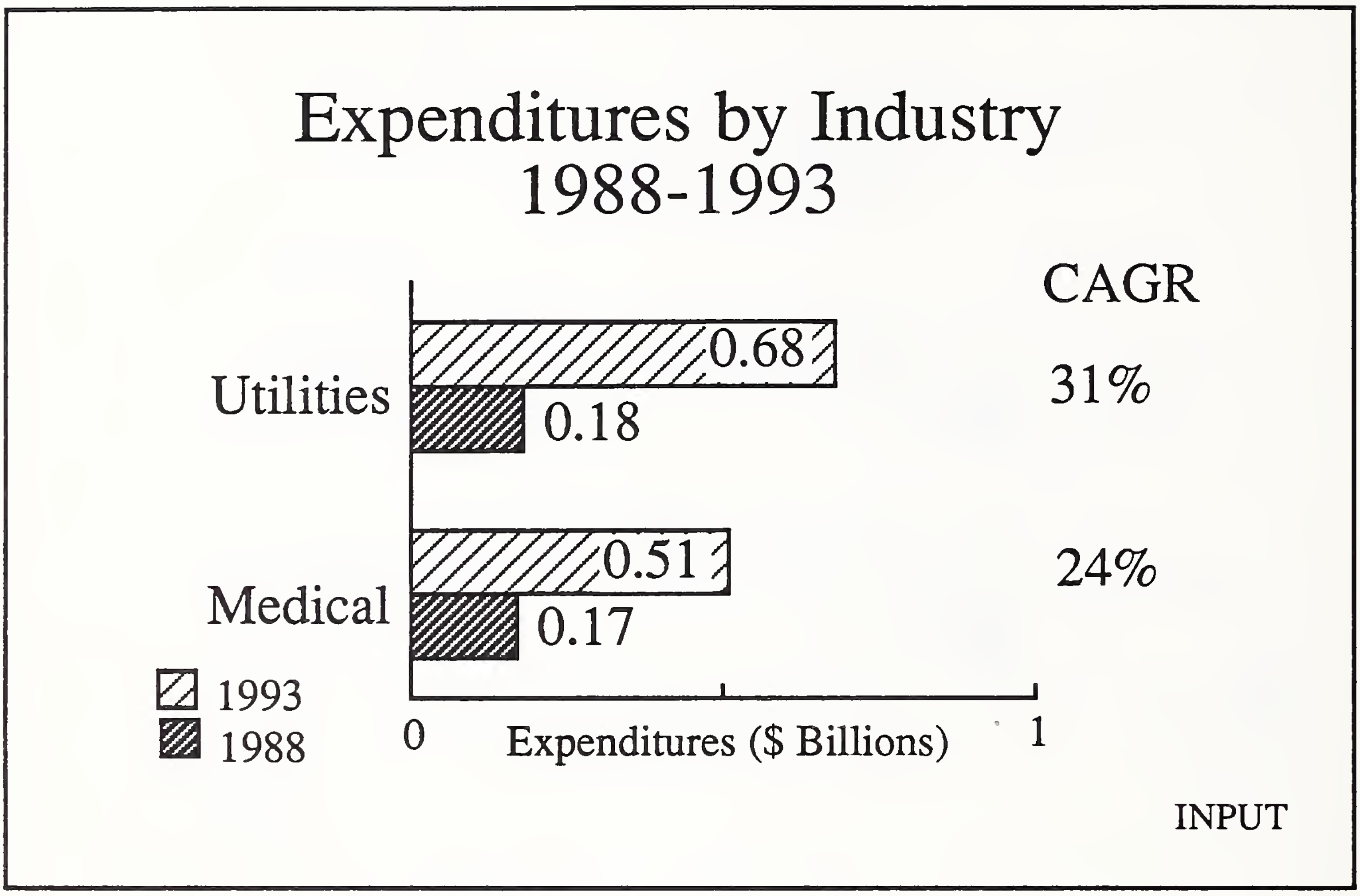


INPUT

NOTES:

JJ88-JF2-6

MPRE89-147

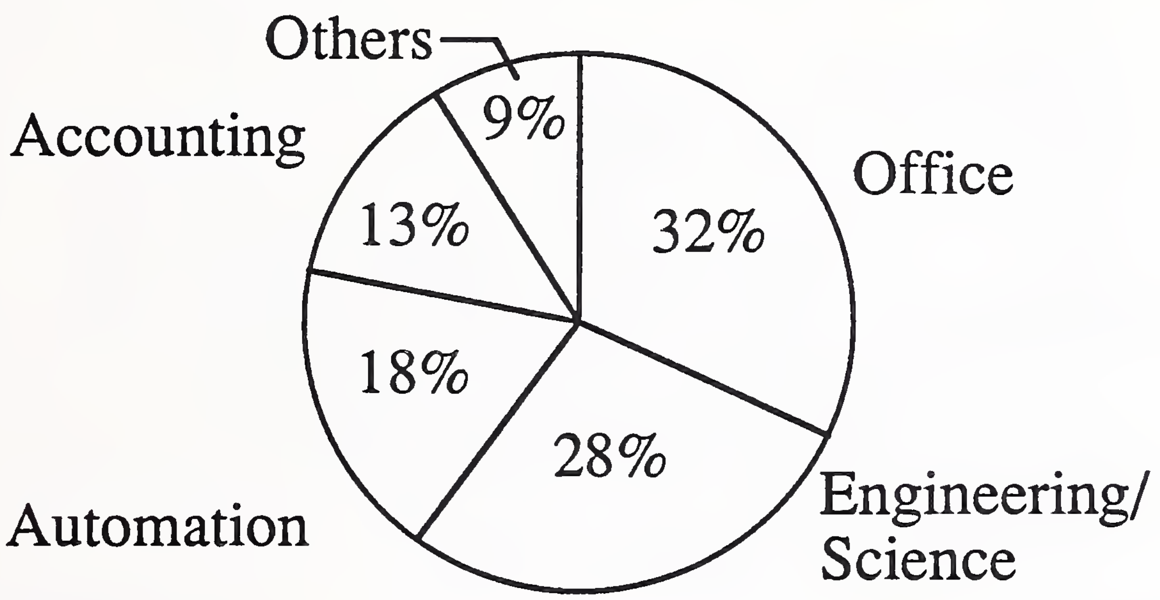


NOTES:

JJ88-JF2-7

MPRE89-148

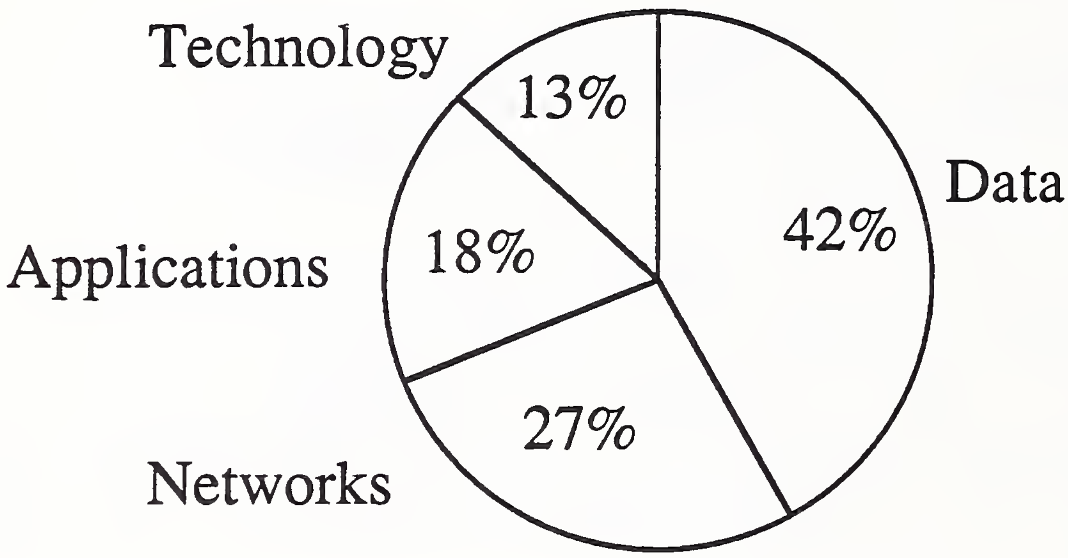
Cross-Industry Market Distribution, Commercial Systems Integration



NOTES:

MPRE89-355

Project Distribution by Focus, 1988



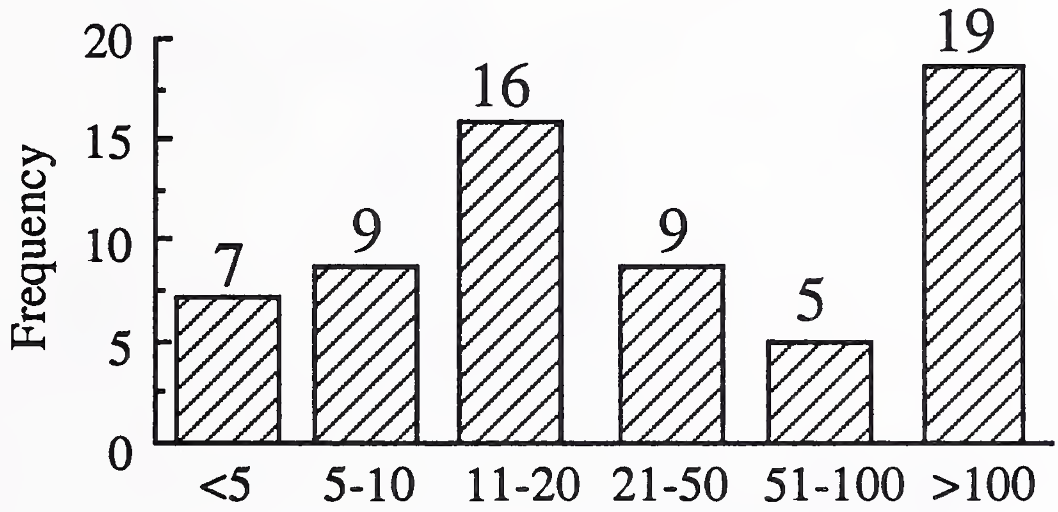
INPUT

NOTES:

MPRE89-356

Distribution of Projects by Value

Federal Sector



No. Projects = 65

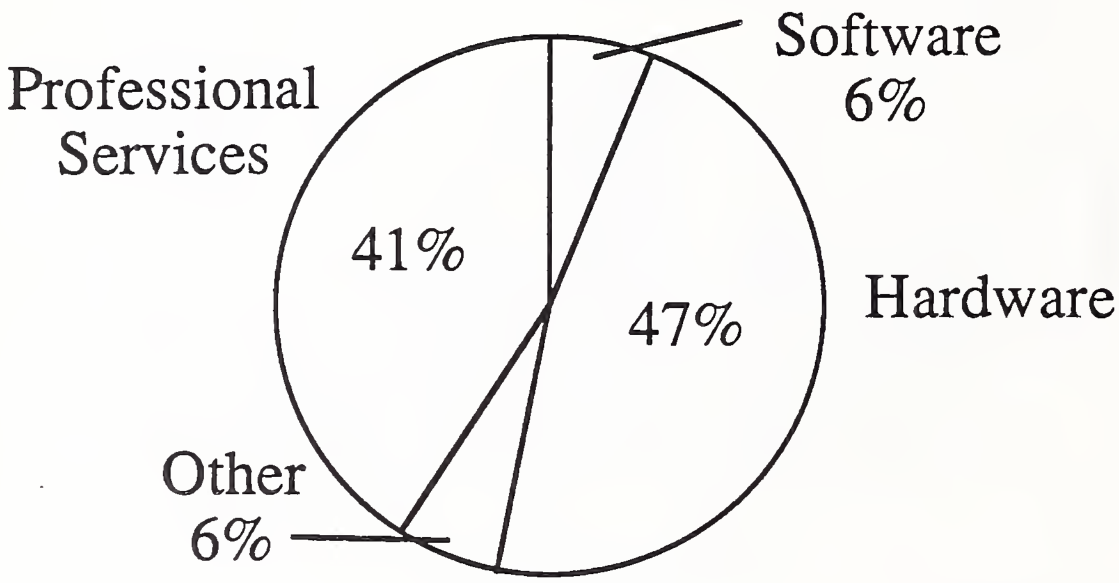
INPUT

NOTES:

SIOS-41a

MPRE89-343

Expenditures by Component Group Federal Project Sample



N=56 Projects

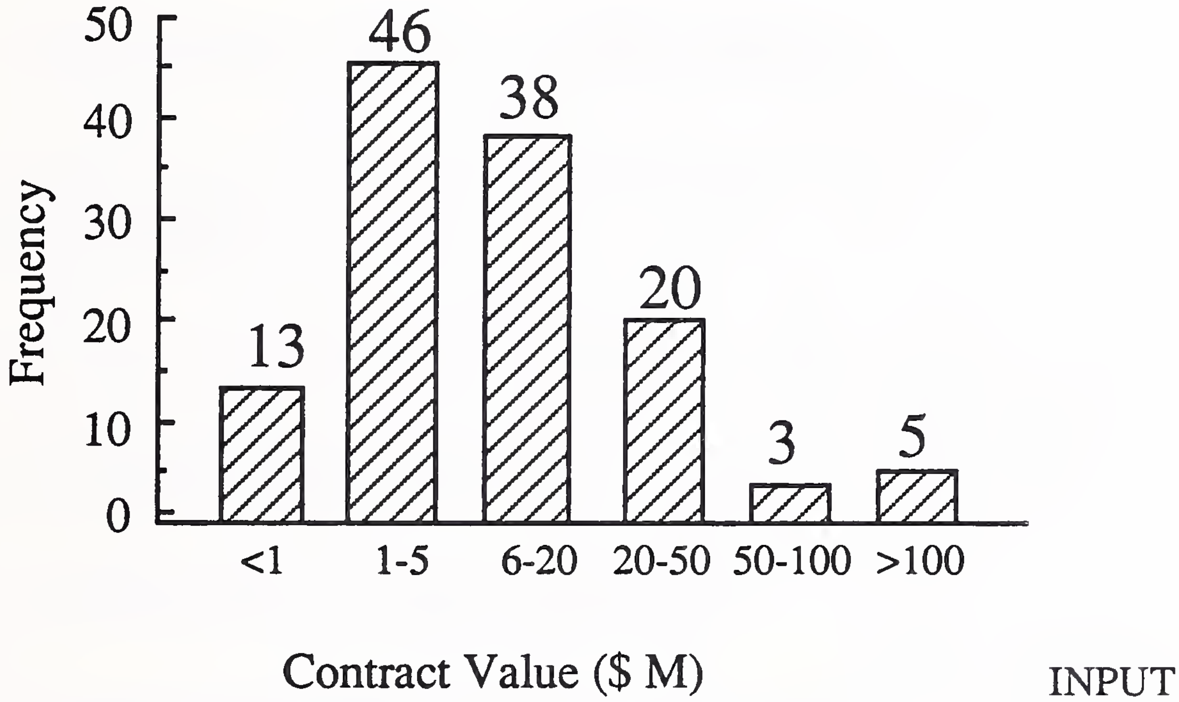
INPUT

NOTES:

SIOS-42

MPRE89-344

Distribution of Commercial Projects by Value

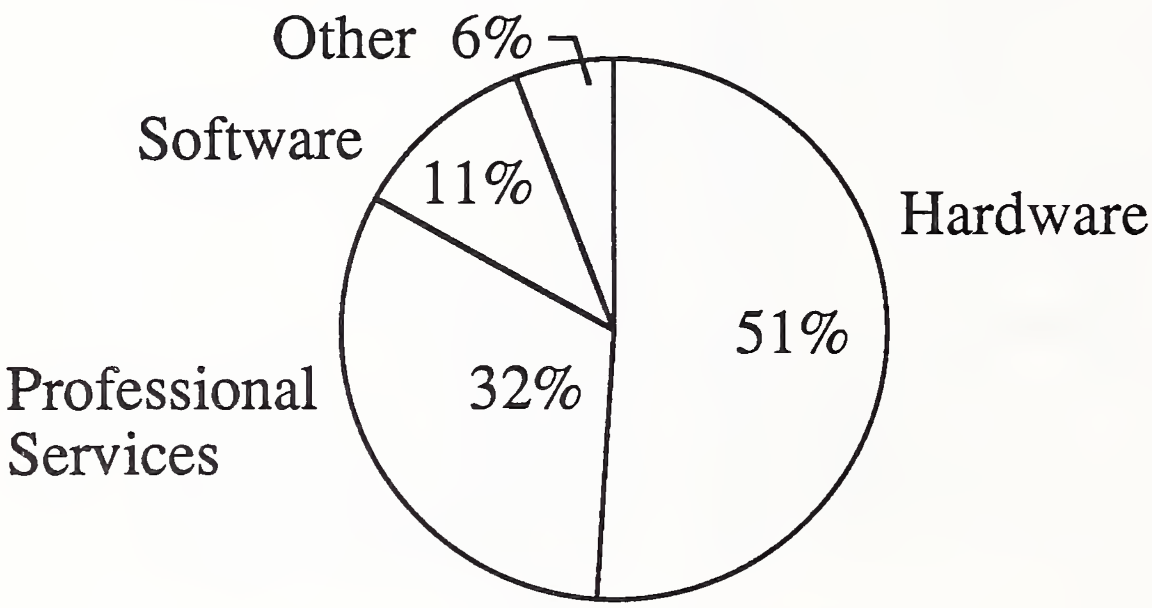


NOTES:

SIOS-43a

MPRE89-345

Expenditures by Component Group
Commercial Project Sample



N=62 Projects

INPUT

NOTES:

MPRE89-346

Driving Forces—1988

- "Bottom Line" Management
- Rapid Response and Deployment
- Expanding Wealth of Technology
- Unstable Organizational Environment
- Systems Complexity
- Networking Requirements
- Shift from Professional Services

INPUT

NOTES:

MAAP-25ab

MPRE89-149a,b

Technology Drivers—1988

- Relational Data Structures
- Open Systems Standards
- Multiplatform Software
- Microcomputer Sophistication
- Communications Product Range

INPUT

NOTES:

JJ88-JF2-17

Market Inhibitors—1988

- Client Infrastructure Gridlock
- Existing Applications Portfolio
- In-House Integration Preferences
- Buyer-User Specific Preferences

INPUT

NOTES:

MAAP-26a

MPRE89-150

Market Inhibitors—1988

- Critical Applications Knowledge
- Financial Risk to Vendors
- "Deep Pockets" Required
- Conspicuous Failures

INPUT

NOTES:

MAAP-26b

MPRE89-151

Major Buyers Issues—1988

- Rising Management Expectations
- User Demands for Increasingly Complex Solutions
- Managing the Technology Investment
- Integration—Data/Applications/Technology
- "Mission Critical" Solutions

INPUT

NOTES:

SIOS-36

MPRE89-341

Buyer Issues—Vendor Selection

- Selection Criteria/Process
- Environmental/Organizational Impacts
- Project Management Issues
- End-User Perspectives

INPUT

NOTES:

JJ88-JF2-16

MPRE89-153

Major Issues—1988

Vendors

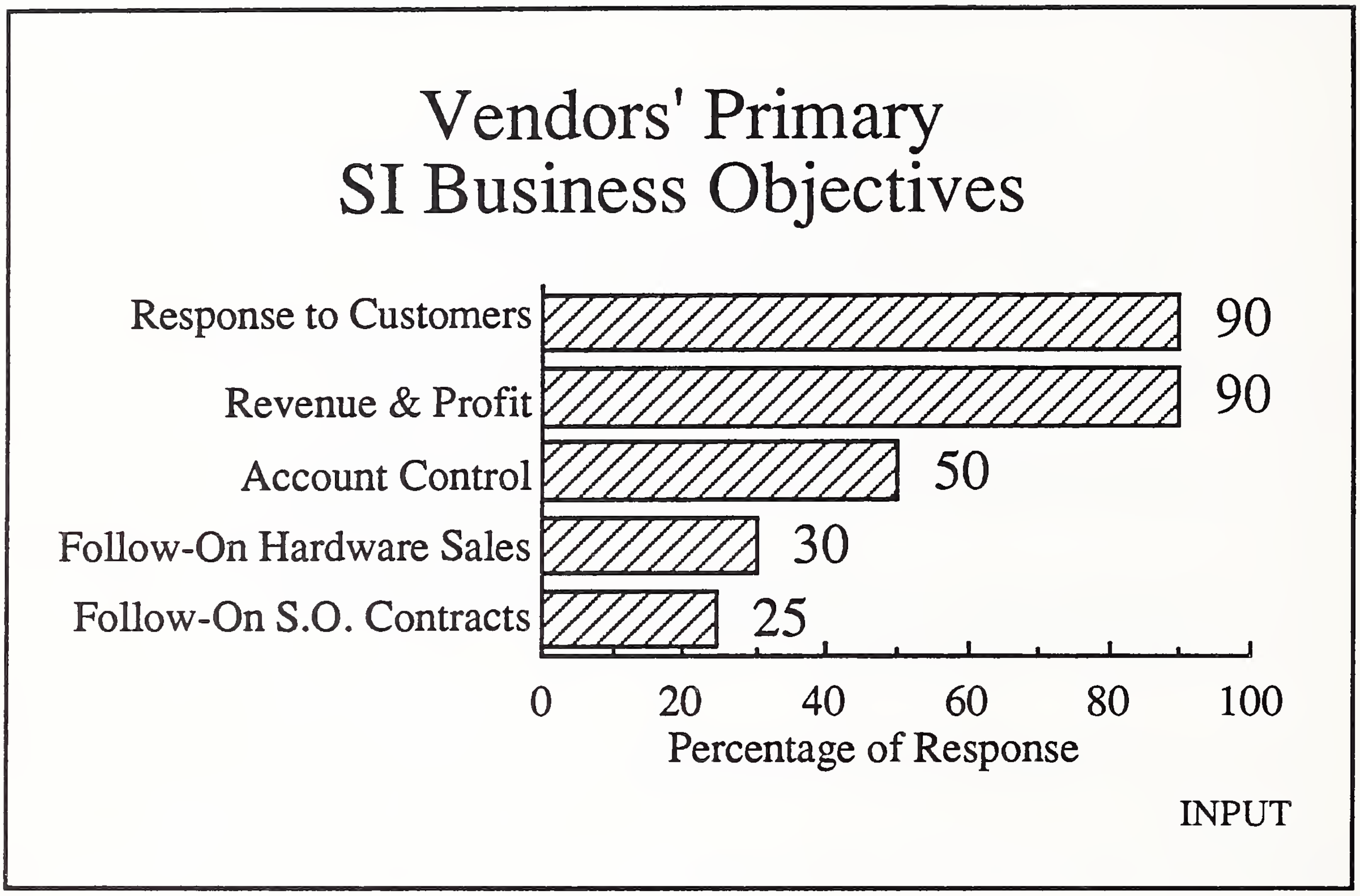
- Potential of Catastrophic Failure
- Resistance from In-House Integrators
- Increasing Competition—Confusion
- Competitive Exposure through Specific Project Alliances
- Leading-Edge Technology Risks

INPUT

NOTES:

SIOS-37

MPRE89-342



NOTES:

MPRE89-357

Implications for Vendors

Trend	Implication
Buying Trends	
User Becomes Buyer	Application Emphasis
Solution Complexity	Development Emphasis

INPUT

NOTES:

JJ88-JF2-26

MPRE89-158

Implications for Vendors

Trend	Implication
Competitive Posturing	
Application Knowledge Critical Long Term	Major Alliances May Be Essential
Turnkey Market Weakening	May Want to Protect Key Subcontractors

INPUT

NOTES:

JJ88-JF2-28

MPRE89-159

Implications for Vendors

Trend	Implication
Strategic Focus	
Current Growth in Technology-Based Projects	Not the Long-Term Opportunity
Vertical Focus of Major SI Competitors	Further Exposure on Profitability

INPUT

NOTES:

JJ88-JF2-29

MPRE89-160

Future Trends

- New Competitors Will Enter Market

  Large, Small & Niche

- Market "Hype" Will Blur Definitions
- Telecommunications Companies
- Increased Centralization of SI "Product" Management within Vendors
- Increased Development of Proprietary Technologies/Methodologies

INPUT

NOTES:

SIOS-61ab

MPRE89-347a,b

Future Trends

- Non-SI Vendors Will Develop Formal Strategies for Market Participation as Subcontractors

Apple

- Number of Acquisitions Will Grow

INPUT

NOTES:

SIOS-62b

MPRE89-348

Systems Integration Recommendations

- Present Full-Service Image
- Leverage/Promote Proprietary Technology
- Establish Strategic Partnerships (Alliances)
- Initiate and Maintain Overall Account Control
- Maintain Project Management Continuity

INPUT

NOTES:

JJ88-JF2-30,31

MPRE89-161a,b

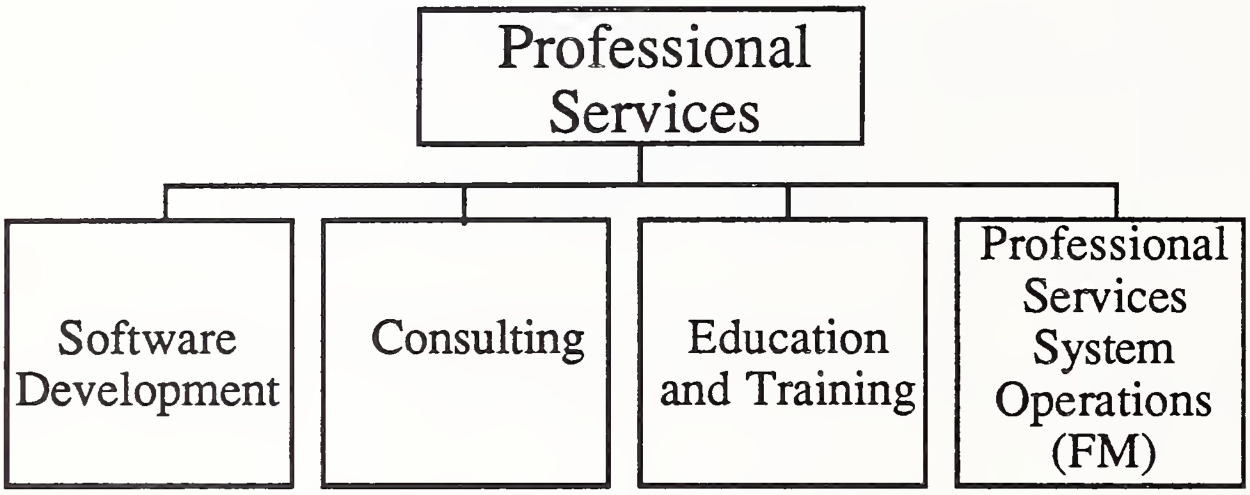
Professional Services
Markets
1988-1993

INPUT

NOTES:

MPRE89-162

Professional Services Market Structure



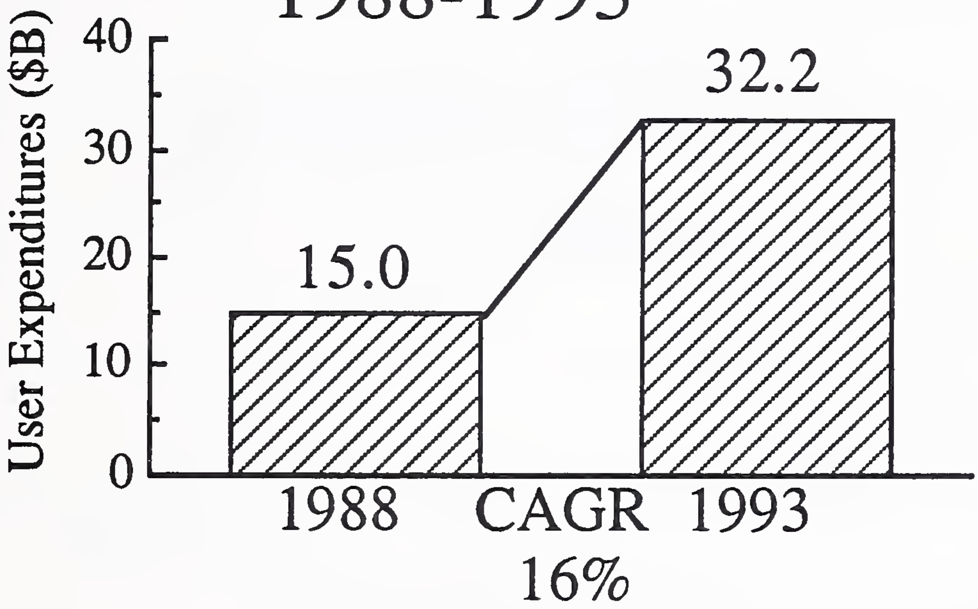
INPUT

NOTES:

JJ88-DWH-2

MPRE89-163

Professional Services Market Forecast 1988-1993

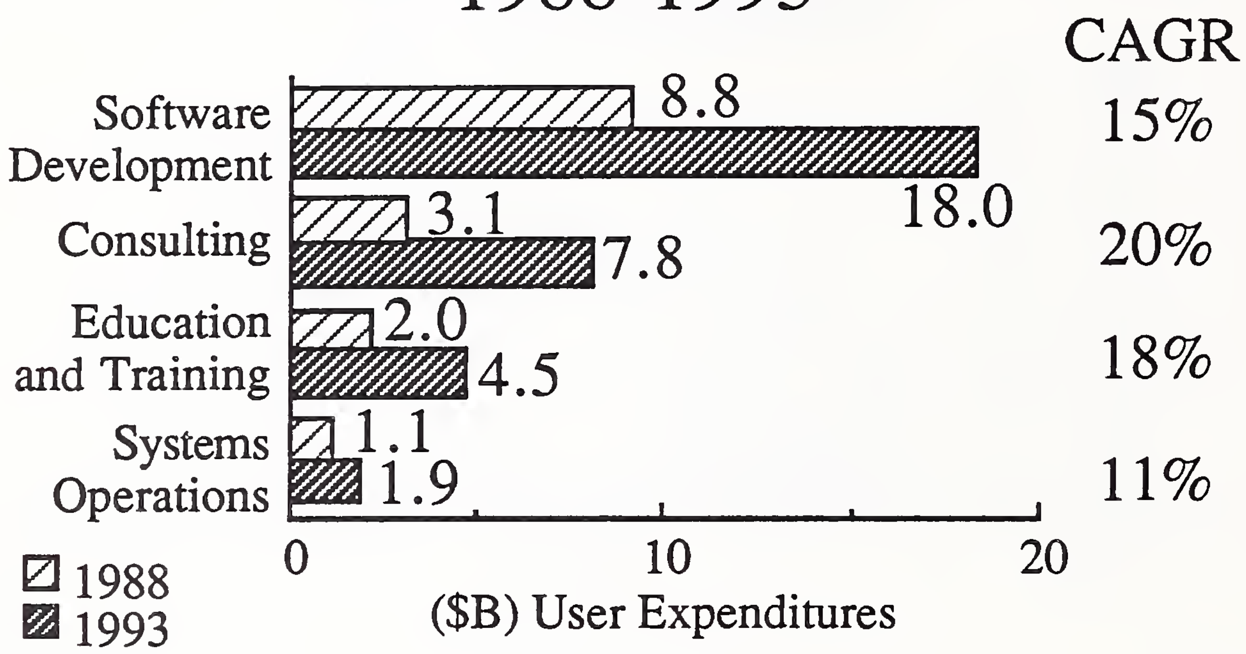


INPUT

NOTES:

MPRE89-164

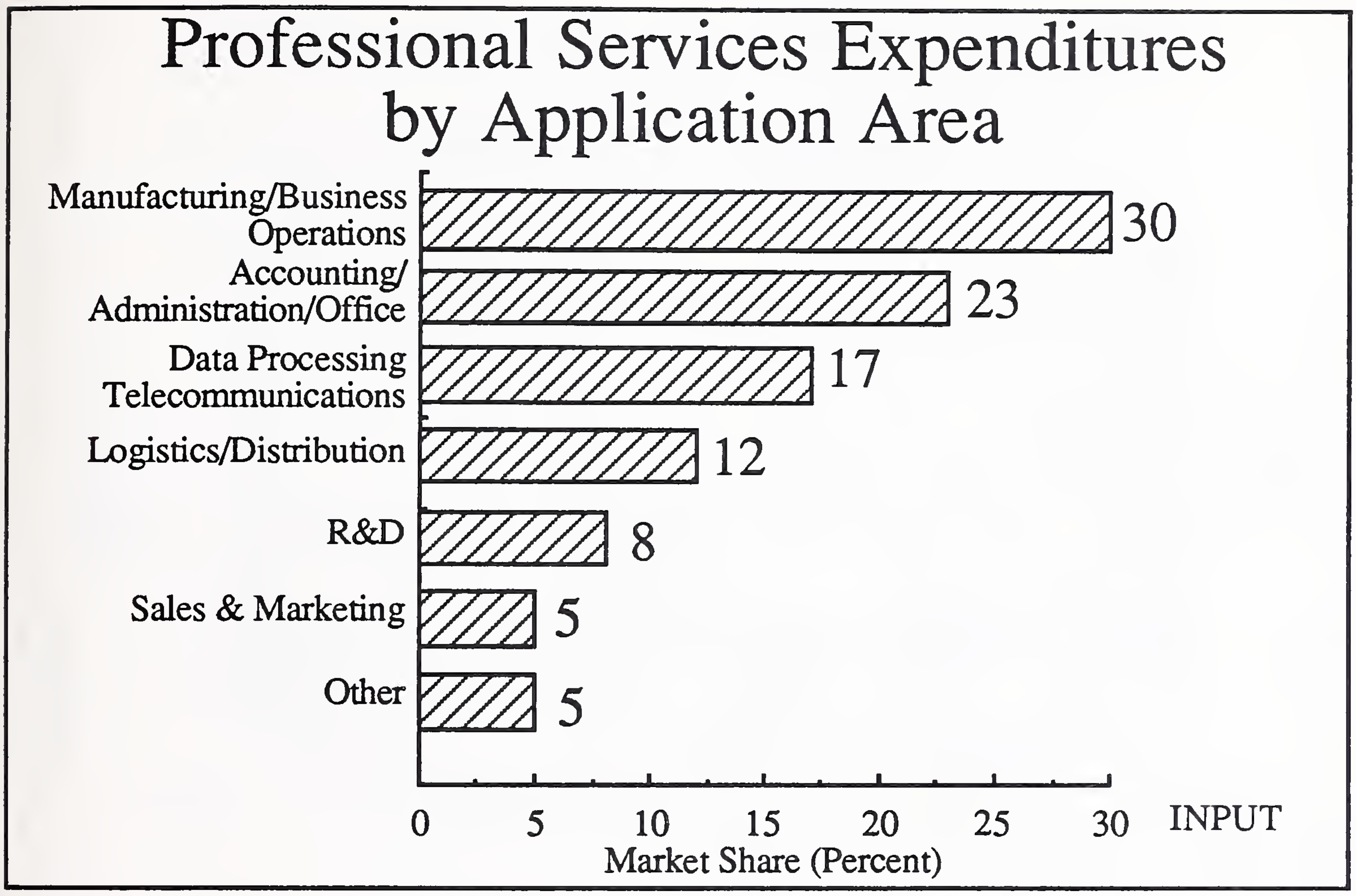
Professional Services Market by Mode 1988-1993



INPUT

NOTES:

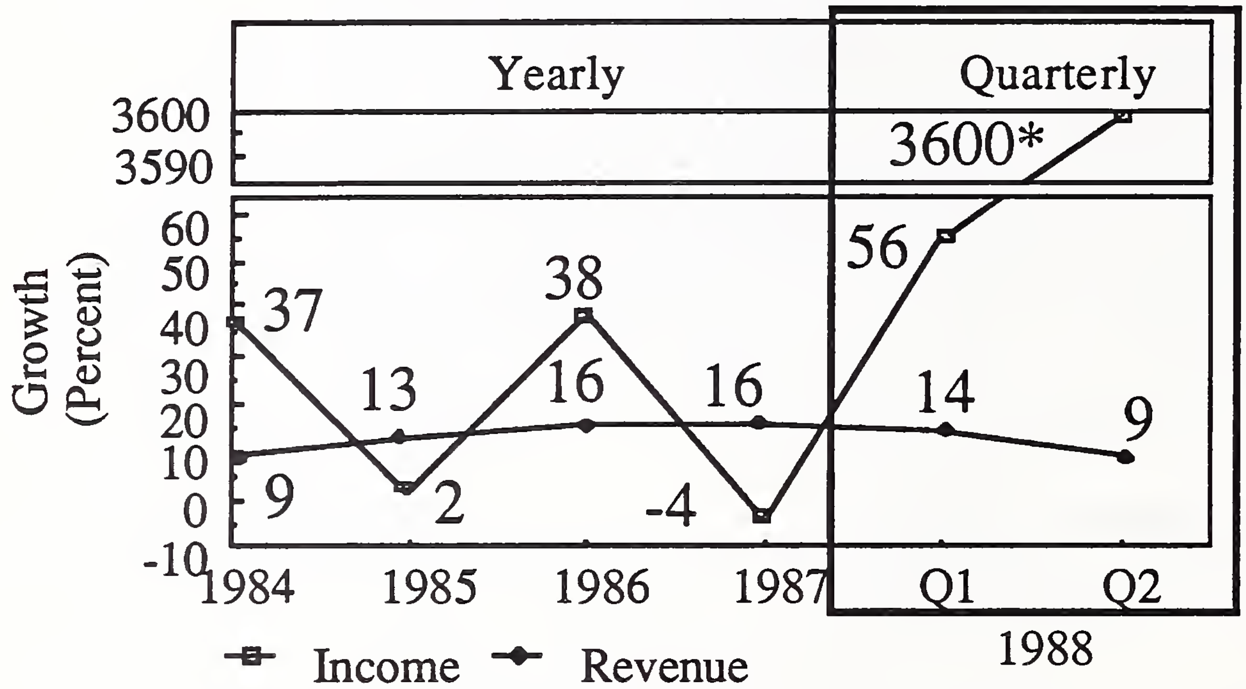
MPRE89-165



NOTES:

MPRE89-320a,b

Public Government Professional Services Vendors



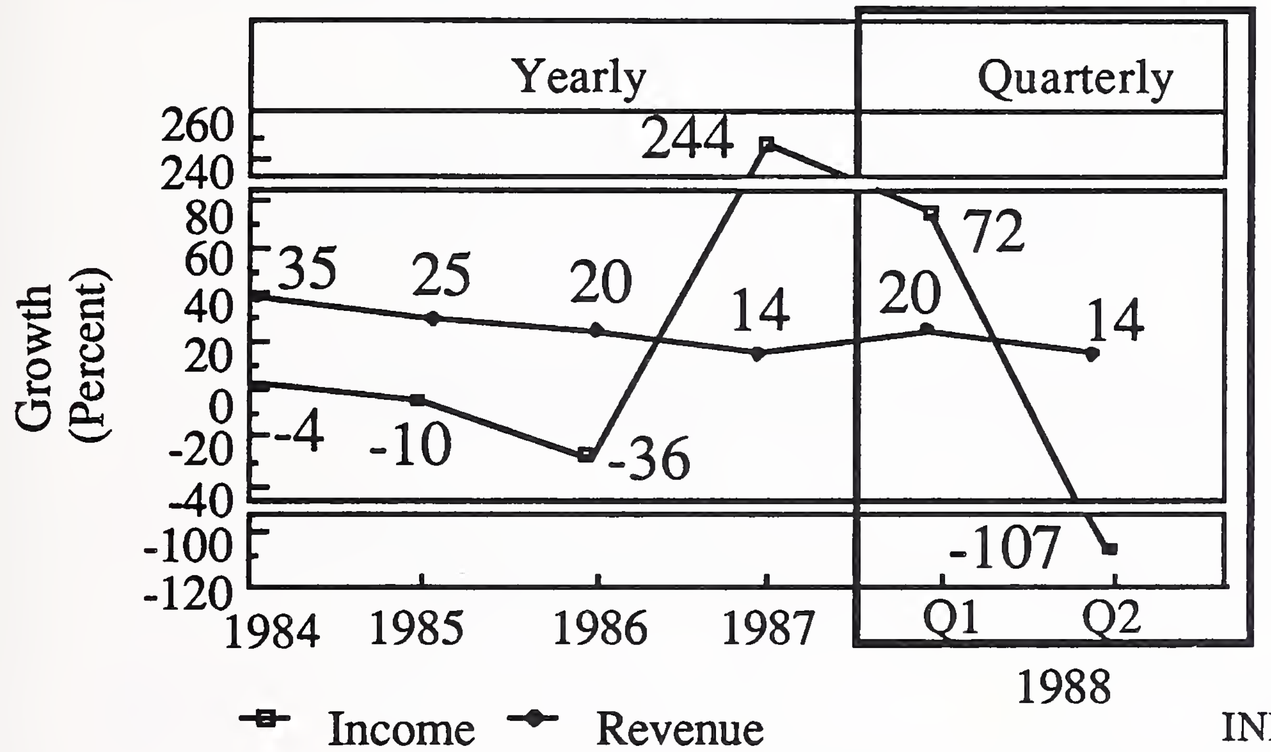
* Due to $18.3 million loss taken by BBN during second quarter calendar year 1987.

INPUT

NOTES:

MPRE89-166

Public Commercial Professional Services Vendors



INPUT

NOTES:

MPRE89-167

Professional Services Market—Driving Forces

- SW/Processing/Turnkey Vendor Positioning
- Vendor Alliances
- Diminished Skilled Labor Pool
- Specialized Skill Sets
- Project Control Methodologies

INPUT

NOTES:

JJ88-DWH-8A

MPRE89-168

Professional Services Market—Driving Forces

- Lack of IS In-House Expertise
- Rising Labor Costs
- Low-Cost Market Entry
- Systems Complexity

INPUT

NOTES:

JJ88-DWH-8B

Professional Services Market Driving Forces

- Changing U.S. Workforce
- New Hardware, Software, and Communications Products
- Growing Application Backlog

INPUT

NOTES:

MPRE89-303a

Professional Services Market Driving Forces

- Unpredictable Need for Specific Resources
- Specialists Needed to "Fine Tune" the System
- Low Cost Market Entry
- Systems Complexity

INPUT

NOTES:

MPRE89-303b

Professional Services Market Driving Forces

- "Big 5" Accounting firms
- New Technologies
- "Unfamiliar" technologies

INPUT

NOTES:

MPRE89-303c

Professional Services Market—Inhibiting Forces

- Shortage of Trained Consultants
- Impact of Switch to Systems Integration
- Loss of IS Management Control

INPUT

NOTES:

MAAP-32

MPRE89-170

Professional Services Market Growth Inhibitors

- Unsuccessful projects
- Lack of qualified personnel
- Investment requested for internal education/training
- Standards (?)

INPUT

NOTES:

MPRE89-304a

Professional Services Market Growth Inhibitors

- More Capital-Intensive Business Means Higher Added-Value Services
- Competiton from:
  - Packaged Software Products
  - In-House Departments or Subsidiaries

INPUT

NOTES:

MPRE89-304b

Major Vendors' Shares of Total U.S. Professional Services Market—1988

Company Name	1988 US Revenue ($ M)*	Market Share (%)
IBM	1,180	8
GM/EDS	740	5
Andersen Consulting	500	3
Unisys Corporation	440	3
CSC Corporation	415	3

* INPUT Estimates

INPUT

NOTES:

MPRE89-171

Major Vendors' Shares of Total U.S. Professional Services Market—1988

Company Name	1988 US Revenue ($ M)*	Market Share (%)
Emhart/Planning Research	320	2
Ford Aerospace/BDM Int'l	300	2
TRW, Inc.	290	2

* INPUT Estimates

INPUT

NOTES:

MPRE89-172

Major Vendors' Shares of Total U.S. Professional Services Market—1988

Company Name	1988 US Revenue ($ M)*	Market Share (%)
Boeing Computer Services	240	1
Peat Marwick	190	1

* INPUT Estimates

INPUT

NOTES:

MPRE89-173

Big-Eight Accounting Professional Services

- Predominately Accounting/Audit
- Professional Services Growing Faster
- Andersen Consulting Reorganization
- Entering Software Markets
  - Andersen's *Foundation*
  - Peat Marwick's *Catalyst*
- Mergers/Acquisitions/Strategic Alliances

INPUT

NOTES:

MPRE89-174a,b

Growing Role of Temporary Personnel Agencies

- Driving Force: Shortages of Qualified IS Personnel
- Temporary Firms Offer Short-Term Solutions
- Economics of Temporary Personnel Agencies
  - Low Cost of Entry
  - Limited Added-Value Services

INPUT

NOTES:

MPRE89-306

Professional Services Firms as Acquisition Targets

- "Buy versus Build" for Key Capabilities

- Wall Street Cycles
  - Previously: Hardware and Software In
  - Now: Hardware and Software Out, Services In

- Professional Services Firms Are Undervalued

INPUT

NOTES:

MPRE89-305

Significant Mergers/Acquisitions in Professional Services (1988)

- EDS/M&SD
- Emhart (Planning Research)/ Advanced Technology
- NYNEX/AGS
- Ford Aerospace/BDM Intl
- Logica (U.K.)/Data Architects

INPUT

NOTES:

MPRE89-175a

Significant Mergers/Acquisitions in Professional Services (1988)

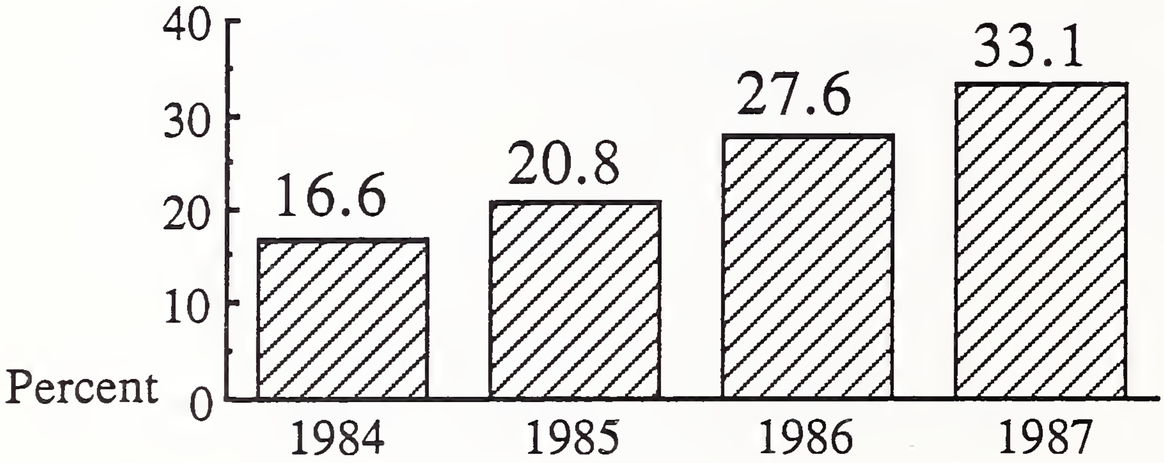
- AEG (FRG)/DYNCORP
- Oracle/Falcon
- CSC/Index Group
- Cincinnati Bell/Vanguard
- Adia/Computer Dynamics
- Knoll Capital/C3

INPUT

NOTES:

MPRE89-175b

Combined Market Shares of Top 10 Professional Services Vendors*, 1984 through 1987



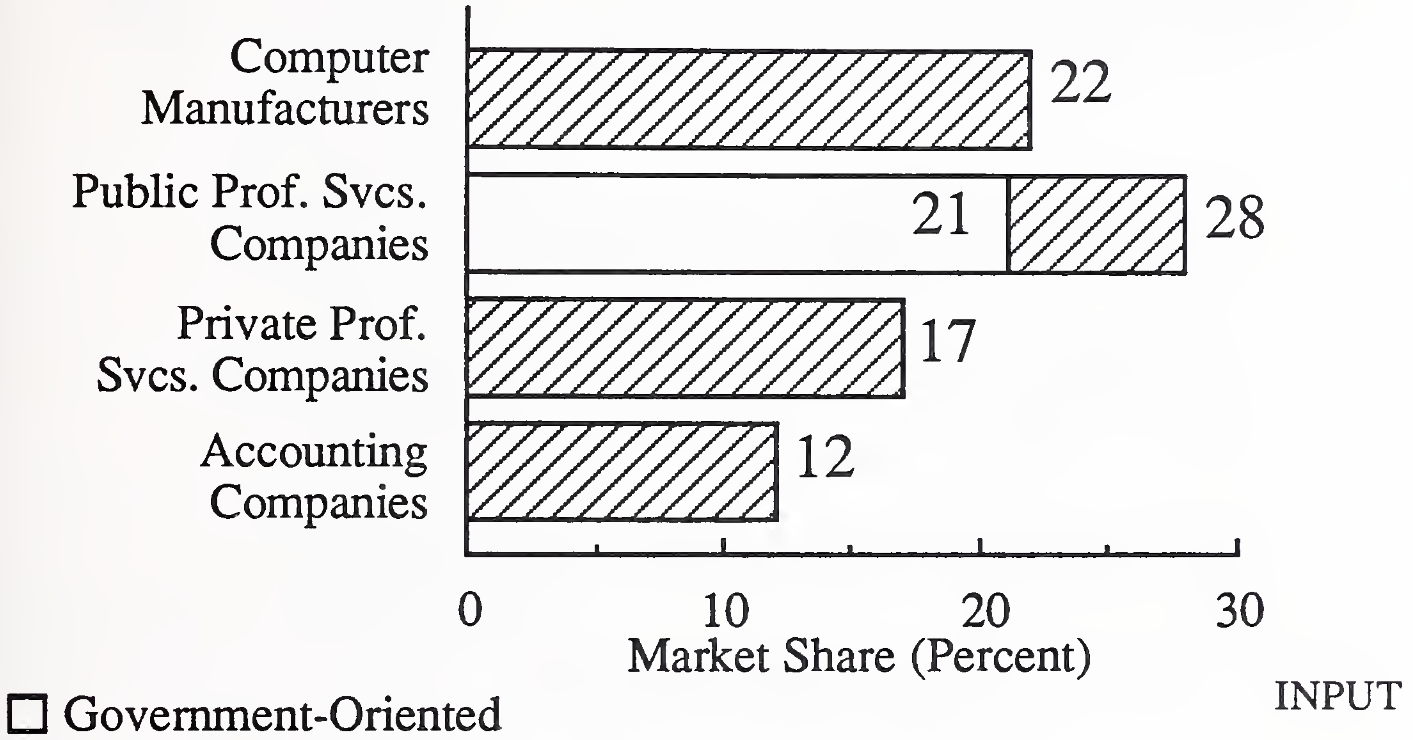
*Based on combined commercial/federal professional services revenues

INPUT

NOTES:

MPRE89-307

Professional Services Market Share by Vendor Type, 1987



NOTES:

MPRE89-319

Professional Services Futures

- Minor Consolidation: Merger/Acquistion of Smaller Firms
- Increased Competition for Worker Bees
- H.R. 1706 Rollback
- Off-Shore Software Development
- "Maintenance" Opportunity

INPUT

NOTES:

JJ88-DWH-31

MPRE89-176

Opportunities and Recommendations

- Specialize
- Develop Alliances within Other Delivery Modes
- Enhance Education and Training Offerings
- Follow Standards and Regulatory Processes
- Monitor New Technologies

INPUT

NOTES:

JJ88-DWH-32A,B

MPRE89-177a,b

Processing Services

INPUT

NOTES:

MAAP-41a

MPRE89-178

Processing Services

- Transaction Processing
- Utility Processing
- "Other" Processing
- System Operations
  - Vendor-Owned System
  - AKA "Facilities Management"

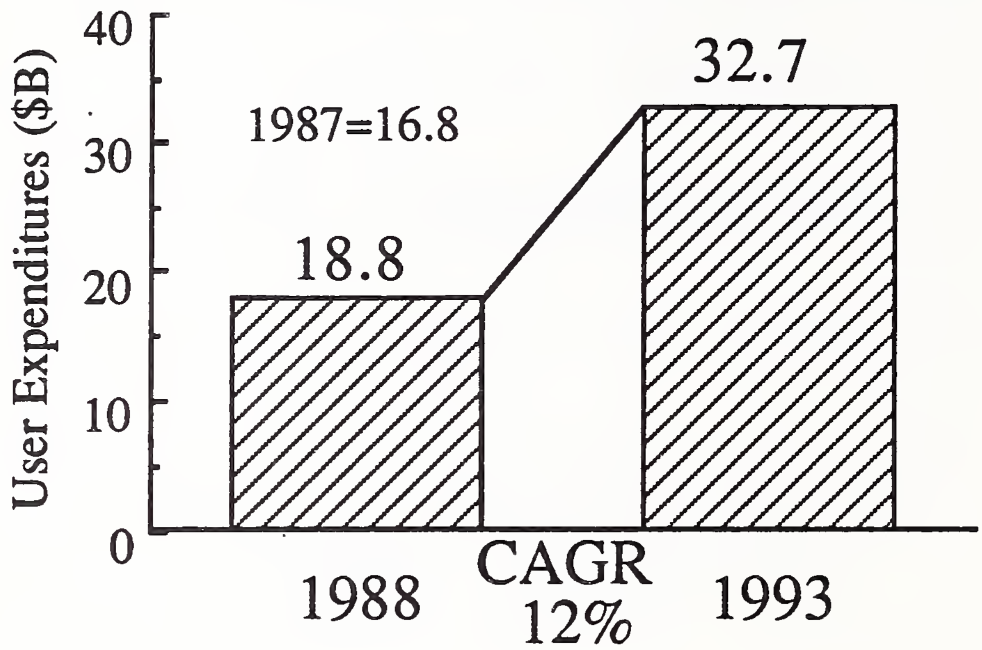
INPUT

NOTES:

MAAP-41b

MPRE89-179

Processing Services Forecast

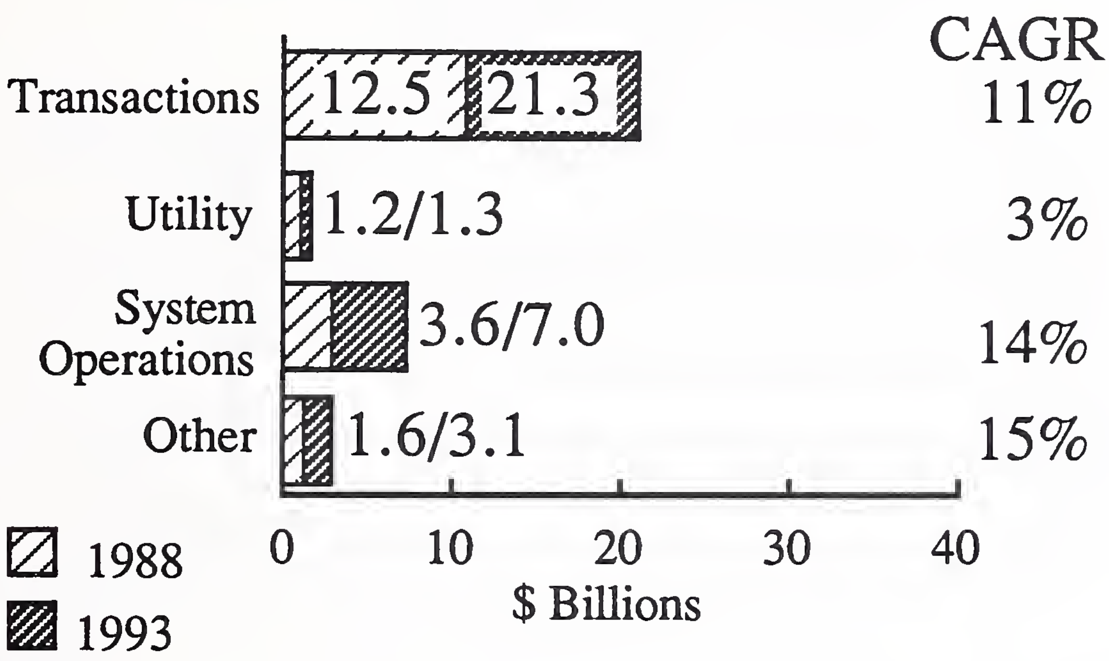


INPUT

NOTES:

MPRE89-180

Processing Services Forecast



INPUT

NOTES:

MPRE89-181

Processing Services
Driving Forces

- Current User Inertia
- Time Critical Solutions
- Outsourcing Trends
- Innovation/Specialization
- Disaster Recovery

INPUT

NOTES:

MAAP-43.1

MPRE89-182

Processing Services Inhibitors

- Micro/Mini/WS Solutions
- Price/Performance Disadvantage
- Market Entry Costs
- Market Maturity
- TDF Restrictions

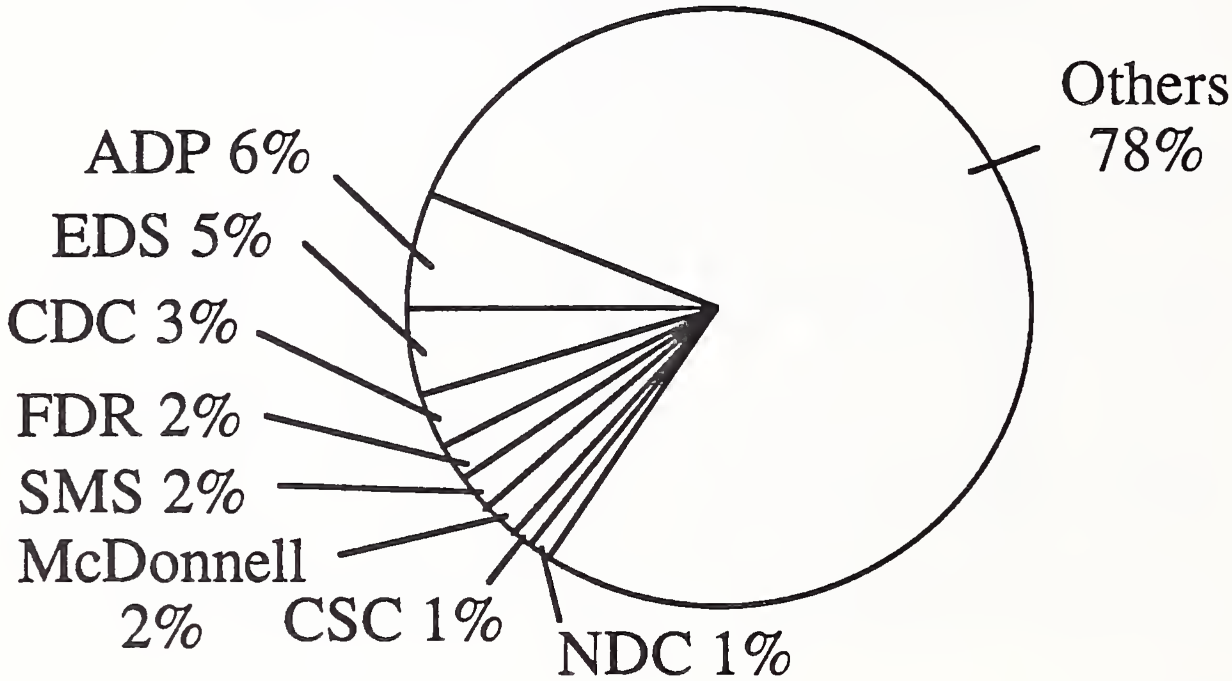
INPUT

NOTES:

MAAP-43.2

MPRE89-183

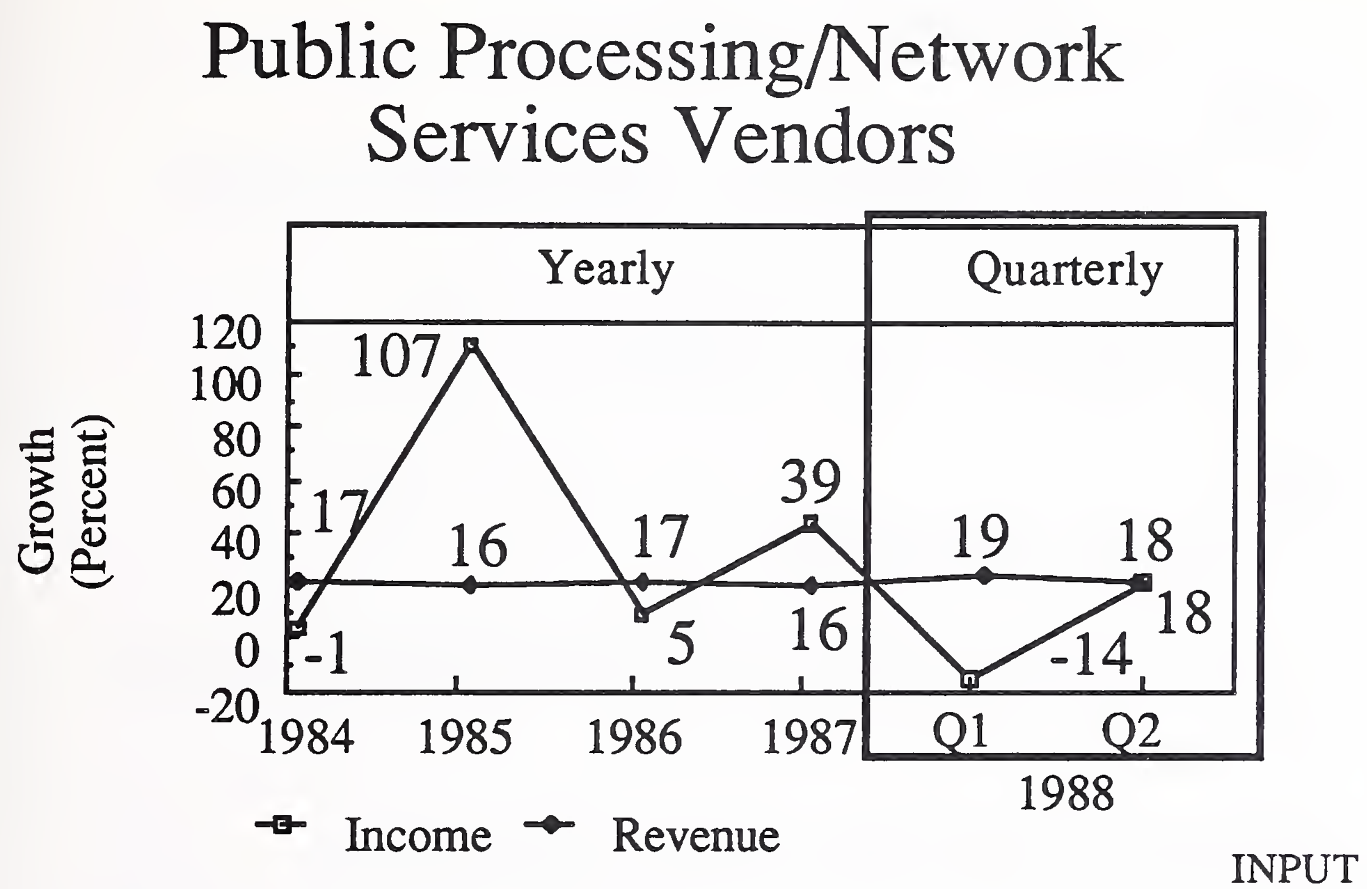
Processing Services Market Share 1988



INPUT

NOTES:

MAAP-43.3



NOTES:

MPRE89-185

Vendor Activity

ADP

- Continuing Profit/Revenue Improvements
- Selling Funds Transfer Business
- Focusing on Basic Markets.

EDS

- Acquired MTECH
- Striving to Reduce Percent of GM Business
- Attacking New Markets
- Heavy Emphasis in Communication

INPUT

NOTES:

MPRE89-186a,b

Vendor Activity

NDC

- ~~Merger with Medco~~
- Developing EDI
- Alternative Operator Services
- Credit Authorizations

INPUT

NOTES:

JJ88-VW2-18

MPRE89-187

Vendor Activity

McDonnell Douglas ISG

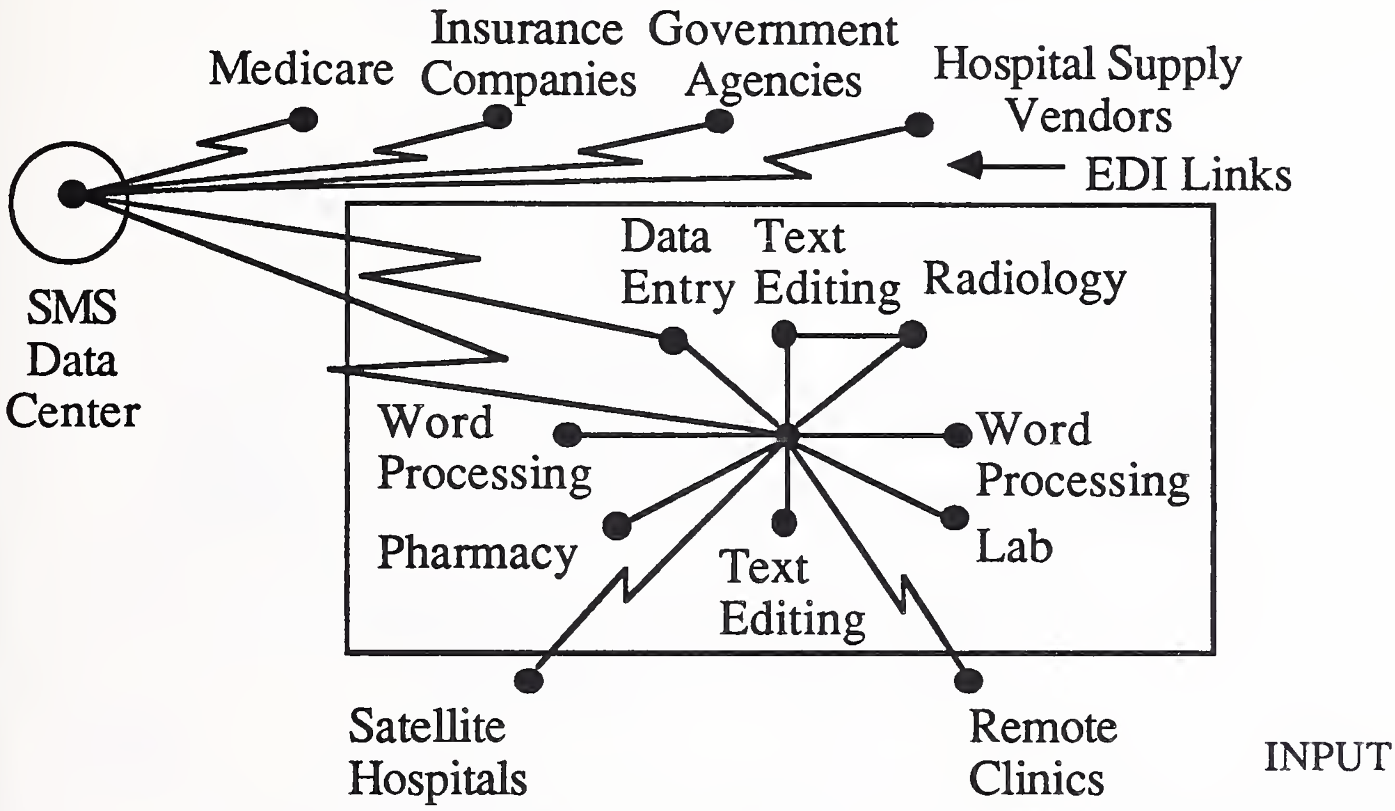
- Reorganization Continues
- Lost $42 M in 1987
  Lost $4 M in 1988
- Systems Integration Strategy
- Health Systems Division Sold to American Express (Systems Associates)
- Sound Basic Business

INPUT

NOTES:

MPRE89-188

Shared Medical Extended Network



NOTES:

MAAP-44.1

MPRE89-189

Utility Processing—COM

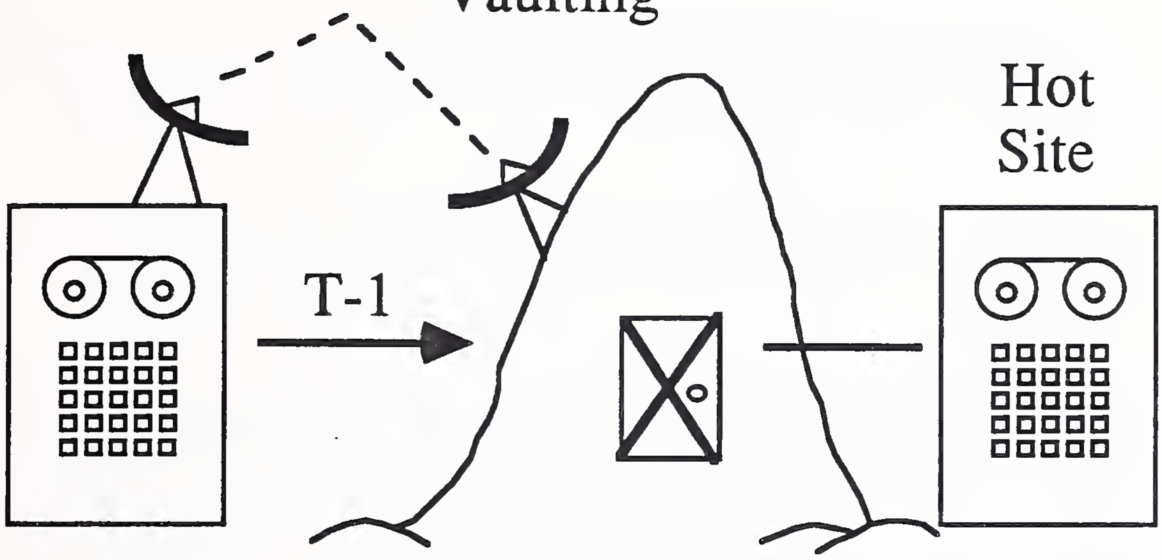
- 60-Year-Old Technology
- Moving In-house
- Anacomp Acquisitions
  - Xidex (Services)
  - Datagraphix (Equipment)
- Endata—Acquired by FFMC

INPUT

NOTES:

JJ88-VW2-28

Disaster Recovery
High-Speed Electronic Vaulting



- Comdisco
- Sungard

INPUT

NOTES:

JJ88-VW2-29

MPRE89-191

Processing Services Opportunties

- Voice/Data Processing Services
- Link to Network Services
- Catastrophic Health Care Bill
- Time-Sensitive Solutions
- Bank and Financial Services Processing
- Non-IBM Disaster Recovery
- Time-Shared Super-Computing

INPUT

NOTES:

MPRE89-194

Recommendations

- Evaluate Role of New Technologies/ Applications
- Determine How Transmitted Data Can Be Processed
- Understand Technical Requirements for Connection between User's Operations and Your Services

INPUT

NOTES:

JJ88-VW2-37

“Old”

Facilities Management

- Focus on Computer Operations

“New”

Systems Operations

- Development, Planning, Control, Operations

INPUT

NOTES:

MPRE89-328

Trends

Large Scale SI Projects → Systems Operations Contracts

INPUT

NOTES:

JJ88-VW2-31

MPRE89-192

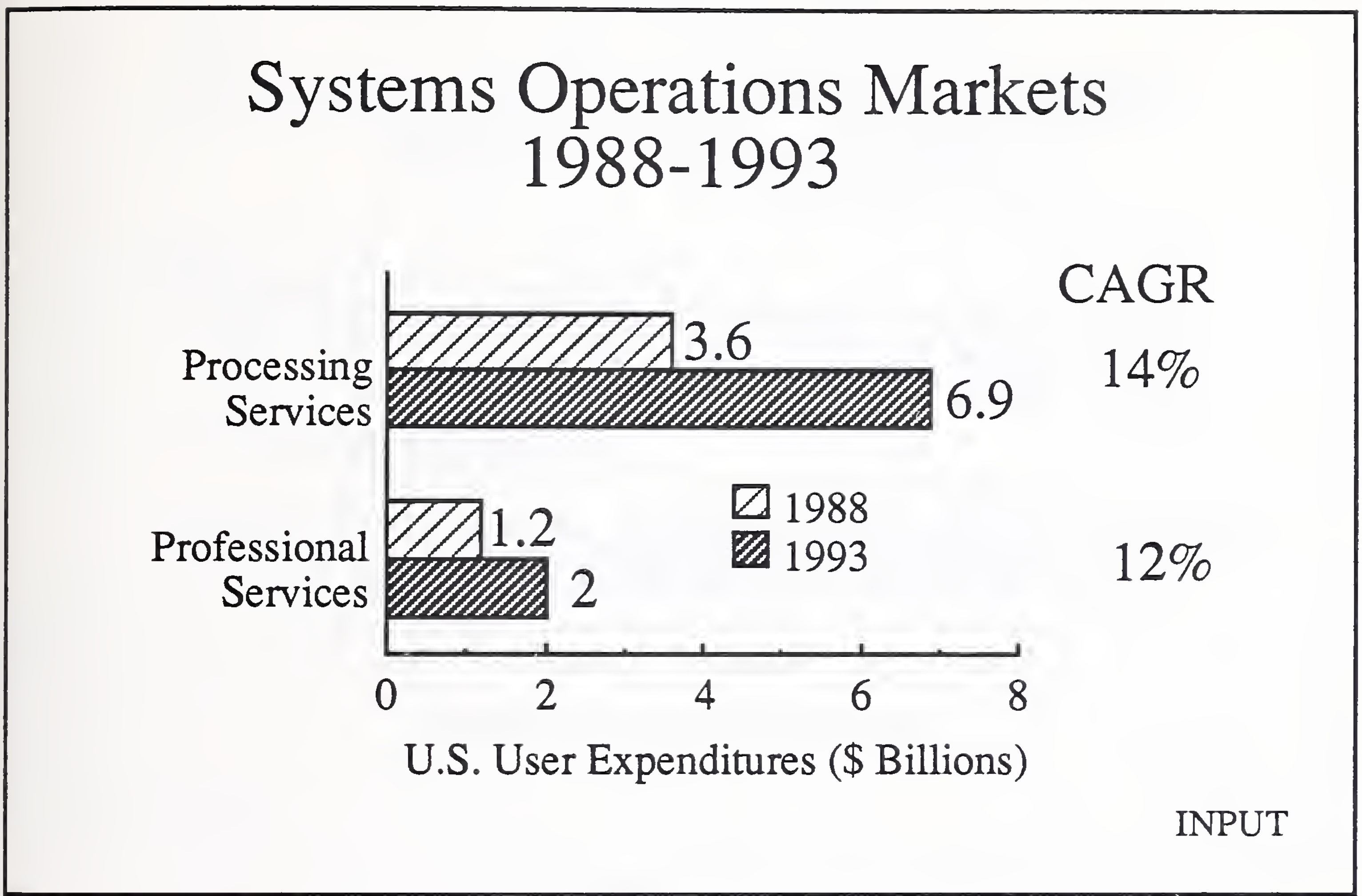
Trends in Systems Operations

- Network Management Contracts
- Development as well as Operations Included in Agreements
- Shared Resources Approach
- Mixed Hardware Offerings
- Vertical Market Focus
- Long-Term Contracts for Processing Services

INPUT

NOTES:

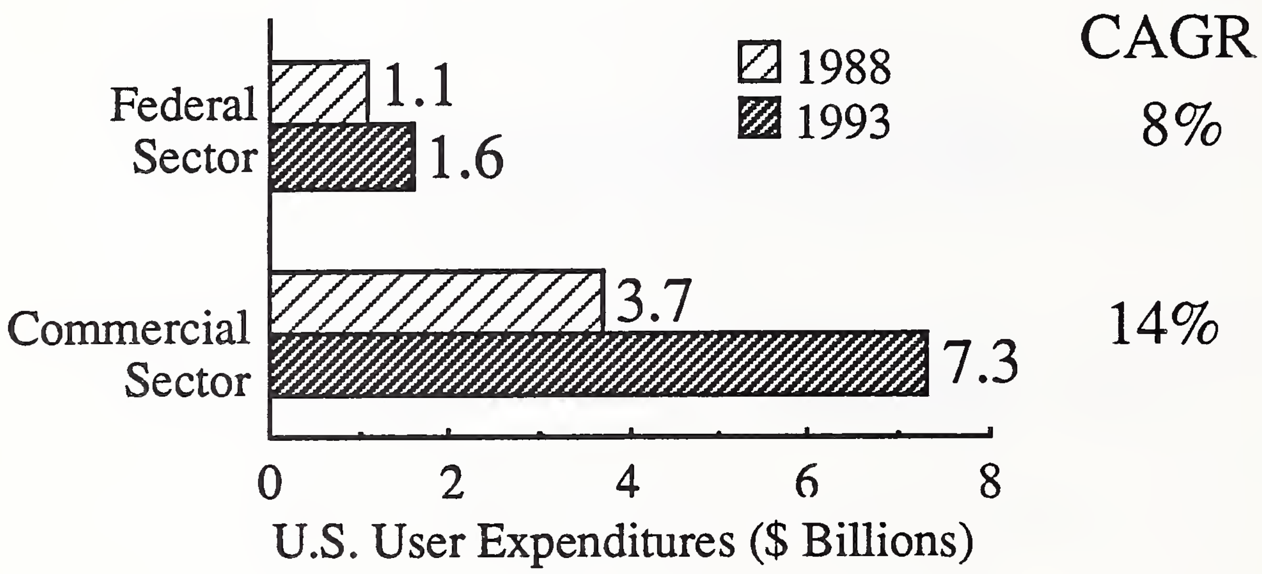
MPRE89-327



NOTES:

MPRE89-321

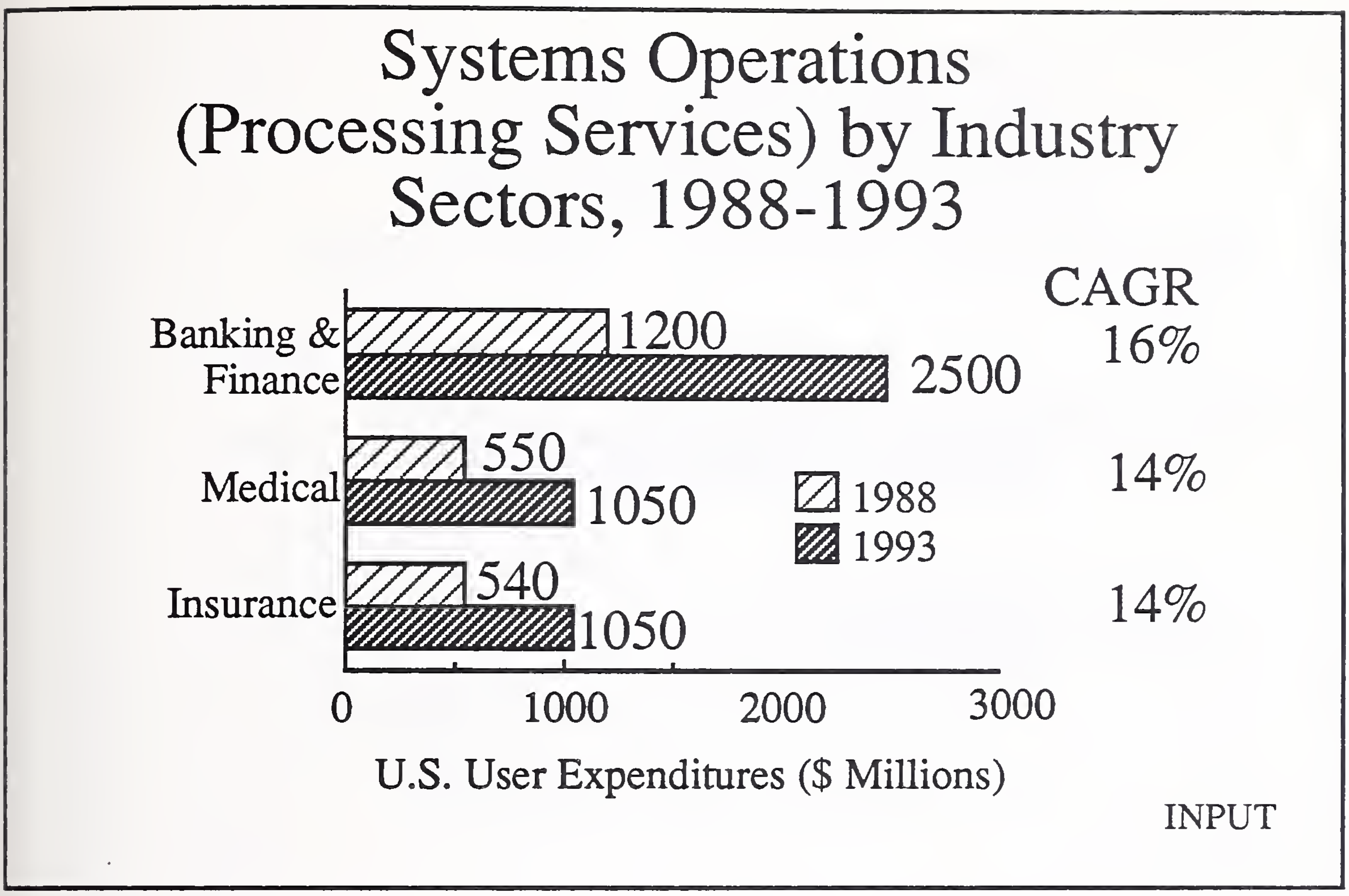
Systems Operations Markets by Sector, 1988-1993



INPUT

NOTES:

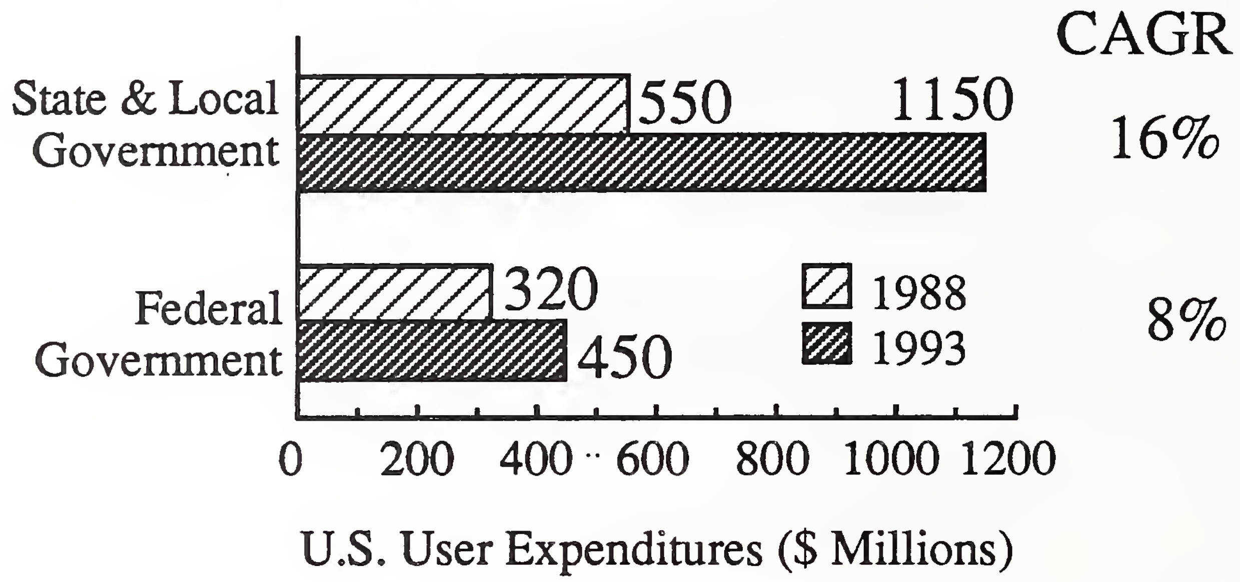
MPRE89-322



NOTES:

MPRE89-323

Systems Operations (Processing Services) by Industry Sectors, 1988-1993



INPUT

NOTES:

MPRE89-324

Systems Operations

Driving Forces

- Tight Labor Markets
- Difficulty in Paying Competitive Salaries
- Cost of Upgrading Systems
- Backup Requirements
- Systems Integration Creates Opportunities

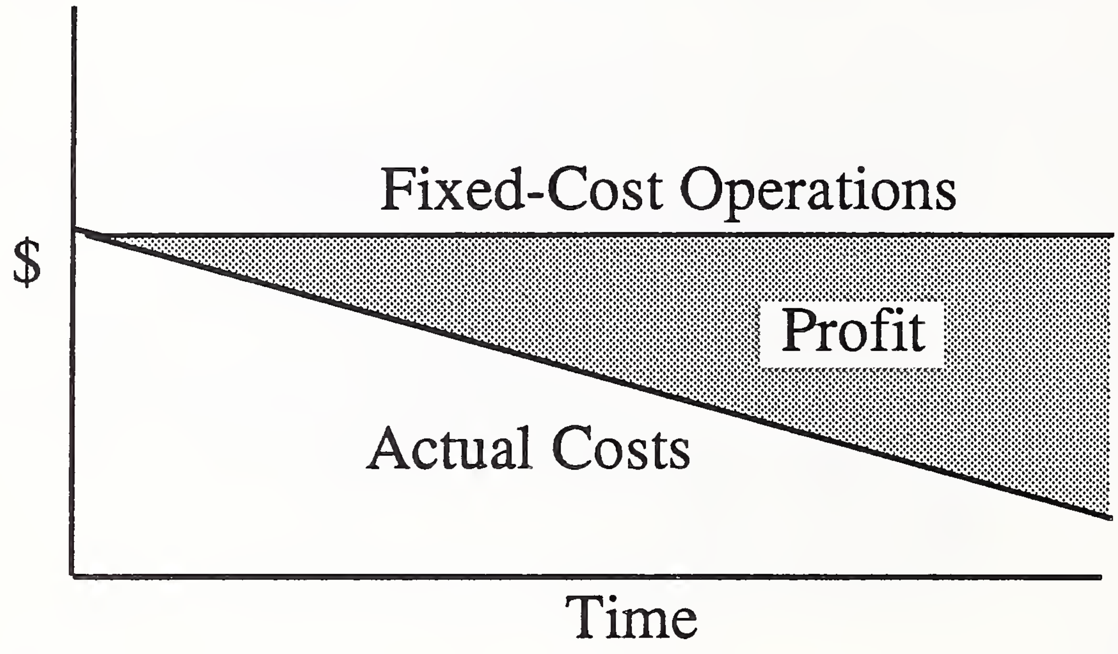
INPUT

NOTES:

MPRE89-325

Systems Operations

Efficiency Yields Profits



INPUT

NOTES:

MPRE89-326

Network Services

INPUT

NOTES:

MPRE89-197

Network Services

Network Applications

- VANs
- EDI
- E-mail
- Other

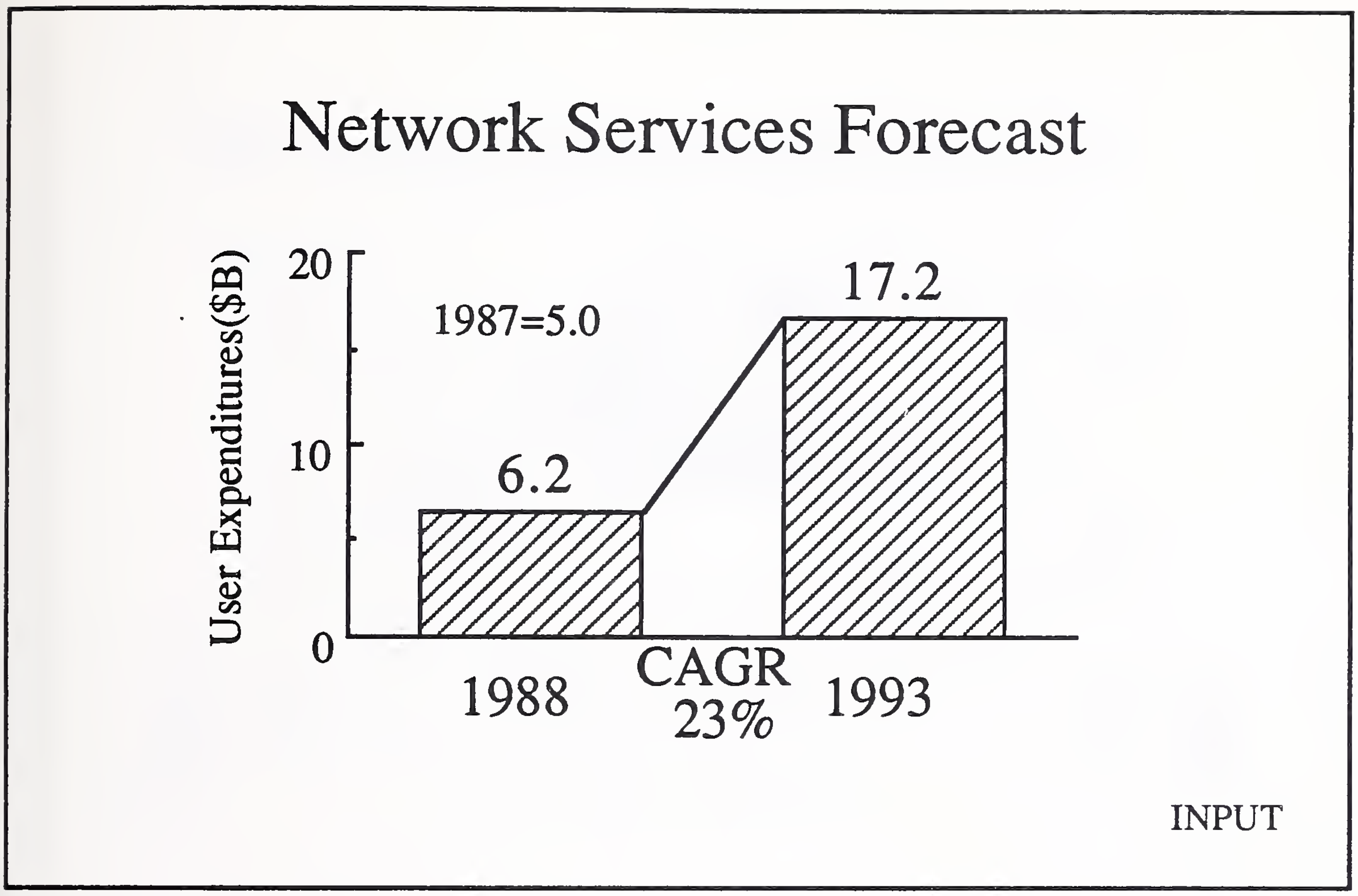
Electronic Information Service

- Structured Data Bases
- Unstructured Data Bases

INPUT

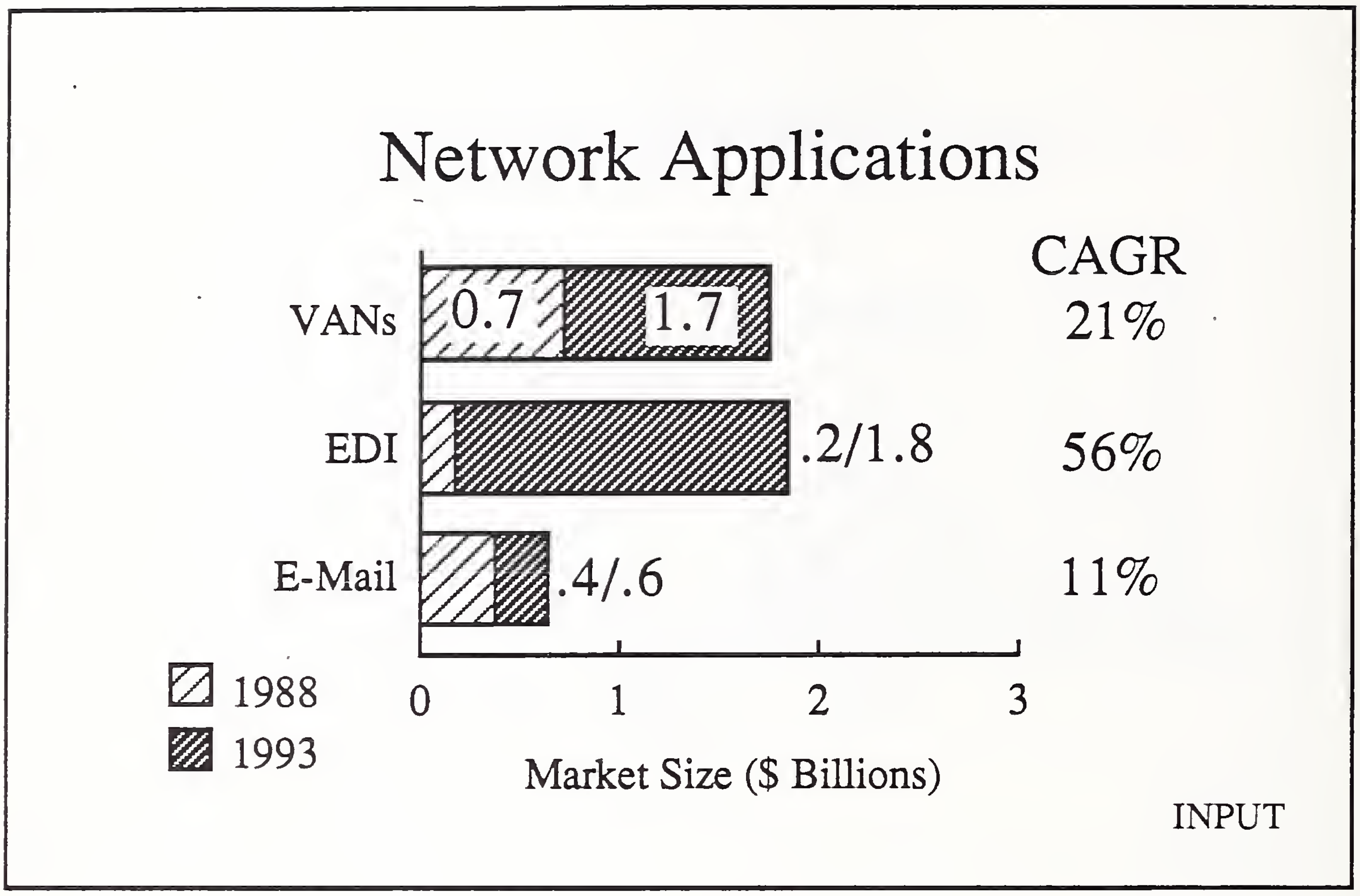
NOTES:

MPRE89-198



NOTES:

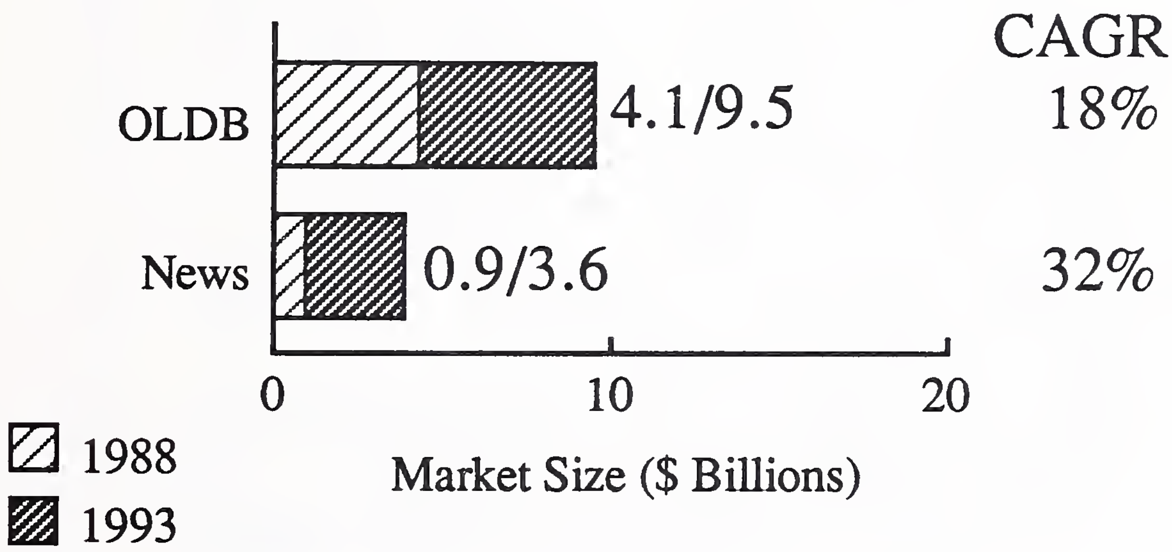
MPRE89-199



NOTES:

MPRE89-200

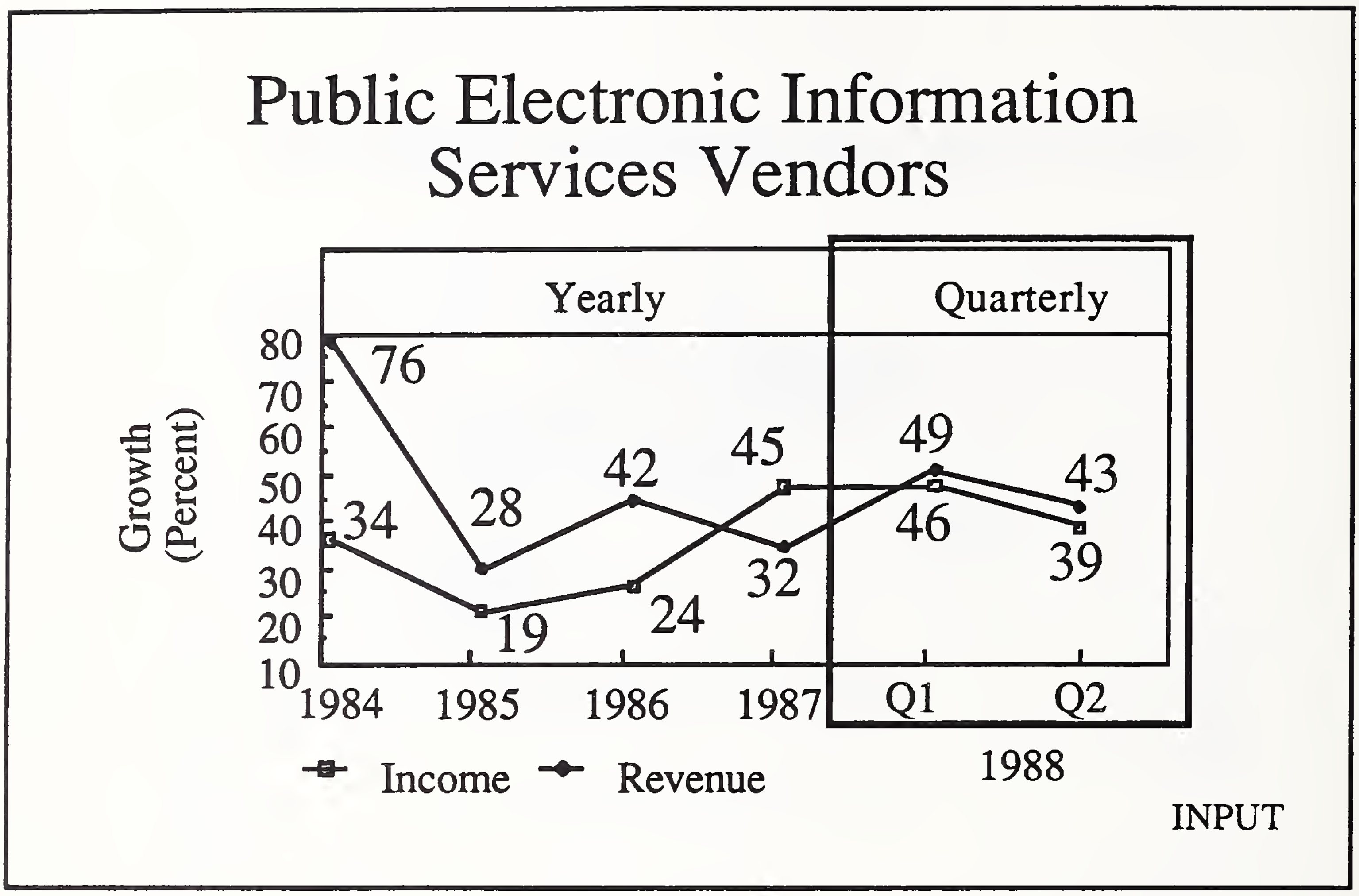
Electronic Information Services



INPUT

NOTES:

MPRE89-201



NOTES:

MPRE89-202

Network/Electronic Information Services Market—Driving Forces

- PC Population
- Consumer Information Services
- ISDN
- EDI Popularity
- Wide-Area Networking

INPUT

NOTES:

MAAP-51a

MPRE89-203

Network/Electronic Information Services Market—Driving Forces

- Business Need for Rapidly Available Electronic Information
- RBOC Entry
- Network Management Services
- Voice Information Services
- Transaction "Electronification"

INPUT

NOTES:

MPRE89-204

Network/Electronic Information Services Market—Inhibiting Forces

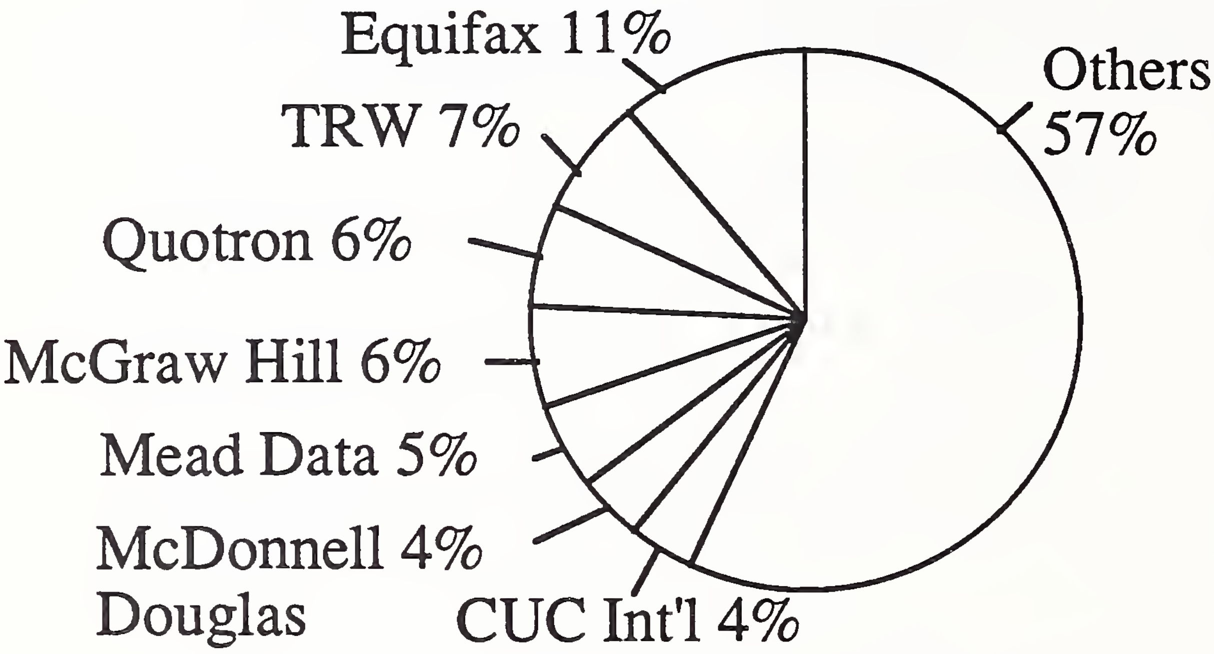
- Data Overload
- CD/ROM as Alternative
- Profitability Questions

INPUT

NOTES:

MAAP-52

Network Services Market Share 1988



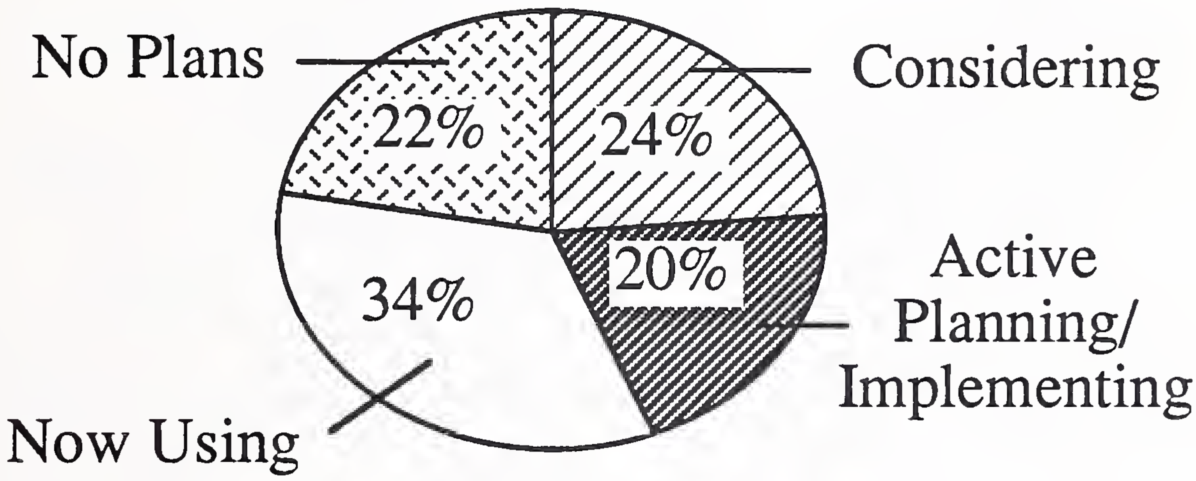
INPUT

NOTES:

MAAP-53

Forecast Factors

EDI Status
(IS Managers)



INPUT

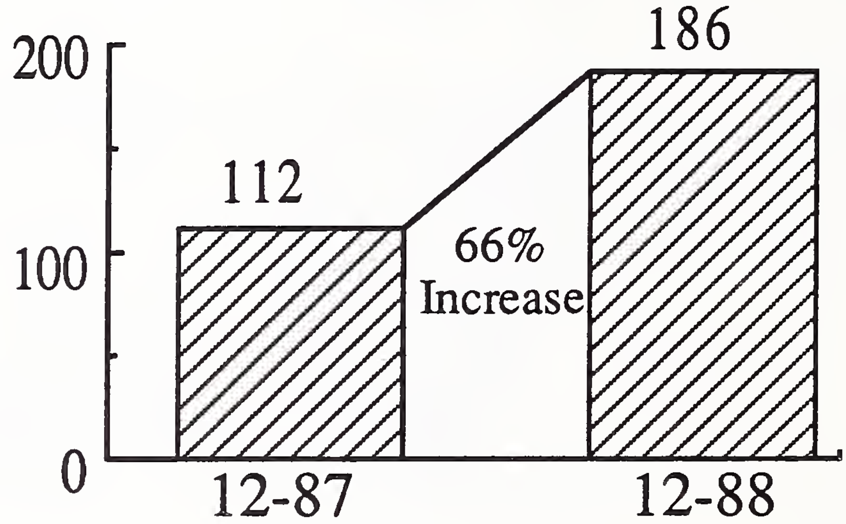
NOTES:

JJ88-VW2-7

MPRE89-207

Forecast Factors

Number of EDI Trading Partners

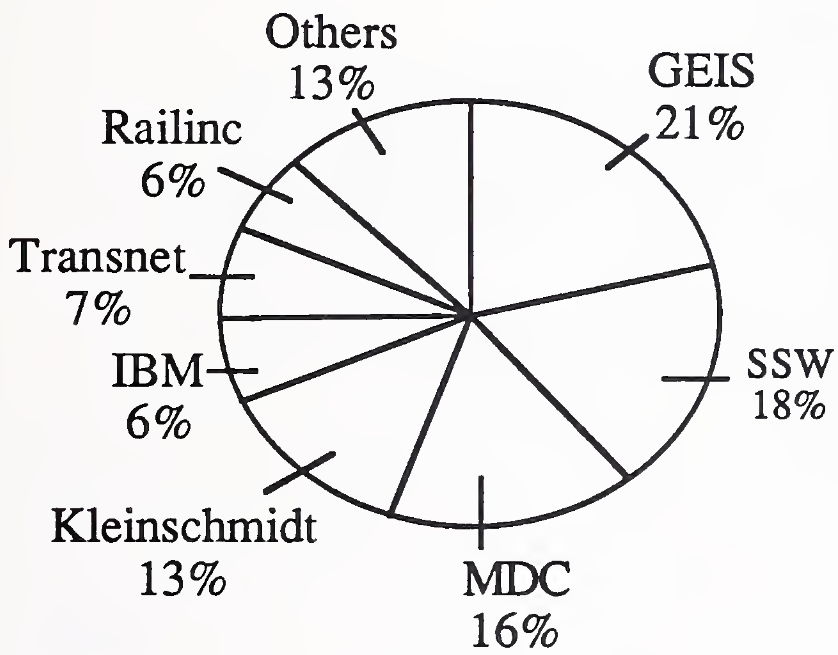


INPUT

NOTES:

MPRE89-208

EDI Network/Processing Service Market Shares



Excludes Private Networks, EMC, Interface, Federal

INPUT

NOTES:

JJ88-VW2-11

MPRE89-209

Extension of EDI to IOS

- Vendors
  - EDI on the Continuum
  - Lose the EDI Message

- Users
  - Confusion as to Fit
  - Delay

INPUT

NOTES:

MPRE89-330

New EDI Entrants

- Sears Communications
- Harbinger/Westinghouse/Banks
- Industry Associations Evaluating

INPUT

NOTES:

MPRE89-329

Trends In Electronic Mail

- Implementation of X.400 Standard
- Conformance Tests
- Intercorporate E-Mail
- Entry of RBOCs
- PC/WS E-Mail Growth

INPUT

NOTES:

MPRE89-334

Leading Value-Added Network Services Vendors 1988

McDonnell Douglas Network Systems Company

Telenet Corporation

IBM Information Network

CompuServe, Inc.

INPUT

NOTES:

MPRE89-210

Leading Value-Added Network Services Vendors 1988

GE Information Services Co. (GEIS)

Computer Sciences Corporation

Western Union Corporation

Wang Information Services Company

MCI Data Transport

INPUT

NOTES:

MPRE89-211

Vendor Activity

Shifting Ownership

U.S. Sprint & Telenet Communications

GTE → United Telecom

INPUT

NOTES:

JJ88-VW2-19

MPRE89-212

Trends

- Fixed Length Contracts are Out, Flexibility is In
- Users Become Vendors
- Ample Bandwidth Available
- Technical "Solutions" Search for "Problems"

INPUT

NOTES:

JJ88-VW2-34

MPRE89-193

Vendor Activity—Alliances

- CSC—European PTTs
- CSC—Minitel
  - United Telecom or US Sprint
- AT&T, BT, KDD
  "One Stop Network Services"

INPUT

NOTES:

MPRE89-213

Trends

- OLDB Consolidation
  - Dialog/Knight-Ridder
  - CSC/Equifax Credit Reports

INPUT

NOTES:

MPRE89-214

OLDB Opportunity

- International Access
- Multi-Lingual, Real-Time Translation

INPUT

NOTES:

JJ88-VW2-27

MPRE89-215

RBOC Network Services

- Integrated Services Digital Network (ISDN)
- Information Gateways
- Virtual Private Networks
- Metropolitan-Area Networks (MAN)

INPUT

NOTES:

MAAP-80a

RBOC Network Services

- Open Network Architecture (ONA)—
  Future
- Videotex (future)—Subsidized Terminals?
- Voicemail
- Electronic Mail
- Voice Recognition Services

INPUT

NOTES:

MPRE89-217

RBOC Network Services Limited by:

- Varying Services Make National Customer Network Usage Difficult
- Gateways Limited to LATA
- RBOC "Culture"
- RBOC Sales/Marketing Expertise

INPUT

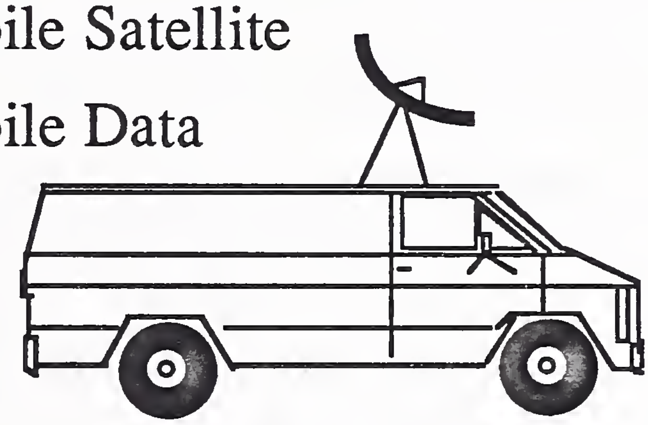
NOTES:

MAAP-81

MPRE89-219

Interesting Network Technologies

- Mobile Satellite
- Mobile Data



INPUT

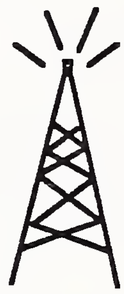
NOTES:

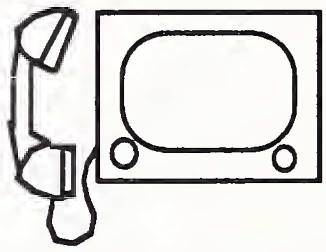
JJ88-VW2-32

MPRE89-220

Interesting Network Technologies

- FAX Store & Forward
- FM SCA Broadcast Data
- Video Phones





INPUT

NOTES:

JJ88-VW2-33

MPRE89-221

Conclusions—Network Services Markets

- Data Base Alone Is Not a Guarantee of Success
- Vendors Can Leverage Unique Gateways and Interfaces
- OLDB Companies are Highly Valued

INPUT

NOTES:

MPRE89-221a

Conclusions—Network Services Markets

- RBOCs Will Be a Factor
- EDI Has Leverage into Interorganizational Services
- Market Growth Remains Strong

INPUT

NOTES:

MPRE89-221b

Network Management Tasks

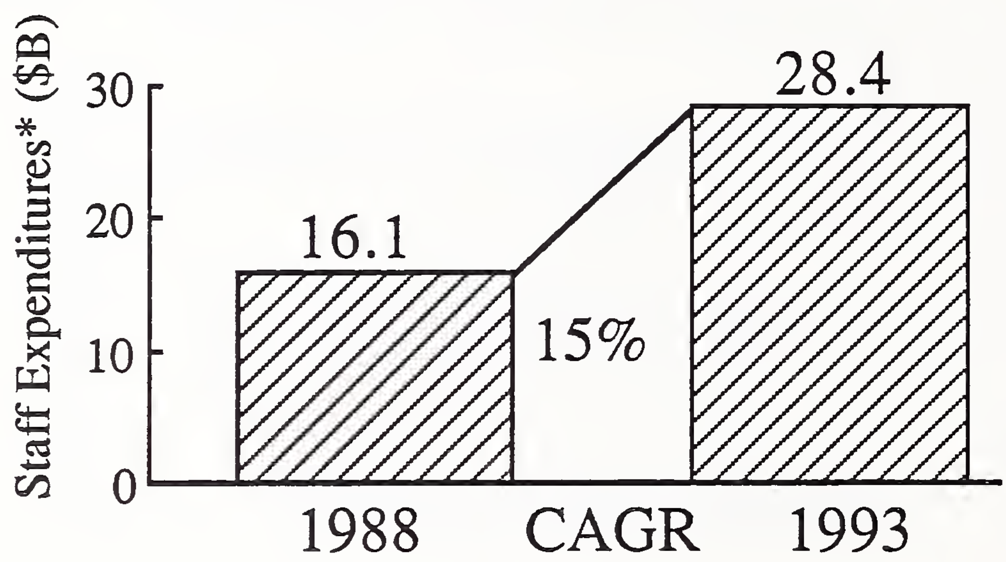
- Design
- Configuration Management
- Problem Management
- Capacity Management
- Network Administration
- Management Reporting

INPUT

NOTES:

MPRE89-308

Network Management Expenditures in Large Companies, 1988-1993

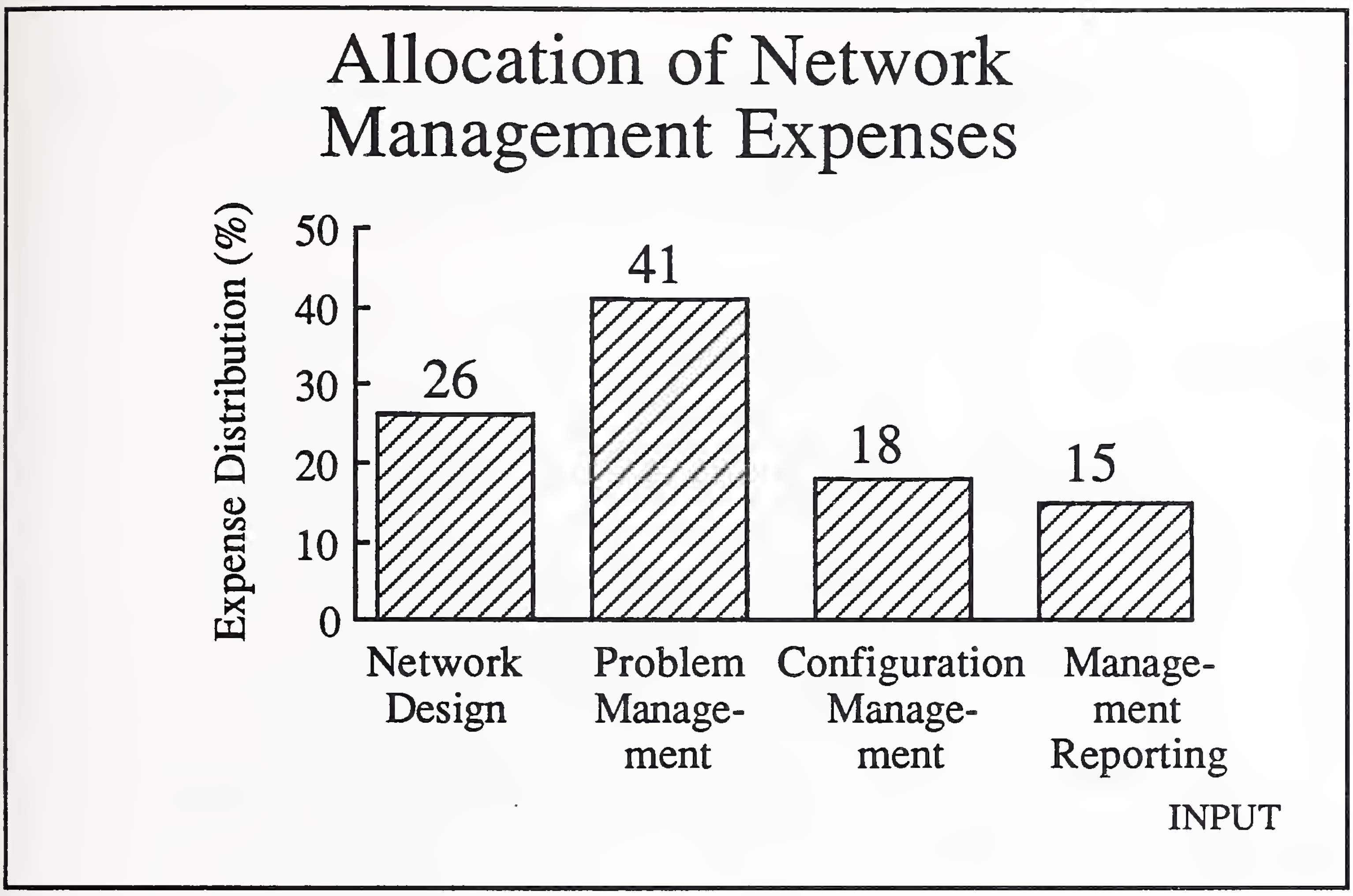


* For companies with more than 500 employees.

INPUT

NOTES:

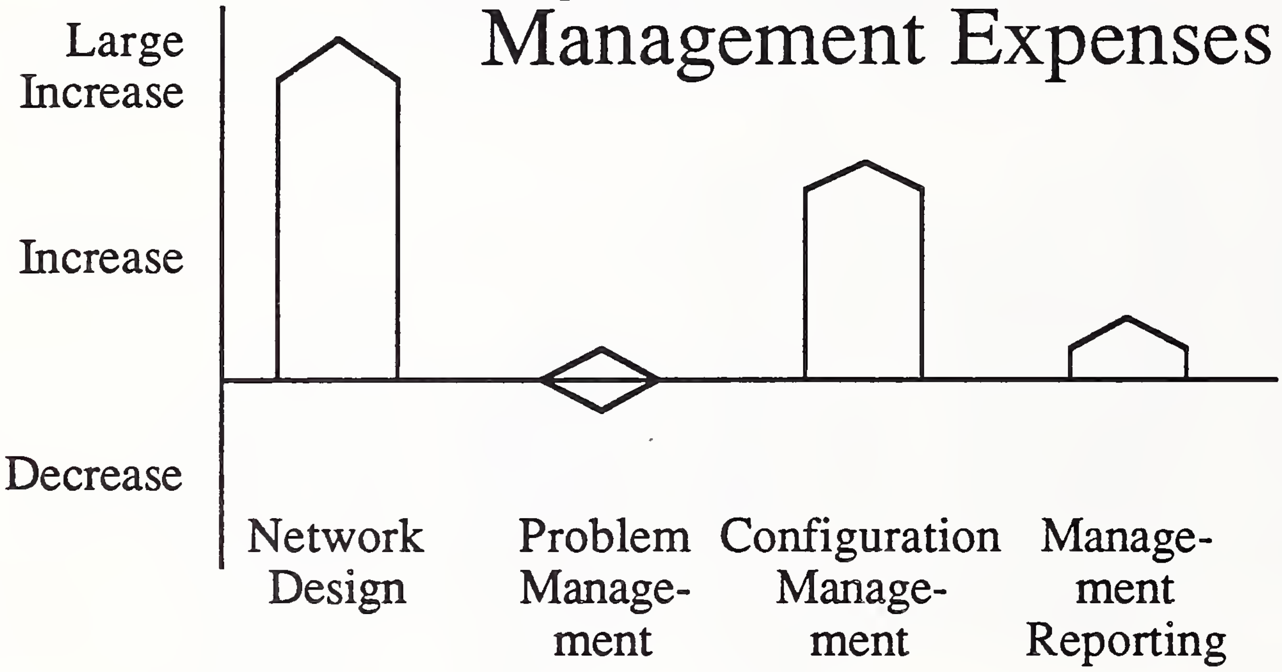
MPRE89-309



NOTES:

MPRE89-310

Changing Pattern of Network Management Expenses

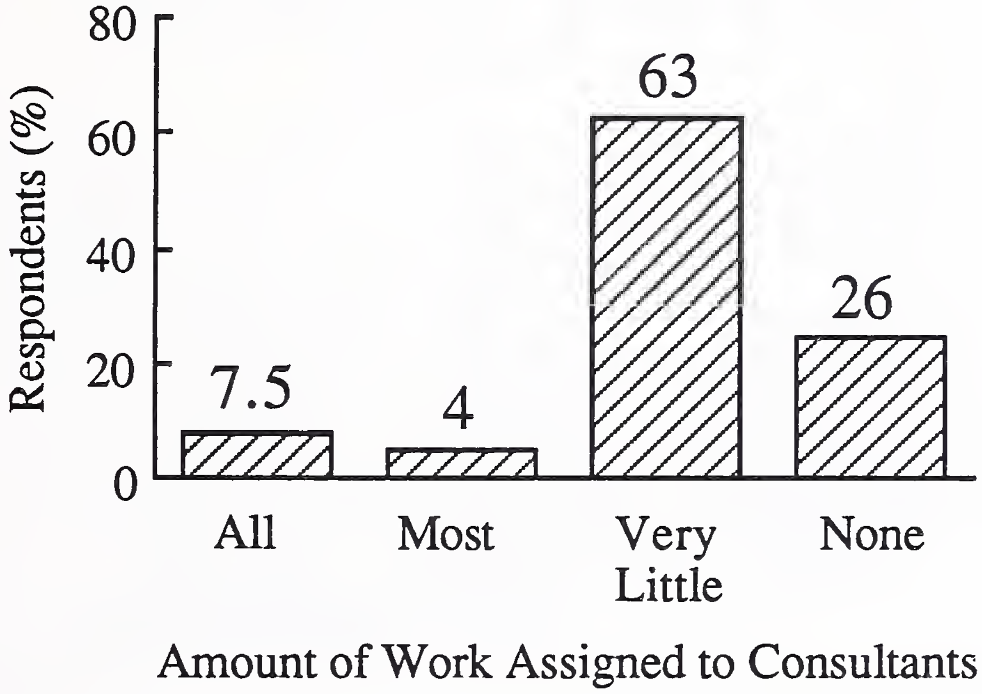


INPUT

NOTES:

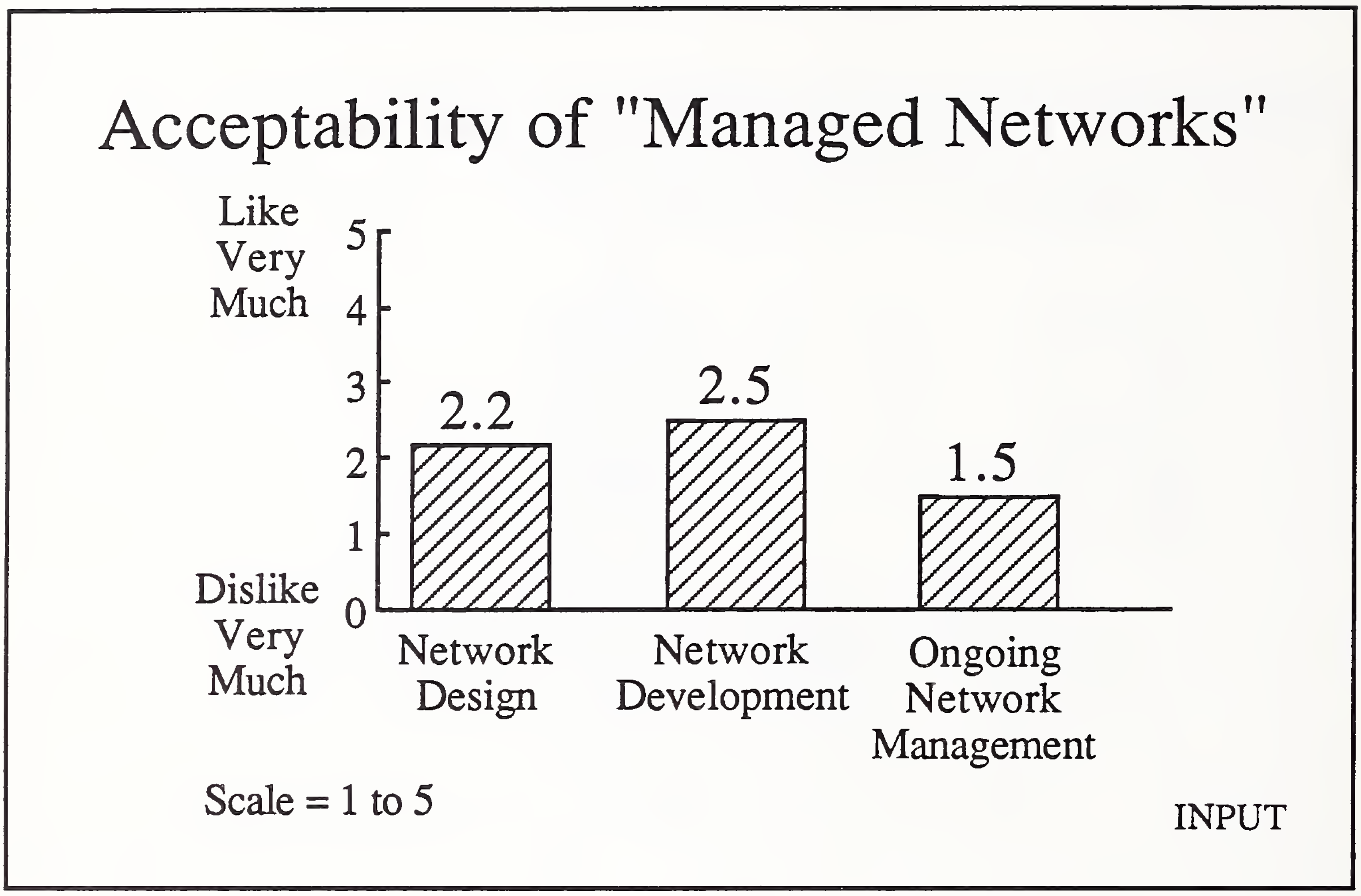
MPRE89-311

Use of Consultants for Network Design



NOTES:

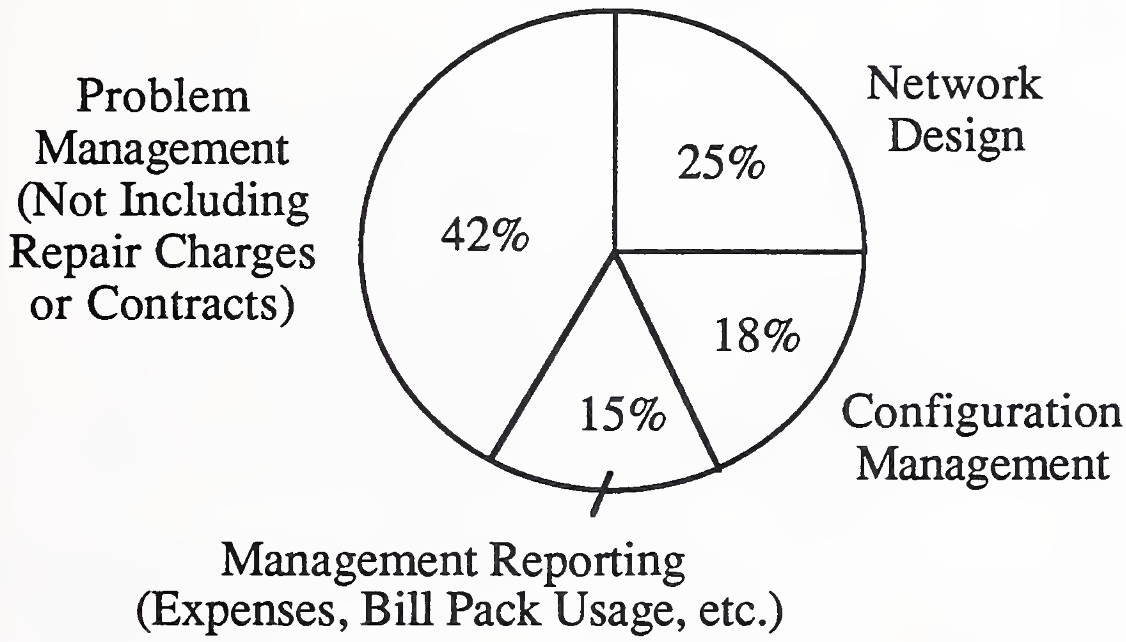
MPRE89-312



NOTES:

MPRE89-313

Staff Time Used for Network Management Functions

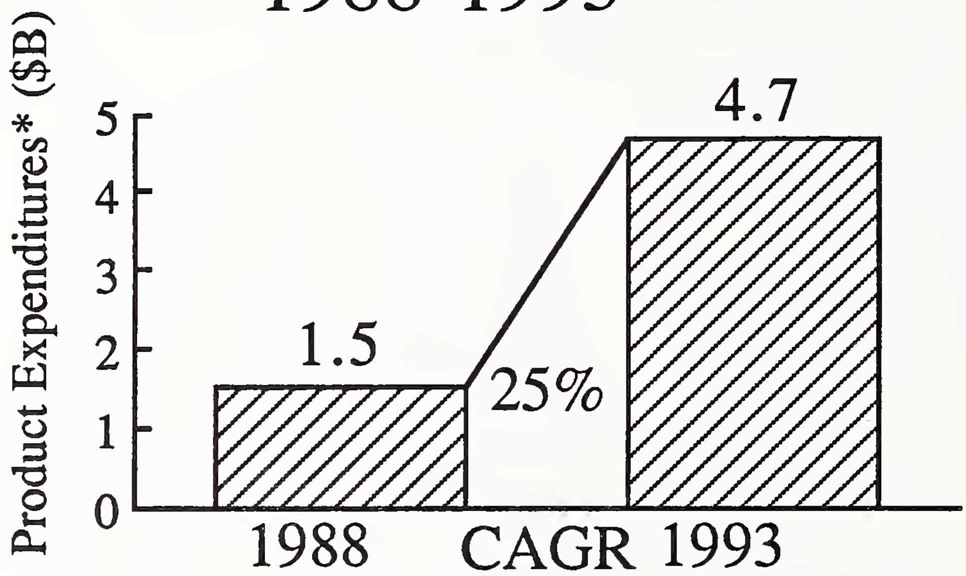


INPUT

NOTES:

MPRE89-314

Network Management Product Expenditures in Large Companies 1988-1993



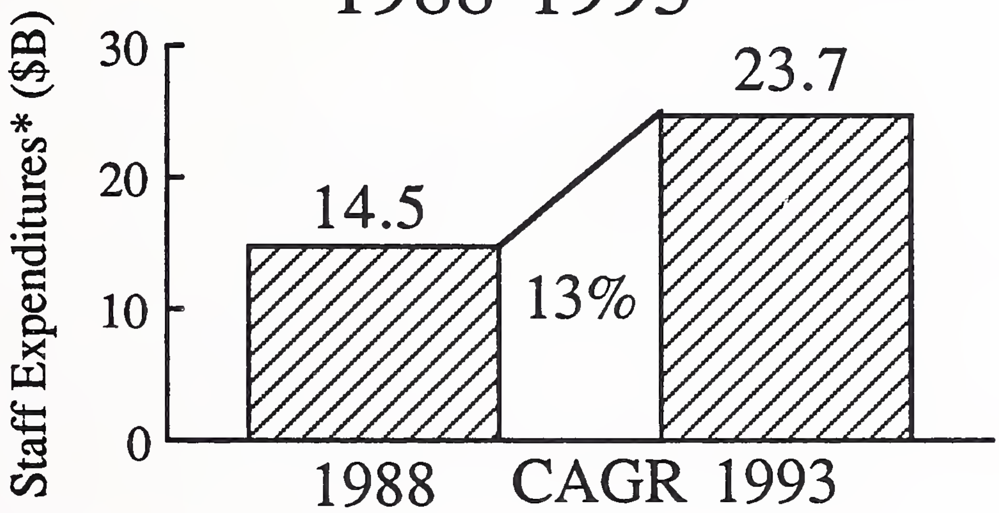
* For companies with over 500 employees.

INPUT

NOTES:

MPRE89-315

Network Management Staff Expenditures in Large Companies 1988-1993



* For companies with over 500 employees.

INPUT

NOTES:

MPRE89-316

Vertical Markets

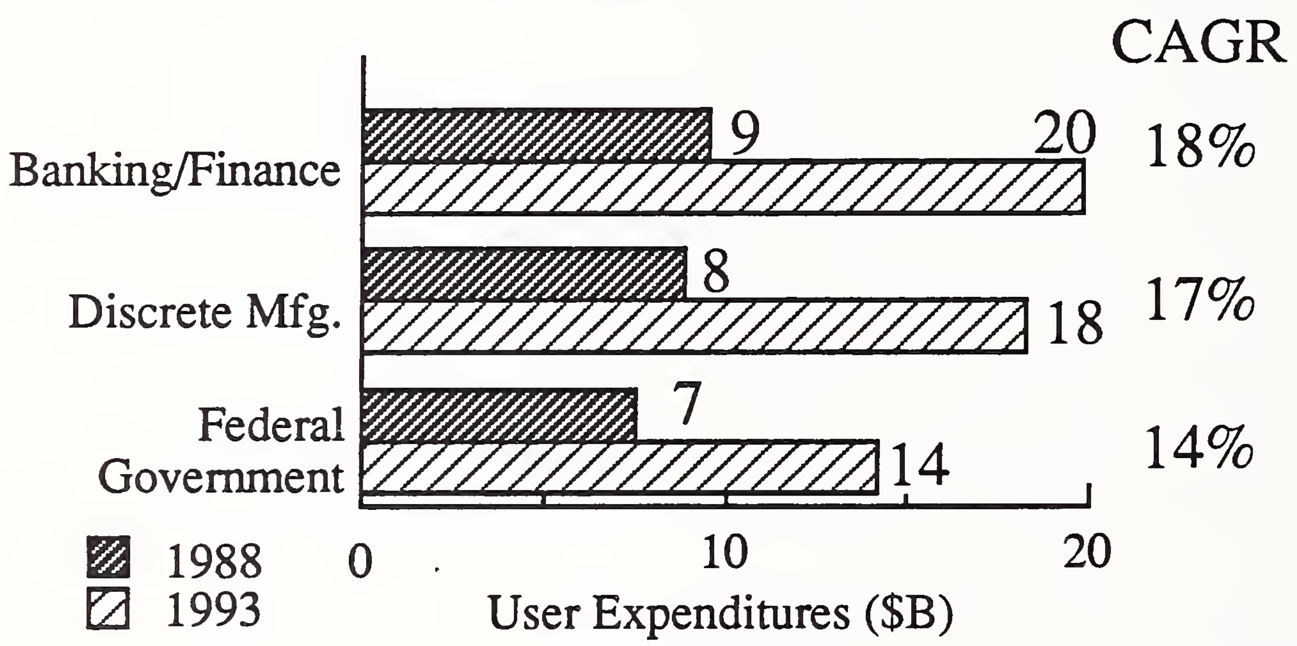
INPUT

NOTES:

MAAP-59.1

MPRE89-222

Largest IS Vertical Markets

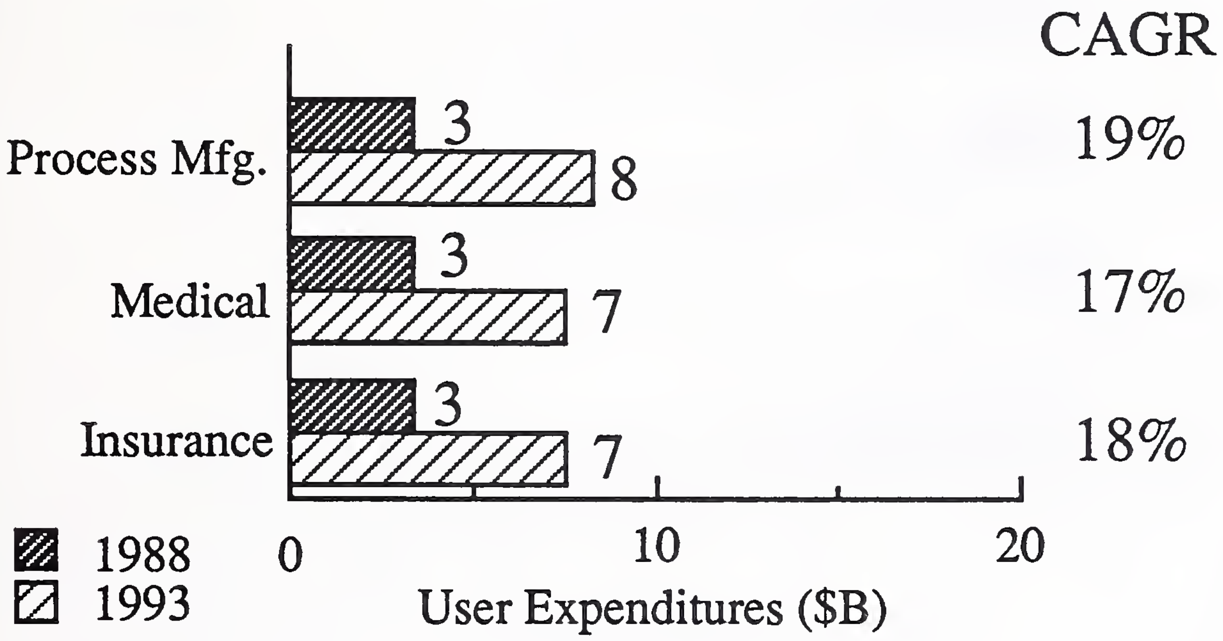


INPUT

NOTES:

MPRE89-223

Largest IS Vertical Markets

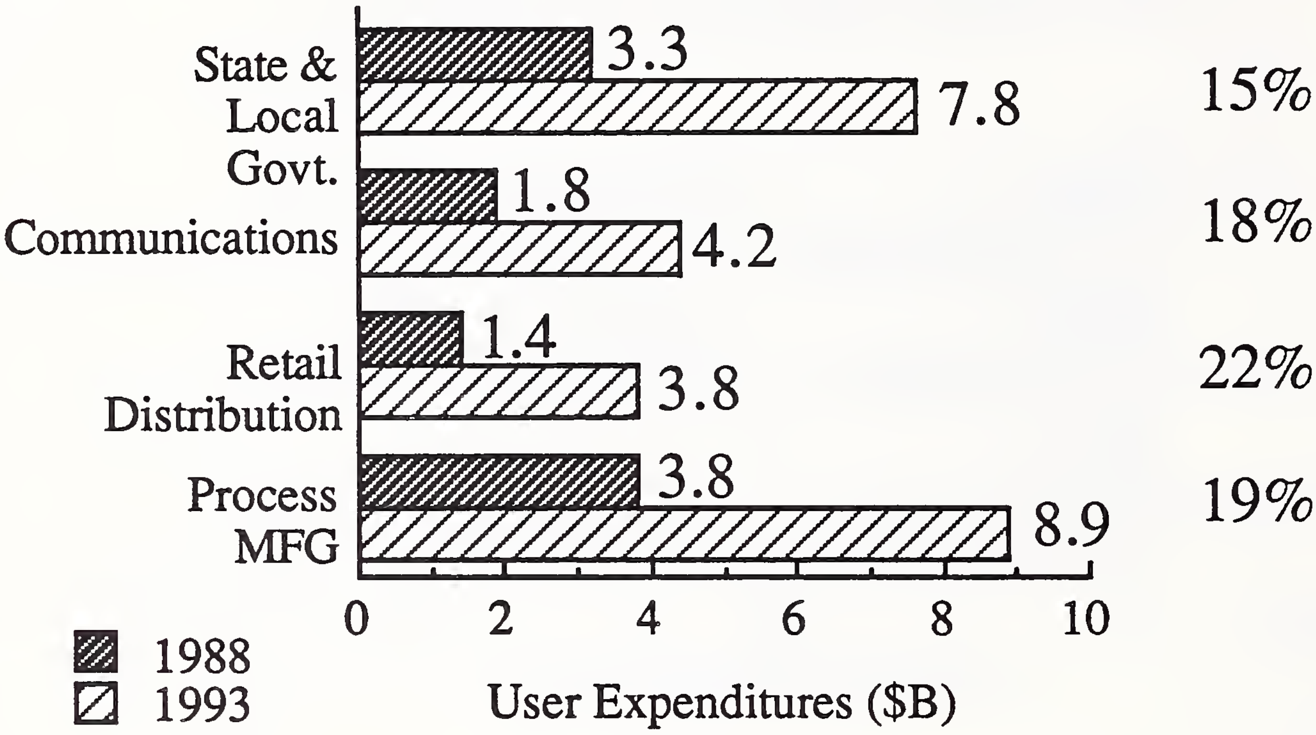


INPUT

NOTES:

MAAP-60b

Fast-Growing IS Vertical Markets



INPUT

NOTES:

MAAP-61

MPRE89-225

Medical

INPUT

NOTES:

MAAP-68

MPRE89-226

Medical Industry—Trends

- Movement to HMOs, Away from Traditional Health Care
- Aging U.S. Population
- Government Regulation
  - Medicare Catastrophic Illness
  - Prescription Reimbursements
  - Medicare Budget Cutting?

INPUT

NOTES:

MAAP-69a

MPRE89-227

Medical Industry—Trends

- Need for Functional Integration
  - Patient Care
  - Billing/Financial
  - Clinical/Testing
  - Medical Records

INPUT

NOTES:

MAAP-69b

MPRE89-228

Hospital Sector—Trends

- Reduction of Average Patient Stay
- DRG Reimbursement Reductions
- Hospital Diversification
- Hospital Consolidation
- Saturation of Financial/Patient Care Stand-Alone Systems

INPUT

NOTES:

MAAP-70

MPRE89-229

Physician Sector—Trends

- Increased Competition
- Increase in Group Practices
- Possible Change in Medicare: Reimbursements by Value, Not DRG

INPUT

NOTES:

MAAP-71

MPRE89-230

"Other" Medical Sector—Trends

- Medicare Reimbursement for Outpatient Care
- Nationwide Prescription Drug Program

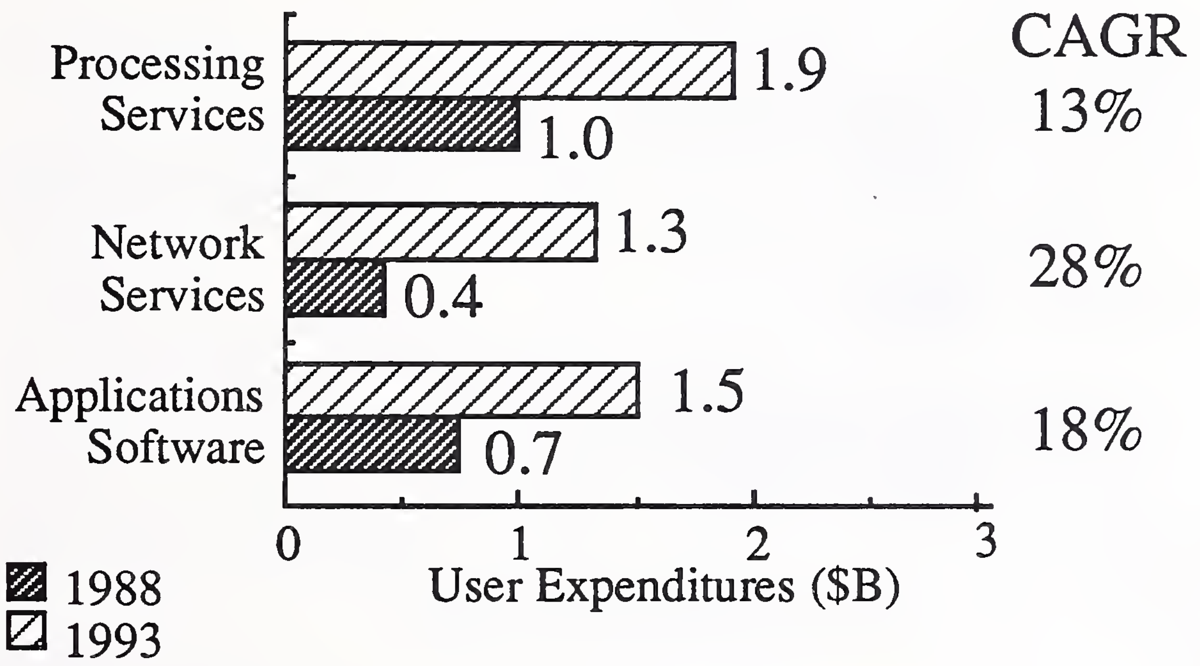
INPUT

NOTES:

MAAP-72

MPRE89-231

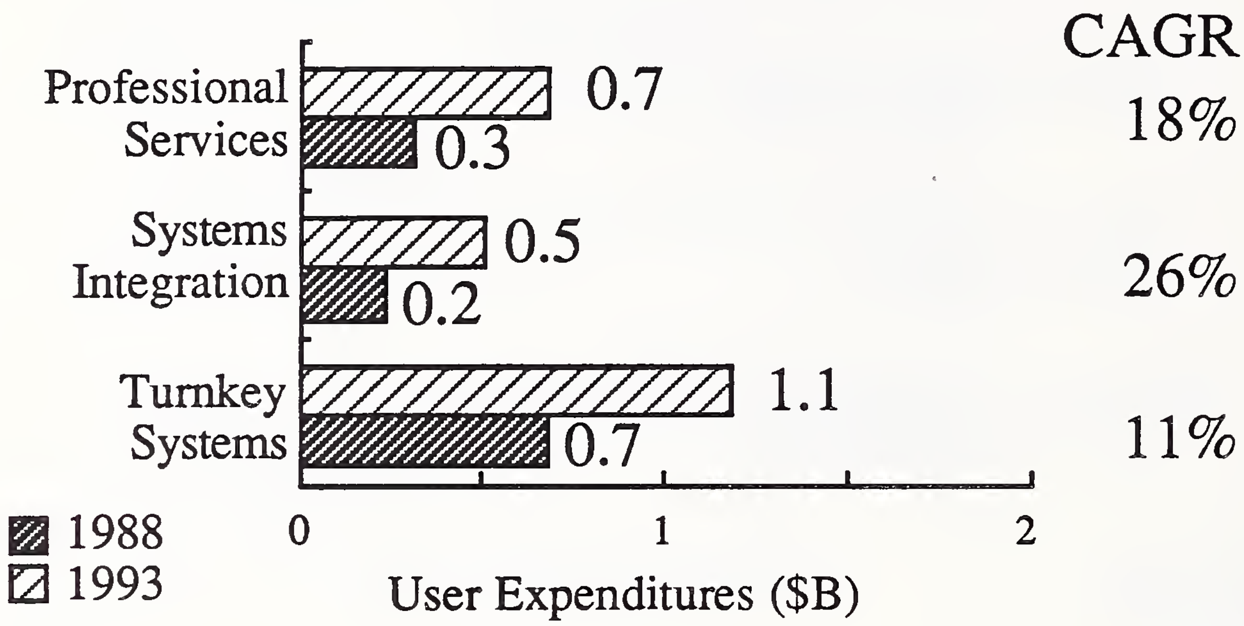
Medical Sector Forecast by Delivery Mode 1988-1993



NOTES:

MPRE89-232

Medical Sector Forecast by Delivery Mode
1988-1993



INPUT

NOTES:

MPRE89-233

Medical Sector—Leading Vendors

Vendor	1988 US Revenues ($M)*	Market Share (%)
Shared Medical Systems	400	13
McDonnell Douglas	230	7
HBO & Co.	200	6
Baxter Travenol	180	6

* INPUT Estimate

INPUT

NOTES:

MPRE89-234

Medical Sector—Leading Vendors

Vendor	1988 US Revenues($M)*	Market Share(%)
IBM	175	5
Cycare Systems	80	3

* INPUT Estimate

INPUT

NOTES:

MPRE89-235

Medical Sector—Leading Vendors

Vendor	1987 IS Revenues($M)*	Market Share(%)
Technicon Data Systems	60	2
Cerner	45	1
Meditech	40	1
Keane	40	1
All Others		53

* INPUT Estimate

INPUT

NOTES:

MPRE89-236

Vendor Opportunities

- Integrated Systems
- Clinical/Laboratory Applications
- Networking: Physicians & Hopitals
- Professional Services

INPUT

NOTES:

MAAP-74a

MPRE89-237

Vendor Opportunities

- "Point of Care" Systems
- Skill Nursing/Health Care Systems
- Physicians: PC Usage
- Prescription Drug Programs

INPUT

NOTES:

MAAP-74b

MPRE89-238

Education Sector

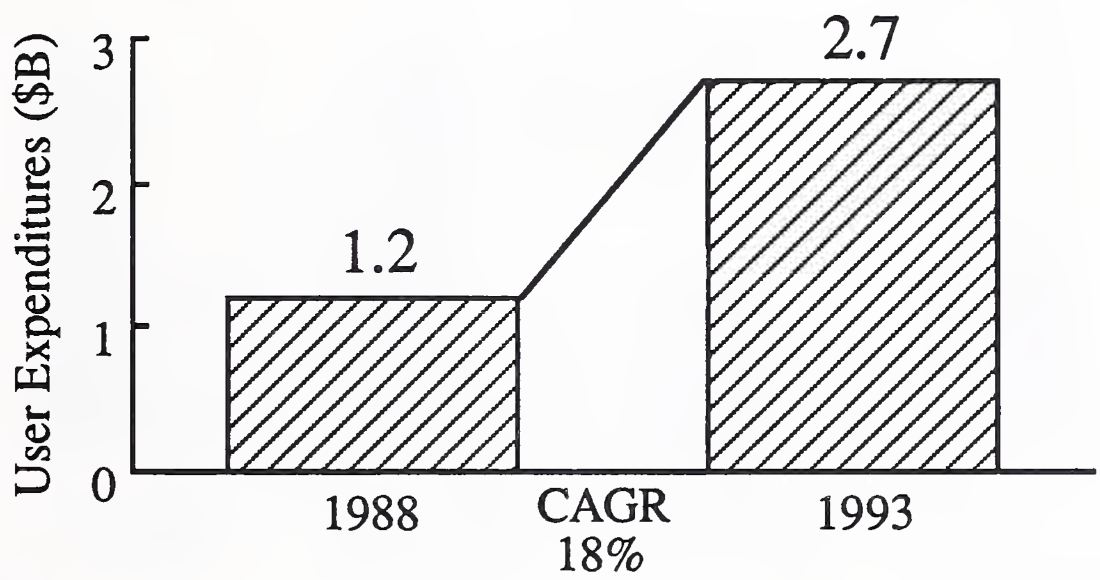
INPUT

NOTES:

MAAP-86

MPRE89-239

User Expenditures, Education Sector, 1988-1993



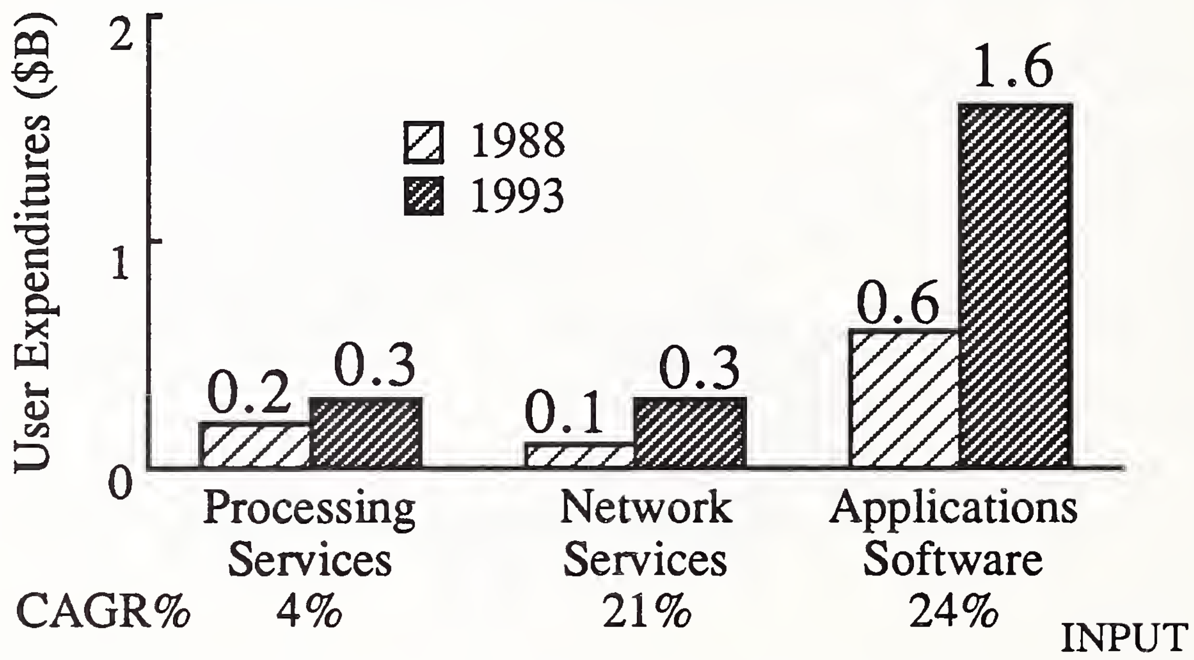
INPUT

NOTES:

MAAP-88

MPRE89-240

User Expenditures, Education Sector, 1988-1993, by Delivery Mode

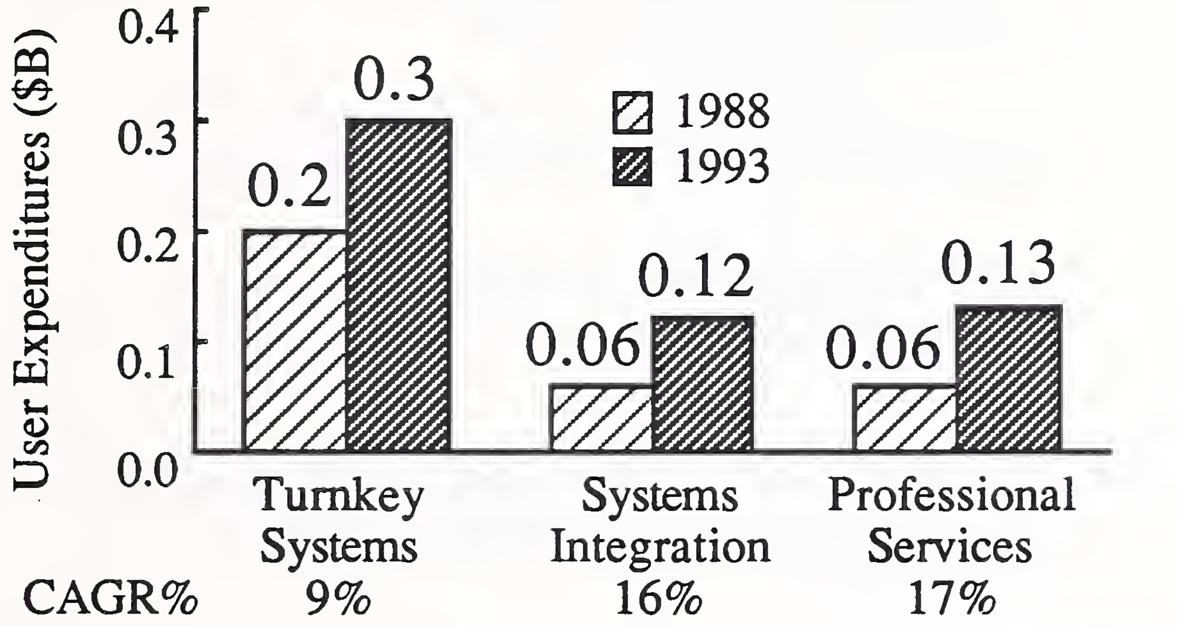


NOTES:

MAAP-87a

MPRE89-241

User Expenditures, Education Sector, 1988-1993, by Delivery Mode



NOTES:

MAAP-87b

MPRE89-242

Trends—Higher Education

- Centralized IS Control
- Integrated, Networked Solutions
- Standards for Intercampus Networking
- Spending on Microcomputers in Past, Leading to Connectivity Needs

INPUT

NOTES:

MAAP-89a

MPRE89-243

Trends—Higher Education

- User Involvement in Software Development
- CAI/Courseware Development
  - EDUCOM
- Budgetary Concerns

INPUT

NOTES:

MAAP-89b

MPRE89-244

Driving Forces—Higher Education

- Administrative Applications
- Research Applications
- Word Processing (Faculty/Students)
- Intracampus Networking

INPUT

NOTES:

MAAP-90a

MPRE89-245

Driving Forces—
Higher Education

- IBM/MCI: NSF NET Enhancements
- Library Computerization
- Impact of NEXT Computers?

INPUT

NOTES:

MAAP-90b

MPRE89-246

Discrete Manufacturing

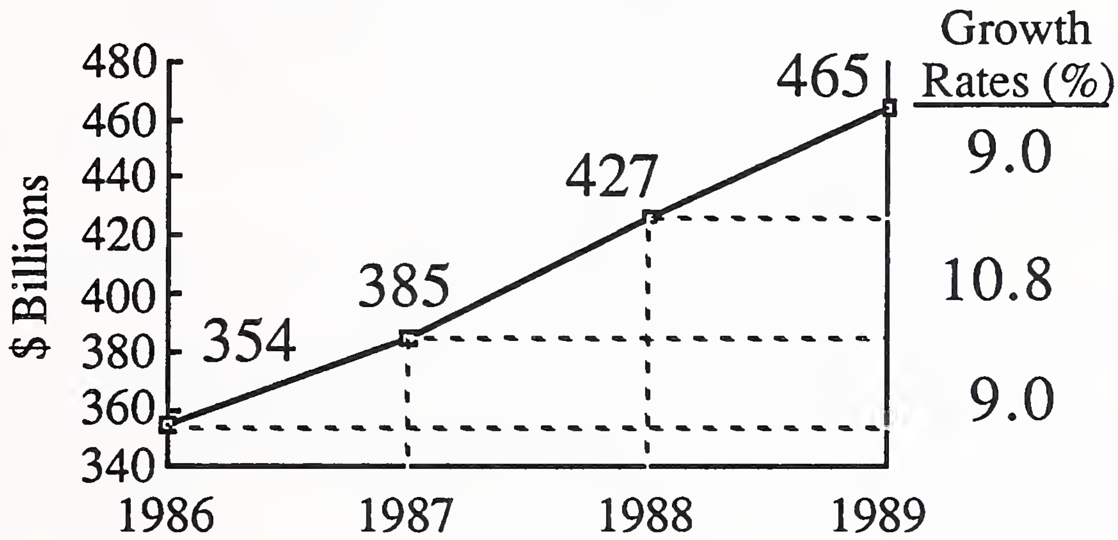
INPUT

NOTES:

MAAP-62

MPRE89-247

U.S. Industry Capital Investment Trend



Source: Nov. 1988 Commerce Dept.

INPUT

NOTES:

MPRE89-353

Trends—
Discrete Manufacturing

- Large Market, Still Growing at 17%
- High-End MRPII Saturation
- Micro-Based Solutions & Workstations
- Need for Integrated Systems

INPUT

NOTES:

MAAP-63a

MPRE89-248

Trends—
Discrete Manufacturing

- MAP versus Ethernet—Inconclusive
- CIM—From Buzzword to Reality?
- Rapid Growth in CAD/CAM, but on Less Expensive Platforms

INPUT

NOTES:

MAAP-63b

MPRE89-256

Events—
Discrete Manufacturing

- Prime Acquires Computervision
- Prime Acquires Calma
- Digital Moves Away from MAP

INPUT

NOTES:

MAAP-64a

MPRE89-257

Events—
Discrete Manufacturing

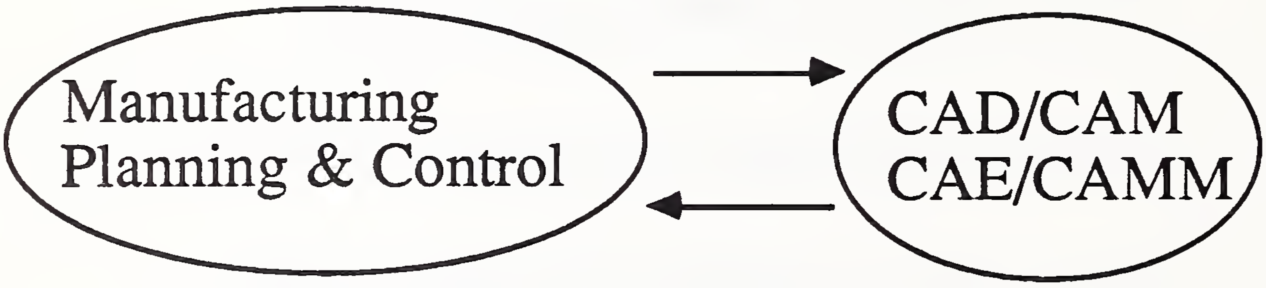
- Digital—Multiple Alliances
- IBM—Focus on CIM through ASD

INPUT

NOTES:

MPRE89-258

Discrete Manufacturing



Applications Will Be Merged/
Integrated into Complete Solutions

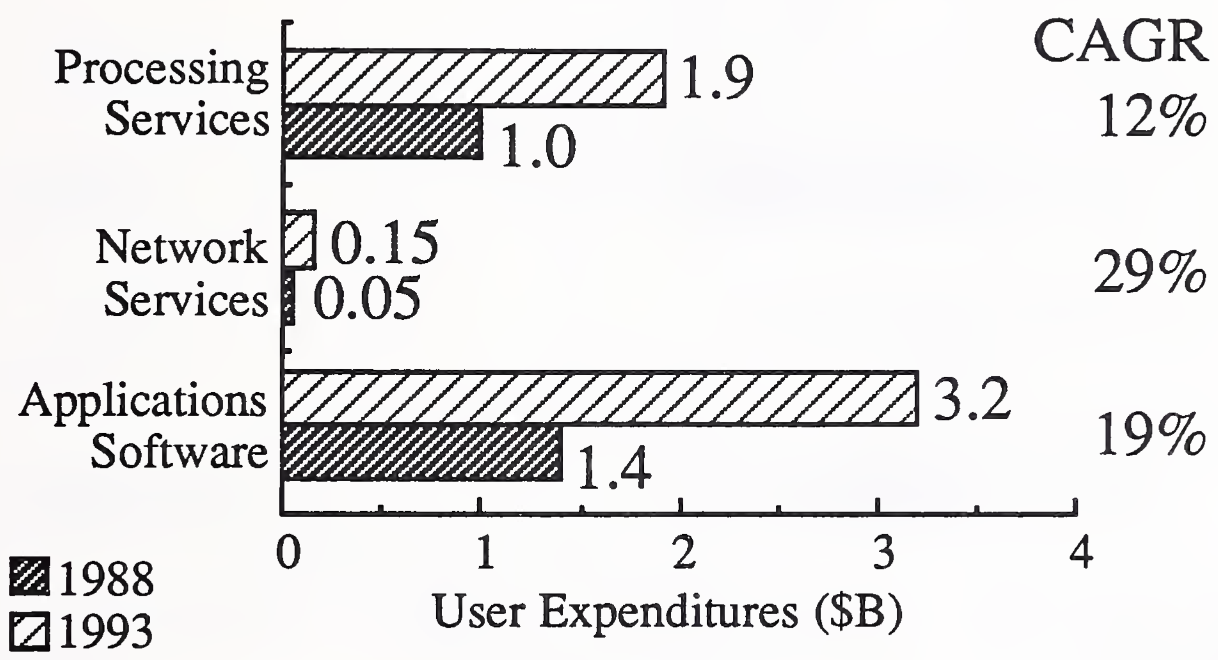
INPUT

NOTES:

MAAP-65

MPRE89-259

Discrete Manufacturing Sector Forecast by Delivery Mode—1988-1993

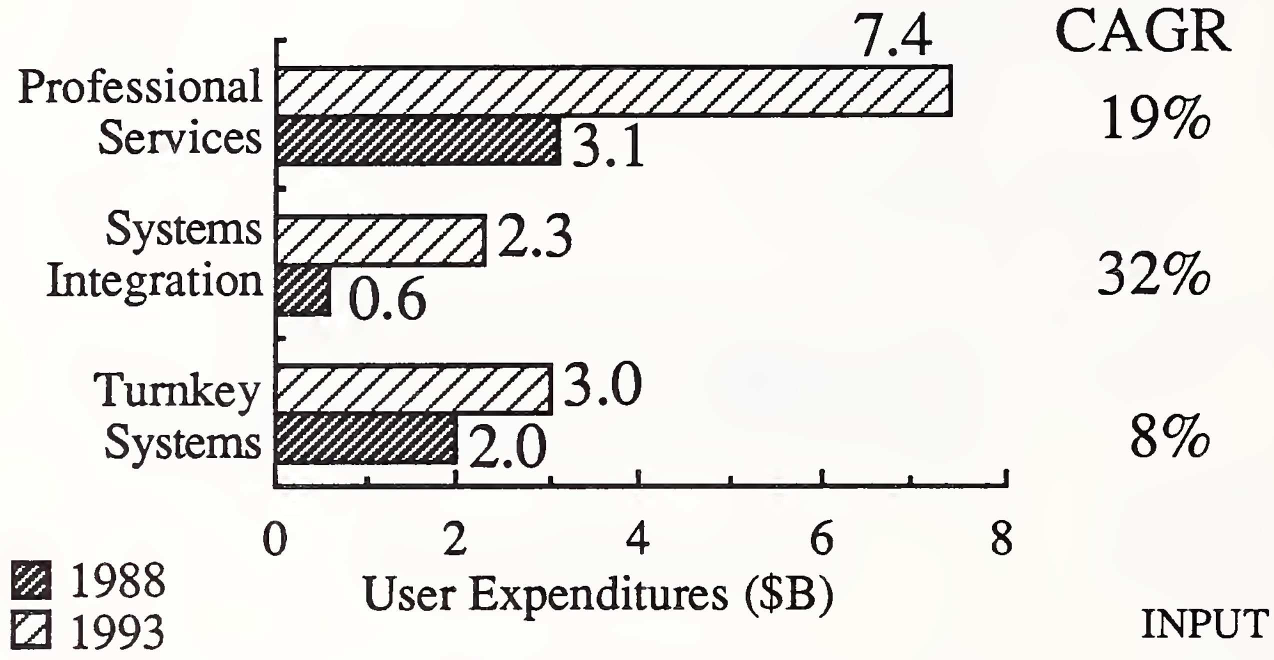


INPUT

NOTES:

MPRE89-249

Discrete Manufacturing Sector Forecast by Delivery Mode—1988-1993



NOTES:

MPRE89-250

Discrete Manufacturing Leading Vendors

Vendor	1988 US Revenues ($M)*	Market Share (%)
Prime (Computervision)	500	6
IBM	480	6
Intergraph	450	5
McDonnell Douglas	240	3

INPUT

NOTES:

MAAP-66a

Discrete Manufacturing Leading Vendors

Vendor	1988 US Revenues($M)*	Market Share(%)
Schlumberger	210	3
Arthur Andersen	200	2
Control Data	140	2

* INPUT Estimate

INPUT

NOTES:

MAAP-66b

MPRE89-252

Discrete Manufacturing Leading Vendors

Vendor	1988 US Revenues($M)*	Market Share(%)
Gerber	130	2
ASK	130	2
Boeing	105	1
All Others		68

* INPUT Estimate

NOTES:

MPRE89-253

Vendor Recommendations: Discrete Manufacturing

- Be a Leader in Your Niche
- Build Alliances, Provide Integrated Solutions
- Look at International Markets

INPUT

NOTES:

MAAP-67a

Vendor Recommendations: Discrete Manufacturing

- Implement Workstation/PC Host-Based Solutions
- Offer Customized Solutions
- Offer Professional Services

INPUT

NOTES:

MPRE89-255

1988 User Research

INPUT

NOTES:

MPRE89-260

1988 User Research Activity

Questionnaire	No. Interviews	No. Industries
Budget & Issues	211	15
Application Development	103	12
Data Administration	100	11
Issues Studies	200	NA

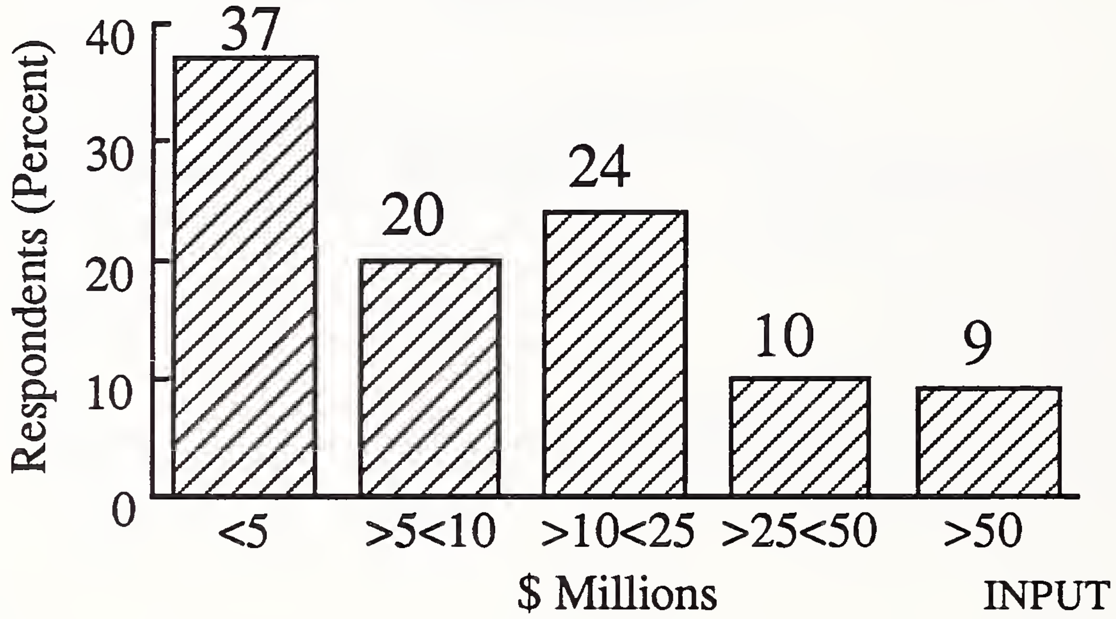
INPUT

NOTES:

JJ88-DT2-3

MPRE89-261

Research Demographics
Size of Information Systems Budget



NOTES:

JJ88-DT2-4

MPRE89-262

Office Systems

INPUT

NOTES:

MPRE89-331

Key User Objectives

- The Integration of Voice Recognition with Word Processing
- Implementation of Cooperative Processing Solutions for More Efficient Computer Resource Utilization
- Hardware Device Independence
- Distributed Data Base Access

INPUT

NOTES:

MPRE89-302

Important User Issues

- Need to Reduce Paper Levels
- Need to Enhance Office Productivity
- Pricing for Multi-User Software Packages
- Software Portability

INPUT

NOTES:

MPRE89-301

Integrated Office Systems

- Common User Interfaces
- Linkages with Vertical Applications
- Multivendor, MultiNetwork Interconnectability
- OSI Reference Model
- UNIX-based Office Systems

INPUT

NOTES:

MPRE89-332

Image Scanning/Processing

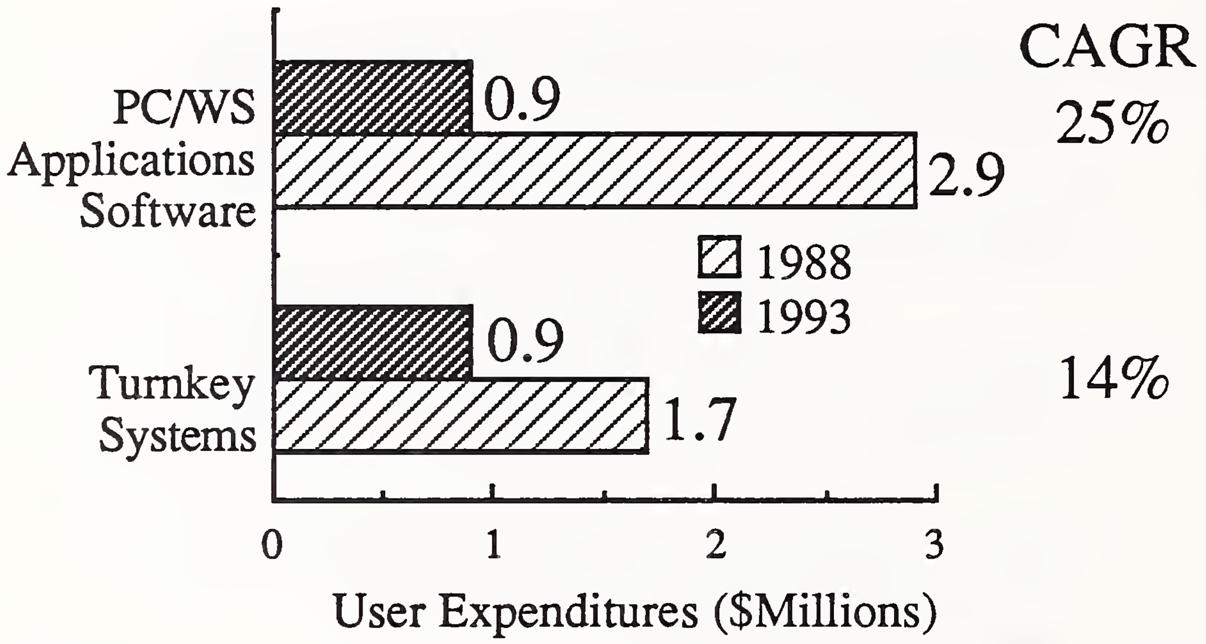
- Integrated Document Storage and Retrieval
- Scanning
- Enterprise-wide Image Processing Systems
- Fax Technology for Capture and Distribution

INPUT

NOTES:

MPRE89-333

Office Systems Markets
1988-1993



INPUT

NOTES:

MPRE89-335

Office Systems Application Development Trends

- Integrated Solutions
- Bundling of Operating Systems and Applications
- Groupware Products
- Standard Communications Protocols
- Integration of Office Systems and Information Systems

INPUT

NOTES:

MPRE89-336

Office Systems Technologies

- Client/Server Distributed Processing
- Minicomputer Servers
- Interoffice Networking with OSI
- Needs for Standards
  - Image Processing
  - Compound Documents

INPUT

NOTES:

MPRE89-337

Opportunities in Office Systems

- Integration of Information Management
  - Structured and Unstructured
  - Data/Text/Graphics

- Integration of Storage and Delivery
  - Voice
  - Data
  - Other Media

INPUT

NOTES:

MPRE89-338

Image Processing Market

- Object Oriented Structures Needed
- Compound Document Handling
- Integrated Indexing/Data Base Management

INPUT

NOTES:

MPRE89-292a

Image Processing Market

- Vendor Entrance
  - Wang
  - Digital
  - IBM

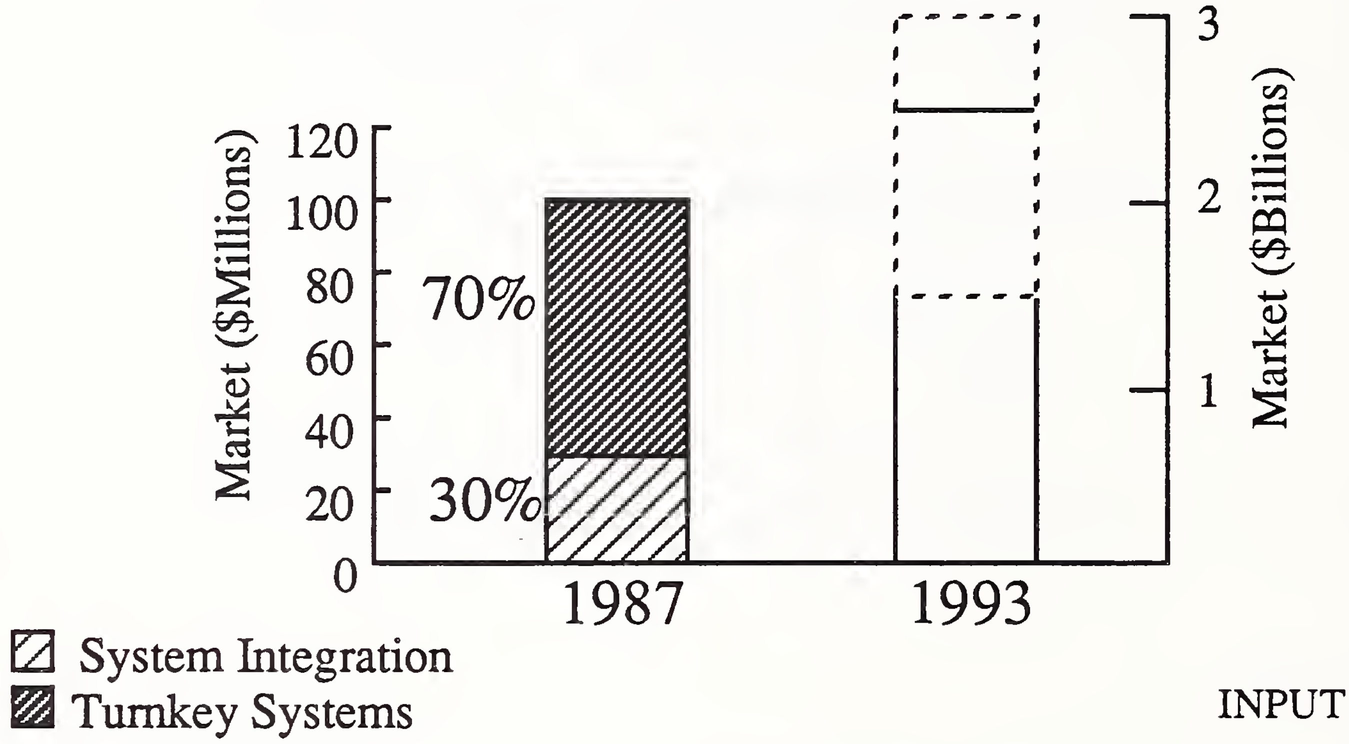
- Filenet Leading Independent

INPUT

NOTES:

MPRE89-292b

Compound Document Handling



NOTES:

MPRE89-293

Application Development Tools

INPUT

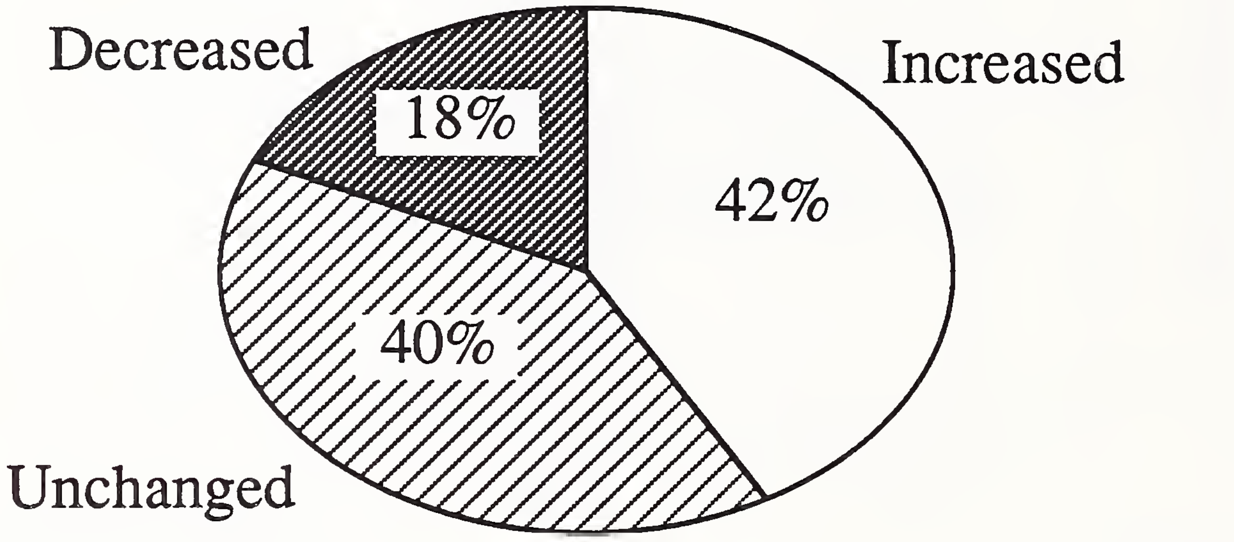
NOTES:

JJ88-DT2-10

MPRE89-264

Application Development—Backlog 1987 versus 1988

Budget & Issue Survey



NOTES:

JJ88-DT2-11

MPRE89-265

Application Development—Key Issues

Issue	Resp.
Productivity & Quality	38
Use of Technology	16
Responsiveness	14
Development Process	11

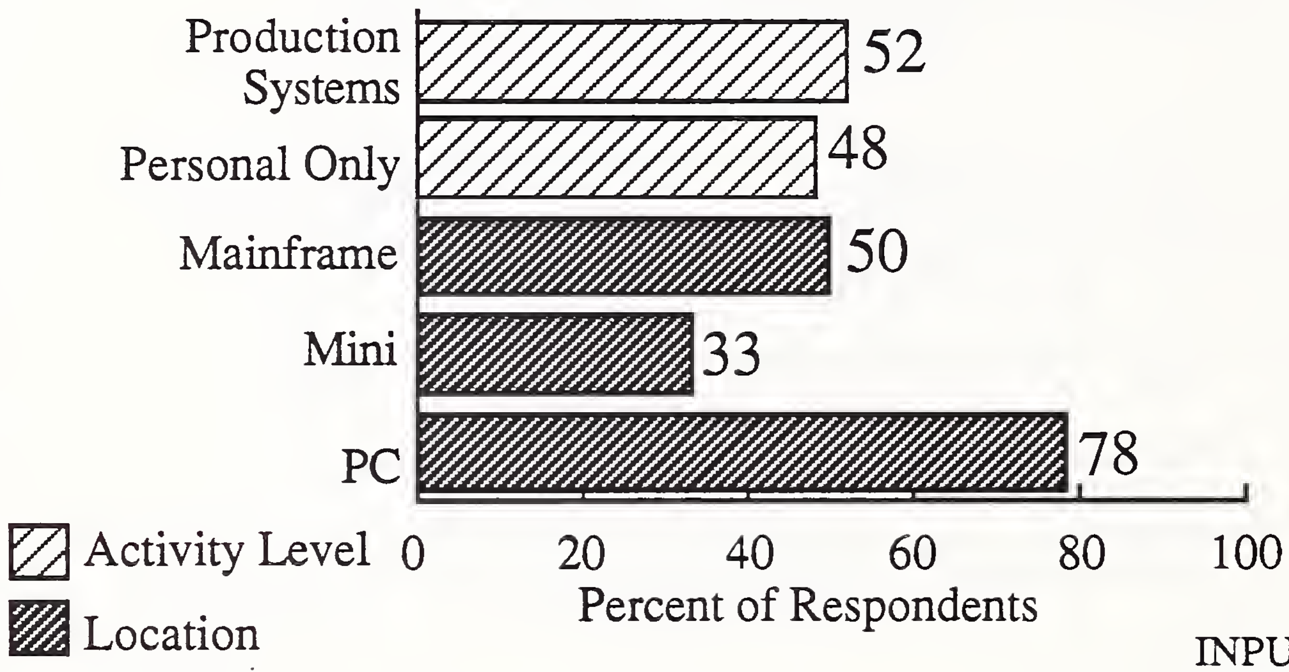
INPUT

NOTES:

JJ88-DT2-12a

MPRE89-266

Development by the End User



NOTES:

JJ88-DT2-16

MPRE89-267

Applications Development Summary

- Backlog Will Never Go Away
- External Resources Becoming More Common

INPUT

NOTES:

JJ88-DT2-21a

MPRE89-268

Applications Development Summary

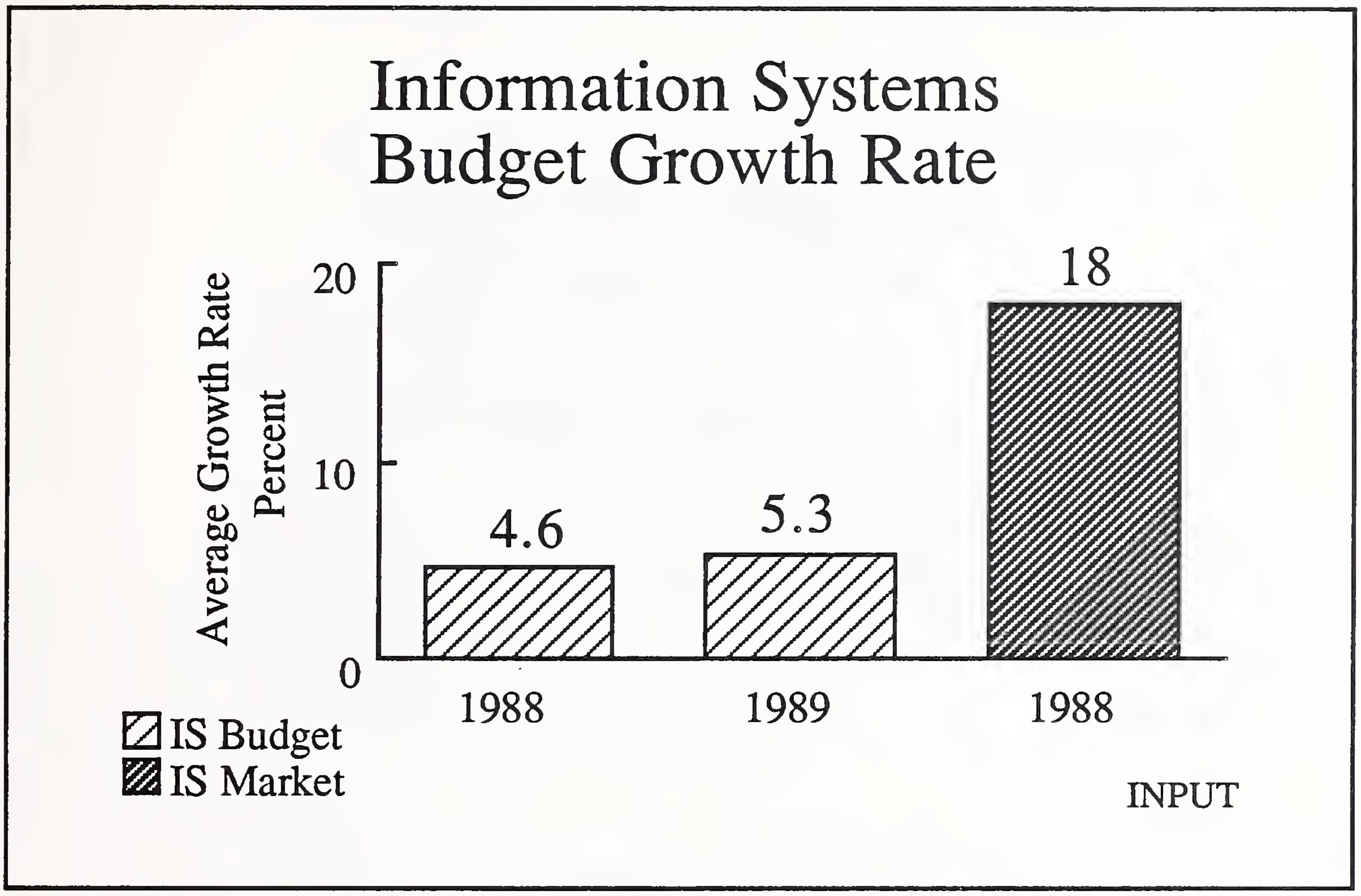
- End User Becoming a Force and Alternative
- Relational DBMS Use in Full Bloom
- Data Management Will Have to Change

INPUT

NOTES:

JJ88-DT2-21b

MPRE89-269



NOTES:

MPRE89-270

Information Systems Budget

(Percent)

Category	'87 (Dist'n)	'88 (Dist'n)	'88 (Growth)	'89 (Growth)
Personnel	40	39	2	2
Computer Hardware	28	28	5	4
Communications	11	12	14	6
Ext. Prod. & Svcs.	16	16	5	2
Other	5	5	4	0
Total	100	100	4.6	5.3

INPUT

NOTES:

JJ88-DT2-29

MPRE89-271

Information Systems Priorities—1989

- Audit the Data Management Function
- Review IS Budget Control Policies
- Review Use of External Products and Services

INPUT

NOTES:

JJ88-DT2-39a

MPRE89-272

Information Systems Priorities—1989

- Prepare End-User Support for the Next Wave
- Experiment with Connectivity
- Assign Responsibility for Standards

INPUT

NOTES:

JJ88-DT2-39b

MPRE89-273

Information Systems Priorities—Beyond 1989

- Clear Expectations of IS
- Identify Mission Critical Processes
- Application Development—Use All Alternatives

INPUT

NOTES:

JJ88-DT2-40a

MPRE89-274

Information Systems Priorities—Beyond 1989

- Data Management—Company-Wide Orientation
- Technology Architecture—Network Management
- Central IS—Consulting Role

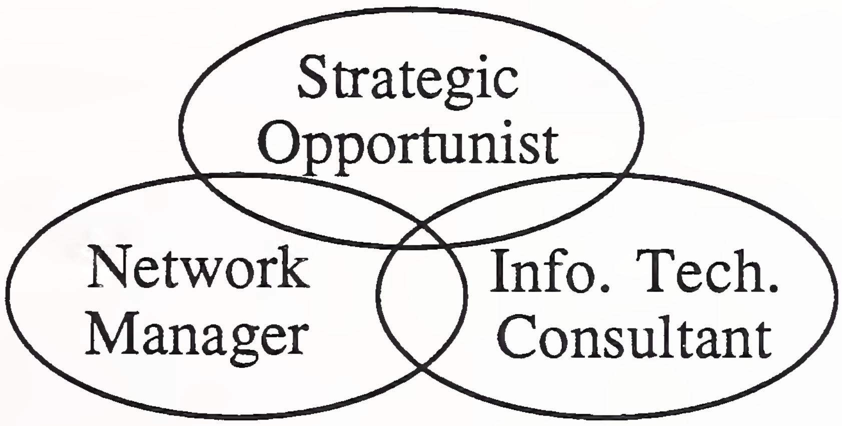
INPUT

NOTES:

JJ88-DT2-40b

MPRE89-275

Information Systems Executive Role in the 1990s



An Internal "Systems Integrator"

INPUT

NOTES:

JJ88-DT2-41

MPRE89-276

Information Systems—Major Issues

- Rising Management Expectations
- User Demands for Increasingly Complex Solutions
- Managing the Technology Investment
- Integration of Data/Technology/Applications
- Delivery of "Mission Critical" Systems

INPUT

NOTES:

JJ88-DW1-5A,B

MPRE89-277a,b

Blocking Factors

- Infrastructure Gridlock
- Lack of Qualified In-House Personnel
- Existing Applications Portfolio
- Organizational Response Time

Create Opportunities for the Information Services Industry

INPUT

NOTES:

JJ88-DW1-6

MPRE89-278

IS Organization in the 1990s

Not Centralized

Not Decentralized

<u>Federated</u>

Brought together "by agreement of each party to sublimate its power to the central authority in common affairs." - Webster

INPUT

NOTES:

JJ88-DW1-7

MPRE89-279

Federated IS Organization

Federal Government	Corporate IS
Defense	Competition
Treaties	Partnerships
Regulation	Standards
National Programs	Corporate Systems
National Policies	Corporate Policies

INPUT

NOTES:

JJ88-DW1-8

MPRE89-280

Federated IS Organization

State Government	Unit IS
Citizens	Customers
Local Issues	Business Support
Operating Programs	Operating Systems
Policy Implementation	Policy Implementation

INPUT

NOTES:

JJ88-DW1-9

MPRE89-281

IS Responsibilities—1990s

- Treat "Users" as Customers
- Analyze "Make" or "Buy" Decisions
- Consult on Strategy and Direction
- Support Organizational Units at All Levels in Use of:
  - Information
  - Information Systems and Services
  - Information Technology

INPUT

NOTES:

JJ88-DW1-10A,B

MPRE89-282a,b

Fundamental Driving Forces

Key Business Trends:

Shorter Product Life Cycles

More Customization/Specialization

Narrower Market Segments

Higher Impact of Technology

More Competition in U.S. from Overseas Vendors

INPUT

NOTES:

JJ88-DW1-3

Fundamental Driving Forces

- *Apply to the Information Services Industry*
- *Are Restructuring the Role of IS Management*
  - Reactive to Proactive
  - Technology-Driven to User-Driven
  - Centralized to "Federated"

INPUT

NOTES:

JJ88-DW1-4

Conclusions

INPUT

NOTES:

MPRE89-349

Environment for Information Services in Year 2000

- Worldwide Network Infrastructure in Place (ISDN)
  - Voice
  - Data
  - Text
  - Graphics

INPUT

NOTES:

MPRE89-285a

Environment for Information Services in Year 2000

- Simultaneous Language Translation/ Transmission
- Active Home/Consumer Use of Videotex, Data Base Access

INPUT

NOTES:

MPRE89-285b

Environment for Information Services in Year 2000

- Image Processing Is Routine
- Portable, Desktop Computers Used by All Professional/Clerical/ Managerial Workers
- Standards in Place for OS, Graphical Interfaces

INPUT

NOTES:

MPRE89-286

Environment for Information Services in Year 2000

- Fewer Hardware Vendors
- Solutions Delivered, Not Products
- Software Customized by Nonprogrammers

INPUT

NOTES:

MPRE89-287

Conclusions

- Overall Market Remains Vital
- Opportunities Will Require Targeted Marketing and Support
- Paradoxically, Breadth of Services/ Products Enhances Market Position

INPUT

NOTES:

MPRE89-288a

Conclusions

- Alliances/Mergers Necessary for Growth, Survival for Many Vendors
- User Requirements Becoming More Sophisticated
- End Users Becoming Decision Makers

INPUT

NOTES:

MPRE89-288b

Conclusions

- Shorter Lifecycle Calls for Fast Response
- People Skills/Retention Are Key
- Systems Integration Expands
- Technology Creates Opportunities

INPUT

NOTES:

MPRE89-288c

Summary

- Vendors Entering New Product/Service Areas; Competition Increasing
- Alliances/Mergers Necessary for Growth, Survival for Many Vendors
- International Opportunities
- Vendors Must Recognize Standards Impact

INPUT

NOTES:

MAAP-75b

Recommendations to Vendors

- Focus on Marketing
- Establish and Protect Account Base
- Expand Scope of Services to Customers

INPUT

NOTES:

MPRE89-290a

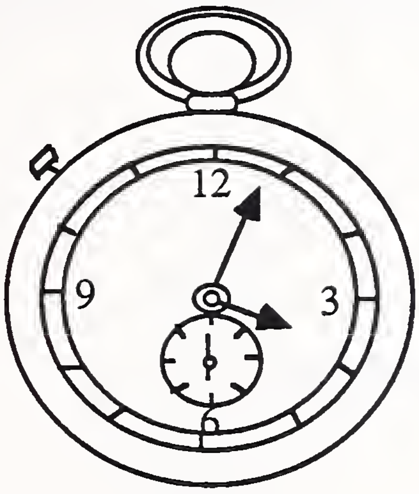
Recommendations to Vendors

- Deliver Complete Solutions
- Be Aware of Standards, Leverage Them
- Develop Multiplatform Solutions
- Consider International Markets

INPUT

NOTES:

MPRE89-290b



"Time—
The Next Source of
Competitive Advantage"
- HBR July/August 1988

- Attack Opportunities
- Adjust to the Requirements

INPUT

NOTES:

JJ88-VW2-38

MPRE89-196

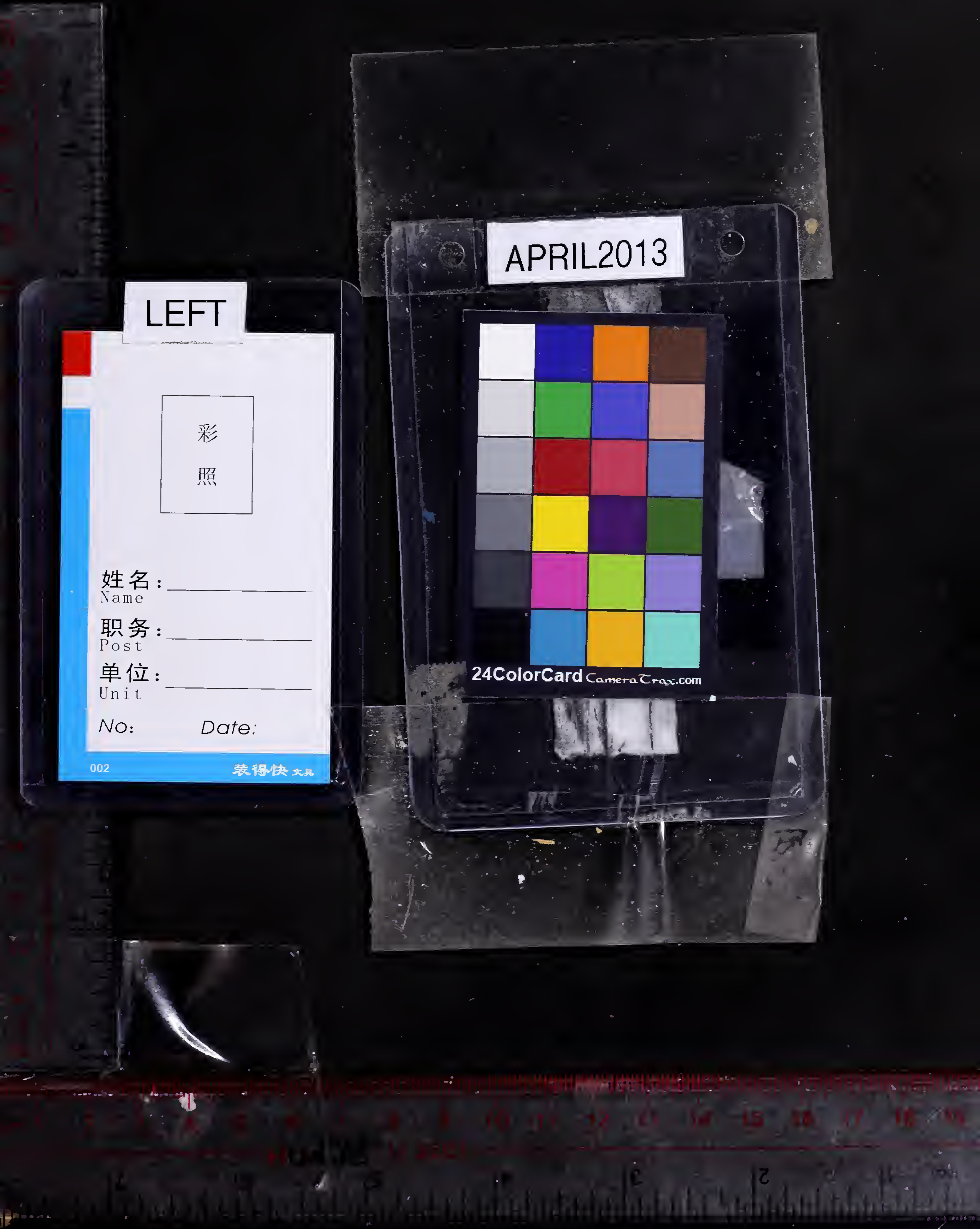
Available Information Services Revenue, 1988-1993

GO FOR IT!!!

INPUT

NOTES:

MPRE89-291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