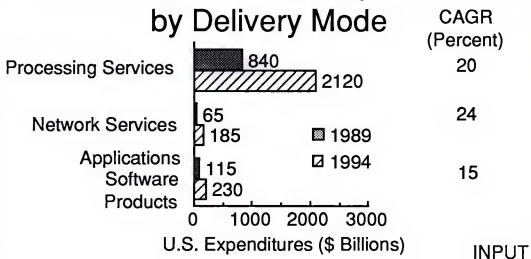


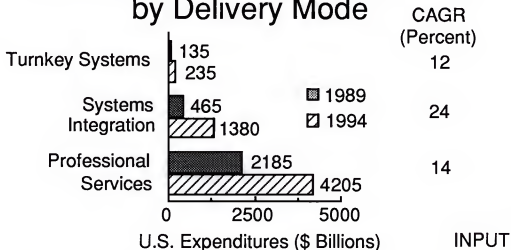
State and Local Government Sector Information Services Expenditures by Delivery Mode



Notes



State and Local Government Sector Information Services Expenditures by Delivery Mode

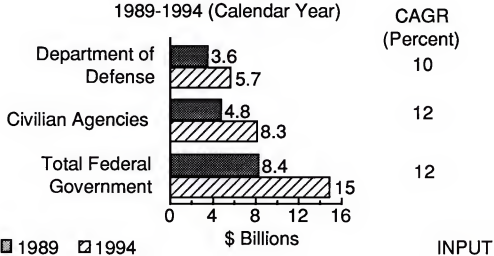


Notes



Federal Government Sector Market Forecast

1989-1994 (Calendar Year)



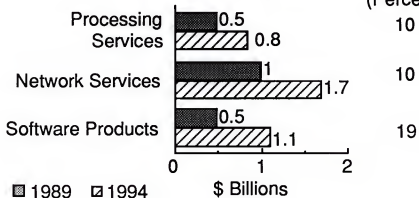
Notes

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Federal Government Information Services Markets by Delivery Mode

1989-1994

CAGR
(Percent)



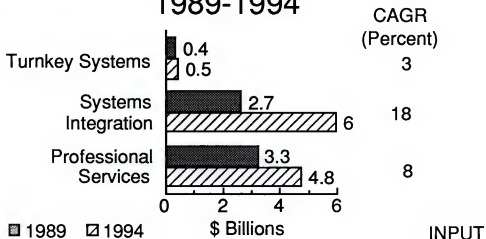
INPUT

Notes



Federal Government Information Services Markets by Delivery Mode

1989-1994



Notes

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the success of any business and for the protection of the interests of all parties involved.

2. The second part of the document outlines the various methods and techniques used to collect and analyze data. It describes the different types of data that can be collected and the various ways in which this data can be analyzed to identify trends and patterns.

3. The third part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the success of any business and for the protection of the interests of all parties involved.

4. The fourth part of the document outlines the various methods and techniques used to collect and analyze data. It describes the different types of data that can be collected and the various ways in which this data can be analyzed to identify trends and patterns.

5. The fifth part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the success of any business and for the protection of the interests of all parties involved.

6. The sixth part of the document outlines the various methods and techniques used to collect and analyze data. It describes the different types of data that can be collected and the various ways in which this data can be analyzed to identify trends and patterns.

7. The seventh part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the success of any business and for the protection of the interests of all parties involved.

8. The eighth part of the document outlines the various methods and techniques used to collect and analyze data. It describes the different types of data that can be collected and the various ways in which this data can be analyzed to identify trends and patterns.

9. The ninth part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the success of any business and for the protection of the interests of all parties involved.

10. The tenth part of the document outlines the various methods and techniques used to collect and analyze data. It describes the different types of data that can be collected and the various ways in which this data can be analyzed to identify trends and patterns.

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



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Vendor Opportunities

- Integrated systems
- Clinical/laboratory applications
- Networking: physicians & hospitals
- Professional services

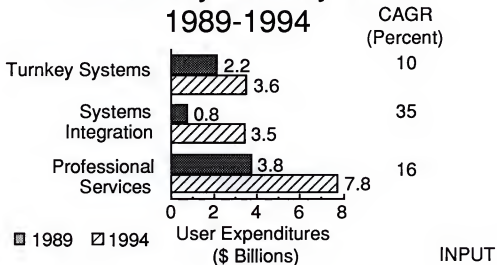
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Notes



1000

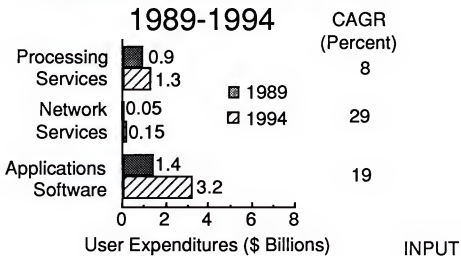
Discrete Manufacturing Sector Forecast by Delivery Mode



Notes

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Discrete Manufacturing Sector Forecast by Delivery Mode



Notes

1950

1951

Trends—Discrete Manufacturing

- Large market, growing at 16%
- High-end MRP II saturation
- Micro-based solutions & workstations
- Need for integrated systems

INPUT

Notes

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This not only helps in tracking expenses but also ensures compliance with tax regulations.

In the second section, the author outlines the various methods used for data collection and analysis. These include surveys, interviews, and focus groups. Each method has its own strengths and limitations, and the choice depends on the specific research objectives.

The third section delves into the statistical analysis of the collected data. It covers topics such as descriptive statistics, inferential statistics, and regression analysis. The goal is to identify patterns and trends in the data that can inform decision-making.

The fourth section discusses the ethical considerations of the research. It highlights the need for informed consent from all participants and the importance of maintaining confidentiality. The author also mentions the steps taken to ensure the integrity and objectivity of the study.

In the fifth section, the author presents the findings of the study. The results show a clear correlation between the variables being studied, which supports the initial hypothesis. However, there are some limitations to the study, and further research is needed to explore these findings in more detail.

The final section provides a conclusion and offers recommendations for future research. The author suggests that the findings can be applied in various contexts and that ongoing monitoring is necessary to ensure the long-term success of the project.

State and Local Government Driving Forces

- Changes in information systems organization
- Lack of internal staff expertise
- Reliance on information services vendors

INPUT
MPRE90-261

Notes

Issues for IS Departments

- Rising expectations of key users and officials
- User demands for more complex solutions
- Planning for changes in technology
- Productivity and backlogs
- Integration of data/technology applications
- Budgeting and funding

INPUT
MPRE90-262

Notes

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the integrity of the financial system and for the ability to detect and prevent fraud.

2. The second part of the document outlines the specific requirements for record-keeping, including the need to maintain original documents and to keep copies of all transactions. It also discusses the importance of ensuring that records are accessible and can be retrieved in a timely manner.

3. The third part of the document discusses the role of the auditor in verifying the accuracy of the records. It emphasizes that the auditor must exercise due diligence and must be able to trace all transactions back to their source.

4. The fourth part of the document discusses the consequences of failing to maintain accurate records. It notes that failure to do so can result in the loss of the company's ability to raise capital and can also result in the company being subject to legal action.

5. The fifth part of the document discusses the importance of training and education for all employees involved in the financial system. It emphasizes that all employees must be aware of the importance of accurate record-keeping and must be trained in the proper procedures for maintaining records.

6. The sixth part of the document discusses the importance of internal controls. It notes that internal controls are essential for ensuring the accuracy of the financial system and for preventing fraud. It also discusses the importance of having a strong internal control system in place.

7. The seventh part of the document discusses the importance of having a strong audit committee. It notes that the audit committee is responsible for overseeing the financial system and for ensuring that the company is in compliance with all applicable laws and regulations. It also discusses the importance of having a strong audit committee in place.

8. The eighth part of the document discusses the importance of having a strong internal control system. It notes that internal controls are essential for ensuring the accuracy of the financial system and for preventing fraud. It also discusses the importance of having a strong internal control system in place.

9. The ninth part of the document discusses the importance of having a strong internal control system. It notes that internal controls are essential for ensuring the accuracy of the financial system and for preventing fraud. It also discusses the importance of having a strong internal control system in place.

10. The tenth part of the document discusses the importance of having a strong internal control system. It notes that internal controls are essential for ensuring the accuracy of the financial system and for preventing fraud. It also discusses the importance of having a strong internal control system in place.

Federal Government

INPUT
MPRE90-263

Notes

Federal Government Sector Issues

- Cost containment
- Acquisition reforms
- Budget deficit control measures

INPUT
MPRE90-264

Notes

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Federal Government Sector Issues

- Regulations imposed on agency
- Internal agreement on requirements
- Availability of skilled staff

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MPRE90-265

Notes

Federal Government Sector Driving Forces

- Rising service demands
- Equipment obsolescence
- High maintenance costs
- End-user computing needs

INPUT
MPRE90-266

Notes



Federal Government Sector Driving Forces

- Connectivity requirements
- Improved security/privacy demands
- Presidential priority programs

INPUT
MPRE90-267

Notes



Federal IS Goals and Objectives

- Improve information technology support
- Improve productivity
- Maintain and enhance systems
- Increase contracting out
- Overcome staff shortages

INPUT
MPRE90-268

Notes

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Medical

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MPRE90-269

Notes

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Medical Industry—Trends

- Need for functional integration
 - Patient care
 - Billing/financial
 - Clinical/testing
 - Medical records

INPUT
MPRE90-270

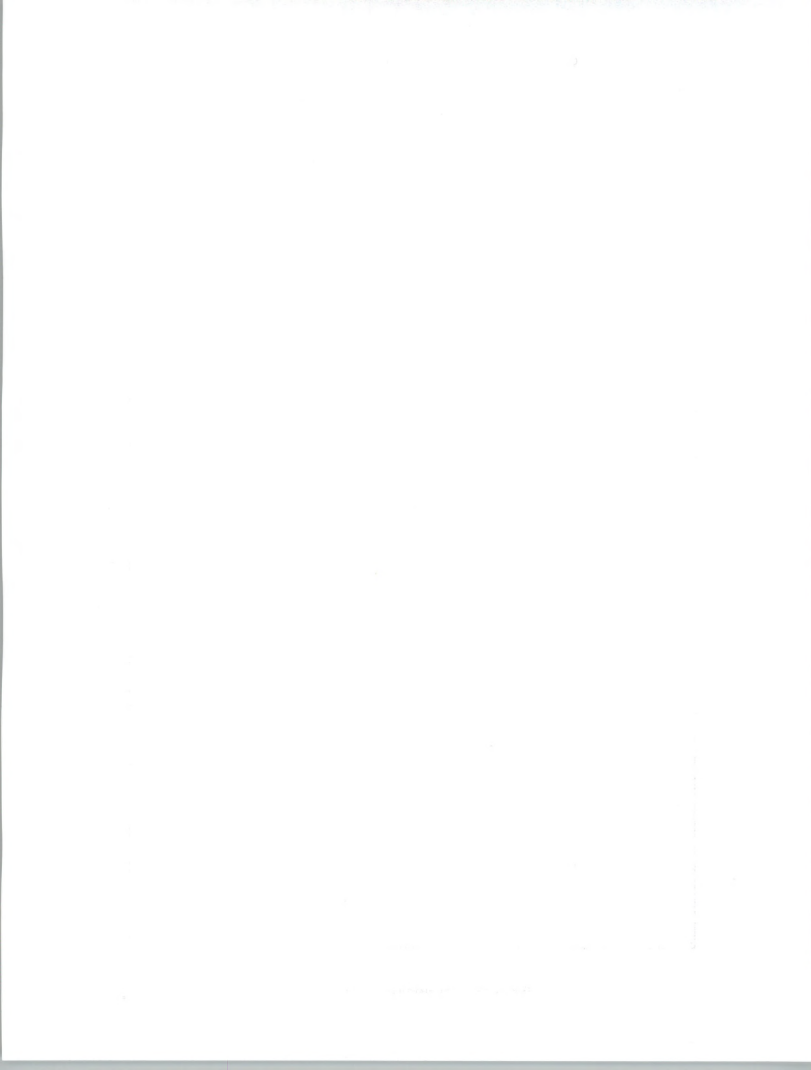
Notes

Vendor Opportunities

- "Point of care" systems
- Skill nursing/health care systems
- Physicians: PC usage
- Prescription drug programs

INPUT
MPRE90-271

Notes



Trends—Higher Education

- Centralized IS control
- Integrated, networked solutions
- Standards for intercampus networking
- Spending on microcomputers in past, leading to connectivity needs

INPUT
MPRE90-272

Notes



Trends—Higher Education

- User involvement in software
- Development
- CAI/courseware development
 - EDUCOM
- Budgetary concerns

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MPRE90-273

Notes

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Driving Forces—Higher Education

- Administrative applications
- Research applications
- Word processing (faculty/students)
- Intracampus networking

INPUT
MPRE90-274

Notes

RBOC Network Services

- Integrated services digital network (ISDN)
- Information gateways
- Virtual private networks
- Metropolitan-area networks (MAN)

INPUT
MPRE90-275

Notes

RBOC Network Services

- Open network architecture (ONA)—future
- Videotex (future)—subsidized terminals?
- Voicemail
- Electronic mail
- Voice recognition services

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MPRE90-276

Notes

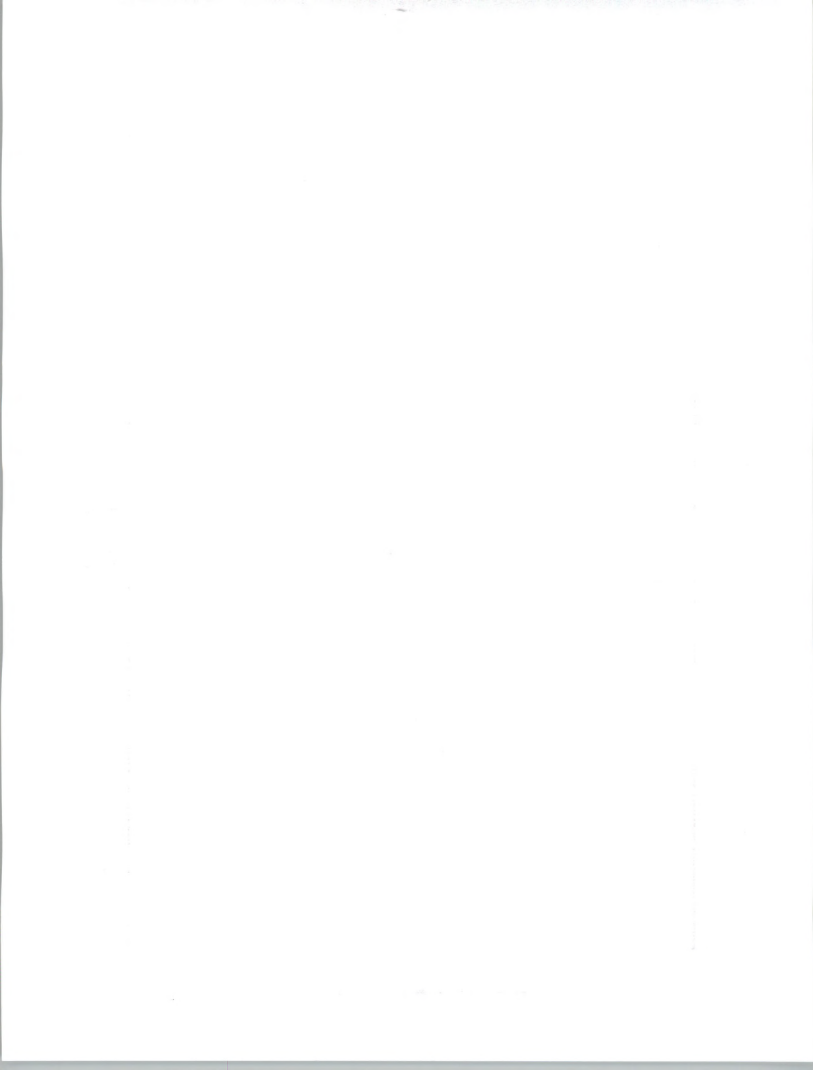


RBOC Network Services Limited by:

- Varying services make national customer network usage difficult
- Gateways limited to LATA
- RBOC "culture"
- RBOC sales/marketing expertise

INPUT
MPRE90-277

Notes



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
- RBOCs will be a factor
- EDI has leverage into interorganizational services
- Market growth remains strong

INPUT
MPRE90-278a,b

Notes



Discrete Manufacturing

INPUT
MPRE90-279

Notes

Trends—Discrete Manufacturing

- MAP versus Ethernet—inconclusive
- CIM—from buzzword to reality?
- Rapid growth in CAD/CAM, but on less expensive platforms

INPUT
MPRE90-280

Notes



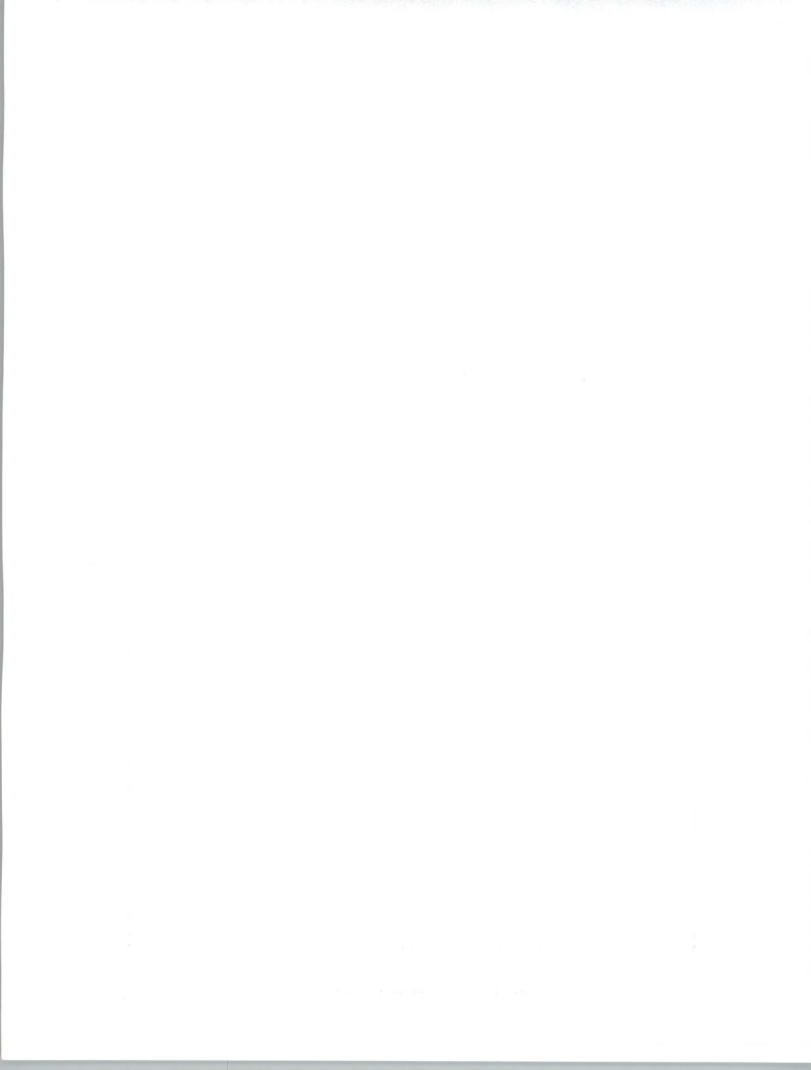
Discrete Manufacturing Leading Vendors

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

* INPUT Estimate

INPUT
MPRE90-281

Notes



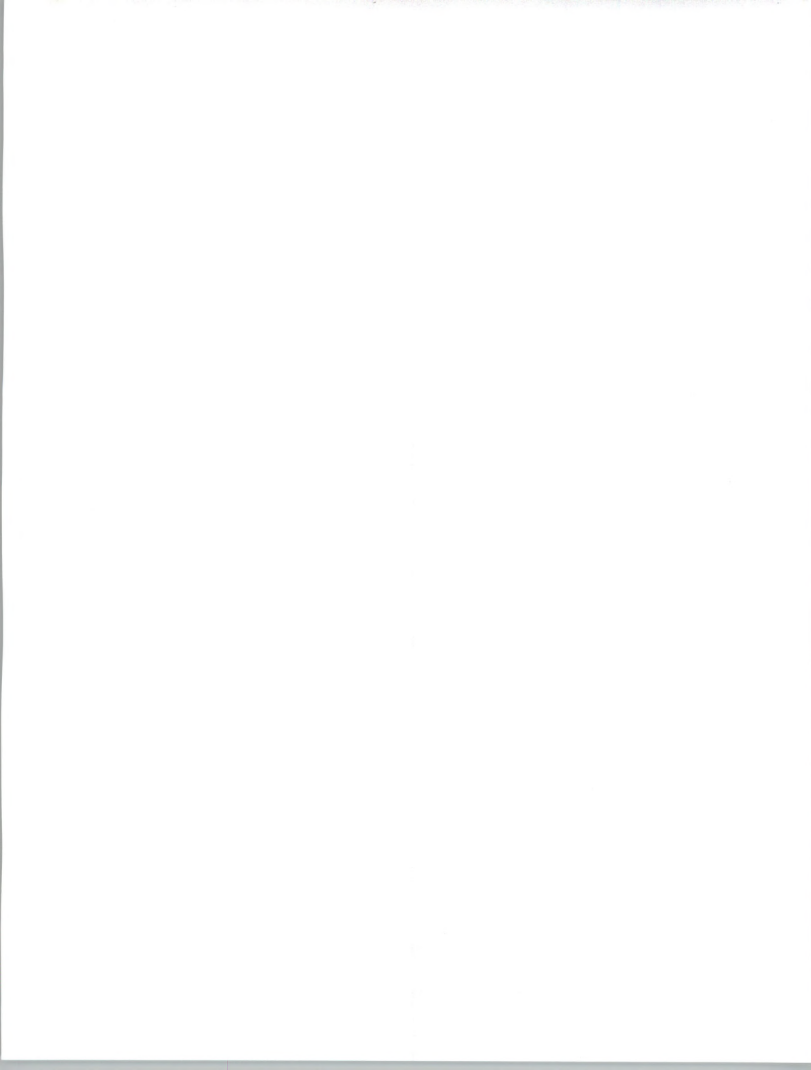
Discrete Manufacturing Leading Vendors

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

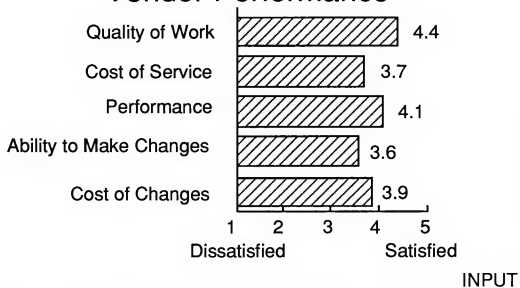
* INPUT Estimate

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MPRE90-282

Notes



User Satisfaction with SO Vendor Performance



Notes

SCON-DRW2-28

MPRE90-285



Systems Operations Vendor Selection Criteria—Buyers' View

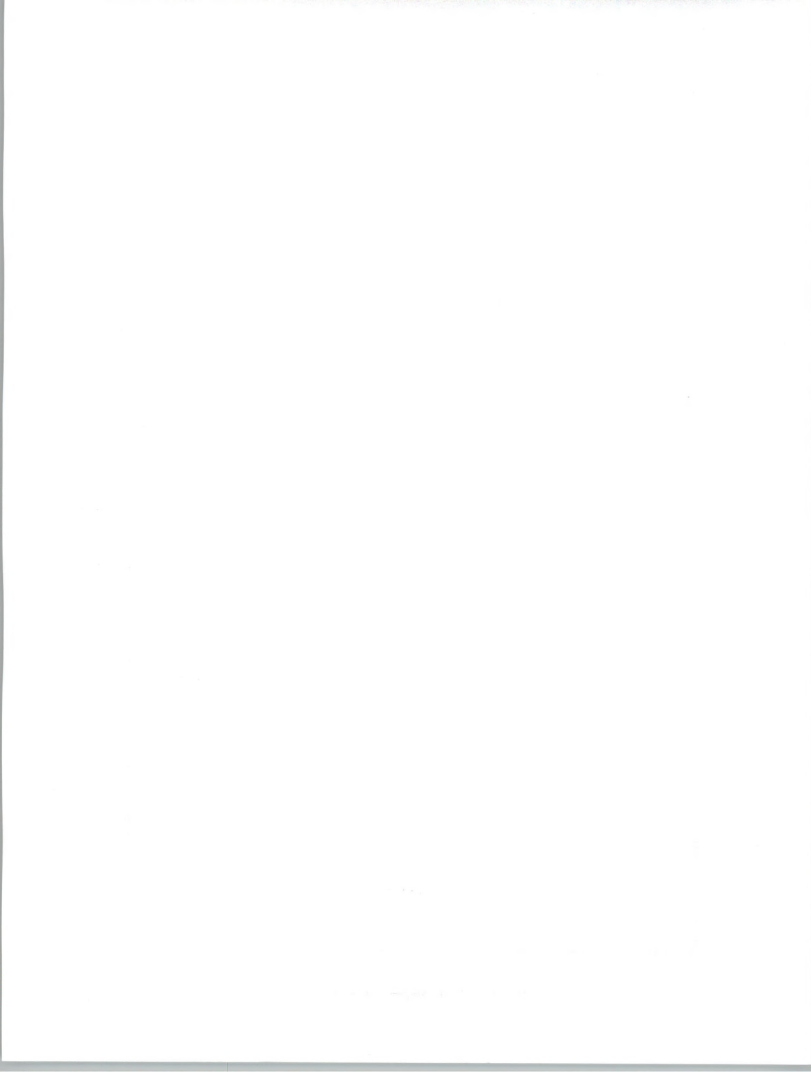
Ranking	Criteria
1	Vendor SO experience
2	Overall cost
3	Data security and protection
4	SO performed by prime SI contractor
5	Vendor-provided hardware and systems software maintenance
6	Application software maintenance

INPUT

Notes

SCON-DRW2-30a

MPRE90-286



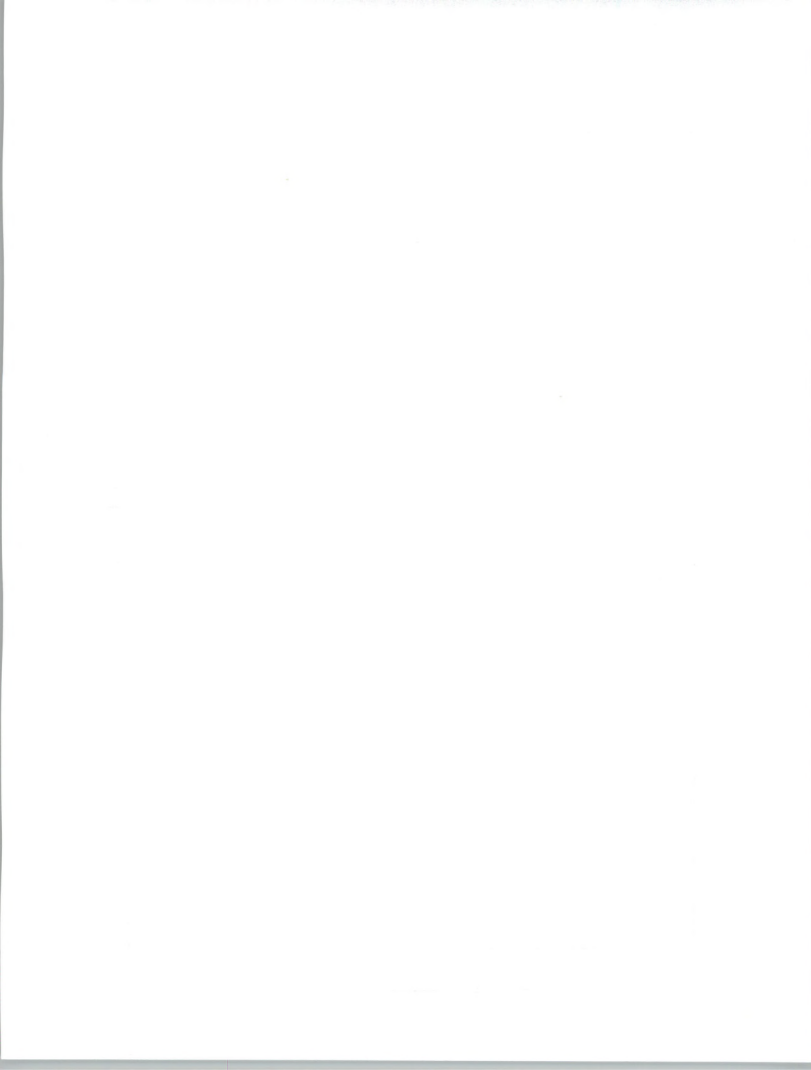
Discrete Manufacturing Leading Vendors

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

* INPUT Estimate

INPUT
MPRE90-287

Notes



Vendor Recommendations: Discrete Manufacturing

- Be a leader in your niche
- Build alliances, provide integrated solutions
- Look at international markets

INPUT
MPRE90-288

Notes



Banking and Finance

INPUT
MPRE90-289a

Notes

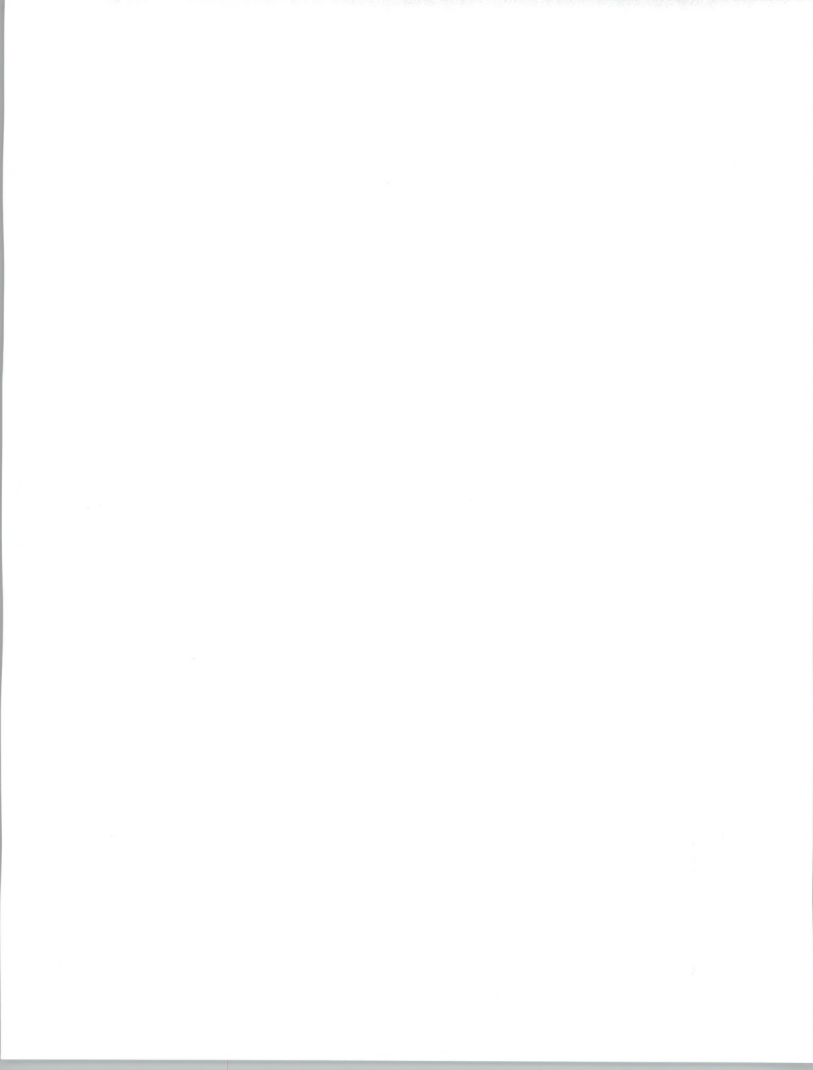


Banking/Finance Industry Trends—Examples Changing Outlook for Individual Products/Services

- Product creation/evolution proceeding at more rapid pace
- 24 hour/automated trading systems
- Increased demand for electronic information services

INPUT
MPRE90-289b

Notes



State and Local Government

INPUT
MPRE90-290a

Notes



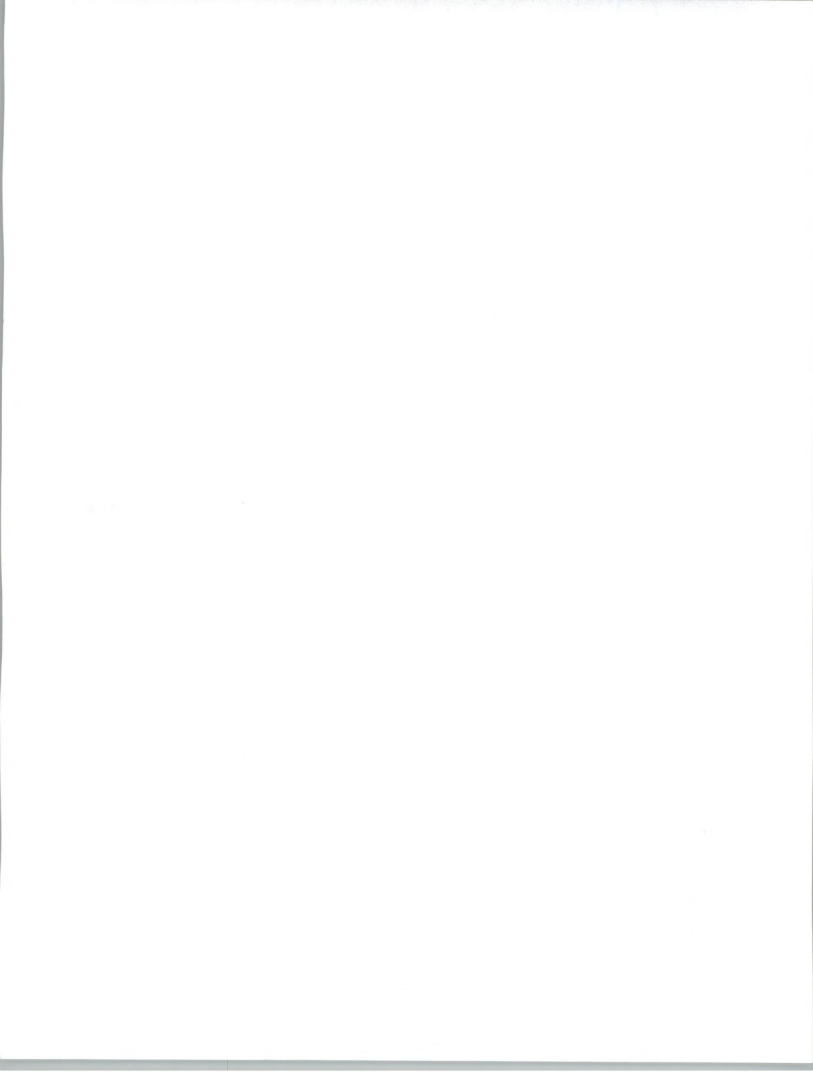
European Companies

- CAP Gemini Sogetti (CAP-SESA) is parent of CAP GEMINI AMERICA (CGA)
 - Close to \$1 billion in 1989
 - Focus on professional services
- Aggressive acquirer
- Will not attack operations market directly
 - Provide support services
 - Emphasizes development market

INPUT

MPRE90-292ab

Notes



Fundamental Driving Forces

- *Apply to the information systems and services industry*
- *Are restructuring the role of IS management*
 - Reactive to proactive
 - Technology-driven to user-driven
 - Centralized to "federated"

INPUT
MPRE90-293

Notes



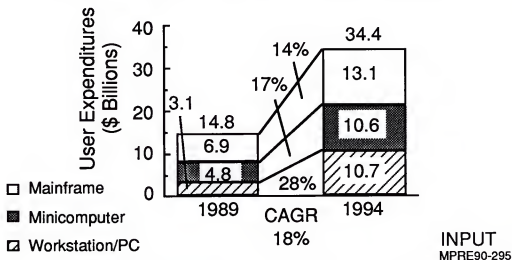
Big-Six Accounting Professional Services

- 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
MPRE90-294ab

Notes

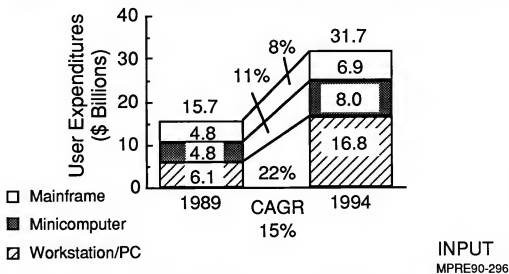
Systems Software Product Market by Platform Size, 1989-1994



Notes



Applications Software Product Market by Platform Size, 1989-1994



Notes



Network Standards Battle

OSI NM standards

Vendor 'standards'

- Netview, IBM
- UNMA, AT&T
- NetPartner, AT&T
- Other vendors

INPUT
MPRE90-297

Notes



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
MPRE90-298

Notes



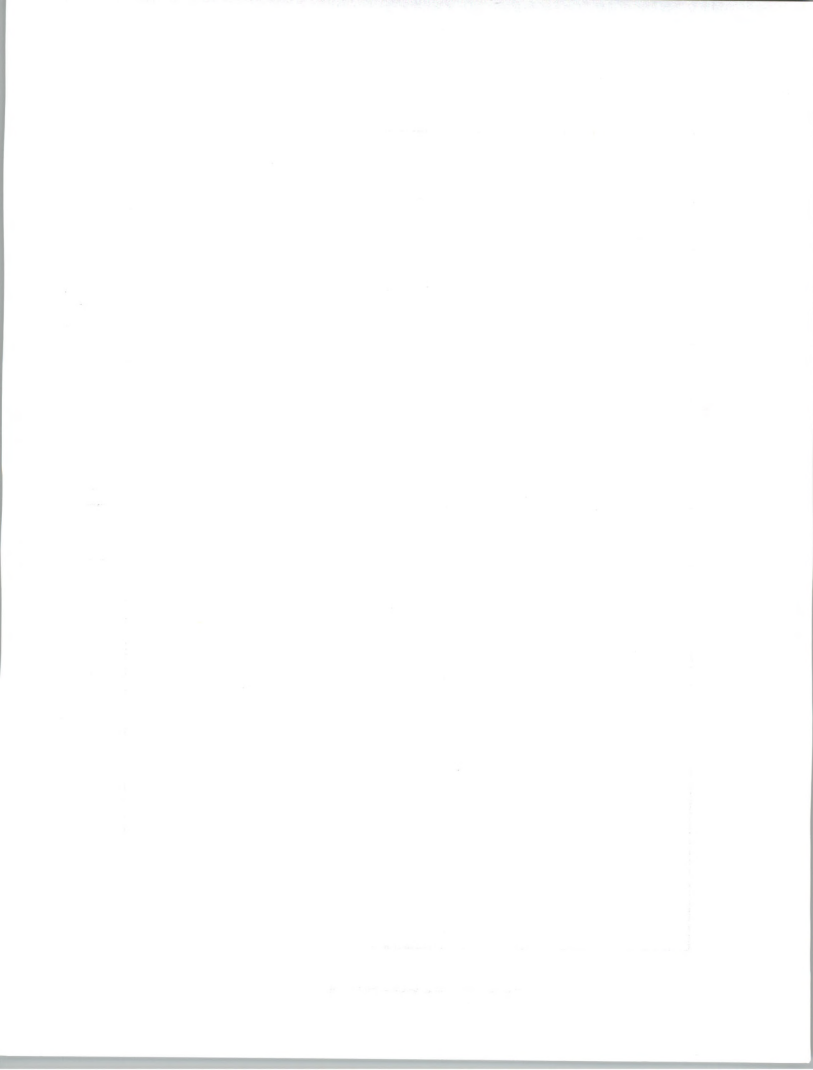
FIG. 10. Correlation between the NPI and the NAMI for the years 1979, 1989, 1999, and 2009. The contours are drawn at intervals of 0.1. The shaded areas indicate the regions where the correlation is statistically significant at the 95% confidence level.

CASE Vendors

- Cadre Technologies
A real-time systems CASE vendor
trying to enter the IS market

INPUT
MPRE90-299

Notes

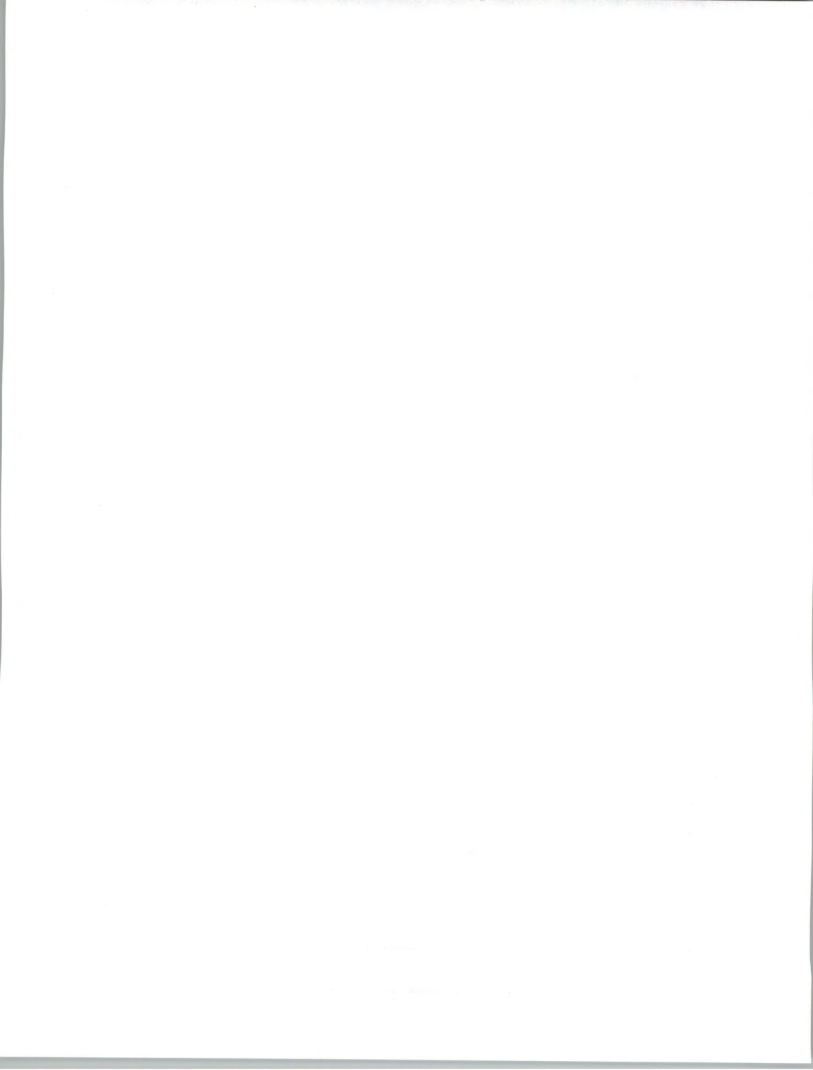


CASE Vendors

- Bachman Information Systems
The first to truly address re-engineering
- Softlab
An established German vendor
entering the U.S. market

INPUT
MPRE90-300

Notes

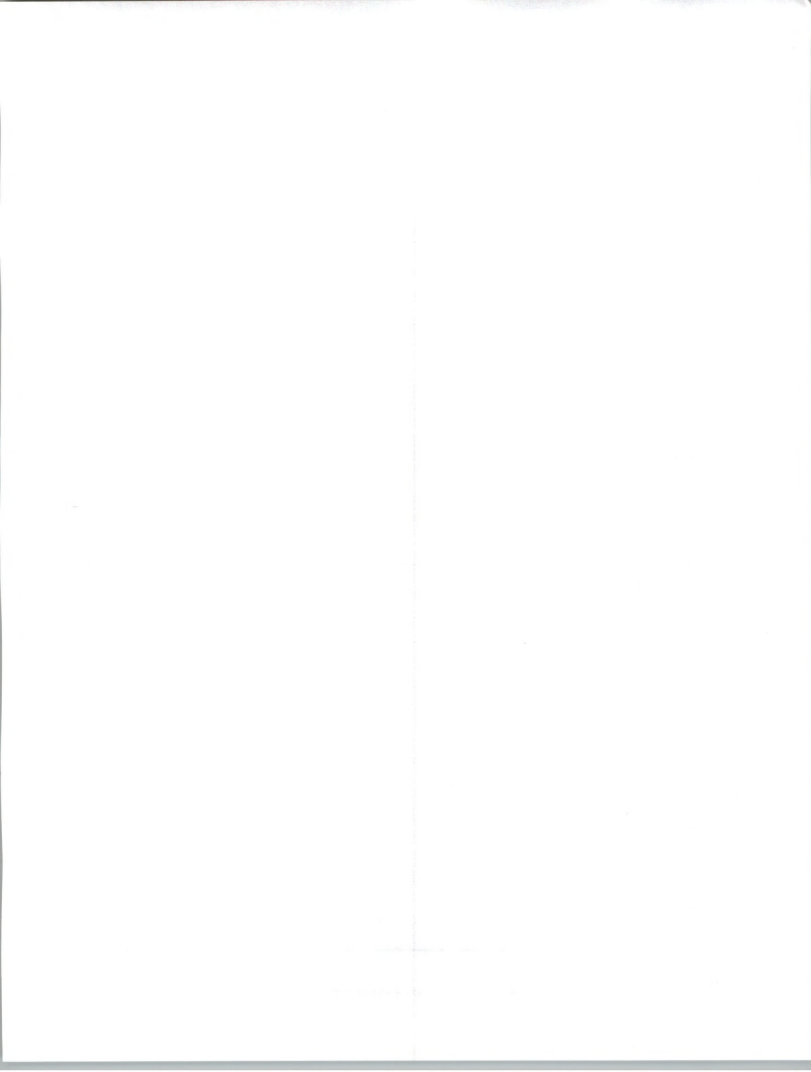


CASE Vendors

- 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
MPRE90-301

Notes

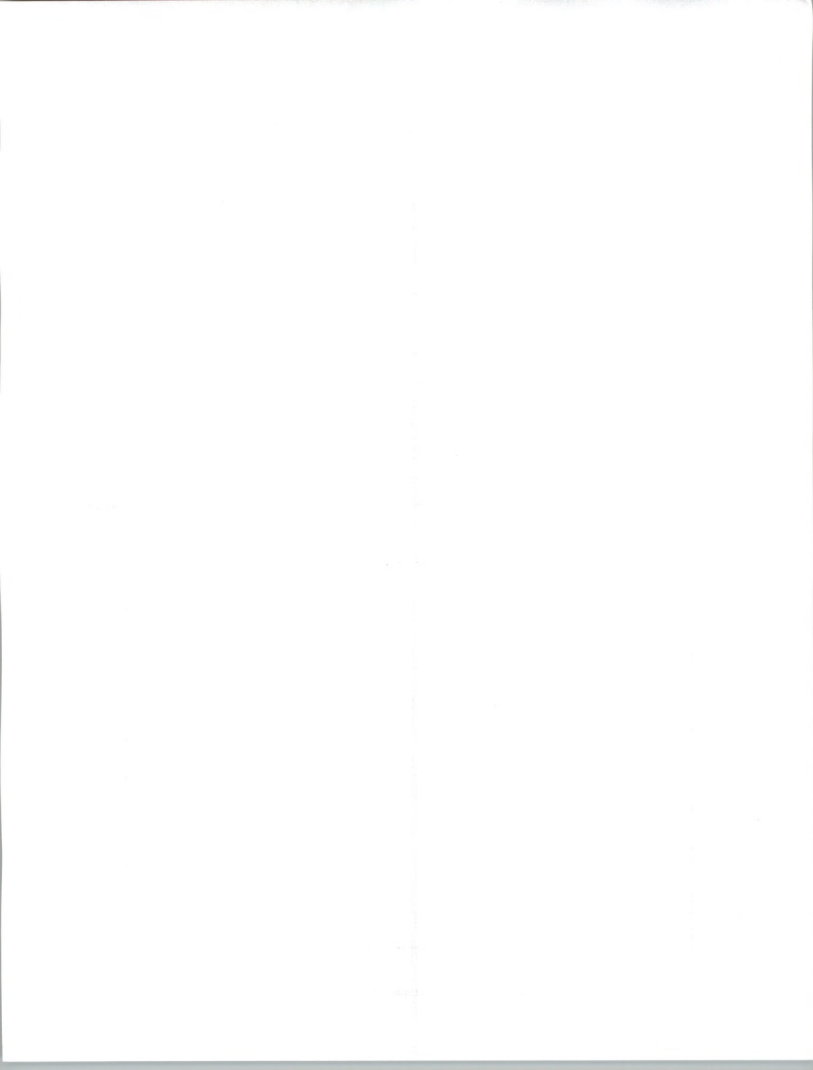


Systems Operations Definition

Operation of all or a major portion of a customer's information systems function on a long-term (more than one year) contract.

INPUT

Notes



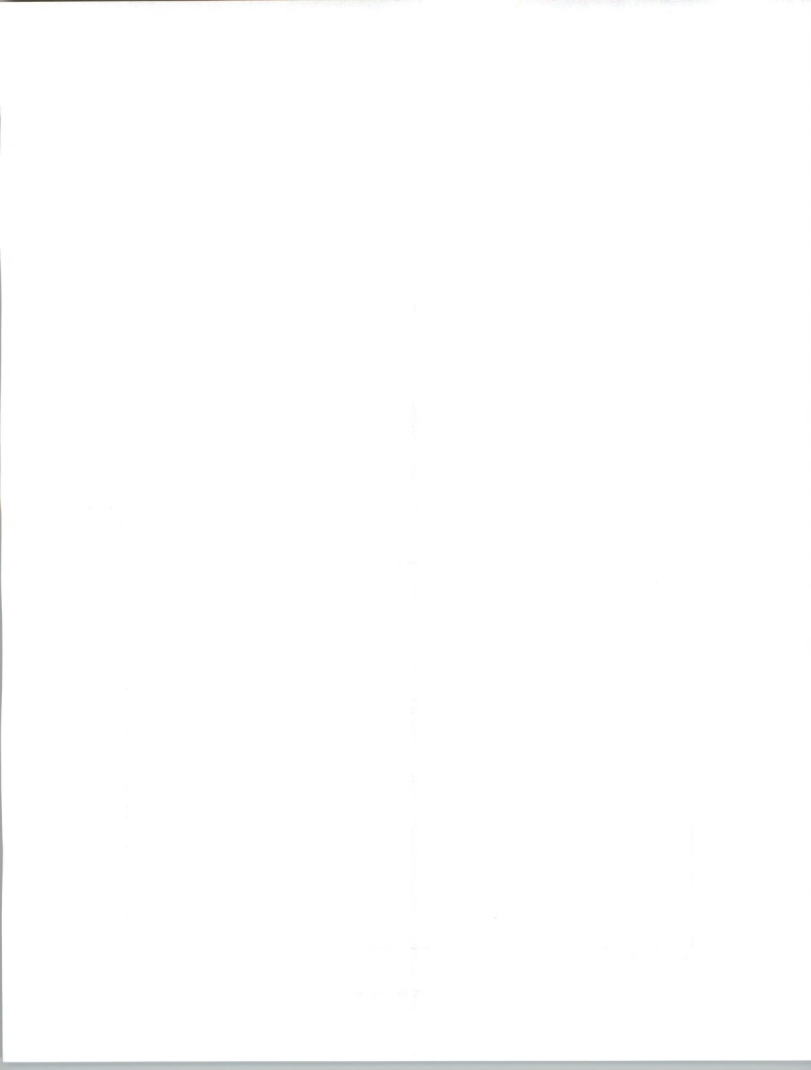
Characteristics of Types of Systems Operations

Location of Main Computer	Ownership of Main Computer	
	Vendor	Customer
Vendor Site	Processing Services	Professional Services
Customer Site	Processing Services	Professional Services

Dominant modes

INPUT

Notes



Characteristics of Types of Systems Operations

Location of Main Computer	Dedication of Main Computer	
	Shared	Single Customer
Vendor Site	Processing Services	Processing Services
Customer Site	Professional Services	Professional Services

Dominant modes

INPUT

Notes



Characteristics of Types of Systems Operations

Application Provider	Type of Systems Operation	
	Platform	Application
Customer	X	
Systems Operation Vendor		X
Third-Party	X	(X)



New mode of partnership

INPUT

Notes



Trends

Large Scale SI Projects



Systems Operations Contracts

INPUT
MPRE90-306

Notes



Systems Operations Buyers' Initial Evaluation Criteria

Ranking	Criteria
1	Better or more-flexible service
2	Availability of operations skills internally
3	Lower operating expenses
4	Faster application changes
5	Data security/privacy
6	Faster new application development

INPUT

Notes



Systems Operations Buyers' Initial Evaluation Criteria

Ranking	Criteria
7	Ability to add/delete personnel
8	Reduced capital investment requirements
9	Mission-critical application
10	Near-term cash flow improvements
11	Labor relations/unions
12	Executive time commitment

INPUT

Notes



Systems Operations Targets

- Industry Markets
 - Volatile, rapidly changing environment
e.g. semiconductor manufacturing, construction
 - Strong cost pressures and systems needs
 - Restructuring, e.g. advertising

INPUT

Notes



Systems Operations Targets

- Prospect Companies
 - Expanding multinationals, particularly aggressive acquirers
 - Troubled companies, going through turnaround
 - Very fast-growing companies
 - Companies undergoing major organizational changes, e.g. LBOs, divestiture

INPUT

Notes



Systems Operations Targets

- Prospect Companies
 - Companies wanting to change basic IS architecture (e.g. Honeywell to IBM)
 - Companies with disparate, incompatible computer centers

INPUT

Notes



Systems Operations Targets

- Companies with major development contracts with professional services companies without operational capability
- Generally medium/large companies for domestic U.S. services and large/very large for international services

INPUT

Notes



Who is the SO Buyer?

- Varies greatly—dependent on prospect
- Individual more than team
- Customized marketing required

INPUT

Notes



What is the SO Buyer Looking For?

- Depends on the prospect
- Requires customized marketing

INPUT

Notes



What are the SO Buyer's Key Motivators?

- Most often, solving a problem
- Reducing risk and time often important
- Scarcity of people

INPUT

Notes



Essential SO Service Requirements

- Computer, communications, software and people package
- Complete, up-to-date operation using accepted standards
- Varied, detailed support requirements
- Simple, accurate billing

INPUT

Notes



SO Terms Characteristics

- Resource use pricing difficult
- Price-packaging required
- Flexible period of contract
- Charge for value-added support
- Customized contracts

INPUT

Notes



"Computer Utility" Market

- Small market for supercomputer computation services
- Small, transient market for compute capability only
- All markets require other value-added parameters
 - Operational, "computer-utility"
 - Applications, FM/SO

INPUT

Notes



Therefore Do Not Use the Term "Computer Utility"

- "Systems utility"
- "Support services"
- "Operations support" (IBM term)
- "Systems operational services" (SOS!)
- "Computer operation services"

INPUT

Notes



Platform Systems Operations = Computer/Systems Utility

INPUT

Notes



Platform Systems Operations

Prospect View of System

Utility Relationship

- "Technology" rather than "application" solution
- View could be:
 - Short-term, solve a problem
 - Long-term, provide basic architecture

INPUT

Notes



Prospect View of System Utility Relationship

- Account control will vary
 - Strong for technology
 - Medium to weak for applications
 - Varied for people
- Competition for other IT services will be strongly affected

INPUT

Notes



Prospect View of System Utility Relationship

- Should become stronger over time
- Opportunity for service expansion

INPUT

Notes



Systems Utility Partnering Opportunity

- Could be key motivator
 - Compute utility/operational capability
 - Vendor application/industry capability

INPUT

Notes



Impact on Existing Markets

- "Traditional" FM/SO markets could be attacked by combination of:
 - Systems utility
 - Application/industry specialist software/service

INPUT

Notes



"Systems Utility" Market Potential

- Vast, unmeasurable
- Replaces in-house data/network centers
- Attractive features:
 - Avoids equipment upgrade/choices
 - Avoids software (operating systems/DBMS/communications) upgrade/operations problems
 - Avoids systems staffing needs and problems
 - Avoids maintenance problems

INPUT

Notes



"Systems Utility" Market Potential

- Increasingly data/network centers are 'operatorless'
- Can be moved, taken over without users noticing
- INPUT always considered major opportunity

INPUT

Notes



"Systems Utility" Market Potential

- Questions
 - To what extent will IBM impact its own business?
 - Can anyone else impact the market as well?

INPUT

Notes



"Systems Utility" Market Potential

- Issues to be addressed:
 - Ownership
 - Control
 - Security
 - Competitiveness
 - People

INPUT

Notes



Recommendations

- Include systems operations and systems integration in business strategies
- Focus on full service offerings
- Target organizations experiencing change
- Leverage skills and resources

INPUT

Notes



Systems Integration: Globalized Activity

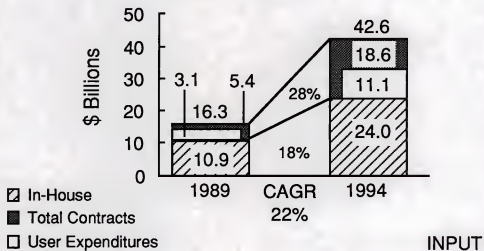
- Gaining overseas acceptance
- Prime contractors need local subcontractor relationships
- Big players with deep pockets and high visibility required
- Leads to systems operations (facilities management) contracts

INPUT

Notes



Commercial Systems Integration Project Value and Expenditures, 1989-1994



Notes

SCON-JEF-7

MPRE90-331



Key Commercial SI Market Factors

- Rising demand for connectivity
- Major infrastructure rebuilding
- Growing user management trend
- Growing application complexity

INPUT

Notes

SCON-JEF-13

MPRE90-332



Cross-Industry Market Distribution, 1989

Cross-Industry	\$ Millions	
	Total Value	Average Award
Office	490	6.5
Engineering/Science	428	33.0
Automation	280	13.5
Accounting	208	5.2
Others	140	3.4

INPUT SI Data Base

INPUT

Notes

SCON-JEF-30

MPRE90-333



Vendor Selection Criteria

Type	Percent of Respondents
Support skills	64
Service orientation	50
On-site visits	43
References	43
Alliances	21

INPUT

Notes

SCON-JEF-18

MPRE90-334



Buyer Acceptance Methodologies

Type	Percent of Respondents
Performance criteria	40
Functionality definition	26
Simulation	13
Prototype/parallel processing/unknown	7 (each)

INPUT

Notes

SCON-JEF-19

MPRE90-335



Market Share by Competition Class, Mid-1989

Vendor Class	Percent of Market		
	Federal	Commercial	Overall
Hardware manufacturers	21	24	23
Communication vendors	6	12	9
Professional services	50	30	40
"Big 6"	4	12	8
Aerospace	15	9	12
Other	4	13	8

INPUT

Notes

SCON-JEF-32

MPRE90-336



Future Trends

- New domestic and off-shore competitors as primary and secondary vendors
- Increased centralization of vendor SI "product" management
- Increased development of program management methods

INPUT

Notes

SCON-JEF-38

MPRE90-337



Future Trends

- Growing marketing/promotion investment
- Formal market strategy development by non-SI vendors
- Telecommunications and engineering companies

INPUT

Notes

SCON-JEF-39

MPRE90-338



Conclusions

- Financial characteristics
 - Rapid revenue growth
 - Commercial profits—stable/increasing
 - Federal profits—stable/decreasing

INPUT

Notes

SCON-JEF-41

MPRE90-339



Conclusions

- SI market strategies
 - Vertical market penetration
 - Full service emphasis
 - Fewer cross-industry markets
 - User business sensitivity
 - Less emphasis on alliances

INPUT

Notes

SCON-JEF-42

MPRE90-340



Conclusions

- Buyer Emphasis
 - Users becoming buyers
 - Interest in solutions, not technology
 - Preference for industry knowledge
 - Project management key
 - Acceptance by performance

INPUT

Notes

SCON-JEF-43

MPRE90-341



Vendor Recommendations

- Develop/expand business consulting skills
- Involve program managers in business acquisitions
- Use repeatable processes, strive for end-to-end methodologies

INPUT

Notes

SCON-JEF-44

MPRE90-342



Computer Sciences Corp/Infonet

- Continues strong in federal markets
 - Primarily professional services/SI
- Resurgent interest in commercial markets
 - Health and insurance
 - Tax and credit
 - Professional services/SI

INPUT

Notes



Computer Sciences Corp/Infonet

- Acquisitions key to commercial activities
 - Index
 - Computer Partners

INPUT

Notes



IBM

- Fundamental changes
- 1. Sales incentives for services
- 2. Willingness to provide systems operations services

INPUT

Notes



IBM National Services Division

- Will provide systems operations for customers
- 30,000 people
- Works with IBM's SID and INS operations

INPUT

Notes



IBM National Services Division

- Provides all "operations support" functions
 - Data center design and building
 - Remote, "Lights-out" data center operations
 - Hardware/software/network maintenance
 - Disaster recovery
 - End-user software support
 - Systems operations studies
 - Conversion services

INPUT

Notes



Aerospace Subsidiaries

- Tried the "Computer Utility" route
- Have enjoyed limited success
- Successes
 1. Government
 - BCS
 - Gruman
 - MMDS
 2. Specialized areas
 - TRW

INPUT

Notes



Aerospace Companies

- Litton Computer Services
- Provides "computer utility" processing services
 - \$30M revenues
 - "Packaged" pricing
 - Emphasis in Los Angeles

INPUT

Notes



European Companies

- Hoskyns:
 - Very successful in FM
 - Good "computer utility" model
 - Avoided industry specialization
- Thorn-EMI
 - Also successful in processing utility
- SD-Scicon, GSI, Sema-Cap, others
- PTTs becoming more aggressive

INPUT

Notes



Japanese Companies

- NT&T Data Services
 - Primary market government
 - SI/Systems operations
- Many VAN companies (500)

INPUT

Notes



U.S. Information Services Market

INPUT
MPRE90-352

Notes

Summing It Up

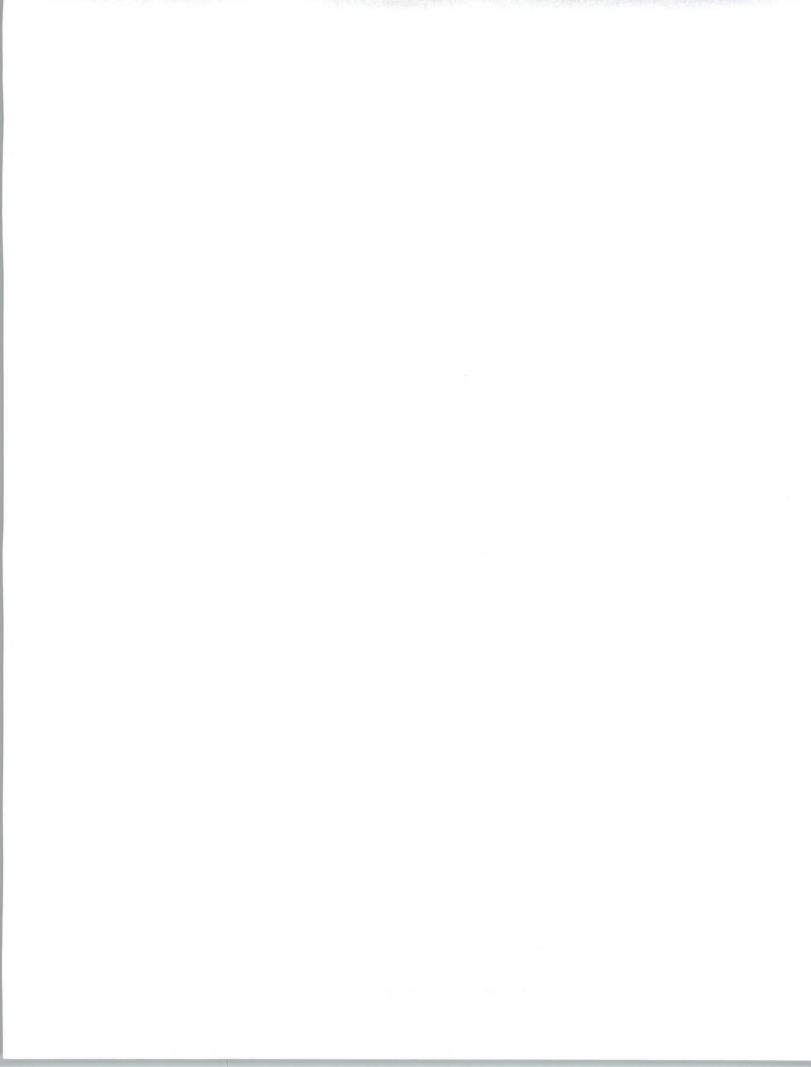
- Broadening product strategies
- Emphasis on "solution" niches
- Focus on quality and service

Accomplished through:

- Self-funded expansion
- Consolidation—partnering/acquisitions

INPUT
MPRE90-353

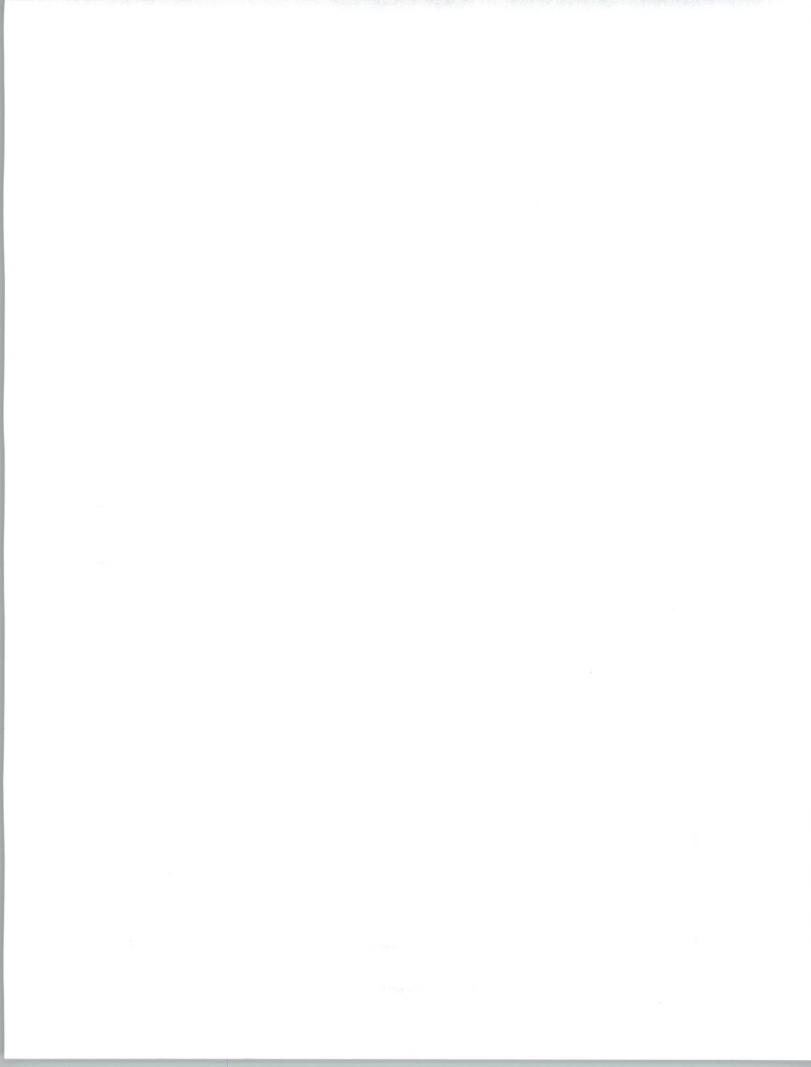
Notes



Where's the Productivity?

INPUT
MPRE90-354

Notes



Technology is a Mixed Blessing

- Technology adds complexity
- Poor application is counter-productive
- Change process with systems

INPUT
MPRE90-355

Notes

The Human Element

- Changing systems is a process
- Evolution not revolution

INPUT
MPRE90-356

Notes

Concerns

- Ergonomics
- Health
- Deskillling
- Organization
- Redundance
- Progress

INPUT
MPRE90-357

Notes

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CIM—The Human Element

- U.S.
 - Technology as a fix
- Japan
 - Technology plus people

INPUT
MPRE90-358

Notes



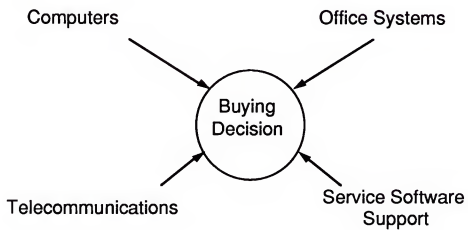
V.P. Humatics

INPUT
MPRE90-359

Notes



Complexity



INPUT
MPRE90-360

Notes



Law 1

Rate of supply >
rate of absorption

INPUT
MPRE90-361

Notes

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IS Trends

- IS to reduce costs
- IS for competitive advantage
- Mission-critical systems
- Inter-enterprise systems
- Integrated customer-oriented systems

INPUT
MPRE90-362

Notes

1. The first part of the document is a list of names and addresses of the members of the committee.

2. The second part of the document is a list of names and addresses of the members of the committee.

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Next Generation of DBMSs

- Distributed/networked
- Interconnected
- Relational +
- Information-oriented
- Hardware-assisted

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MPRE90-363

Notes

115

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Strategic Values

- Information
- Information systems (IS)
- Information technology (IT)

INPUT
MPRE90-364

Notes

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Without Change There is No Benefit from IS

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MPRE90-365

Notes

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice to ensure transparency and accountability.

2. The second section outlines the various methods used to collect and analyze data. It highlights the use of both qualitative and quantitative approaches to gain a comprehensive understanding of the subject matter.

3. The third part of the document details the results of the study. It shows that there is a significant correlation between the variables being examined, which supports the initial hypothesis.

4. The final section provides a conclusion and offers recommendations for future research. It suggests that further exploration is needed to address the limitations of the current study and to investigate the underlying causes of the observed phenomena.

Corporate Organization

- IT and IS will change the organization
- How will it operate?
- People
 - How many?
 - When?
 - What skills?

INPUT
MPRE90-366

Notes



Limits to Growth

- Absorption rate
 - Implementation
 - Education and training
 - Organization changes
 - Resistance to change
 - Logistics

INPUT
MPRE90-367

Notes



Buying Process Changing

- Involves
 - Users
 - IS management
 - Finance
 - Corporate management
- More specialists

INPUT

MPRE90-368

Notes

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IS Issues

- Reporting structure
- Scope of responsibility
- Budgetary authority
- Senior management people expectations

INPUT
MPRE90-369

Notes

Development

- Where performed?
- By whom?

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MPRE90-370

Notes

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Telecommunications

- Responsibility?
- Integration?

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MPRE90-371

Notes



Internal IS Considerations

- Who owns the data?
- Who gets benefit from its use?
- Is information an "asset"? Or is it free?

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MPRE90-372

Notes



Other Issues

- Education and training
- Standards and policies

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Notes

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Make vs. Buy

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Notes

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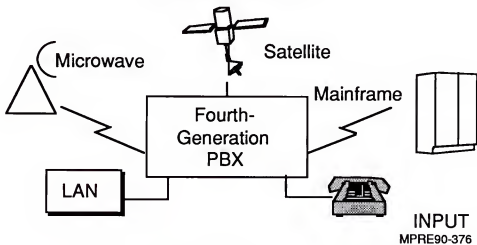
**Micro-Mainframe
vs.
Micro-LAN-Mainframe
vs.
Micro-Mini-Mainframe**

INPUT
MPRE90-375

Notes



Fourth-Generation PBX: The Voice/Data Manager of the Future



Notes

The Network Will Become the System

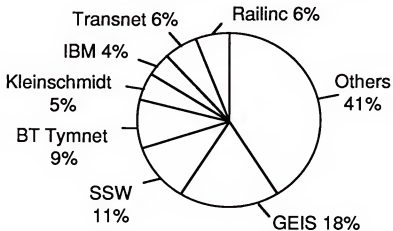
- Implications for users
 - Nodes are almost equal in power
 - Telecommunications skills are vital
 - IS management at many nodes
 - More complex systems design

INPUT
MPRE90-377

Notes



EDI Network Services Market Shares



Excludes private networks, EMC, interface, federal

INPUT
MPRE90-378

Notes

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

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MPRE90-379

Notes

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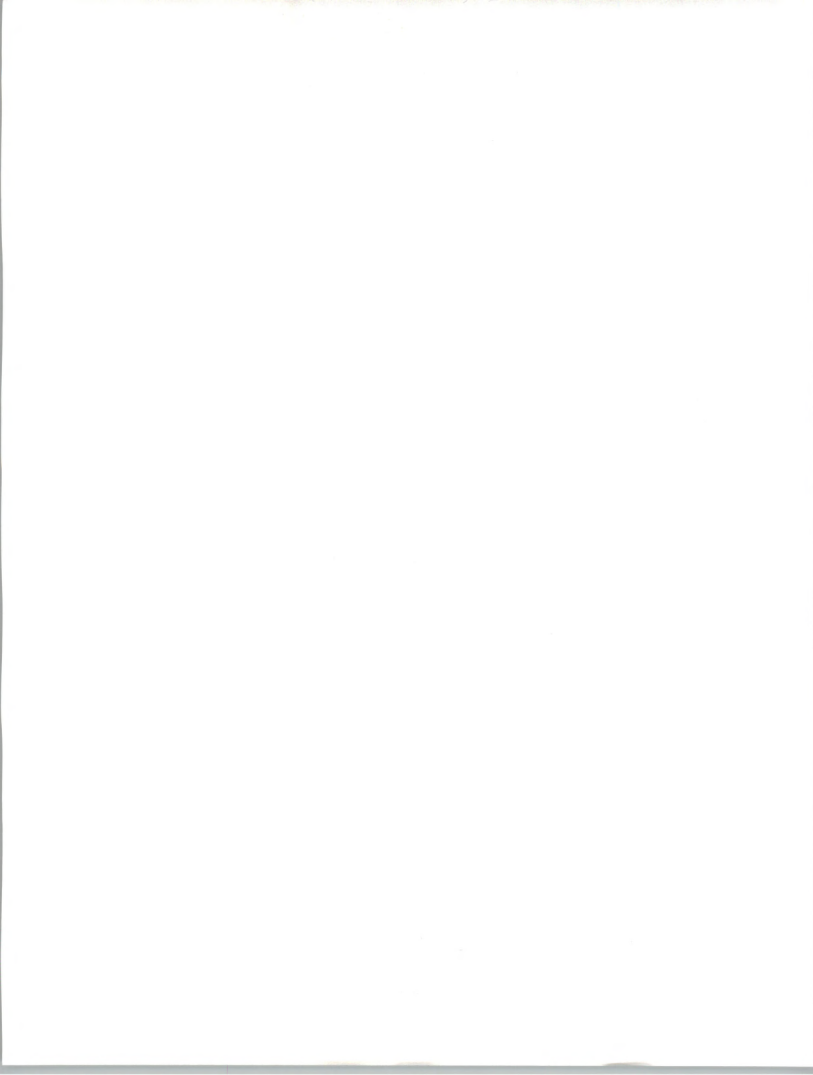
Fundamental Driving Forces

Key Business Trends:

- Shorter product life cycles
- More customization/specialization
- Narrower market segments
- Higher impact of technology
- More competition from overseas vendors

INPUT
MPRE90-380

Notes



Blocking Factors

- Infrastructure gridlock
- Lack of qualified in-house personnel
- Existing applications portfolio
- Organizational response time

Create opportunities for the information services industry

INPUT
MPRE90-381

Notes



Technology Trends

- Not a driving force
- Evolutionary vs. revolutionary
- Three phases of technology application
 - Comparative advantage
 - Comparative parity
 - Comparative necessity

INPUT
MPRE90-382

Notes

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Key Future Trends—Impact on IS

Trend	Impact on IS
Business integration— within companies	Centralization of infrastructure planning
Business integration— between companies	
Decentralization of technology	

INPUT
MPRE90-383

Notes



Key Future Trends—Impact on IS

Trend	Impact on IS
Increasing use of communications	Network view of the corporation
Emphasis on business planning	Decreased involvement in operations

INPUT
MPRE90-384

Notes



Information Services Industry Trends

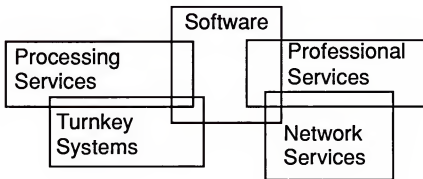
INPUT
MPRE90-385

Notes



IS Market Structure—1980s

INPUT's View



INPUT
MPRE90-386

Notes



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Market Forecasts 1989-1994

INPUT
MPRE90-387

Notes

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Impact of Equipment Slowdown on Information Services

- Information services will lag
Equipment
- Selective downturn
 - Mainframe-related
 - Minicomputer-related

INPUT
MPRE90-388

Notes



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
MPRE90-389

Notes

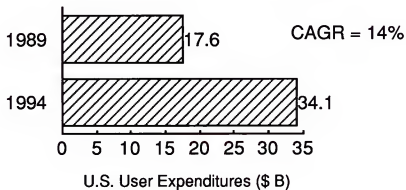
Impact of Equipment Slowdown (Short-Term)

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

INPUT
MPRE90-390

Notes

Professional Services Market Forecast

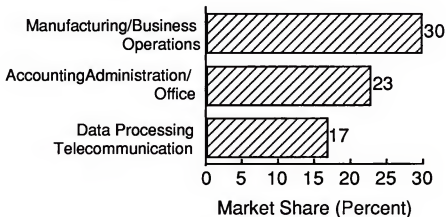


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Notes

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Professional Services Expenditures by Application Area

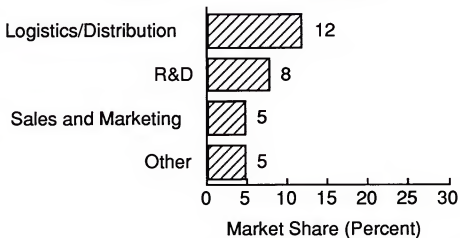


INPUT
MPRE90-392a

Notes



Professional Services Expenditures by Application Area



INPUT
MPRE90-392b

Notes

Professional Services Major Trends

- New technology creates demand
 - Conversions
 - Knowledge-based systems
 - Cooperative processing
 - Networking
 - C++
 - Image processing
 - Multimedia systems

INPUT
MPRE90-393

Notes

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

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

* INPUT Estimates

INPUT
MPRE90-394

Notes

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

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

* INPUT Estimates

INPUT
MPRE90-395

Notes

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

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

* INPUT Estimates

INPUT
MPRE90-396

Notes



Opportunities and Recommendations

- Specialize
- Develop alliances within other delivery modes
- Enhance education and training offerings
- Follow standards and regulatory processes
- Monitor new technologies

INPUT
MPRE90-397

Notes

Processing Services Opportunities

- 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
MPRE90-400

Notes



Transaction Processing

- Major Trends
 - Continuing trend for users "outsourcing"
 - Customer inertia
 - Vendor ability to deliver proven results quickly
 - Strong vendor positions in specific niches
 - Continual improvement in workstation/PC price performance

INPUT
MPRE90-401

Notes



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
MPRE90-402

Notes

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
MPRE90-403

Notes



Network/Electronic Information Services Market—Driving Forces

- PC population
- Consumer information services
- ISDN
- EDI popularity
- Wide-area networking

INPUT
MPRE90-404

Notes



Network/Electronic Information Services Market—Inhibiting Forces

- Data overload
- CD-ROM as alternative
- Profitability questions

INPUT
MPRE90-405

Notes



Software Products

INPUT
MPRE90-407

Notes

Software Products Market Issues

- Hardware and software development moving toward synchronization
- Software vendors promoting a number of "de facto" standards
- Technical, not market, differentiation

INPUT
MPRE90-408

Notes

the model. The model is run with a 10-day time step, and the time series of the model output are averaged over the 10-day period. The model output is then compared to the observed time series of the same variable. The model output is compared to the observed time series using the root mean square error (RMSE) and the correlation coefficient (CC).

The RMSE is defined as the square root of the mean square error (MSE). The MSE is defined as the mean of the squared differences between the model output and the observed time series. The CC is defined as the ratio of the covariance between the model output and the observed time series to the product of the standard deviations of the model output and the observed time series.

The RMSE and CC are used to evaluate the performance of the model. A lower RMSE and a higher CC indicate a better model performance. The RMSE and CC are calculated for each variable and for each month. The RMSE and CC are also calculated for the entire year.

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Software Products Market Issues

- Software complexity increasing
- Development resources decreasing
- Product life cycles
- Capital supply constraints
- Redundant software products

INPUT
MPRE90-409

Notes



Vendor-Related Driving Forces

- Computer equipment
 - Link disparate product lines
 - Leverage system software
 - Leverage 3rd party software relationships
- Computer software
 - Leverage software development efforts
 - Maximize equipment vendor relationships

INPUT
MPRE90-410

Notes

Major Vendors' Shares of Systems Software Market—1988

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

* INPUT Estimates

INPUT
MPRE90-411

Notes

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Major Vendors' Shares of Systems Software Market—1988

Company Name	1988 US Revenue (\$ M)*	Market Share (Percent)
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

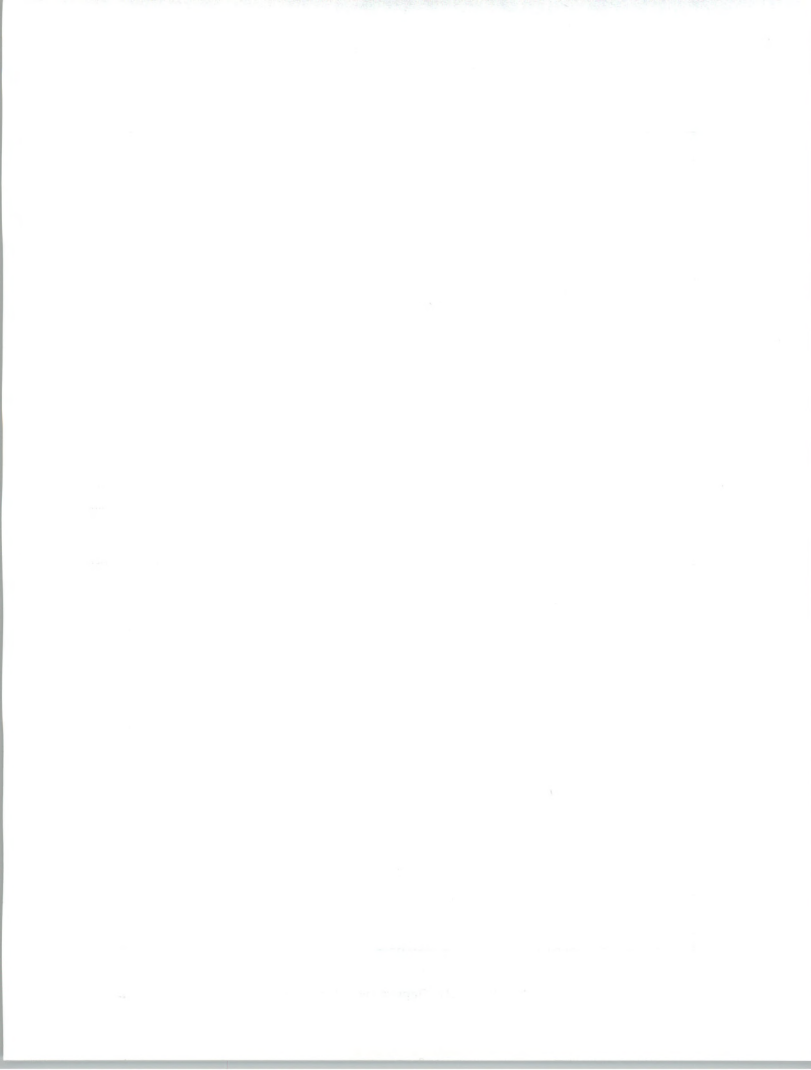
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MPRE90-412

Notes

Vertical Markets

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MPRE90-413

Notes



Conclusions

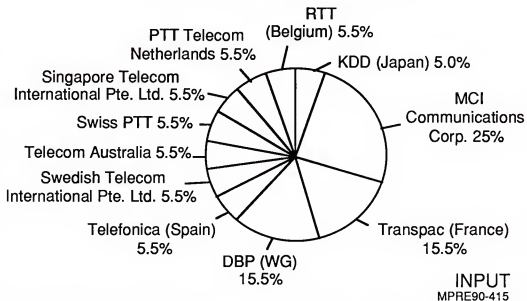
- Double-digit annual growth for all vendors no longer "automatic"
- Worldwide markets offer real opportunities
- All vendors need alliances
- Consolidation will continue
- Standards play key role
- Users want total solutions

INPUT
MPRE90-414

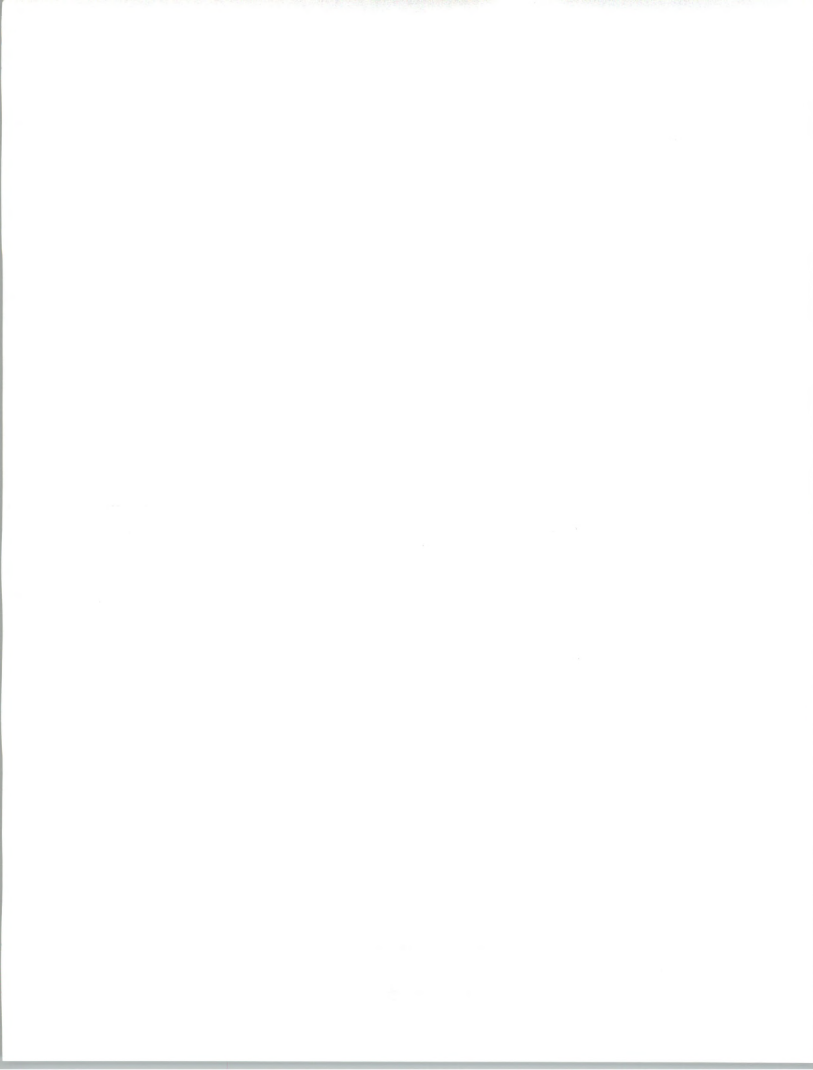
Notes



INFONET Ownership



Notes



Application Development Key Issues

Issue	Resp.
Productivity & quality	38
Use of technology	16
Responsiveness	14
Development process	11

INPUT
MPRE90-416

Notes

MPRE89 266

Applications Development Summary

- Backlog will never go away
- External resources becoming more common

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MPRE90-417

Notes

MPRE89 268

Applications Development Summary

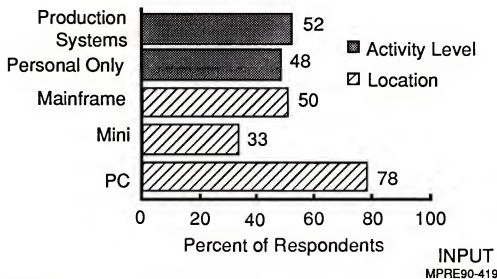
- End user becoming a force and alternative
- Relational DBMS use in full bloom
- Data Management Will Have to Change

INPUT
MPRE90-418

Notes

MPRE89 269

Development by the End User



Notes

MPRES81 267

CASE Tools

New Development

Lifecycle Management	
Design	Code Generation
Documentation	

Maintenance

Translators Analyzers Comparators Restructurers
--

INPUT
MPRE90-420

Notes

MPRE89 106

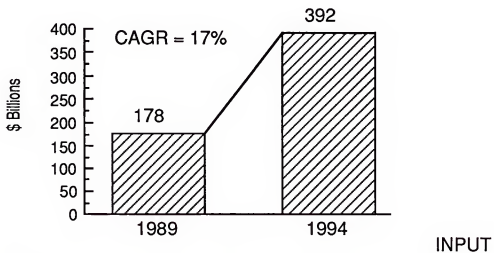
Application Development/CASE

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MPRE90-421

Notes

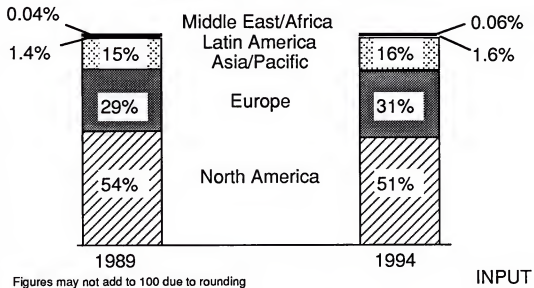


Worldwide Market Summary Five-Year Forecast 1989-1994



Notes

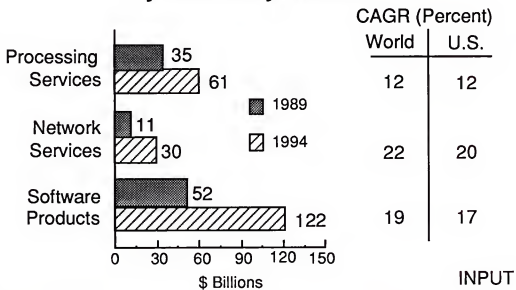
Worldwide Market Summary Market Distribution



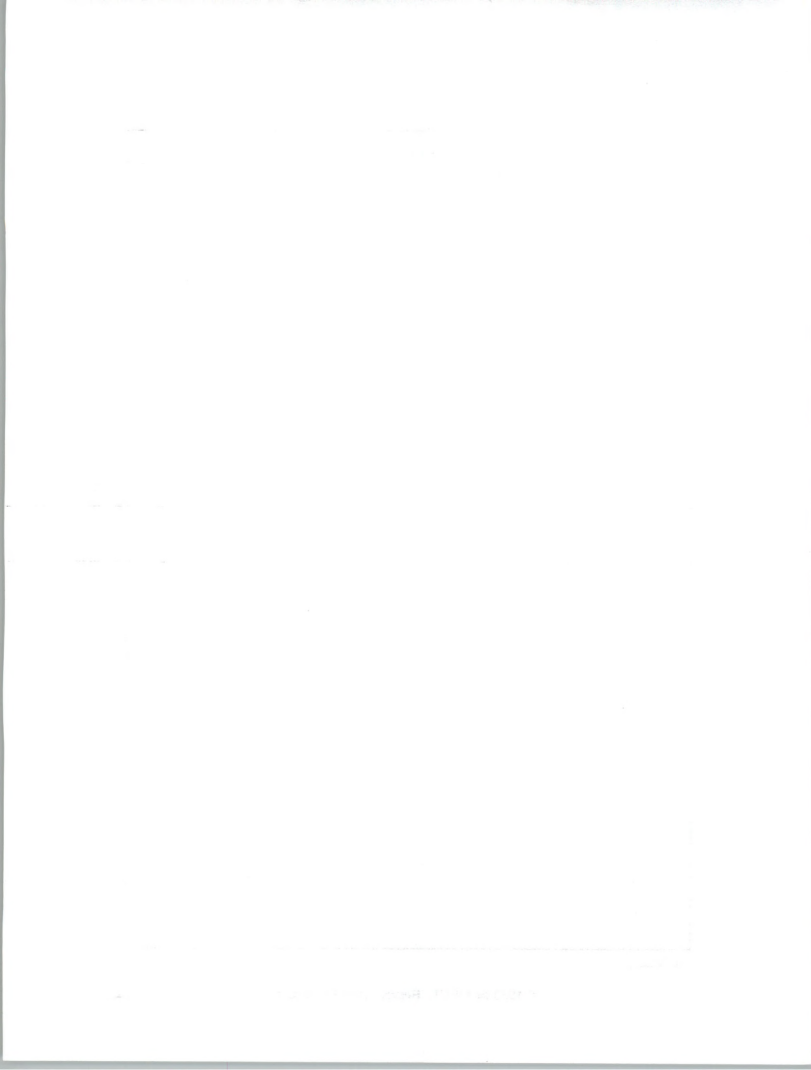
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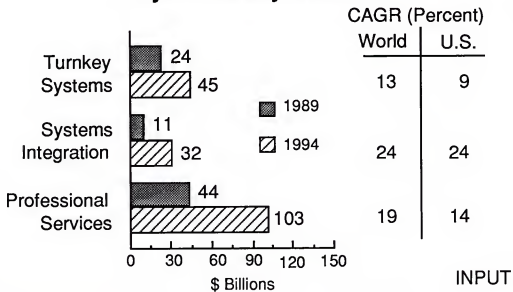
Worldwide Market Summary by Delivery Mode



Notes



Worldwide Market Summary by Delivery Mode



Notes

