INFORMATION SERVICES INDUSTRY

ANNUAL EXECUTIVE PRESENTATION

1988

INPUT

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INFORMATION SERVICES INDUSTRY DIRECTIONS

INPUT ANNUAL EXECUTIVE PRESENTATION 1988

INFORMATION SERVICES MPRE
INDUSTRY ANNUAL 1988
EXECUTIVE PRESENTATION C. 1

AUTHOR

TITLE

DATE LOANED	BORROWER'S NAME

Fundamental Driving Forces

Key Business Trends:

Shorter Product Life Cycles

More Customization/Specialization

Narrower Market Segments

Higher Impact of Technology

More Competition

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NOTES:

JJ88-DW1-3

Fundamental Driving Forces

- *Apply to the Information Services Industry*
- *Are Restructuring the Role of IS*
  - Reactive to Proactive
  - Technology-Driven to User-Driven
  - Centralized To "Federated"
- *And Changing the Formula for Success*

INPUT

NOTES:

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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

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:

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Information Systems Priorities—1989

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

INPUT

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JJ88-DT2-39a

Information Systems Priorities—1989

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

INPUT

NOTES:

JJ88-DT2-39b

Information Systems Priorities—Beyond 1989

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

INPUT

NOTES:

JJ88-DT2-40a

Information Systems Priorities—Beyond 1989

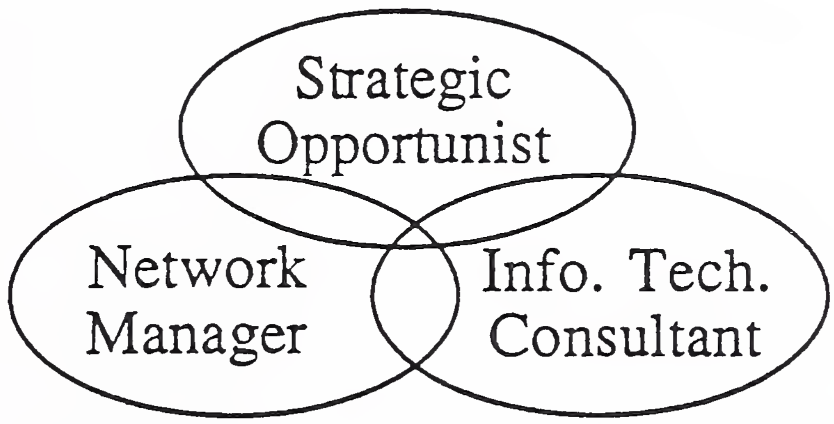
- Data Management—Company-Wide Orientation
- Technology Architecture—Network Management
- Central IS—Consulting Role

INPUT

NOTES:

JJ88-DT2-40b

Information Systems Executive Role in the 1990s



An Internal "Systems Integrator"

INPUT

NOTES:

JJ88-DT2-41

IS Organization in the 1990s

Not Centralized

Not Decentralized

Federated

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

INPUT

NOTES:

JJ88-DW1-7

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

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

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

1988 User Research Activity

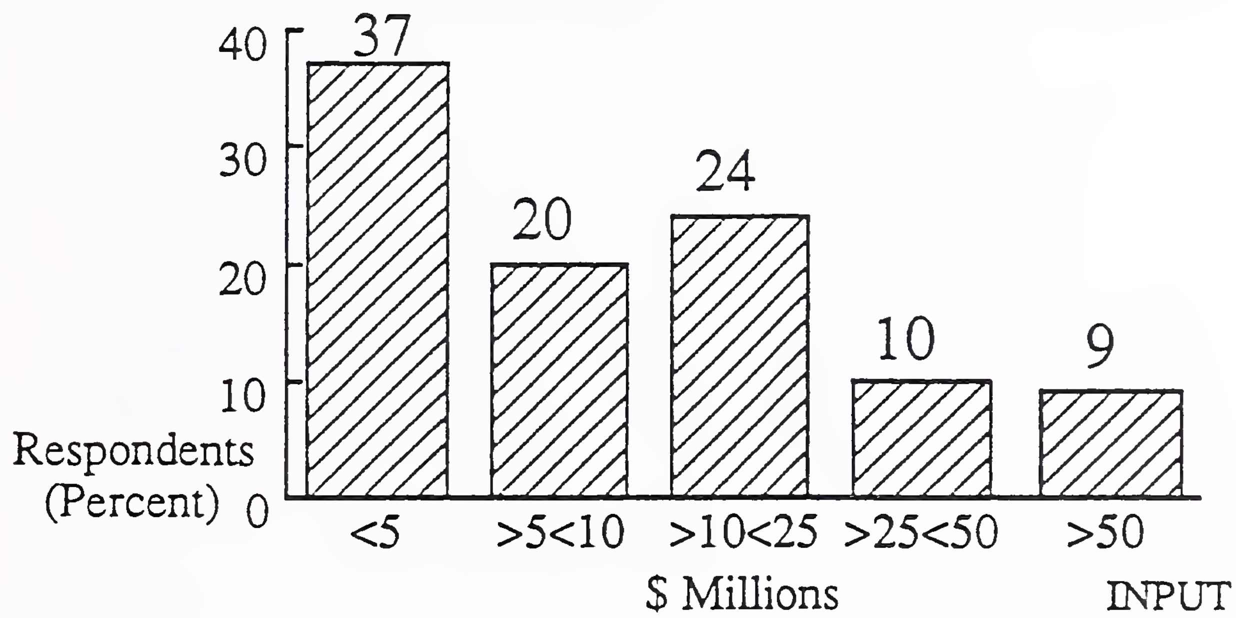
Questionnaire	No. Interviews	No. Industries
Budget & Issues	211	15
Application Development	103	12
Data Administration	100	11
Issues Studies	200	NA

INPUT

NOTES:

JJ88-DT2-3

Research Demographics
Size of Information Systems Budget



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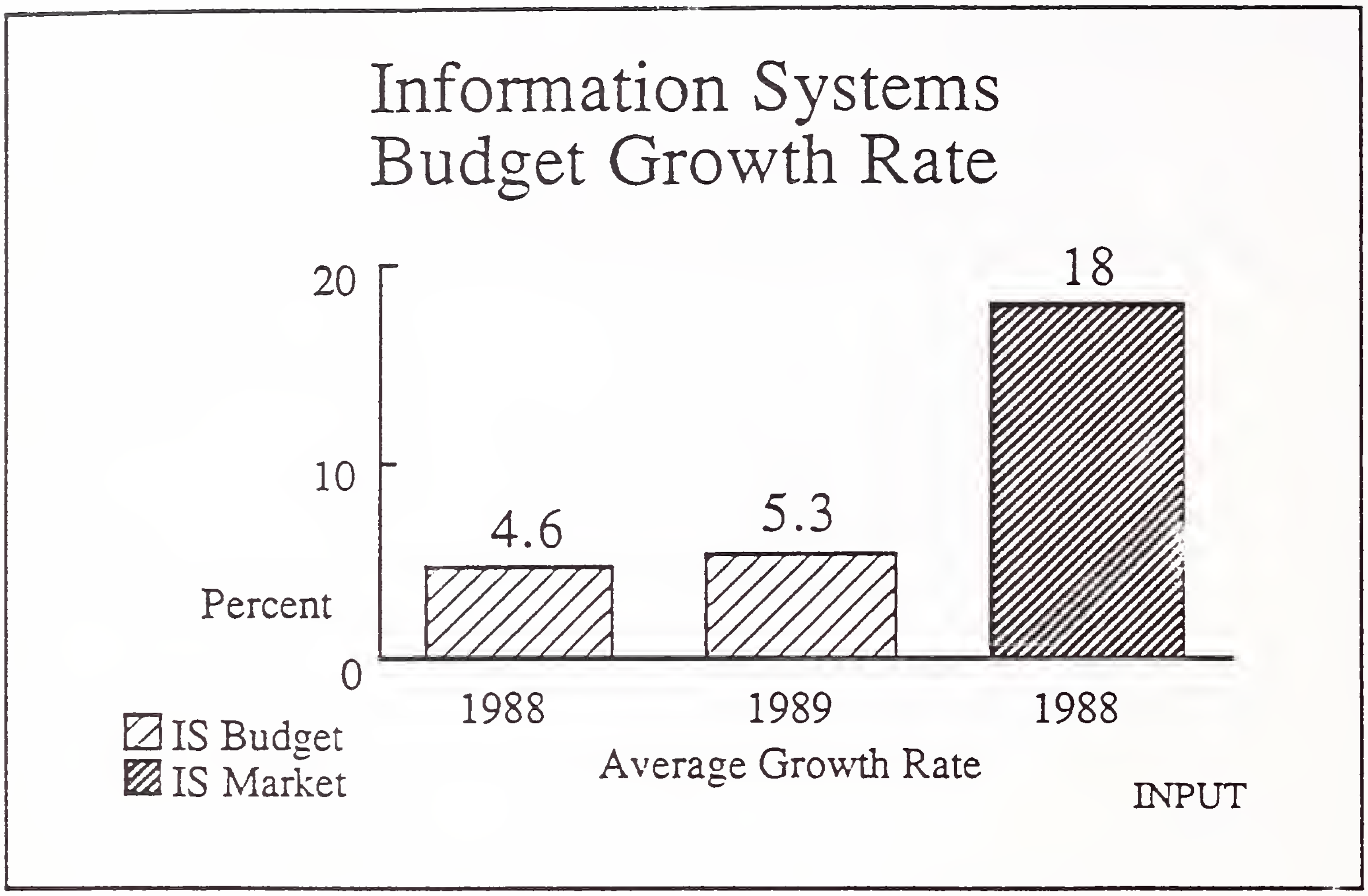
JJ88-DT2-4



NOTES:

JJ88-DT2-26

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

Information Systems
Major Issues—1988

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

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NOTES:

JJ88-DT2-7a,b

Application Development Tools

INPUT

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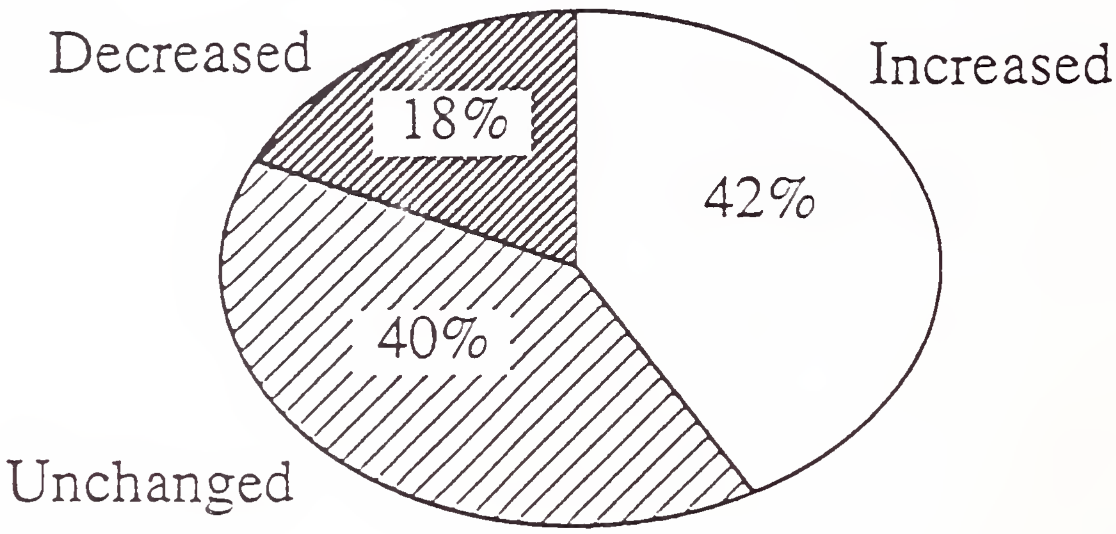
JJ88-DT2-10

Application Development—Backlog 1987 versus 1988

Budget & Issue Survey



INPUT

NOTES:

JJ88-DT2-11

Application Development—Key Issues

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

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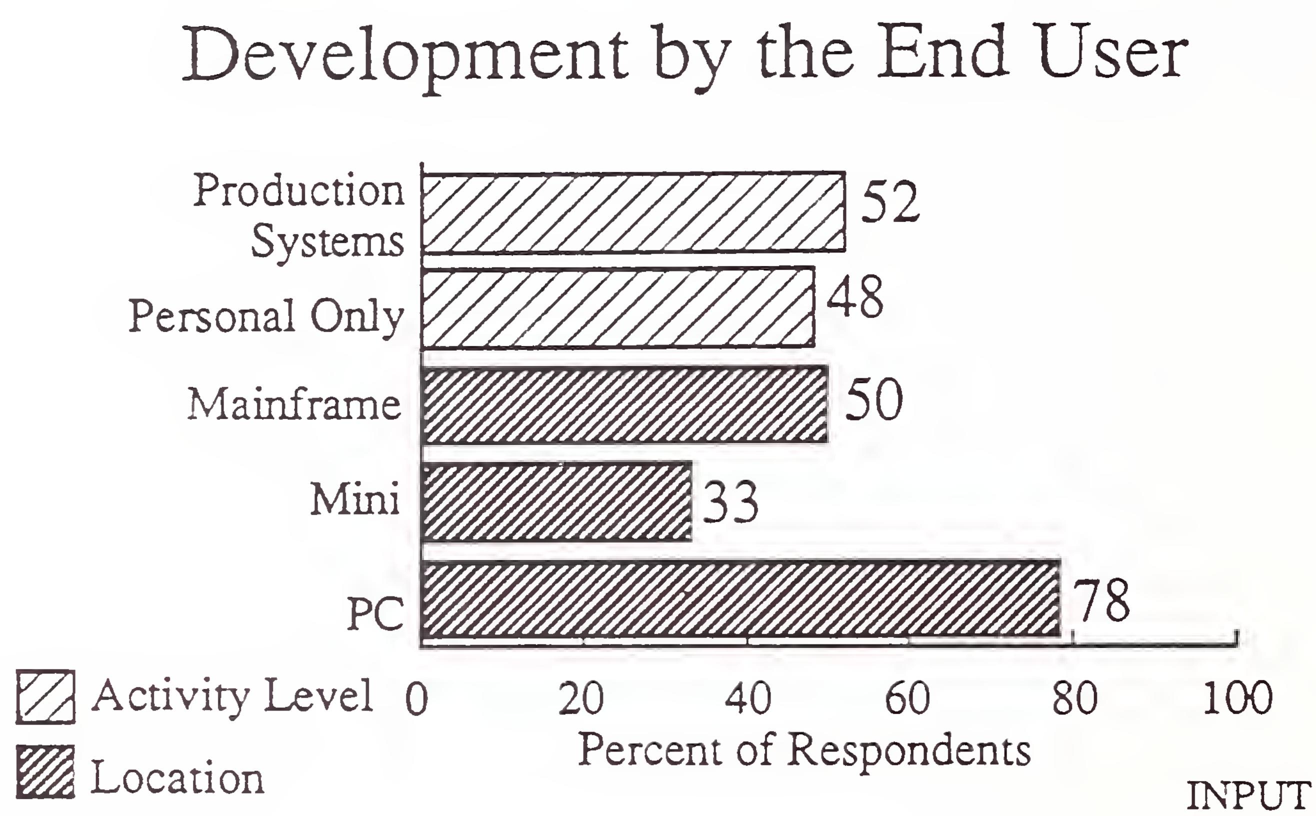
NOTES:

JJ88-DT2-12a



NOTES:

JJ88-DT2-16

Applications Development Summary

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

INPUT

NOTES:

JJ88-DT2-21a

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

User Research Findings
Round Table Session

- Data Management: Current Trends and Challenges
- Systems Integration: Buyer Issues
- Workstation Strategies
- Information Systems Budget

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NOTES:

JJ88-DT2-42

Information Services Industry Structure

- Total Industry
  - Applications Software
  - Systems Software
  - Turnkey Systems
  - Systems Integration
  - Processing Services
  - Network Services
  - Professional Services
  - Customer Support

INPUT

NOTES:

JJ88-RG1-10

Delivery Mode Expansion

1986	1987
Processing/Network Services	Processing
	Network
Professional Services	Professional Services
	Systems Integration

INPUT

NOTES:

JJ88-RG1-11 A

Delivery Mode Expansion

1986		1987
Applications Software	→	Unchanged
Systems Software	→	Unchanged
Turnkey Systems	→	Unchanged

INPUT

NOTES:

JJ88-RG1-11 B

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	

INPUT

NOTES:

JJ88-RG1-12a, b

Information Services Industry Trends

INPUT

NOTES:

JJ88-DW1-11

Key Trends for the 1990s

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

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NOTES:

JJ88-DW1-12

Products & Services 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

INPUT

NOTES:

JJ88-DW1-13A,B

"Blurring" of Offerings Reflects
Changing Market Structure/Demand

- Systems Integration Continues to Emerge
- EDI Incorporates Multiple Products/Services
- New Technologies Will Spawn Additional Change
  - Image
  - Integrated Voice/Data
  - High-Performance Digital Communications

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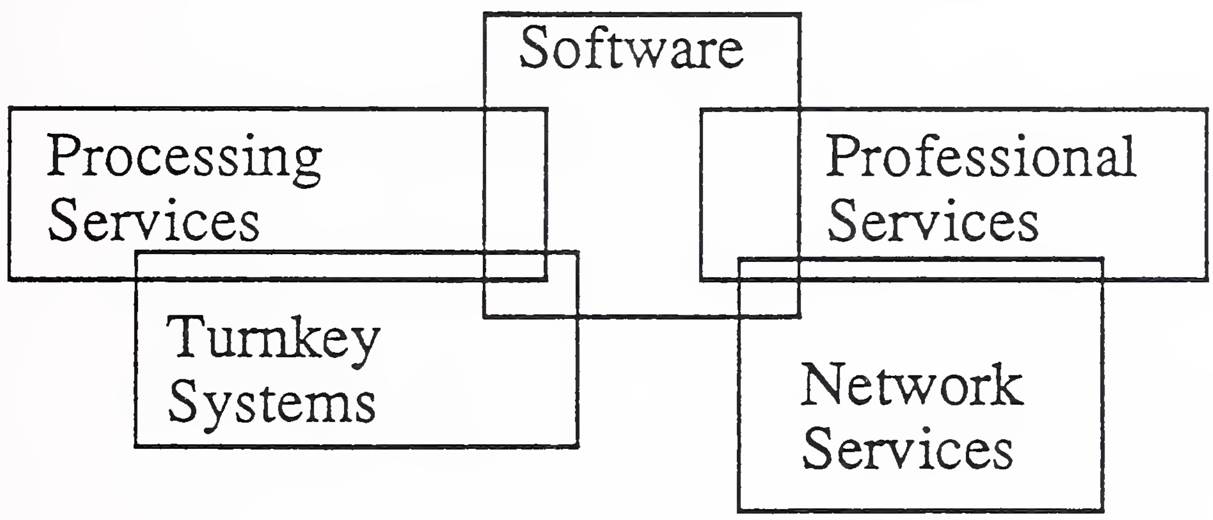
NOTES:

JJ88-DW1-15A,B

IS Market Structure—1980s

INPUT's View



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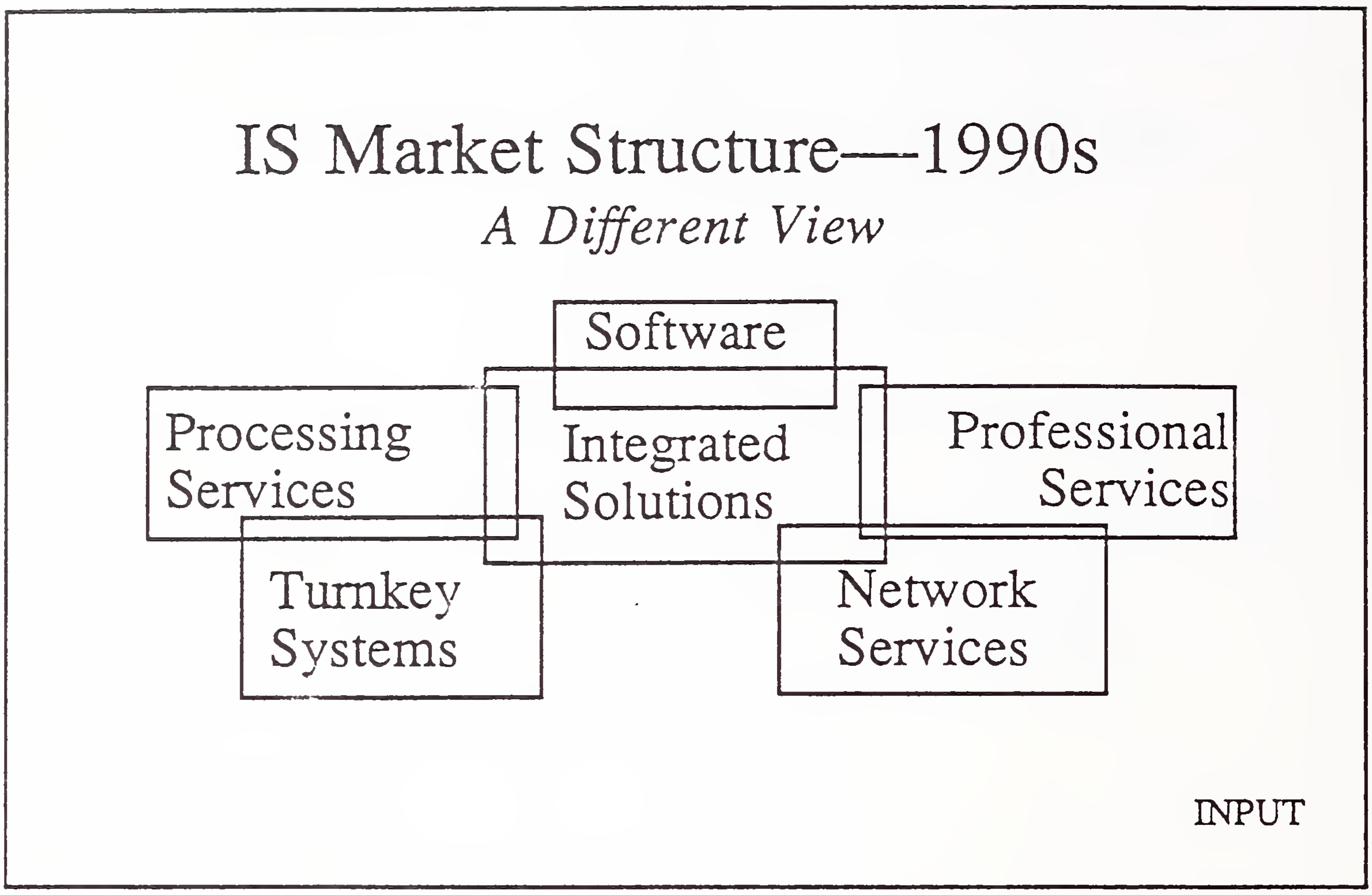
JJ88-DW1-16

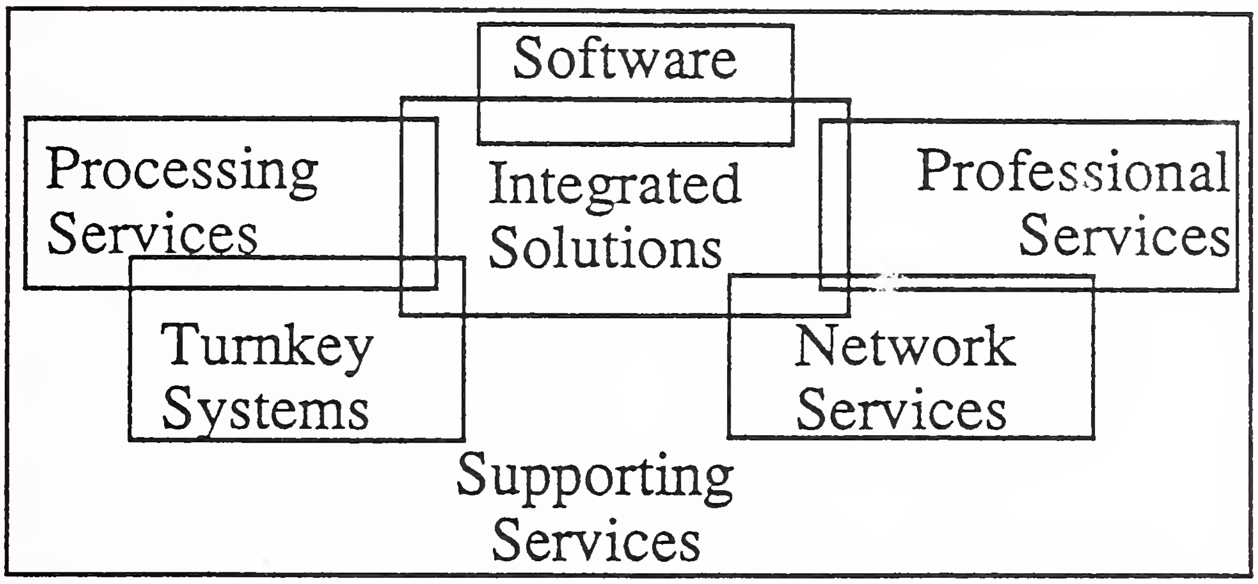


NOTES:

JJ88-DW1-17

IS Market Structure—1990s

Emphasis on Supporting Services



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NOTES:

JJ88-DW1-18

Internationalization

A Dominant Trend in the '90s

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

INPUT

NOTES:

JJ88-DW1-19

Internationalization

- Computer Manufacturers Ahead Now
- Information Services Companies Falling Behind
- Competition Coming:
  - Cap Gemini
  - Sema - Cap
  - SDL Scicon

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NOTES:

JJ88-DW1-20

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

Standards in the 1990s

Rationalization — Not Unification

Software — Not Hardware Driven

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JJ88-DW1-22

Vendor Reactions

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JJ88-DW1-23

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:

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Current Examples Portend 1990s Trends

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

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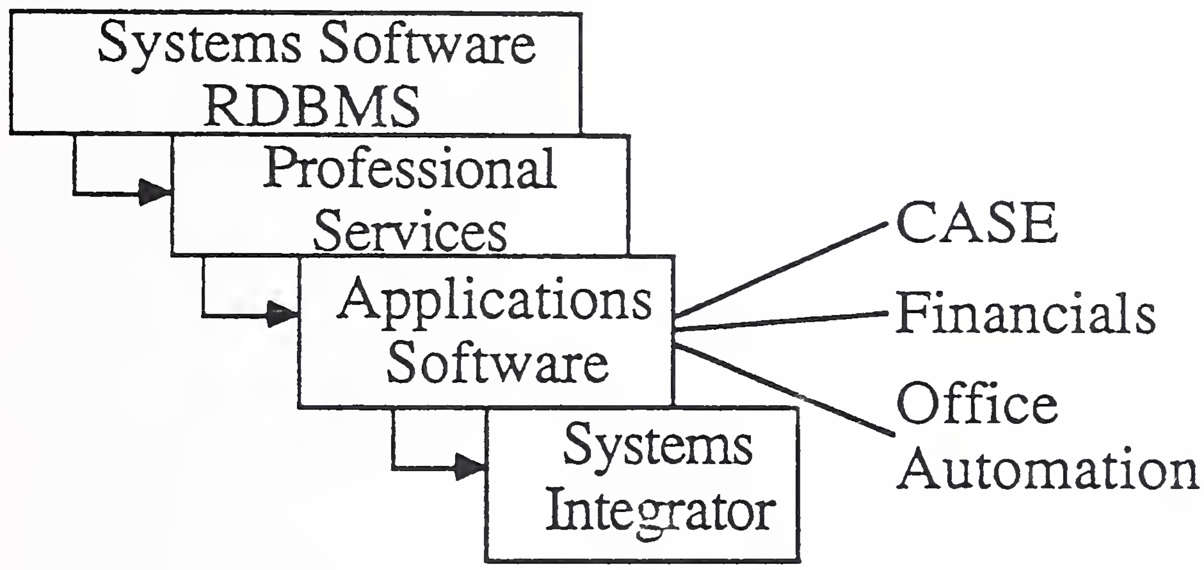
NOTES:

JJ88-DW1-25

Oracle as an Example



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NOTES:

JJ88-DW1-26

Arthur Andersen

- Management Consulting
- Software Development
  - Software Products — • Mac-Pac • Foundation • DCS
    - Education
      - Systems Integration

$1.4 Billion
13,000 Professionals

INPUT

NOTES:

JJ88-DW1-27

Digital Equipment

- Software Products
  - Professional Services
    - Systems Integration
    - Enterprise Services

Alliances (Apple & CIM)
Network Systems
Architecture

INPUT

NOTES:

JJ88-DW1-29

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:

JJ88-DW1-28

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

Alliances

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

INPUT

NOTES:

JJ88-DW1-33

Conclusions

- 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

NOTES:

JJ88-DW1-34

Conclusions

- Shorter Lifecycle Calls for Fast Response
- Vendor Versatility a Key to Growth
- Everybody Needs Strategic Partners
- Services (People) Will Be the Key
  - Recruiting
  - Motivation
  - Compensation
  - Training

INPUT

NOTES:

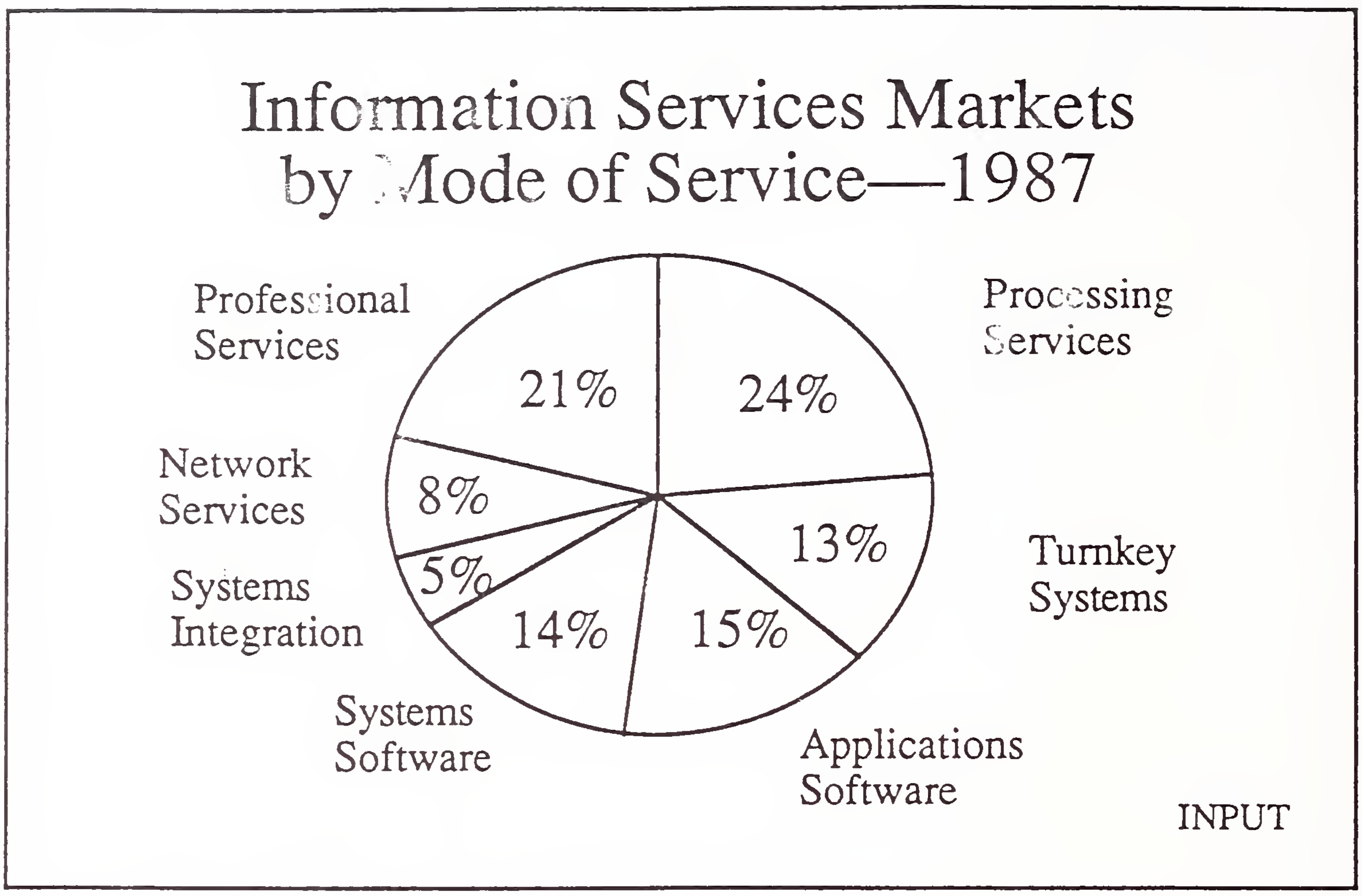
JJ88-DW1-35

Information Services
Industry Forecast

INPUT

NOTES:

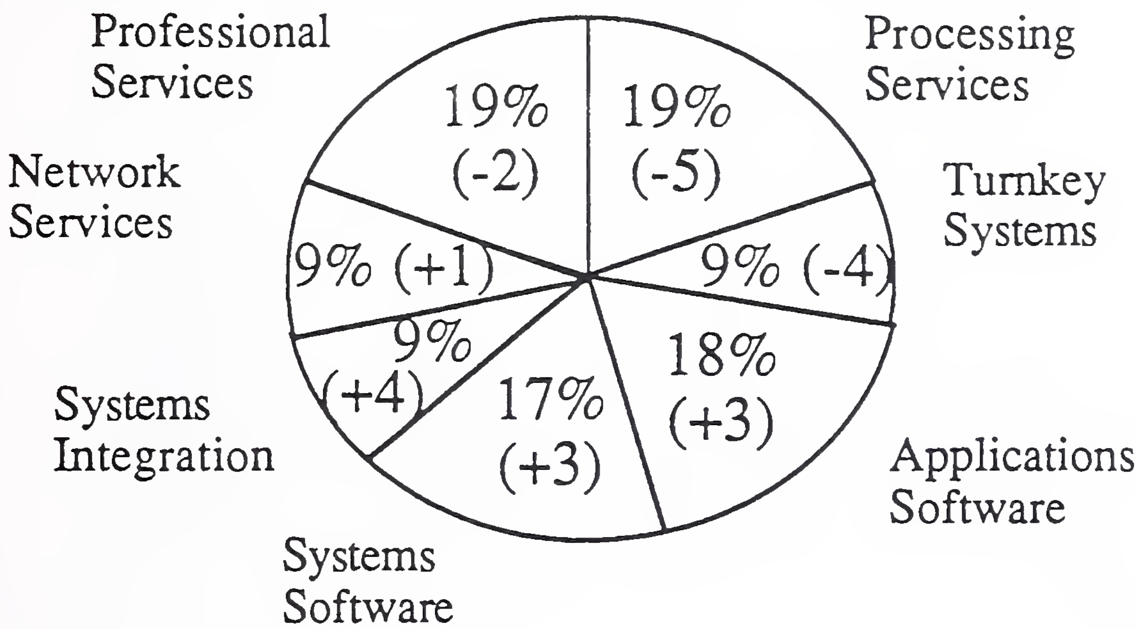
JJ88-RDW-1



NOTES:

JJ88-RDW-3

Projected Information Services Markets by Mode of Service—1993



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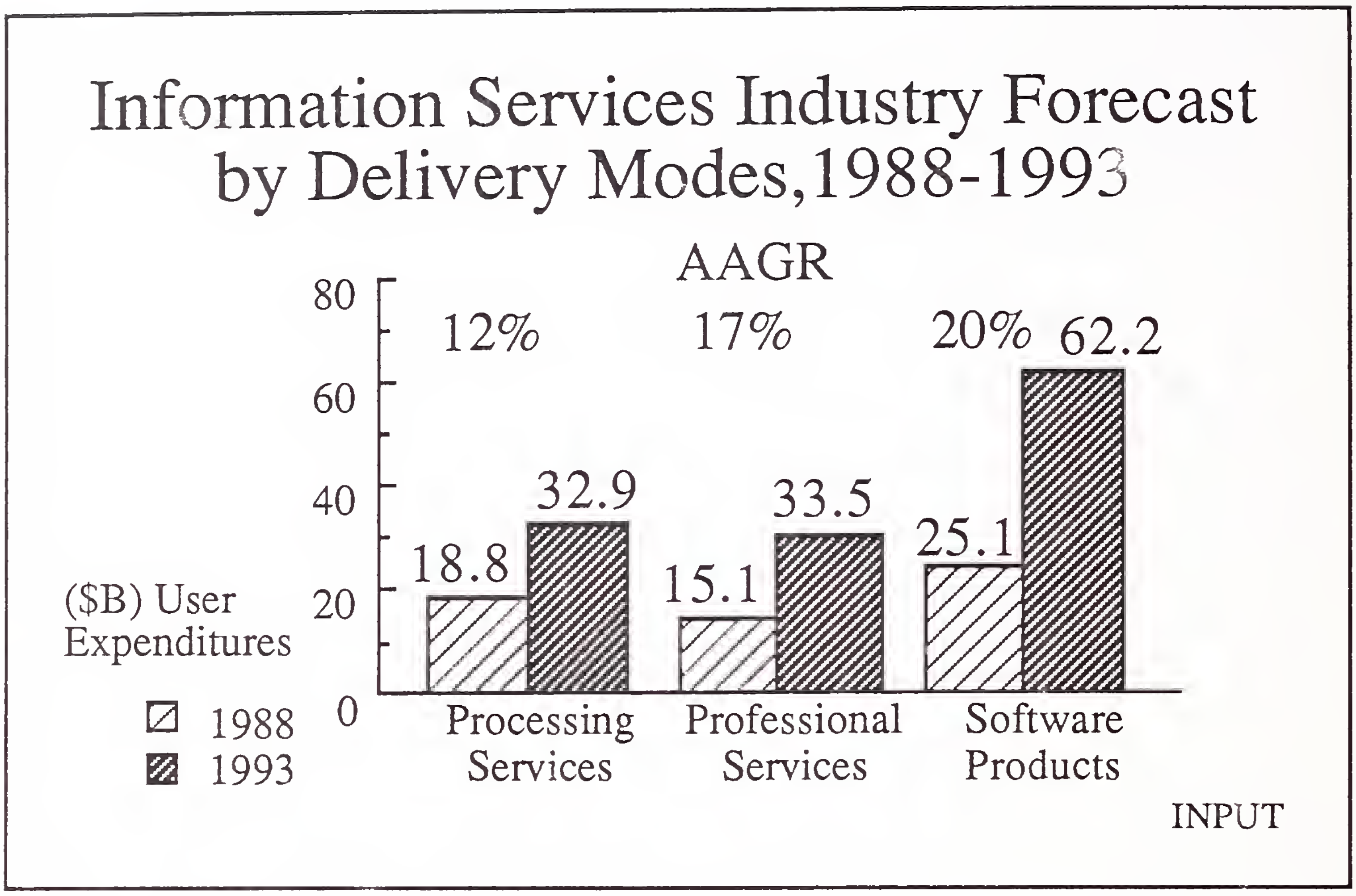
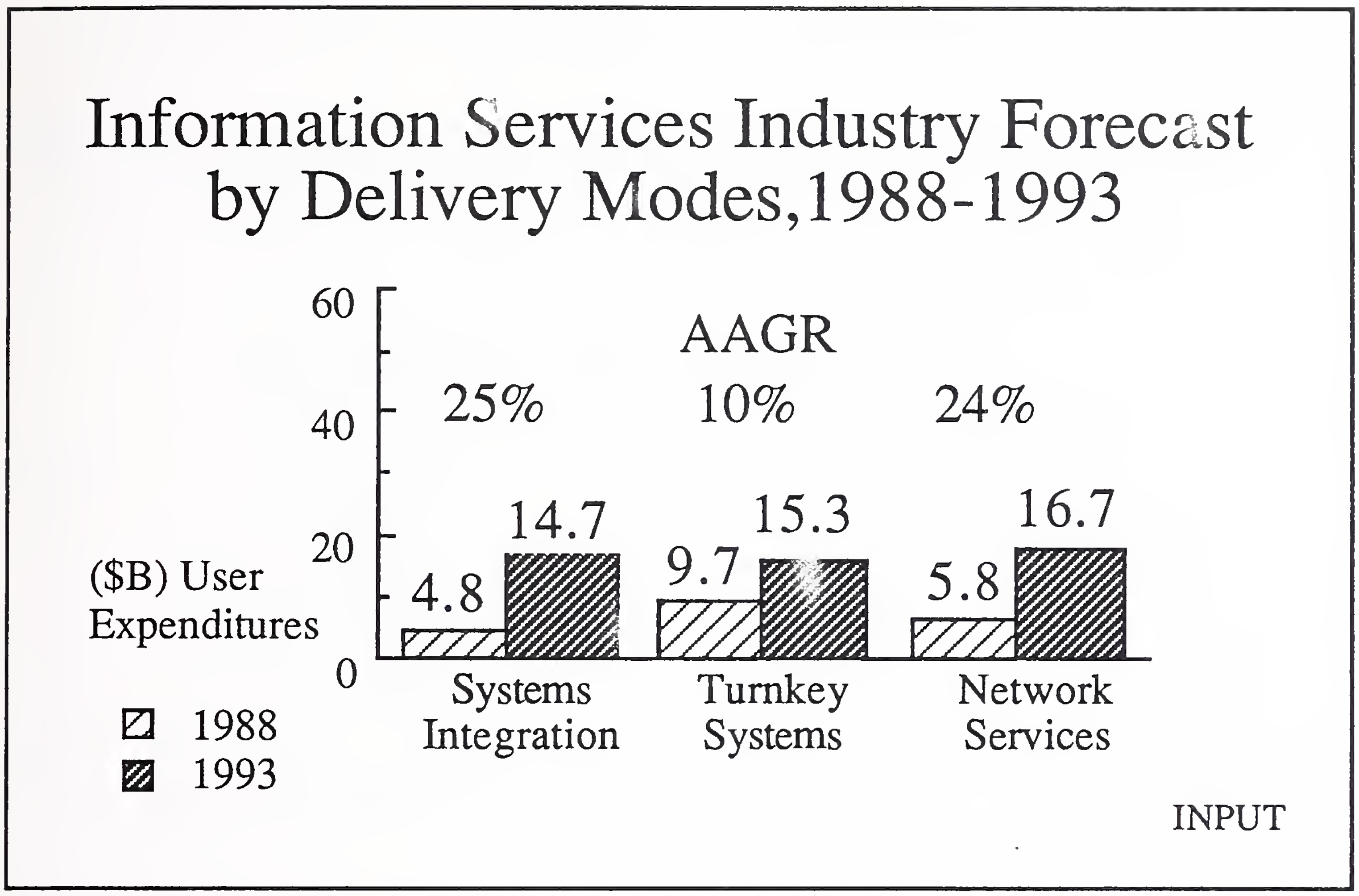
NOTES:

JJ88-RDW-3a



NOTES:

MAAP-39



NOTES:

MAAP-40

Incremental Industry Expenditures by Delivery Mode, 1988-1993

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

INPUT

NOTES:

JJ88-RDW-7a

Information Services Leading Vendors

Vendors	1987 U.S. Revenues ($M)
IBM	4,841
ADP	1,384
EDS	1,296
DEC	1,138
UNISYS	1,035
CSC	960

Top Ten Vendors=21% of Industry Total

INPUT

NOTES:

JJ88-RDW-8a

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

Information Services Leading Vendors

Vendors	1987 U.S. Revenues ($M)
McDonnell Douglas	852
CDC	840
Arthur Anderson	806
TRW	651

Top Ten Vendors=21% of Industry Total

INPUT

NOTES:

JJ88-RDW-8b

Information Services Leading "Pure IS" Vendors

Vendors	1987 U.S. Revenues ($M)
ADP	1,384
EDS	1,296
CSC	960
Intergraph	641
Lotus	395
Shared Medical	391

INPUT

NOTES:

JJ88-RDW-9a

Information Services Leading "Pure IS" Vendors

Vendors	1987 U.S. Revenues ($M)
Computer Associates	389
BDM Int'l	307
Microsoft	239
Compugraphics	220
MSA	199

INPUT

NOTES:

JJ88-RDW-9b

Software Products

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

INPUT

NOTES:

MAAP-1a

Software Products

INPUT

NOTES:

JJ88-DW2-1

User Needs

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

INPUT

NOTES:

JJ88-DW2-3

Technology Impacts

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

INPUT

NOTES:

JJ88-DW2-4a

Technology Impacts

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

NOTES:

JJ88-DW2-4b

Business Environment

- Standards
- Taxation
- Object Code: Source Code
- Licensing
- Lawsuits
- Cooperation
- Market Mix

INPUT

NOTES:

JJ88-DW2-6

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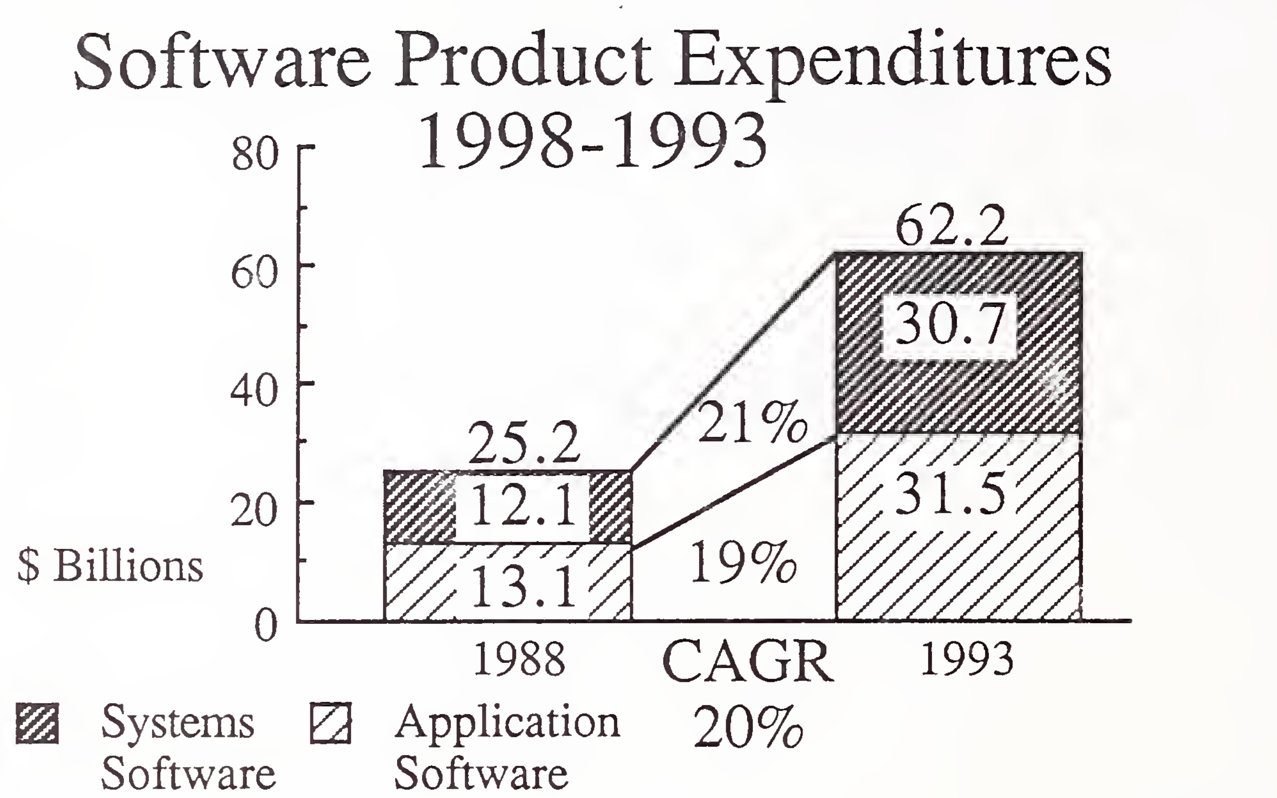
Market Forecast

INPUT

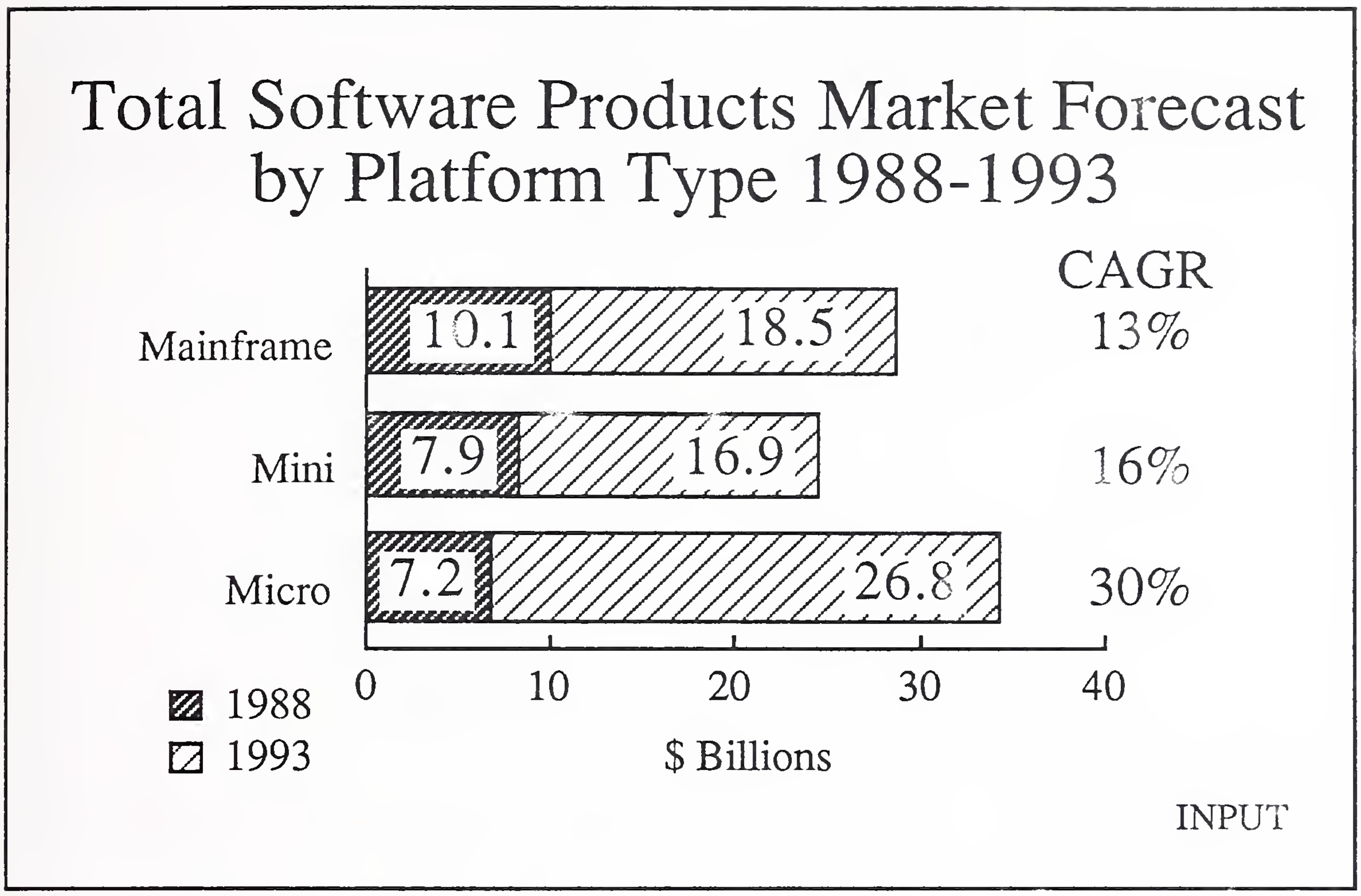
NOTES:

JJ88-DW2-7


Software Product Expenditures
1998-1993
80
60
40
20
0
$ Billions
62.2
30.7
31.5
25.2
12.1
13.1
21%
19%
1988
CAGR
20%
1993
Systems Software
Application Software
INPUT

NOTES:

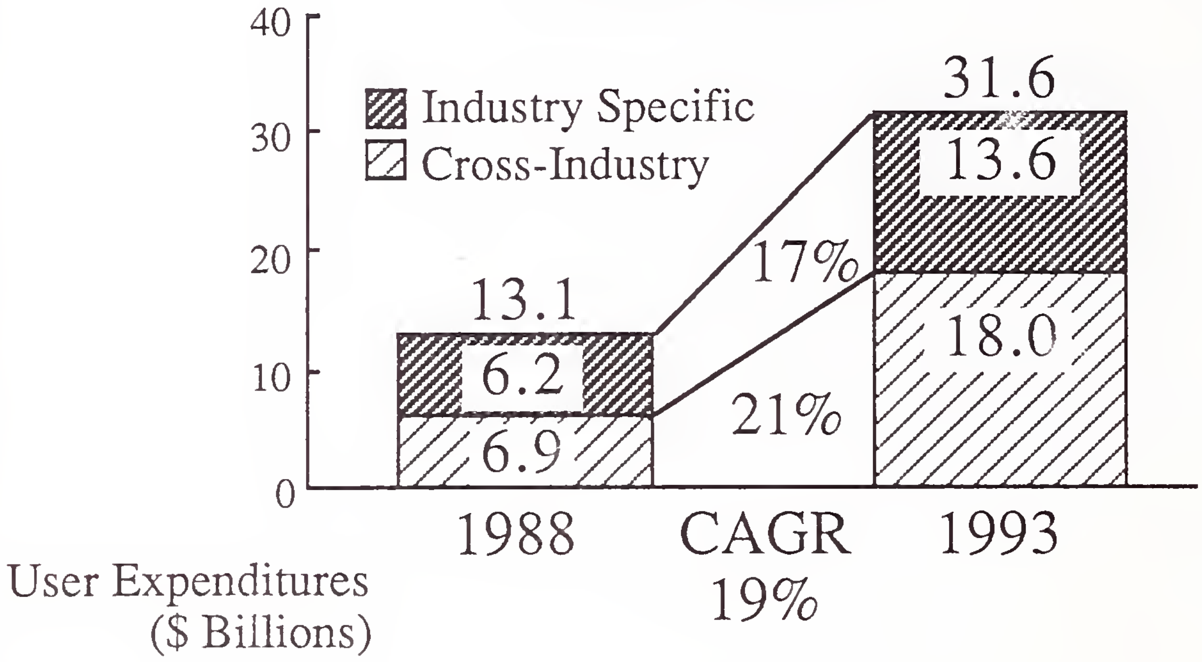
MAAP-3



NOTES:

MAAP-13

Applications Software Market Submodes 1988-1993



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NOTES:

MAAP-4

Applications Software Products Market—Driving Forces

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

INPUT

NOTES:

MAAP-5ab

Systems Software Products Market—Driving Forces

- Staging for New Applications Software Growth
- Data Center Management Tools
- RDMS
- SAA

INPUT

NOTES:

MAAP-11a

Systems Software Products Market—Driving Forces

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

INPUT

NOTES:

MAAP-11b

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)
  - Started Summer of 1987
  - AS/400 Announcement
  - Internal and External Responsibility

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NOTES:

JJ88-DW2-25b

SAA

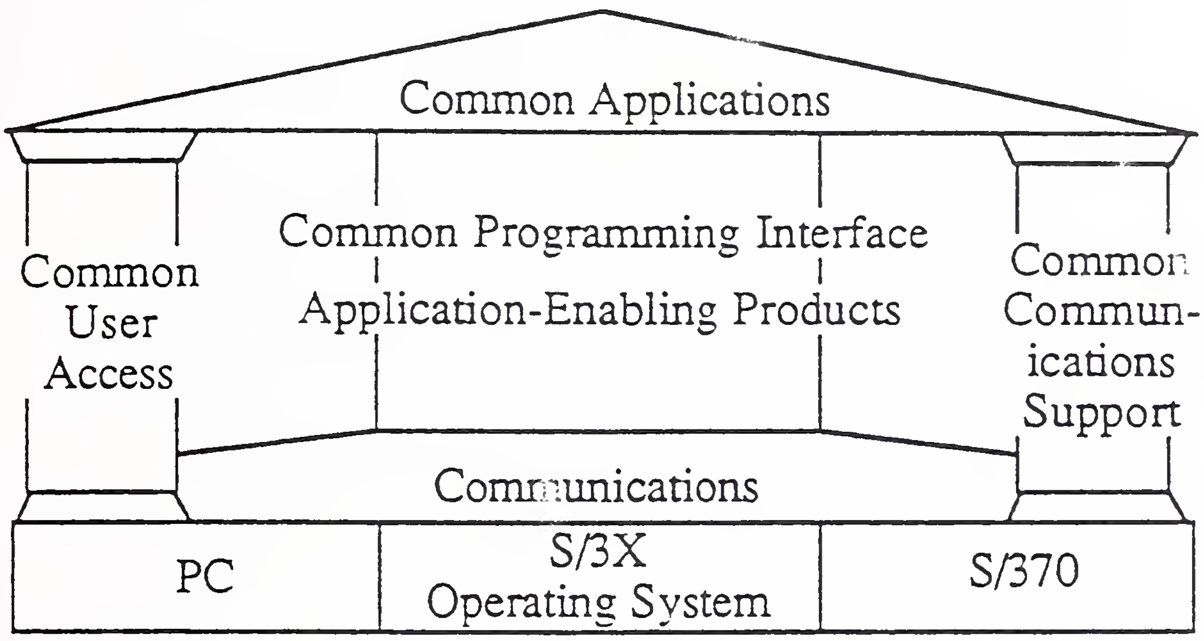
- Single Most Important Event Unfolding in Software Products Market

INPUT

NOTES:

JJ88-DW2-27b

SAA—What Is It?



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NOTES:

JJ88-DW2-28

SAA—Issues

- Impact on Software Industry
- User Acceptance/Benefits
- Impact of ASD
- Marketing Hype?
- Capability Shortfalls
- Hardware Independence

INPUT

NOTES:

JJ88-DW2-29

SAA—When?

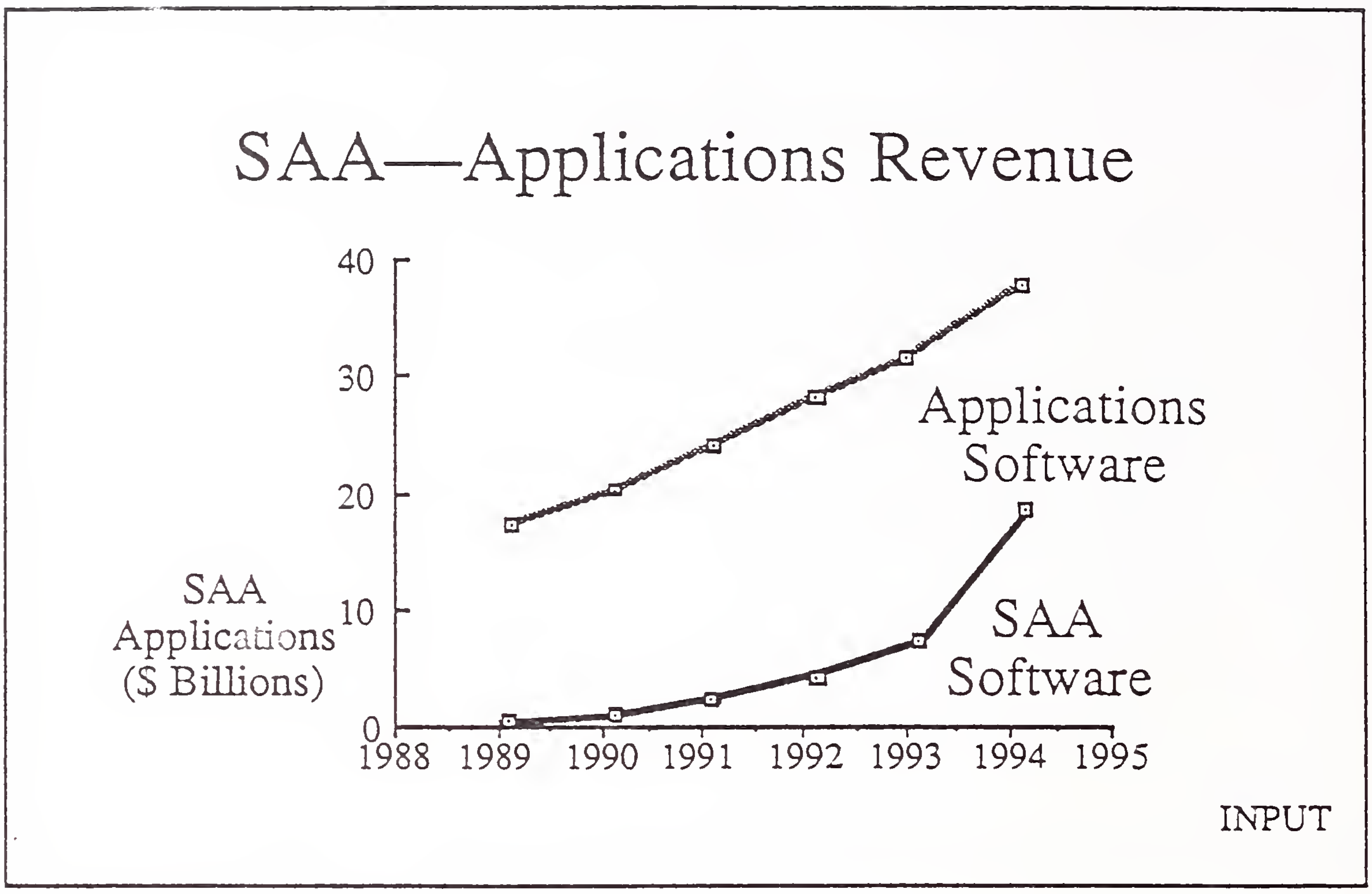
Official Announcement	3/17/87
Marketing Efforts	Continuous
<u>Hardware Platforms</u>	
PS/2: O/S 1.1	3Q88
S/3X (AS/400)	2Q88
S/370	4Q89*
S/? (Next System)	4Q90*

* INPUT Estimate

INPUT

NOTES:

JJ88-DW2-31



NOTES:

JJ88-DW2-32b

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
-Formation-

Background

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

INPUT

NOTES:

JJ88-DW2-35a

Open Software Foundation
-Formation-

Result

- 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

Open Software Foundation

- Rival Group: Archer
  - AT&T
  - Sun
  - UNISYS
  - NCR
- Two UNIX Standards Could Develop

INPUT

NOTES:

MAAP-16

Mergers/Acquisitions

- Broadview Analysis for 1987
  - 358 Deals—Up 17%
  - $4.9 Billion
  - Largest CAI/UCCEL @ $830 Million

- ADAPSO/Broadview Index
  - 1st Half 1988
  - 190 Deals
  - $5.4 Billion

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NOTES:

JJ88-DW2-38

Mergers/Acquisitions
-Examples-

- Informix/Innovative
  DBMS Office Automation
- IBM/Spectrum
  Mfg. Network Mgmt.
- Ashton-Tate/Ann Arbor Softworks
  PC Software Desktop Publishing
- Software Publishing/Office Solutions
  PC Software Word Processing

INPUT

NOTES:

JJ88-DW2-39a

Mergers/Acquisitions
-Examples-

- 3Com/Communications Solutions
  LAN Communications
- Apple/Orion Network Systems
  /Network Innovations
  Mfg. Communications
- Nynex/AGS Computers
  RBOC Prof. & Software

INPUT

NOTES:

JJ88-DW2-39b

Alliances

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

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NOTES:

JJ88-DW2-40a

Alliances

- CAI/Unisys
- Sybase/Neuron, National InfoSys, SPSS, V.I. Corp.
- Ashton-Tate/Microsoft/Sybase
- DEC/Apple
  Network Innovations — Oracle, Sybase

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NOTES:

JJ88-DW2-40b

New/Hot Areas

- CASE
- AI—Rejuvenated
- Data Center Management
- UNIX—All Functionality
- Image Processing
- DSS/EIS

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NOTES:

JJ88-DW2-41

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

Fast-Growing Software Vendor—Oracle

- Core Business: RDBMS
- New Emerging Areas:
  - Professional Services
  - Financial Products
  - Office Automation*
  - Systems Integration
  - Education and Training
  - VAR Channels

* Not Yet Announced

INPUT

NOTES:

JJ88-DW2-43

CASE
(Computer-Assisted Systems Engineering)

Market and Opportunity

INPUT

NOTES:

JJ88-DT4-1

CASE Opportunity
Software Crisis

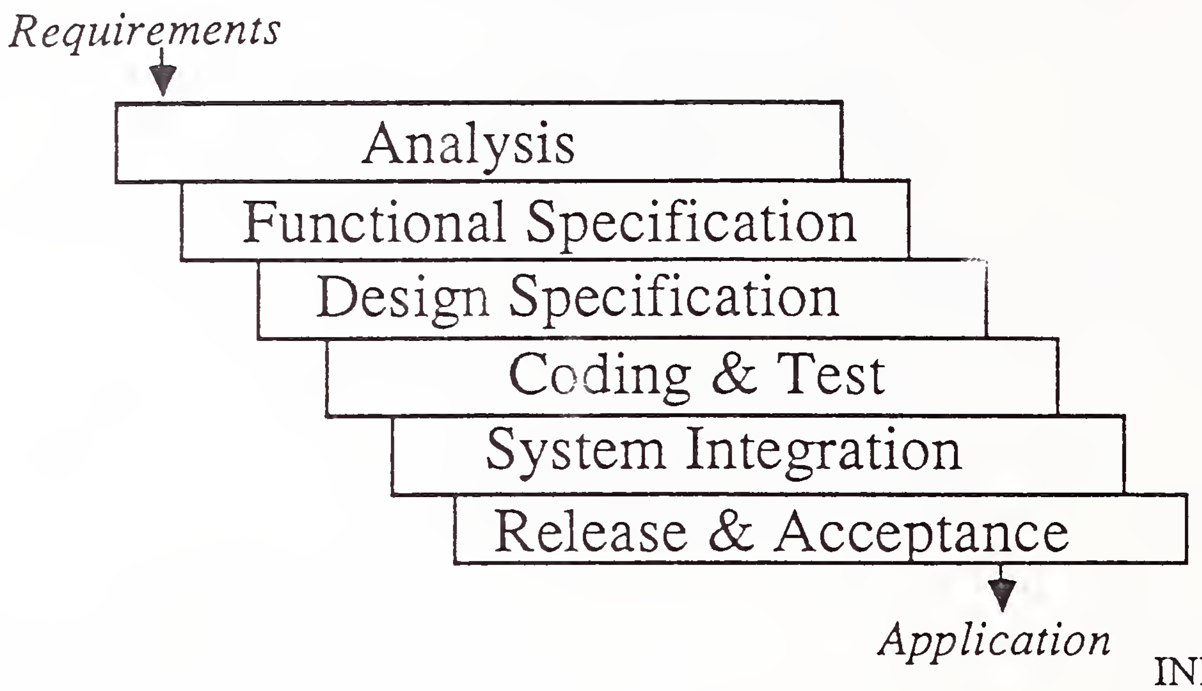
	Software Development			
	In-House		Products	
Systems Software	Small	Large	Small	Large
Applications Software	Small	Large	Small	Large

INPUT

NOTES:

JJ88-DT4-5

Development Lifecycle
The CASE Opportunity



INPUT

NOTES:

JJ88-DT4-6

CASE - User Perspective

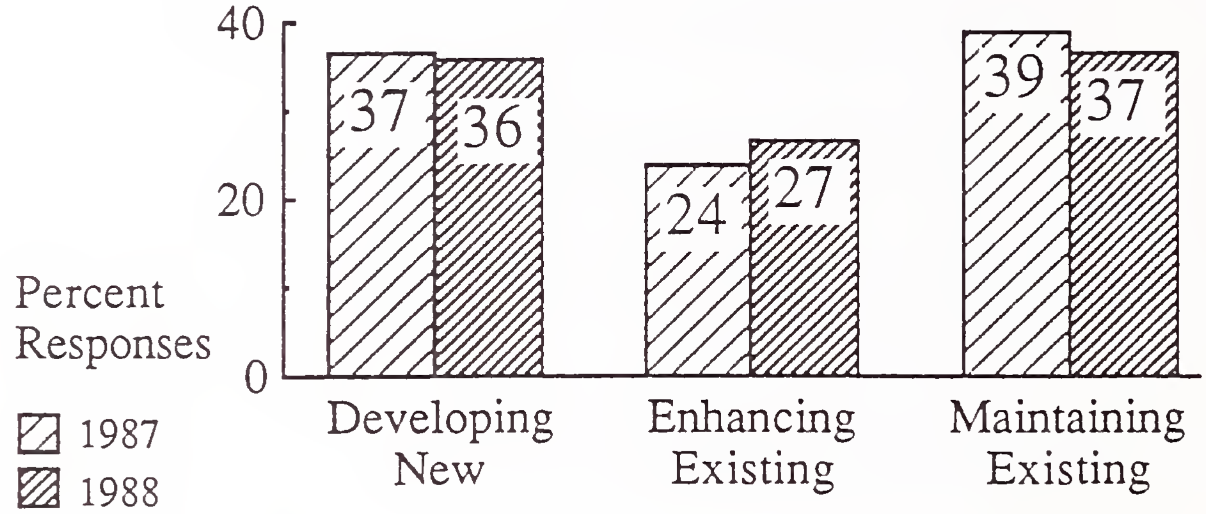
- Backlog Problem Not Improving
- Productivity Problem Real
- Concern About Discipline Requirements
- Cautious About CASE

INPUT

NOTES:

JJ88-DT4-8

Application Development Resources: Allocation of Internal Resources



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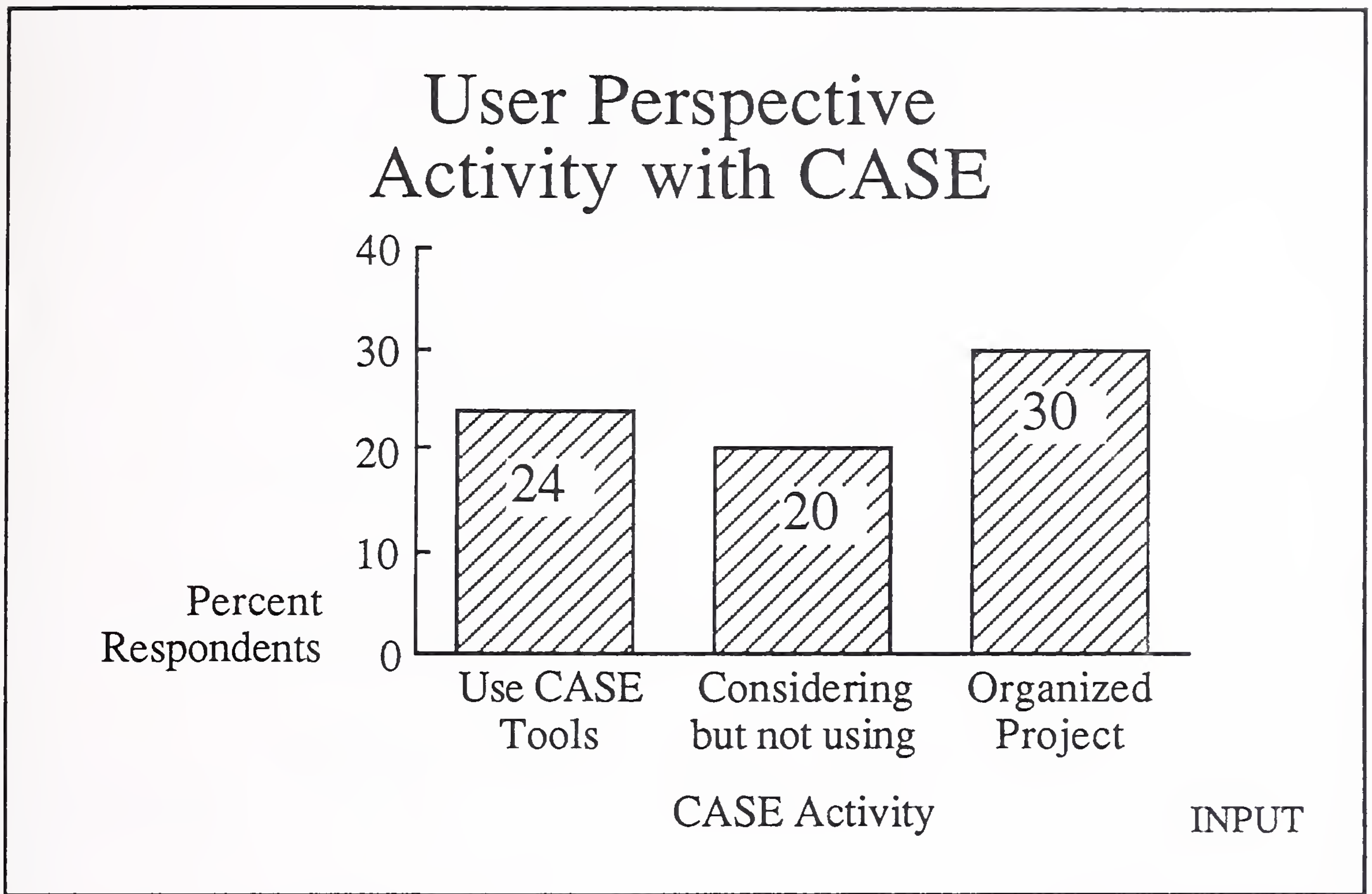
NOTES:

JJ88-DT4-11



NOTES:

JJ88-DT4-14 (Rev. for MAAP)

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

CASE Tools

New Development

Lifecycle Management

Design

Code Generation

Documentation

Maintenance

Translators
Analyzers
Comparators
Restructurers

INPUT

NOTES:

JJ88-DT4-16

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

Market Status

- Large Vendor Population
  - 40+ Active & 40+ Announced Vendors
  - Potential of Hundreds
- New Entries Likely
  - IBM—No Announced Product
  - 4GL & DBMS Vendors
  - Professional Services Vendors

INPUT

NOTES:

JJ88-DT4-24

Vendor Alliances Professional Services- Front End

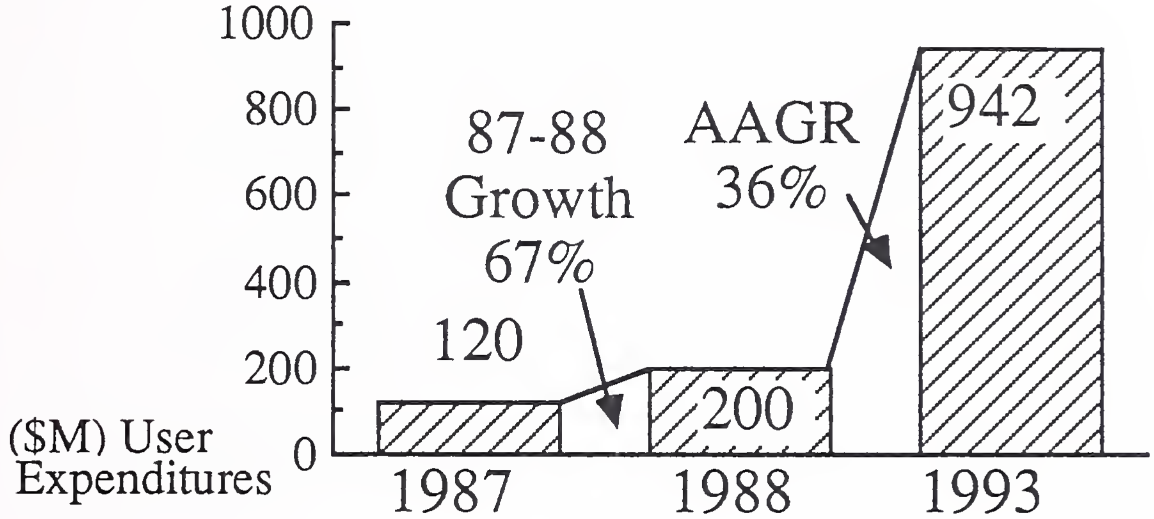
Arthur Young	KnowledgeWare
Coopers & Lybrand	NASTEC
Deloitte Haskins & Sells	Index Technology

INPUT

NOTES:

JJ88-DT4-29

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



INPUT

NOTES:

JJ88-DT4-34 (Rev. for MAAP)

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

Software Trends

- Traditional Vendors Reaching Out
  - Cullinet, McCormack & Dodge → VAX
  - CAI → VAX
- Professional Services Firms Enter
  - Arthur Andersen
  - Peat Marwick Main

INPUT

NOTES:

JJ88-DW2-46a

Software Trends

- Processing Services Firms Enter
  - GE
- Open Systems Architecture

INPUT

NOTES:

JJ88-DW2-46b

Turnkey Systems/ VARs

Market Forecast & Trends

INPUT

NOTES:

JJ88-RG2-1

Turnkey Systems Market Structure

- Turnkey Systems
  - Equipment
  - Packaged Software
  - Customized Software
  - Educ., Train., Prof., Serv.
- Industry-Specific Sectors (15)
  Cross-Industry Sectors (7)

INPUT

NOTES:

JJ88-RG2-6

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

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

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

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

Expanding Services

Provide New/Additional Services

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

INPUT

NOTES:

JJ88-RG2-20

Vendor Strategies

Increase Typical System Size/Price

- Enhance Product Offering
- Sell Larger Systems

Expand Industry Coverage

- Related Opportunities within Current Industry
- New/Additions Industry Markets

INPUT

NOTES:

JJ88-RG2-21

IN

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

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

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

Conclusions/Recommendations

- Look to Installed Base as a Key Asset
- Emphasize Value-Added Services Such as Software Maintenance, Consulting, Education, and Training
- Stress Hardware and Software Add-Ons

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

Conclusions/Recommendations

- Explore UNIX-Based Hardware Platforms
- Focus on On-Going Revenue Sources
- Develop Applications Around Industry Standards
- Increase Emphasis on Network Integration

INPUT

NOTES:

JJ88-RG2-29d

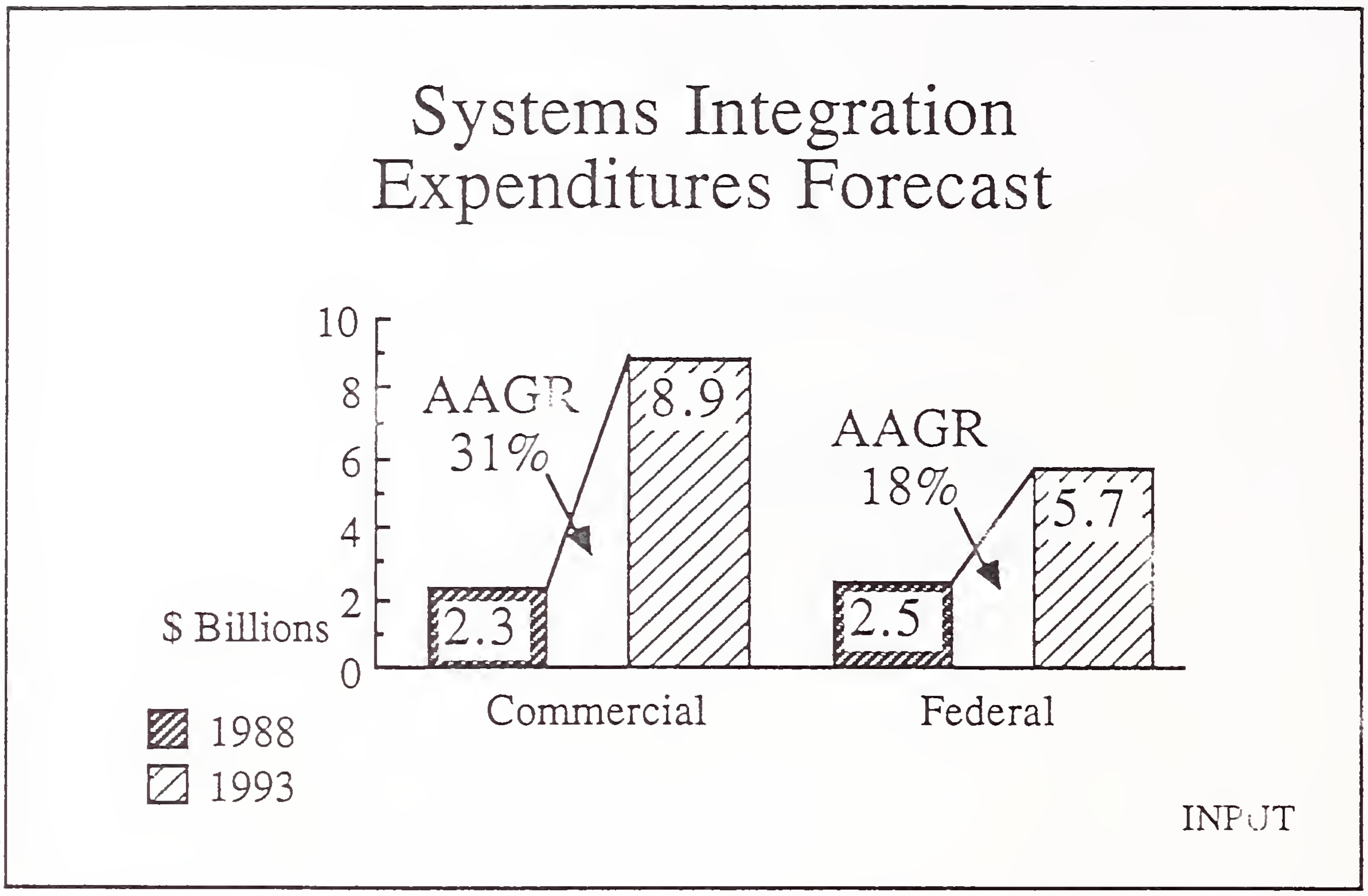
SI Market Definition

Integrated Solution to a Multidisciplinary Information Systems Requirement

INPUT

NOTES:

JJ88-JF2-2



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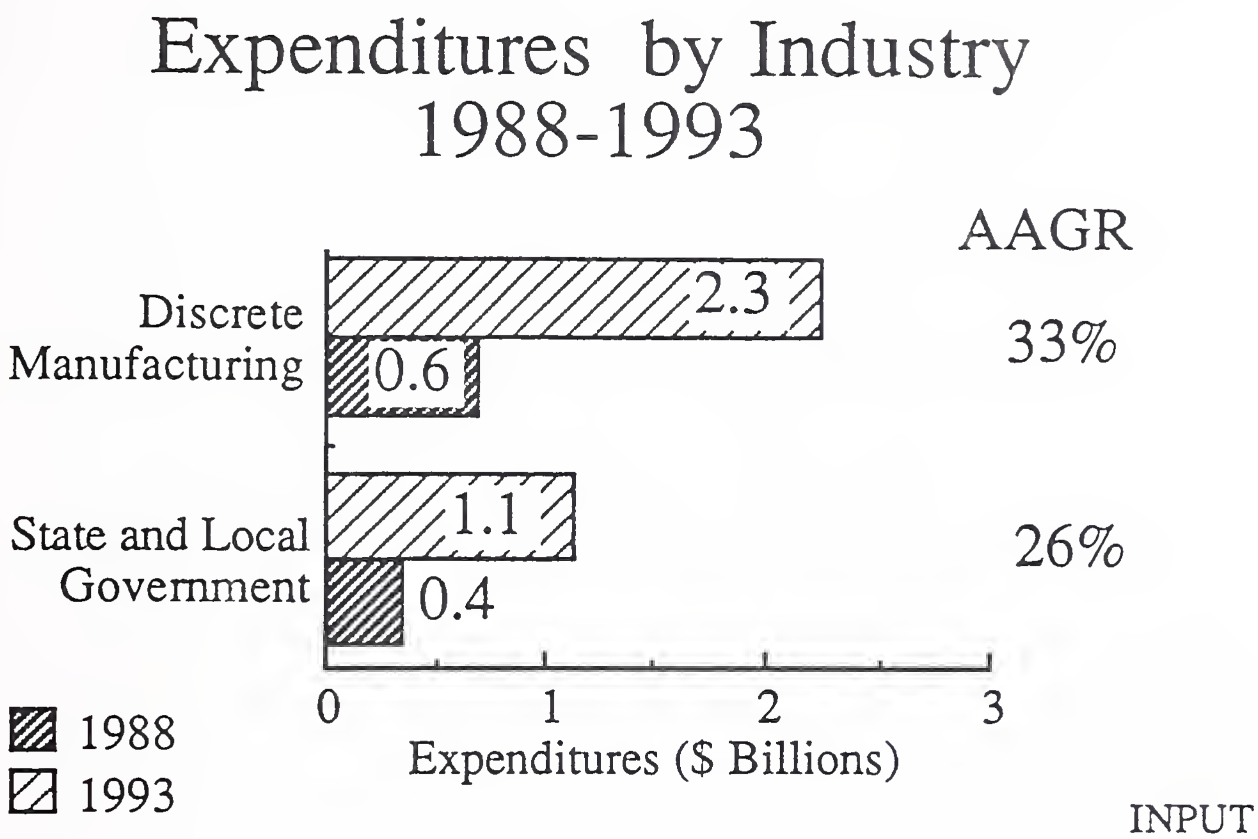
JJ88-JF2-4



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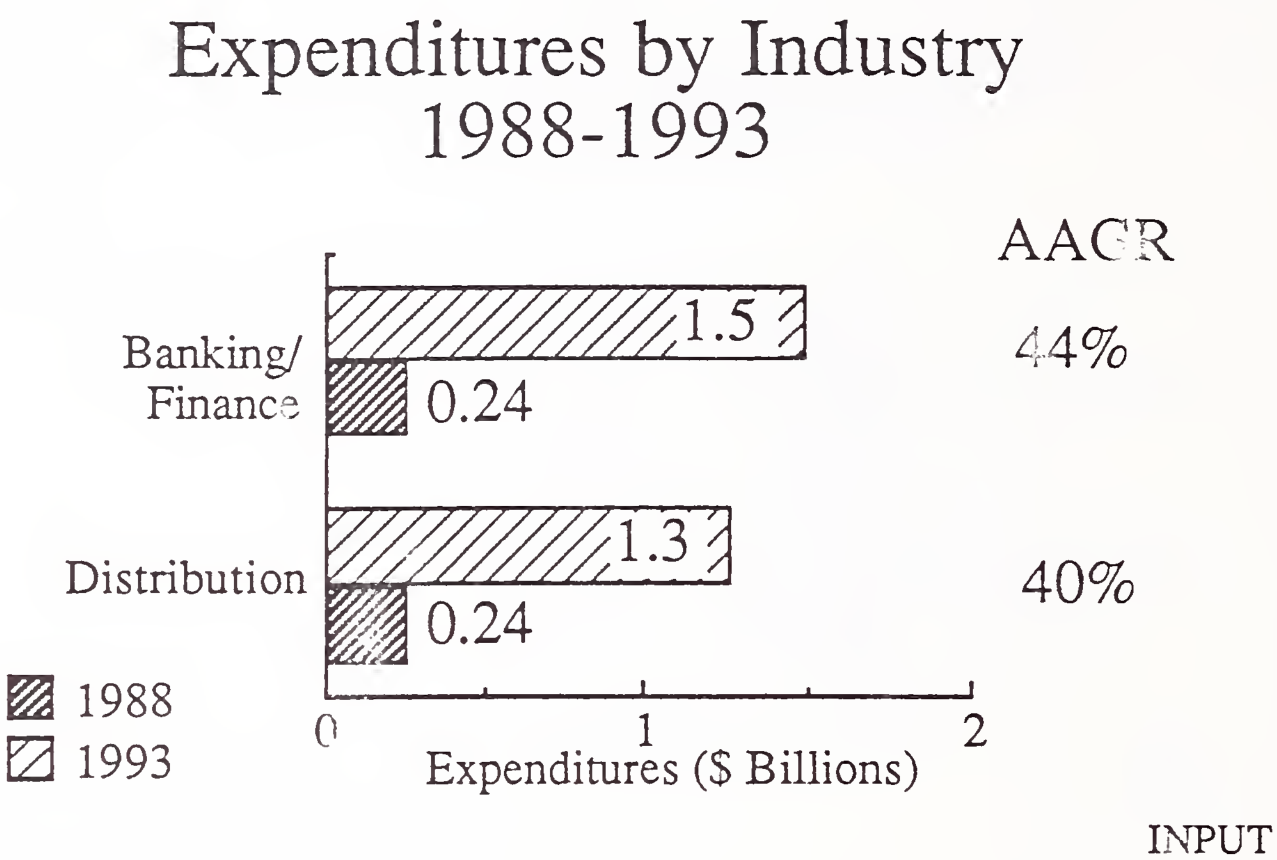
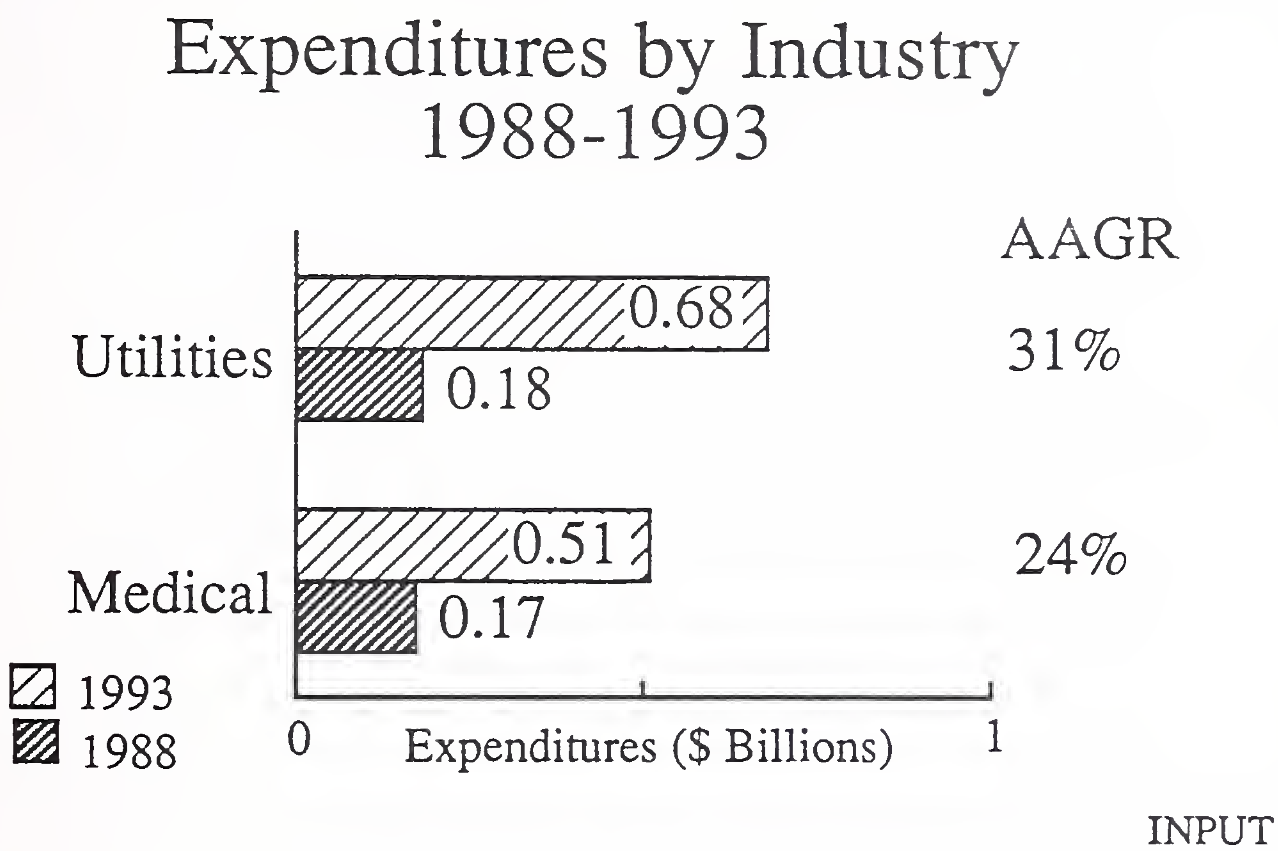
JJ88-JF2-5



NOTES:

JJ88-JF2-6



NOTES:

JJ88-JF2-7

Major Issues—1988

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

INPUT

NOTES:

JJ88-JF2-15

Buyer Issues—Vendor Selection

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

INPUT

NOTES:

JJ88-JF2-16

Technology Drivers—1988

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

INPUT

NOTES:

JJ88-JF2-17

Implications for Vendors

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

INPUT

NOTES:

JJ88-JF2-26

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

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

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

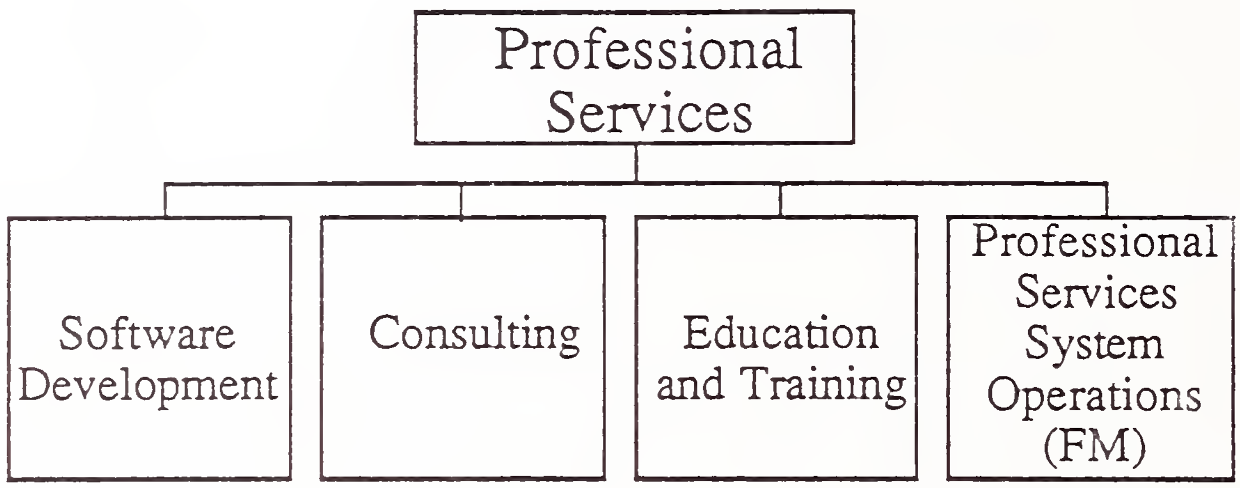
Professional Services

INPUT

NOTES:

JJ88-DWH-1

Professional Services Market Structure



INPUT

NOTES:

JJ88-DWH-2

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

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

Major Vendors' Shares of Total U.S. Professional Services Market—1987

Company Name	Revenue ($M)	Market Share (%)
IBM	1,017	7
CSC Corp.	521	4
Arthur Andersen	437	3
Unisys Corp.	414	3

INPUT

NOTES:

JJ88-DWH-10A

Independent Vendors' Shares of Federal Professional Services Market—1987

Company Name	Revenue ($M)	Market Share (%)
CSC Corp	464	18
Mitre Corp.	343	13
Emhart (PRC)	250	10
BDM International	249	10
Grumman	240	9

INPUT

NOTES:

JJ88-DWH-12A

Independent Vendors' Shares of U.S. Commercial Professional Services Market—1987

Company Name	Revenue ($M)	Market Share (%)
Arthur Andersen	437	4
Arthur D. Little	285	2
TRW, Inc.	273	2
Boeing Computer Services	217	2

INPUT

NOTES:

JJ88-DWH-15A

Independent Vendors' Shares of U.S. Commercial Professional Services Market—1987

Company Name	Revenue ($M)	Market Share (%)
Coopers and Lybrand	190	2
Computer Task Group, Inc.	162	1
Peat Marwick Main and Co.	152	1

INPUT

NOTES:

JJ88-DWH-15B

SI Impact on Professional Service Recommendations

- Is Bigger Better?
- Large Fish/Small Pond vs.
  Small Fish/Large Pond
- Assess Your Own Capabilities
- Plan a Clear Direction
- Work Your Plan

INPUT

NOTES:

JJ88-DWH-25

Big-Eight Accounting Professional Services

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

INPUT

NOTES:

JJ88-DWH-27

Significant Mergers/Acquisitions in Professional Services

- Emhart (Planning Research)/ Advanced Technology
- Nynex/AGS
- Ford Aerospace/BDM Intl
- Logica (U.K.)/Data Architects
- AEG (FRG)/DYNCORP

INPUT

NOTES:

JJ88-DWH-29

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

Opportunities and Recommendations

- Specialize in Industry Niches
- 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

Processing Services

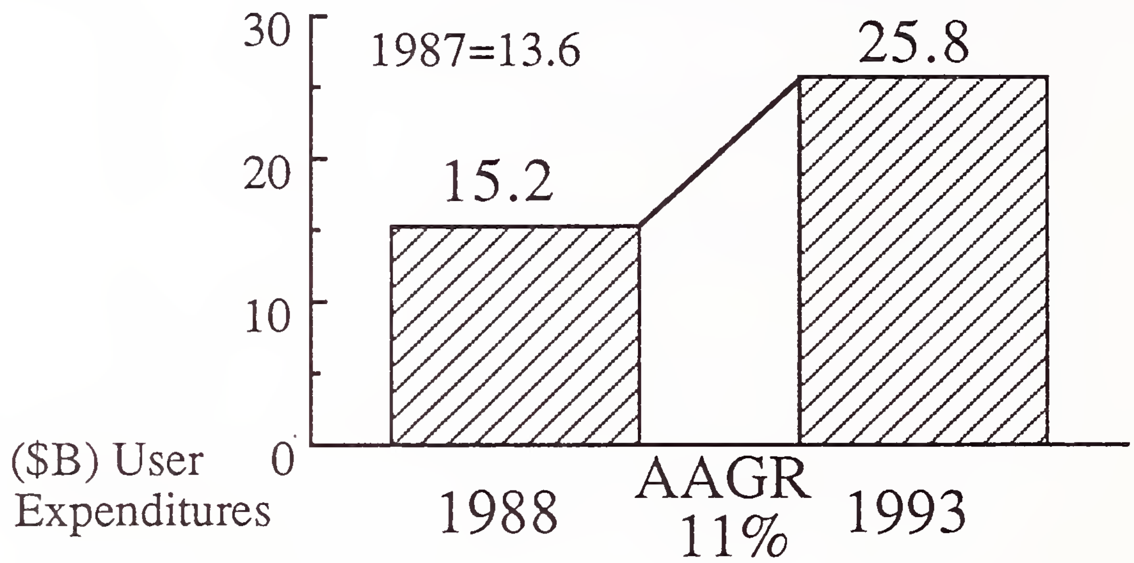
- Transaction Processing
- Utility Processing
- "Other" Processing
- System Operations
  - Vendor-Owned System
  - AKA "Facilities Management"

INPUT

NOTES:

MAAP-41

Processing Services Forecast



INPUT

NOTES:

MAAP-42

Vendor Activity

NDC

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

INPUT

NOTES:

JJ88-VW2-18

Vendor Activity

McDonnell Douglas ISG

- Reorganization, Reorganization
- Lost $42.3 M in 1987

→ Systems Integration Strategy

INPUT

NOTES:

JJ88-VW2-20

Vendor Activity—Network Leverage

AA Sabre

- Terminals ⟶ LAN Linked PS/2
- Network/Processing Service + Office System Sales

INPUT

NOTES:

JJ88-VW2-23

Utility Processing—COM

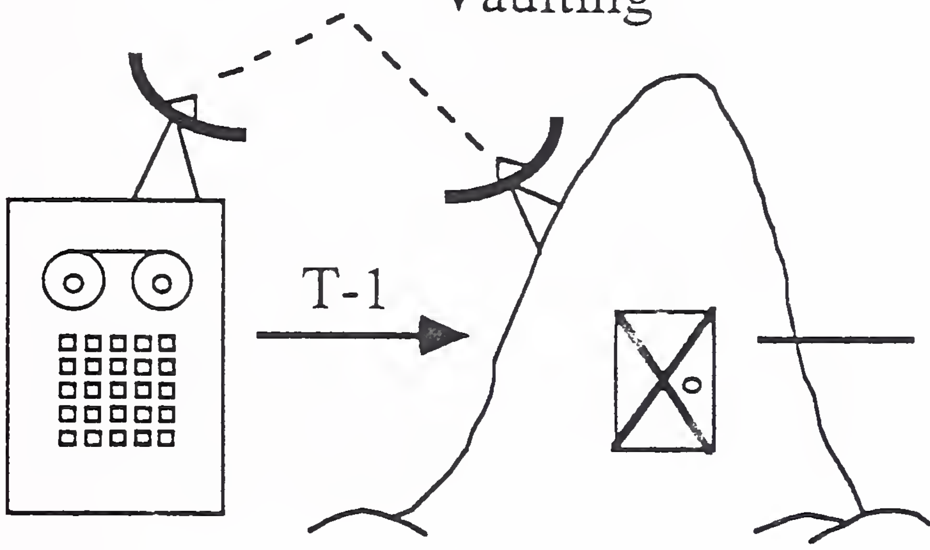
- 60-Year-Old Technology
- Moving In-house
- Anacomp—Back to Fundamentals + Com Hardware
- Endata—Acquired by FFMC

INPUT

NOTES:

JJ88-VW2-28

Disaster Recovery
High-Speed Electronic Vaulting



- Comdisco
- Sungard

INPUT

NOTES:

JJ88-VW2-29

Trends

Large Scale SI Projects → Facilities Management Contracts

INPUT

NOTES:

JJ88-VW2-31

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

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

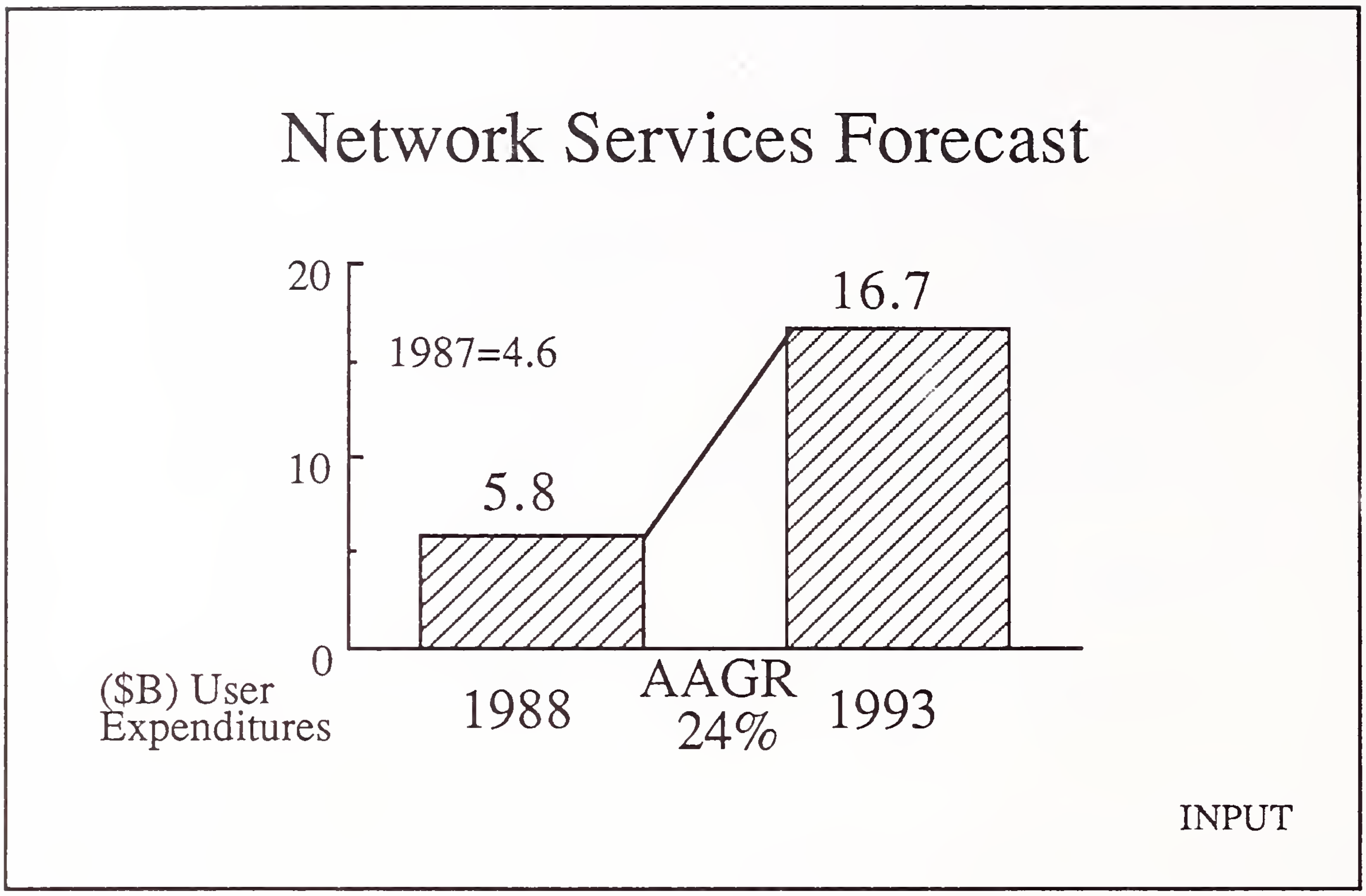
Network Services

- Network Applications
  - Enhanced Network Applications (VANS)
  - EDI
  - E-Mail
- Electronic Information Services
  - On-Line Data Bases
  - News Data Bases

INPUT

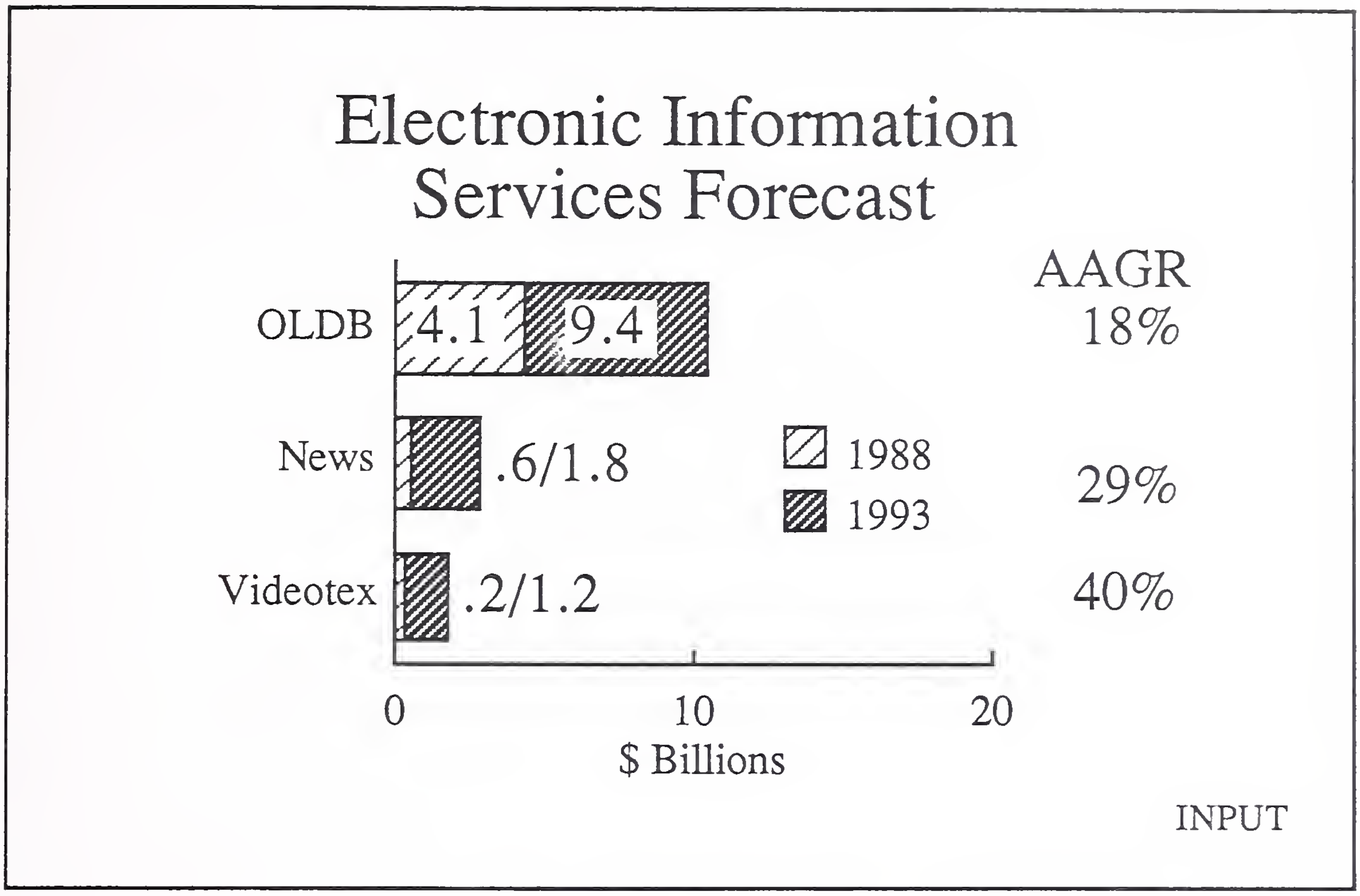
NOTES:

MAAP-46



NOTES:

MAAP-47

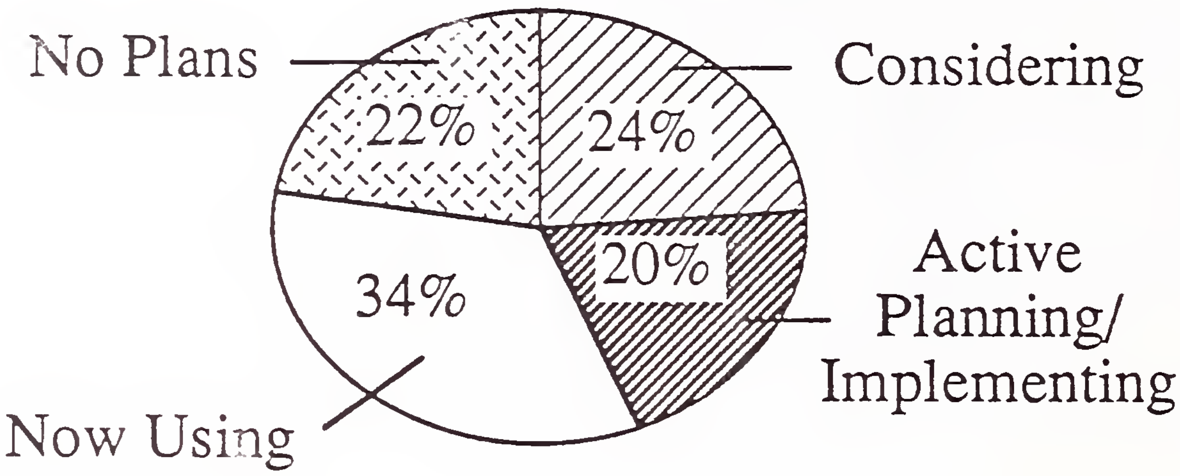


NOTES:

MAAP-49

Forecast Factors

EDI Status
(IS Managers)



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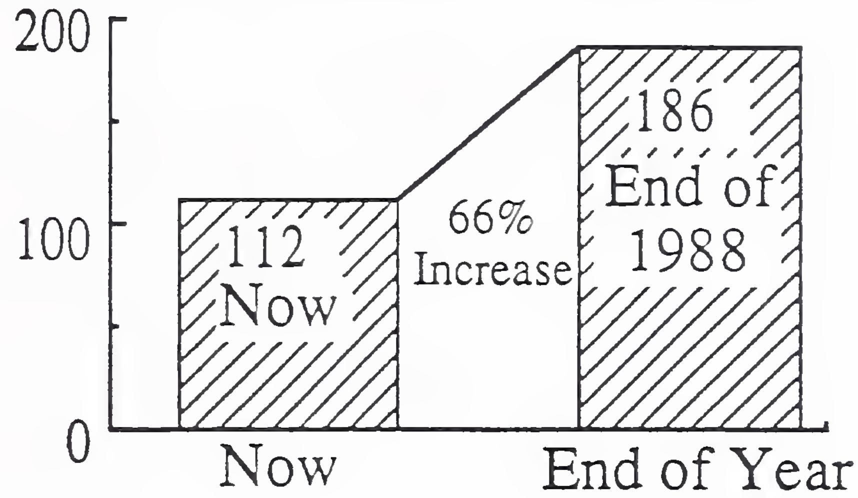
NOTES:

JJ88-VW2-7

Forecast Factors

Number of EDI Trading Partners



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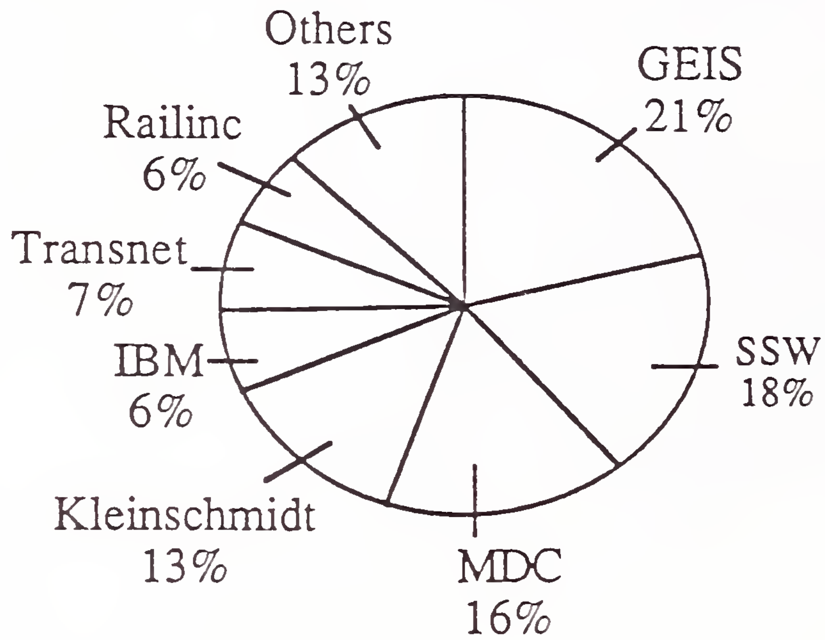
NOTES:

JJ88-VW2-9

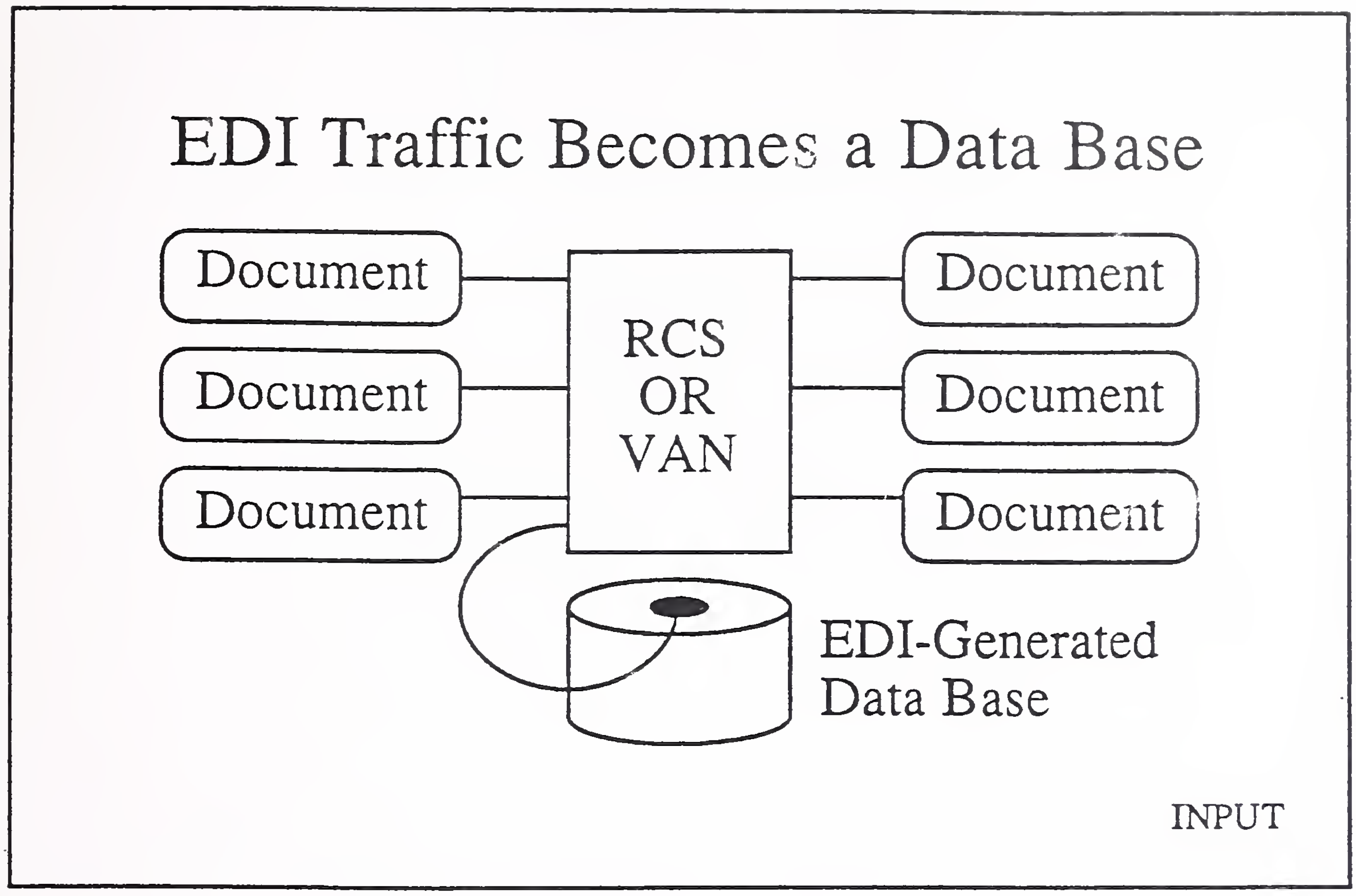
EDI Network/Processing Service Market Shares



Excludes Private Networks, EMC, Interface, Federal

INPUT

NOTES:



NOTES:

JJ88-VW2-25

Vendor Activity

Shifting Ownership

U.S. Sprint & Telenet Communications

GTE → United Telecom

INPUT

NOTES:

JJ88-VW2-19

Trends

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

INPUT

NOTES:

JJ88-VW2-24

Vendor Activity—Alliances

- CSC—European PTTs
- AT&T, BT, KDD

  "One Stop Network Services"

INPUT

NOTES:

JJ88-VW2-21

OLDB Opportunity

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

INPUT

NOTES:

JJ88-VW2-27

RBOC Network Services (LADTS)

- Gateways
- Deep Pockets, Existing Plant
- Marketing Limitations

Future: CATV?

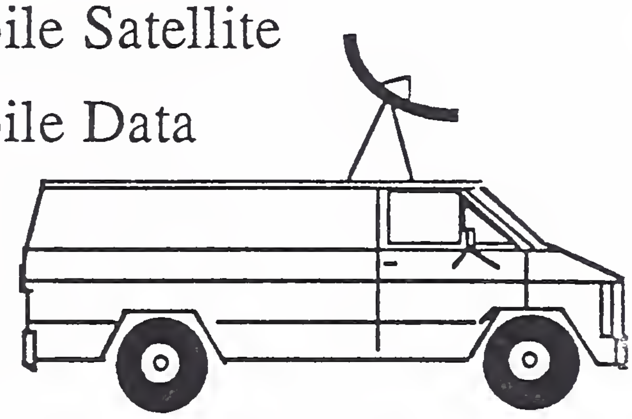
INPUT

NOTES:

JJ88-VW2-30

Interesting Network Technologies

- Mobile Satellite
- Mobile Data



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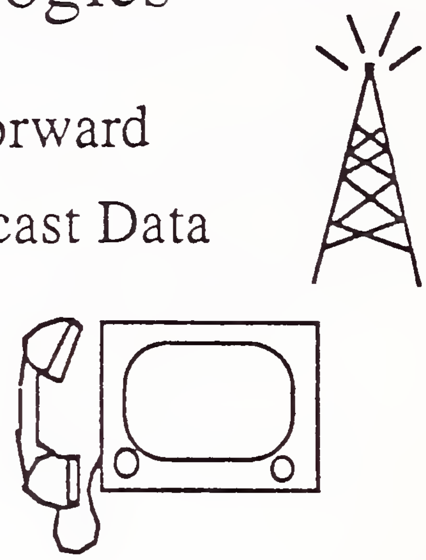
NOTES:

JJ88-VW2-32

Interesting Network Technologies

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



INPUT

NOTES:

JJ88-VW2-33

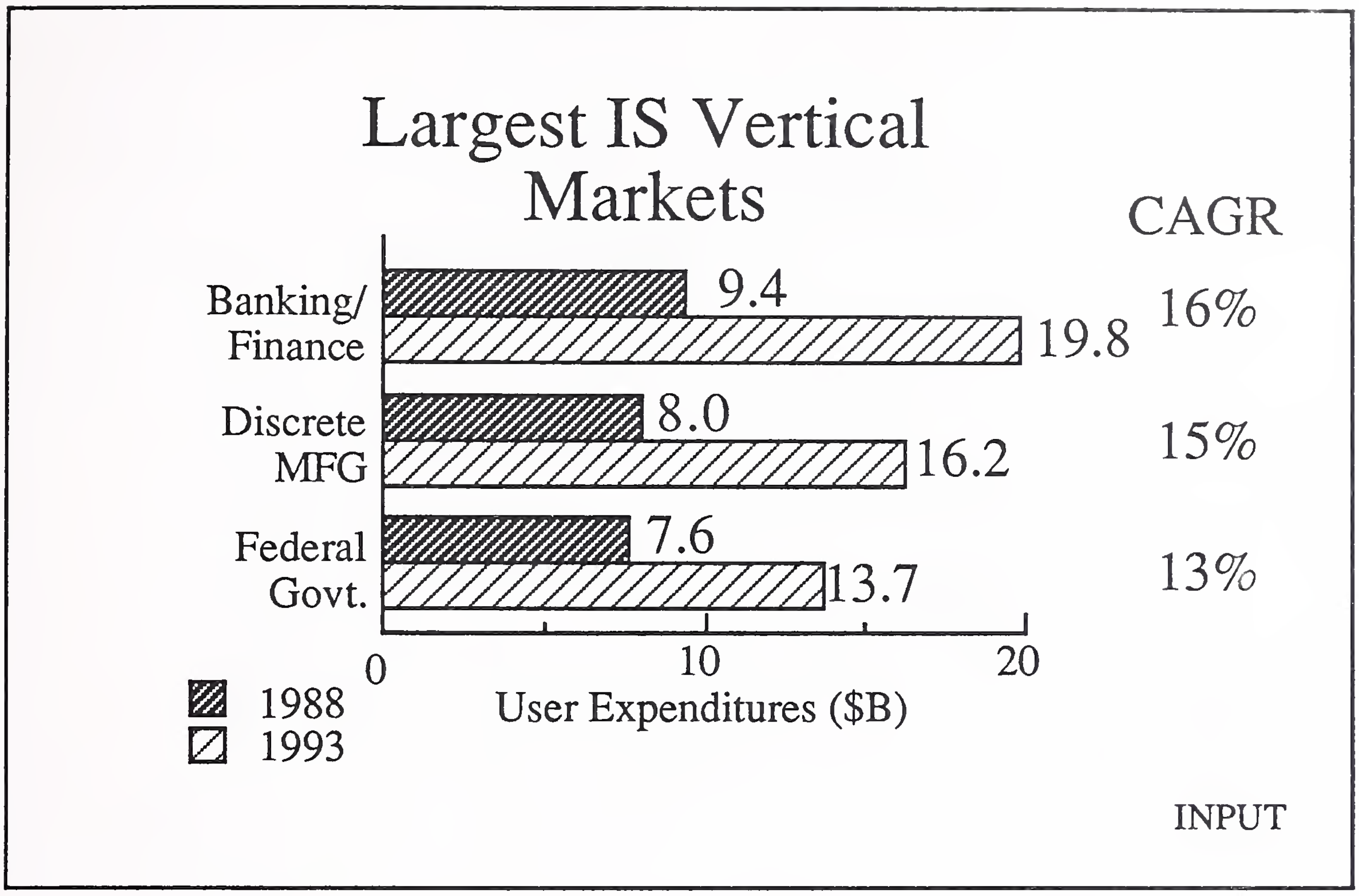
Network Services Opportunities

- RBOC Gateways, Services
- Network Design, Operation
- OLDB: International Access
- Multi-Lingual, Real-Time Translation

INPUT

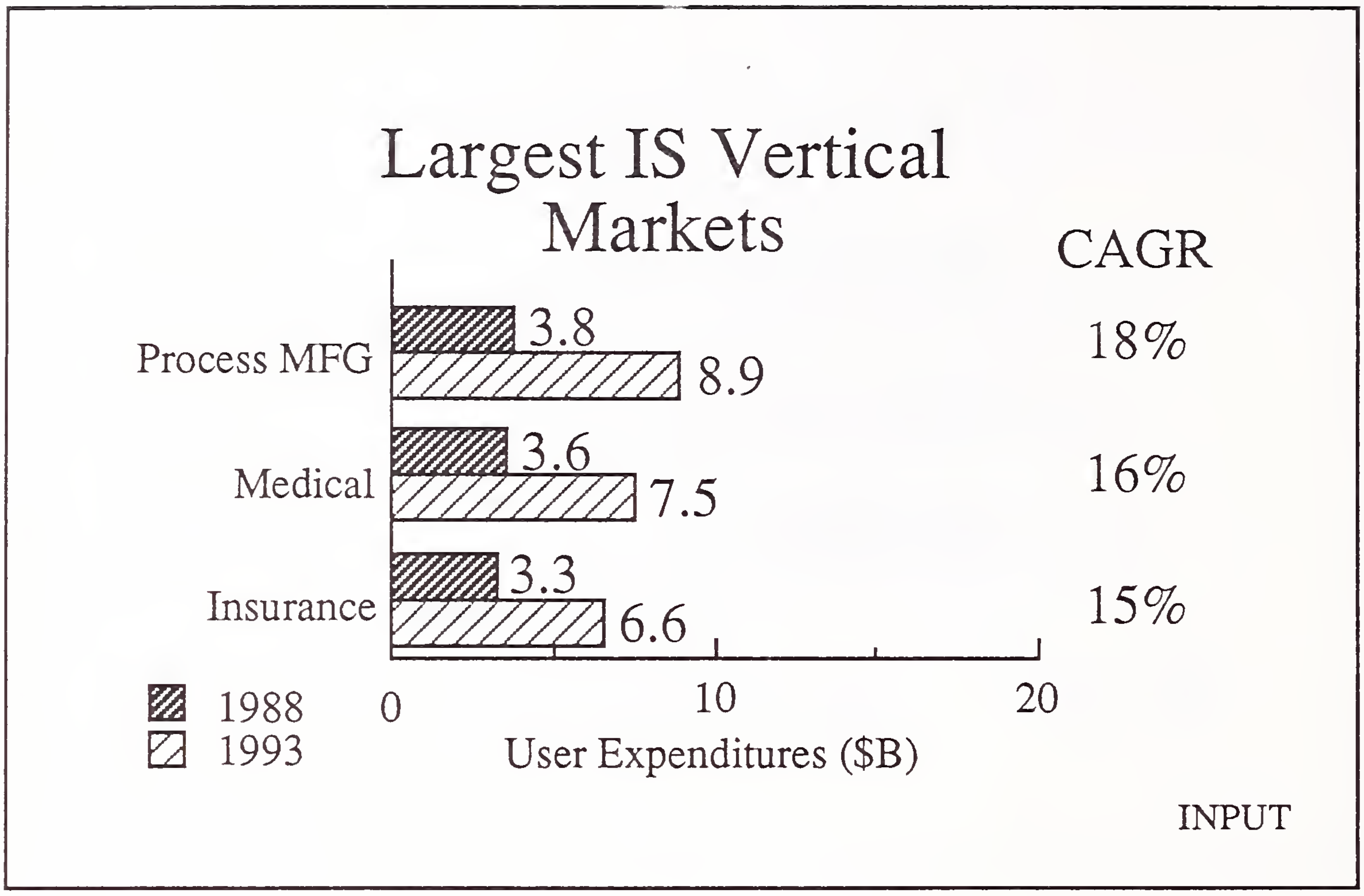
NOTES:

MAAP-55



NOTES:

MAAP-60a



NOTES:

MAAP-60b

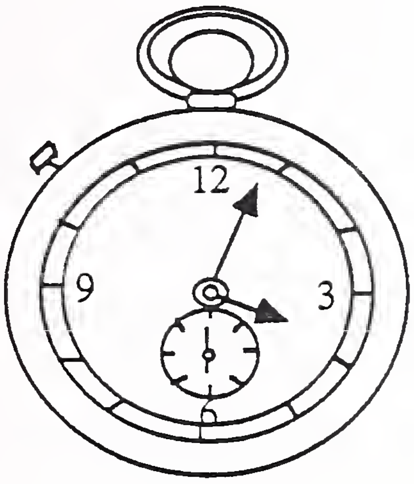
Trends—
Discrete Manufacturing

- Large Market, Still Growing at 15%
- High-End MRPII Saturation
- Micro-Based Solutions & Workstations
- Need for Integrated Systems

INPUT

NOTES:

MAAP-63a



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

- Attack Opportunities
- Adjust to the Requirements

INPUT

NOTES:

JJ88-VW2-38

Hewlett-Packard
Recommendations for Continued Success

- Continue to Develop "Open System" Products
  - Openview (Open Systems Interconnect)
  - New Wave
  - HP-UX
  - OSF Involvement

- Target Vertical/Niche Markets

- Focus on Workstation/PC Development Tools/Environment

- Develop Transaction Processing & Relational Data Base Strengths

- Become a "Systems Integrator"

- Emphasize Professional Services
  - Education /Training
  - Consulting
  - Software Development

- Acquire Specific Software Skill Sets (Acquisition or Merger)

- Leverage VAR Position

MAAP-76

INPUT®

VAR Perspective
H-P Advantages

- Sales Force
- Customer Support
- Customer Loyalty
- VAR Support Programs
- Open Systems Philosophy
- Risc Architecture
- New Wave (Legal Problems Aside)

INPUT®

VAR Perspective
DEC Advantages

- Single Architecture/Distributed Systems
- RDBMS
- Networking Capability
- Price-Performance (?)
- "Hot" Hardware

INPUT®