SOFTWARE PRODUCT DEVELOPMENT

• • •

TELECOMMUNICATIONS
A Top Down View

Presented by: Peter Cunningham, President

INPUT
1280 Villa Street, Mountain View
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(415) 961-3300

Software Product Development

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NOTES:

JPN-1

Software Products
- An Opportunity -

- Largest Delivery Mode in 1988
- Growing at Highest Annual Rate
- Provides the Maximum Benefit of the Computer
- Becoming Easier to Use While More Sophisticated
- Development of Software Is Key

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Software Products Market Size

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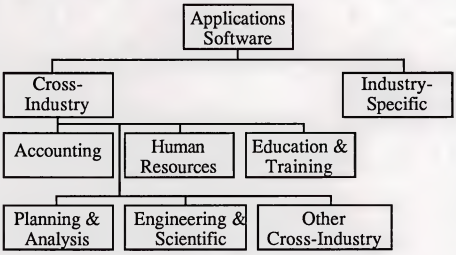
Software Market Structure



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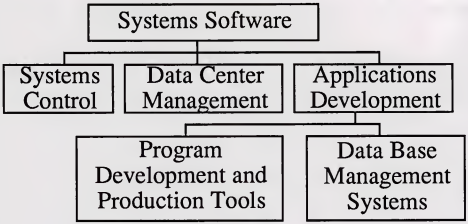
Systems Software Market Segments



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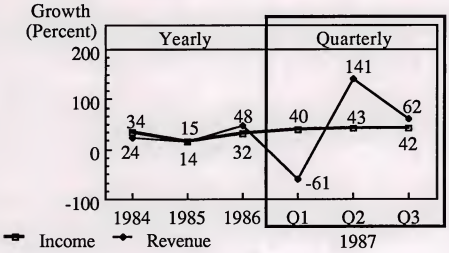
Public Software Products Vendors



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JPN-12

Software Products
Largest Vendors - 1986

	($ Millions)
IBM	2,900
DEC	618
HP	225
Lotus	218
Computer Associates	159
Ashton-Tate	158

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MPRE-97 JPN-13

Software Products
Largest Vendors - 1986
(Non-Manufacturers)

	($ Millions)
Lotus	218
Computer Associates	159
Ashton-Tate	158
Microsoft	151
Management Science	145

Note: CAI plus UCCEL was #1 with $272 million

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Software Development

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Software Product Development
Key Components

Macro Level

- Applications Development Tools
- CASE
- Standards Implementation
- Networking

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Software Product Development
Key Components

Micro Level

- Increased Functionality
- Expert System Shells
- Portability
- Connectivity
- Open Architecture

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Software Engineering Key Factors

- Address Productivity
- Minimize Cost
- Control Risk
- Manage Complexity
- Zero Defect
- Respond to Need for Integration

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Software Product Alternatives

Factor	Application Packages	ADT "In-House"	CASE
Role	Fixed-Function Off-the-Shelf	Productivity	Automation/ Standards
Customization	Limited	High	High
Integration	High	Moderate	High
Performance	Moderate	Moderate	?
Maintenance	Lack of Control	Control	Control+
Documentation	Variable	Variable	Automatic

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Application Development Tools Driving Forces

- Commitment to Competitive Edge Systems
- Central Role of Connectivity
- Increasing Appeal of Application Software Products
- Popularity of 80386-based Micro

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Application Development Tools Trends

- Higher Proportion of End User Developed Systems
- More Business-Driven Analysis
- Tool Integration Increasing
- AI Additives Becoming More Common

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Standards Impact

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IBM Standards - Controlling the Environment

- WINDOWS: Common Menus, Icons
- SQL: User Query
- SNA: Intercompany Communication

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IBM Standards - Controlling the Environment

- Token Ring LAN: Intra-Company Communications
- OSI: Network Design Normalization
- SAA: Application Design and User Interfaces: Bringing It All Together

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IBM's SAA

- Extensive Effort/Company Commitment
- Provide Homogeneous Environment
- New Line of Business Level
  - Called "Programming Systems"
  - Under Earl Wheeler (V.P.)

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SAA Components Common User Access

- Physical Consistency
  Keyboard Layout, Mouse Usage
- Syntactical Consistency
  Sequence and Order of Elements
- Semantic Consistency
  Common Command Meanings

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SAA Components Common Programming Interfaces

Languages

- Fortran, Cobol, C
- Applications Generator—CSP
- Procedures Language—REXX

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SAA Components Common Programming Interfaces

Services

- Data Base Interface—SQL, SQL/DS
- Query Interface—QMF
- Dialog Interface—ISPF, EZ-VU
- Presentation Interface—GDDM, Presentation Manager

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SAA Components Common Communications Support

Data Streams
- 3270, DCA, IPDS

Applications Services
- SNA Distribution
- Document Interchange Architecture
- SNA Network Management

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SAA Components Common Communications Support

Session Services
- LU Type 6.2 (Application-to-Application)

Network
- Type 2.1 (Peer-to-Peer)

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SAA Components Common Communications Support

Data Link Controls

- SDLC
- Token-Ring
- X.25

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SAA Components Common Applications

Initial Focus

- Integrated Office and Decision Support
  - Document Processing
  - Document Library
  - Electronic Max
  - Decision Support

Future Focus

- Industry-Specific Applications

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Reaction to SAA

Software Vendors' View

- Provides Direction and Consistency
- Provides Known Environment
- Reduce Programming Costs
- Increase Productivity

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Reaction to SAA

Hardware Vendors' View

- Long Overdue
- Not Complete
- Not Here
- Very Ambitious

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Data Base Management Systems (DBMS)

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Evolution of Data Base Management Systems

Hierarchical →	Relational →	Distributed
Highly Structured	Simply Structured, i.e., Tables	Simply Structured
Somewhat Inflexible	Very Flexible	Very Flexible
Difficult to Use	Easy to Use	Easy to Use

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Evolution of Data Base Management Systems

Hierarchical →	Relational →	Distributed
Reasonable Performance	Minimal Performance Although Improving	Excellent Performance
Acceptable Functionality	Excellent Functionality	Totally Integrated Functionality
Centralized Data	Centralized Data	Decentralized Data

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DBMS Futures

- Distributed/Networked/Interconnected

  Dictionary Integrity, Data Integrity, Performance, Reliability, Platforms Supported (Transparency)

- Relational + Functionality
- High-Performance
- Standards Support
- Portability
- Open Architecture

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Characteristics of a DDBMS

- Distributed Query and Update Capability
- Network Data Management
- Elimination of Redundant Data Storage
- Platform Independence
- End User Transparency

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DBMS Architecture Breakdown by Platform, 1987-1992

	Micro		Mini		Mainframe	
	1987	1992	1987	1992	1987	1992
Hierarchical	90	50	70	20	89	35
Relational	9	35	27	60	10	55
Distributed	1	15	3	20	1	10

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Program Development Tools (PDT)

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Languages

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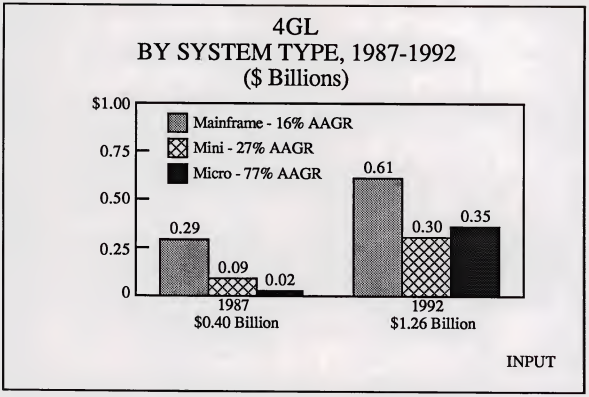

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Advanced Products

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Computer Aided Software Engineering (CASE)

- Forces Disciplined Response to System Development
- Interactive, Graphic Design, Development Testing
- Tools and Process for the Entire Software System Life Cycle
- Support COBOL, PL/1, C, ADA
- Requires Selection of a Development Methodology

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Departmental Systems

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Connectivity

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Objectives of Connectivity

- Platform Integration
- Physical Linkage to Move Information

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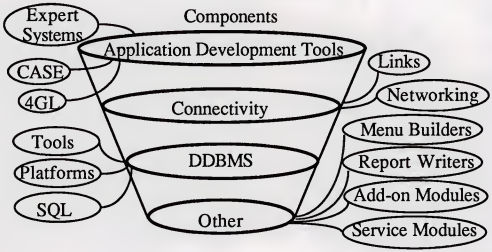
Software Product Development—Overview



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Development Strategies

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Integration Strategies

- Add-in Required Functionality
- Support Standards
- Develop Alliances
- Support Common Piece Parts
- Provide User Customization Capability
- Develop with "Portable" Code

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Software Products
Macro Issues, 1987-1992

- Need to Integrate Applications Systems Installed
- Key Sales Points Are:
  - Productivity
  - Performance
  - Cost Reduction

  > Competitive Advantage
- Distributed Computer Resources
  - Tie Sites Together
  - Integrate Local Site Systems

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Software Product Outlook

- Big-Play Market
- Life-Cycle Contraction
- Professional Services Thrust
- Opportunities
  - Artificial Intelligence
  - Productivity Tools
  - Niche Markets

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Software Products
Hot Areas

- CASE
- Electronic Publishing
- Executive Information Systems (EIS)
- Data Center Management Tools
- Data Base Management Systems

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About INPUT

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

The company carries out continuous and in-depth research. Working closely with clients on important issues, INPUT's staff members analyze and interpret the research data, then develop recommendations and innovative ideas to meet clients' needs. Clients receive reports, presentations, access to data on which analyses are based, and continuous consulting.

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Formed in 1974, INPUT has become a leading international planning services firm. Clients include over 100 of the world's largest and most technically advanced companies.

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TELECOMMUNICATIONS

A TOP DOWN VIEW

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Voice/Data Integration
+
ISDN

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USM1-AG-2

Purpose

Update Research

Identify Current Status

Identify Strategic Considerations

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USM1-AG-3

Research Update

1985

Voice/Data ⟵ Integration

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Research Update

1985

Voice/Data ← Integration

1987

Integration → Network

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Research Update

1985	1987	1989 →
	Integration	
Voice	Voice	Voice
Data	Data	Data
	Graphics	Graphics
	Video	Video
		?

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NOTES:

USM1-AG-6

Current Status

Trends and Directions

Management Understanding

Market

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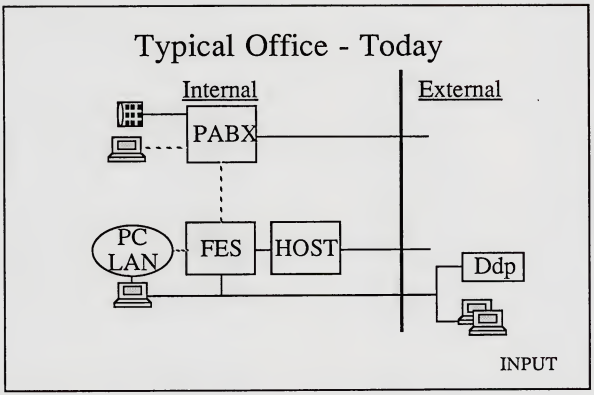
USM1-AG-7



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USM1-AG-8

Trends and Directions
Driving Forces

Factors	Application Voice/Data	Application ISDN
New Applications	I	
Cost Savings	I	
Improved Quality	I	
New Technology	E	E

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NOTES:

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Trends and Directions
Driving Forces

Factors	Application: Voice/Data	Application: ISDN
New Services		E
Competition	E	E
Standards		E
Greater Bandwidth		I

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USM1-AG-9a

Trends and Directions
Driving Forces

Factors	Application Voice/Data	Application ISDN
Competitive Advantage	I	I
Business Globalization		E
Systems Integration	I	I

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Trends and Directions

Primary Integration Methods

- PABX
- Public Network
- T1 Multiplexer/Switch
- ISDN

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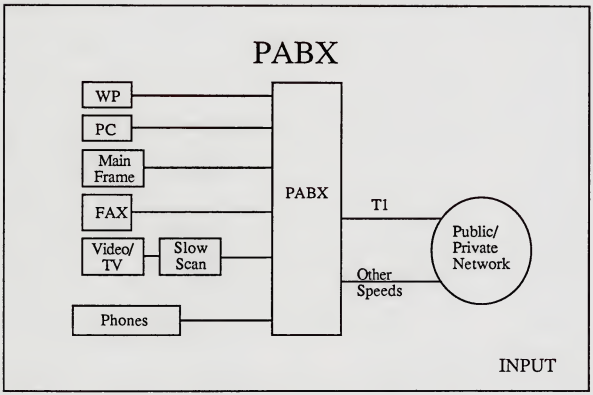

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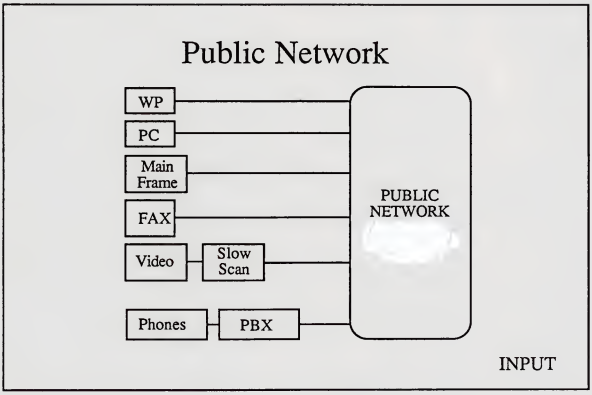

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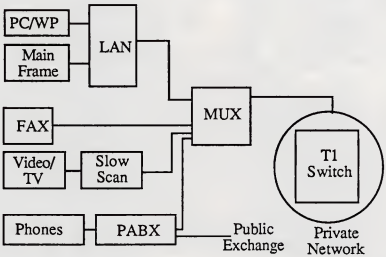
T1 Multiplexer/Switch



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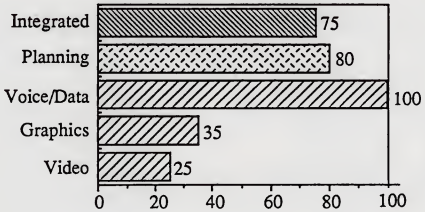
USM1-AG-13

Management Understanding

Voice/Data Integration (Percent)



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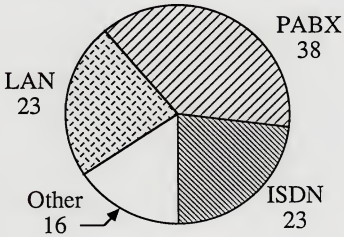
Management Understanding

Voice/Data Integration (Percent)



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NOTES:

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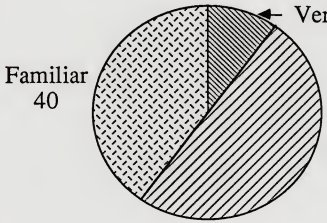
Management Understanding

ISDN Awareness (Percent)



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NOTES:

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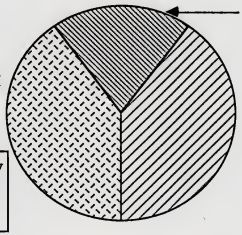
Management Understanding

ISDN Importance (Percent)



70% -Very Important Future

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NOTES:

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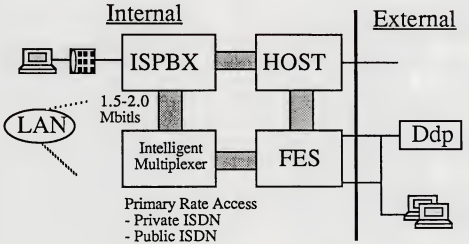
Typical Office Configuration-Late 1990s



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STRATEGIC CONSIDERATIONS

WHAT IS INTEGRATION?

INPUT

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USM1-AG-23

Strategic Considerations

No Single Solution

User Requirements Vary

No Dominant Method

Development Focus

- Primarily External
- Bigger/Faster Highways

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USM1-AG-25

Strategic Considerations - Present

Short Term
- Reduce Operating Costs

Hardware
- Fiber Optics
- Multiplexers
- PABX

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NOTES:

USM1-AG-26

Strategic Considerations - Present

Single Use Islands
- Departmental LANS

Future Value Question
- Increased Data
- Increased Cost
- Strategic Use

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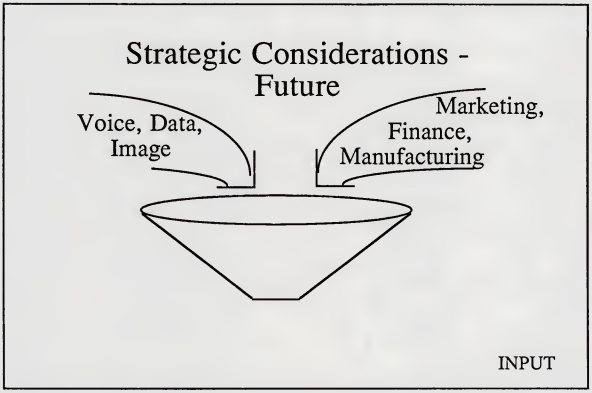
NOTES:

USM1-AG-26a



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Strategic Considerations

Voice/Data Integration

Systems Integration

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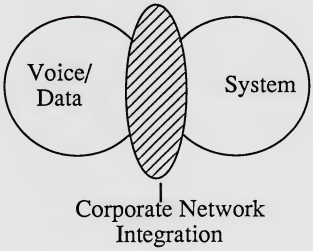
Strategic Considerations



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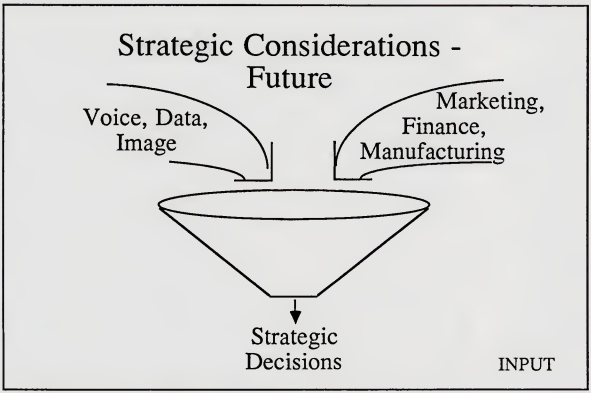

NOTES:

USM1-AG-27a

Research Update

1985	1987	1989 →
	Integration	
Voice	Voice	Voice
Data	Data	Data
	Graphics	Graphics
	Video	Video
		Systems

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NOTES:

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SOFTWARE PRODUCT DEVELOPMENT

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TELECOMMUNICATIONS
A Top Down View

Presented by: Peter Cunningham, President

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Software Product Development

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Software Products
- An Opportunity -

- Largest Delivery Mode in 1988
- Growing at Highest Annual Rate
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NOTES:

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Software Products Market Size

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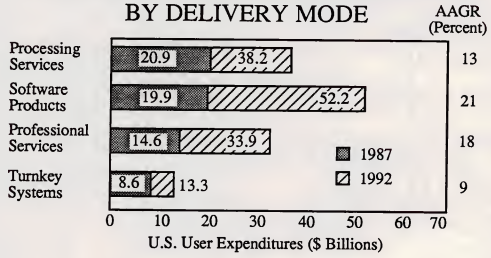
JPN-3



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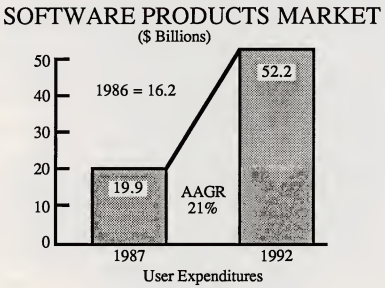

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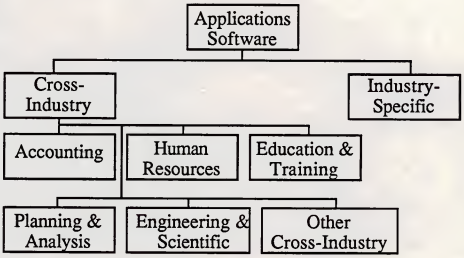
Software Market Structure



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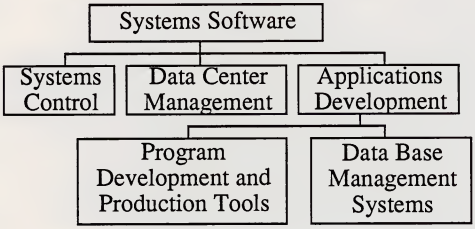
Systems Software Market Segments



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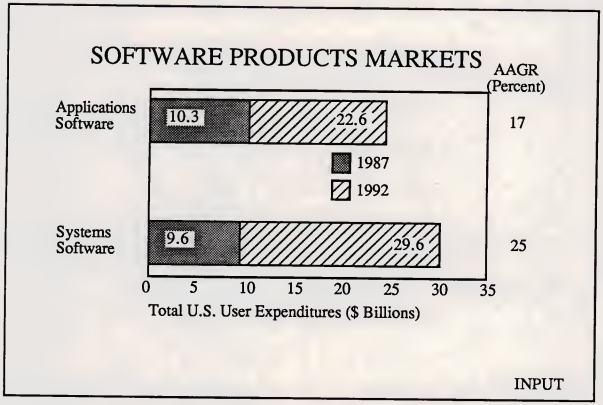

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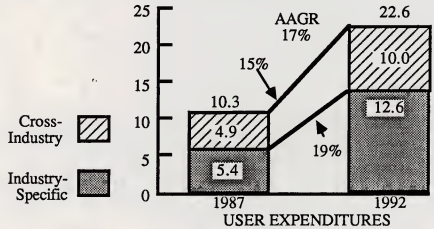

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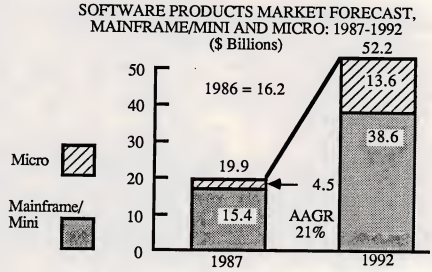

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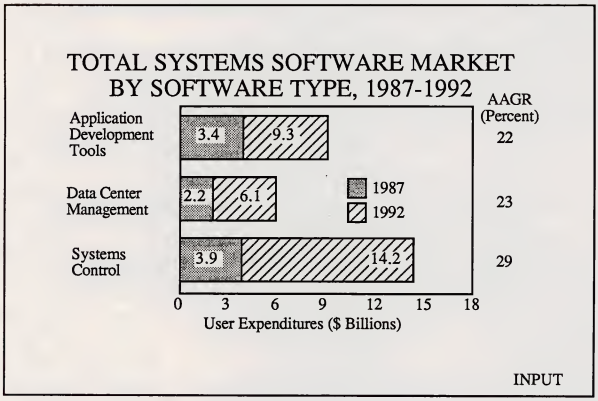

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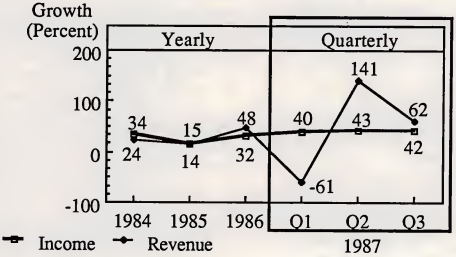
Public Software Products Vendors



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Lotus	218
Computer Associates	159
Ashton-Tate	158

INPUT

NOTES:

MPRE-97 JPN-13

Software Products
Largest Vendors - 1986
(Non-Manufacturers)

	($ Millions)
Lotus	218
Computer Associates	159
Ashton-Tate	158
Microsoft	151
Management Science	145

Note: CAI plus UCCEL was #1 with $272 million

INPUT

NOTES:

MPRE-98 JPN-14

Software Development

INPUT

NOTES:

JPN-15

Software Product Development
Key Components

Macro Level

- Applications Development Tools
- CASE
- Standards Implementation
- Networking

INPUT

NOTES:

JPN-16

Software Product Development
Key Components

Micro Level

- Increased Functionality
- Expert System Shells
- Portability
- Connectivity
- Open Architecture

INPUT

NOTES:

JPN-17

Software Engineering Key Factors

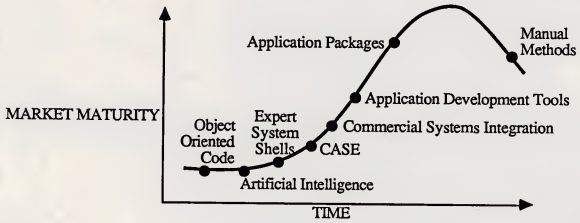
- Address Productivity
- Minimize Cost
- Control Risk
- Manage Complexity
- Zero Defect
- Respond to Need for Integration

INPUT

NOTES:

JJJJ-MC2-5 JPN-18

SOFTWARE DEVELOPMENT ALTERNATIVES (LIFE CYCLES)



INPUT

NOTES:

JJJJ-MC2-6

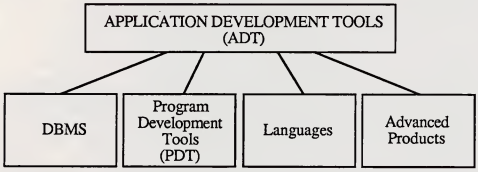
Software Product Alternatives

Factor	Application Packages	ADT "In-House"	CASE
Role	Fixed-Function Off-the-Shelf	Productivity	Automation/ Standards
Customization	Limited	High	High
Integration	High	Moderate	High
Performance	Moderate	Moderate	?
Maintenance	Lack of Control	Control	Control+
Documentation	Variable	Variable	Automatic

INPUT

NOTES:

JJJJ-MC2-7JPN-20



- DBMS
- Data/ Dictionaries

- Application Generators
- Automatic Documentation
- Debugging Aids
- Conversion Tools

- Compilers
- Assemblers
- 4/5/FGL

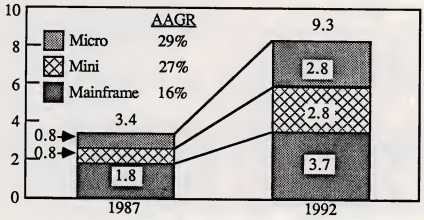
- Expert Systems
- CASE

INPUT

NOTES:

JJJJ-MC2-8

APPLICATION DEVELOPMENT TOOLS BY SYSTEM TYPE, 1987-1992 ($ Billions)



INPUT

NOTES:

AENG-8a

Application Development Tools Driving Forces

- Commitment to Competitive Edge Systems
- Central Role of Connectivity
- Increasing Appeal of Application Software Products
- Popularity of 80386-based Micro

INPUT

NOTES:

JJJJ-MC2-9 JPN-23

Application Development Tools Trends

- Higher Proportion of End User Developed Systems
- More Business-Driven Analysis
- Tool Integration Increasing
- AI Additives Becoming More Common

INPUT

NOTES:

JJJJ-MC2-10 JPN-24

Standards Impact

INPUT

NOTES:

JJJJ-MC2-11 JPN-25

IBM Standards - Controlling the Environment

- WINDOWS: Common Menus, Icons
- SQL: User Query
- SNA: Intercompany Communication

INPUT

NOTES:

JJJJ-MC2-12 JPN-26

IBM Standards - Controlling the Environment

- Token Ring LAN: Intra-Company Communications
- OSI: Network Design Normalization
- SAA: Application Design and User Interfaces: Bringing It All Together

INPUT

NOTES:

JJJJ-MC2-13 JPN-27

IBM's SAA

- Extensive Effort/Company Commitment
- Provide Homogeneous Environment
- New Line of Business Level
  - Called "Programming Systems"
  - Under Earl Wheeler (V.P.)

INPUT

NOTES:

JPN-28

SAA Components Common User Access

- Physical Consistency
  Keyboard Layout, Mouse Usage
- Syntactical Consistency
  Sequence and Order of Elements
- Semantic Consistency
  Common Command Meanings

INPUT

NOTES:

JPN-29

SAA Components Common Programming Interfaces

Languages

- Fortran, Cobol, C
- Applications Generator—CSP
- Procedures Language—REXX

INPUT

NOTES:

JPN-30

SAA Components Common Programming Interfaces

Services

- Data Base Interface—SQL, SQL/DS
- Query Interface—QMF
- Dialog Interface—ISPF, EZ-VU
- Presentation Interface—GDDM, Presentation Manager

INPUT

NOTES:

JPN-30a

SAA Components Common Communications Support

Data Streams
- 3270, DCA, IPDS

Applications Services
- SNA Distribution
- Document Interchange Architecture
- SNA Network Management

INPUT

NOTES:

JPN-31

SAA Components Common Communications Support

Session Services
- LU Type 6.2 (Application-to-Application)

Network
- Type 2.1 (Peer-to-Peer)

INPUT

NOTES:

JPN-31a

SAA Components Common Communications Support

Data Link Controls

- SDLC
- Token-Ring
- X.25

INPUT

NOTES:

JPN-31b

SAA Components Common Applications

Initial Focus

- Integrated Office and Decision Support
  - Document Processing
  - Document Library
  - Electronic Mail
  - Decision Support

INPUT

NOTES:

JPN-32

Reaction to SAA

Software Vendors' View

- Provides Direction and Consistency
- Provides Known Environment
- Reduce Programming Costs
- Increase Productivity

INPUT

NOTES:

JPN-33

Reaction to SAA

Hardware Vendors' View

- Long Overdue
- Not Complete
- Not Here
- Very Ambitious

INPUT

NOTES:

JPN-33a

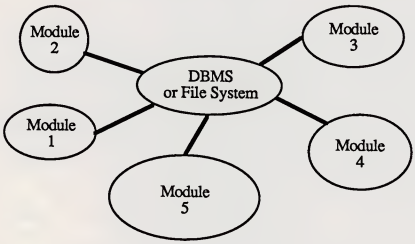
Data Base Management Systems (DBMS)

INPUT

NOTES:

JJJJ-MC2-14 JPN-34

TYPICAL LOOSELY COUPLED SYSTEM



INPUT

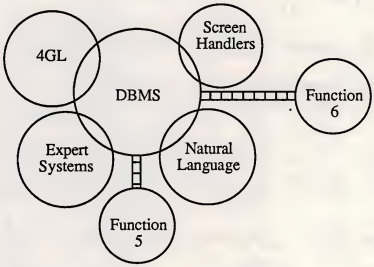
NOTES:

EVOLUTION OF SYSTEM

- Connections (Implicit)
- Reformatting of Data
- Loosely Coupled

JJJJ-MC2-15

DBMS INTEGRATED SYSTEM



INPUT

NOTES:

SYSTEM DESIGNED

- Data Integral
- Tightly Coupled
- Connections Explicit

JJJJ-MC2-16

Evolution of Data Base Management Systems

Hierarchical →	Relational →	Distributed
Highly Structured	Simply Structured, i.e., Tables	Simply Structured
Somewhat Inflexible	Very Flexible	Very Flexible
Difficult to Use	Easy to Use	Easy to Use

INPUT

NOTES:

JJJJ-MC2-17 JPN-37

Evolution of Data Base Management Systems

Hierarchical →	Relational →	Distributed
Reasonable Performance	Minimal Performance Although Improving	Excellent Performance
Acceptable Functionality	Excellent Functionality	Totally Integrated Functionality
Centralized Data	Centralized Data	Decentralized Data

NOTES:

JJJJ-MC2-18 JPN-38

DBMS Futures

- Distributed/Networked/Interconnected

  Dictionary Integrity, Data Integrity, Performance, Reliability, Platforms Supported (Transparency)

- Relational + Functionality
- High-Performance
- Standards Support
- Portability
- Open Architecture

INPUT

NOTES:

JPN-39

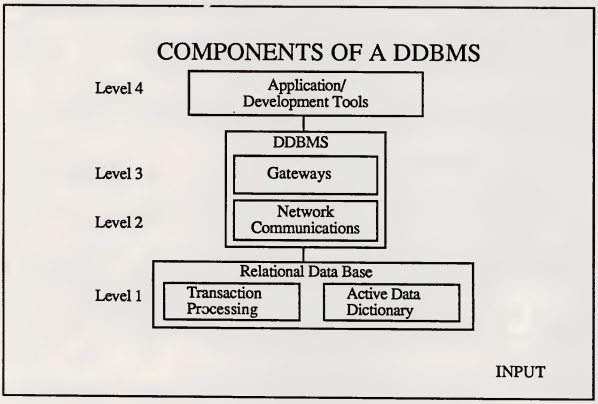
Characteristics of a DDBMS

- Distributed Query and Update Capability
- Network Data Management
- Elimination of Redundant Data Storage
- Platform Independence
- End User Transparency

INPUT

NOTES:

JJJJ-MC2-20 JPN-40



NOTES:

JJJJ-MC2-21

DBMS Architecture Breakdown by Platform, 1987-1992

	Micro		Mini		Mainframe	
	1987	1992	1987	1992	1987	1992
Hierarchical	90	50	70	20	89	35
Relational	9	35	27	60	10	55
Distributed	1	15	3	20	1	10

INPUT

NOTES:

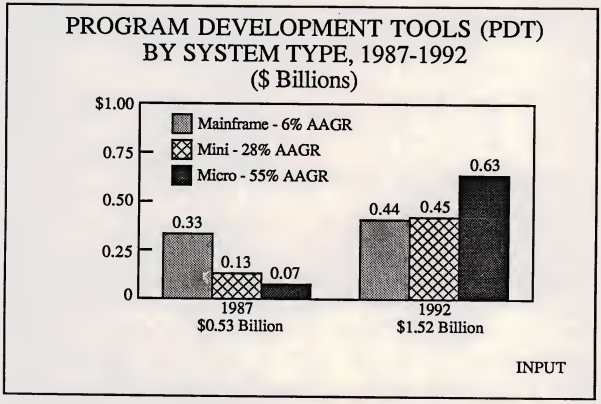
JJJJ-MC2-22 JPN-42

Program Development Tools (PDT)

INPUT

NOTES:

JJJJ-MC2-23 JPN-43



NOTES:

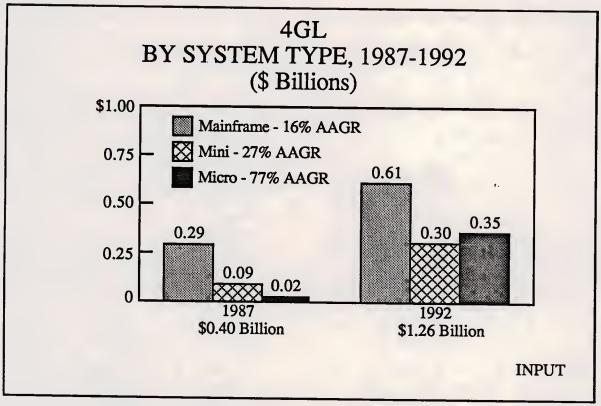
JJJJ-MC2-24

Languages

INPUT

NOTES:

JJJJ-MC2-25 JPN-45



NOTES:

JJJJ-MC2-26

Advanced Products

INPUT

NOTES:

JJJJ-MC2-27 JPN-47

Computer Aided Software Engineering (CASE)

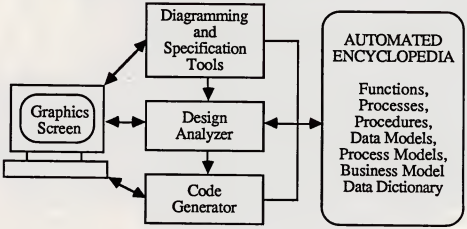
- Forces Disciplined Response to System Development
- Interactive, Graphic Design, Development Testing
- Tools and Process for the Entire Software System Life Cycle
- Support COBOL, PL/1, C, ADA
- Requires Selection of a Development Methodology

INPUT

NOTES:

JJJJ-MC2-28 JPN-48

CASE CHARACTERISTICS



INPUT

NOTES:

JJJJ-MC2-29

Departmental Systems

INPUT

NOTES:

JJJJ-MC2-30 JPN-50

Connectivity

INPUT

NOTES:

JJJJ-MC2-31 JPN-51

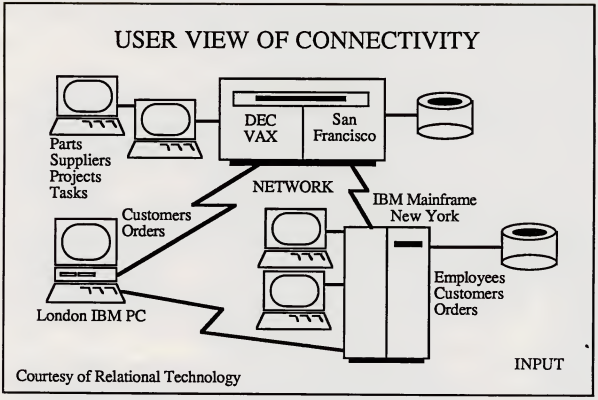
Objectives of Connectivity

- Platform Integration
- Physical Linkage to Move Information

INPUT

NOTES:

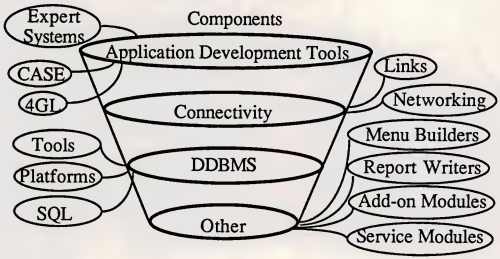
JJJJ-MC2-32 JPN-52



NOTES:

JJJJ-MC2-33

Software Product Development—Overview



INPUT

NOTES:

JPN-54

Development Strategies

INPUT

NOTES:

JPN-55

Integration Strategies

- Add-in Required Functionality
- Support Standards
- Develop Alliances
- Support Common Piece Parts
- Provide User Customization Capability
- Develop with "Portable" Code

INPUT

NOTES:

JJJJ-MC2-37 JPN-56

Software Products
Macro Issues, 1987-1992

- Need to Integrate Applications Systems Installed
- Key Sales Points Are:
  - Productivity
  - Performance
  - Cost Reduction

  > Competitive Advantage
- Distributed Computer Resources
  - Tie Sites Together
  - Integrate Local Site Systems

INPUT

NOTES:

JJJJ-MC2-38 JPN-57

VENDOR CHARACTERISTICS

Vendor Group	Thrust	Process Under-standing	Flexibility
Applications Software	Standard Package	LTD	Low
System Manufacturers	Box	Variable	Medium
Professional Services	People	Variable	High
Systems Integrators	Solution	Medium	Very High

INPUT

NOTES:

JJJJ-MC2-39

Software Product Outlook

- Big-Play Market
- Life-Cycle Contraction
- Professional Services Thrust
- Opportunities
  - Artificial Intelligence
  - Productivity Tools
  - Niche Markets

INPUT

NOTES:

JPN-59

Software Products
Hot Areas

- CASE
- Electronic Publishing
- Executive Information Systems (EIS)
- Data Center Management Tools
- Data Base Management Systems

INPUT

NOTES:

MPRE-101 JPN-60

TELECOMMUNICATIONS

A TOP DOWN VIEW

INPUT

NOTES:

USM1-AG-1

Voice/Data Integration
+
ISDN

INPUT

NOTES:

USM1-AG-2

Purpose

Update Research

Identify Current Status

Identify Strategic Considerations

INPUT

NOTES:

USM1-AG-3

Research Update

1985

Voice/Data ← Integration

INPUT

NOTES:

USM1-AG-4

Research Update

1985

Voice/Data ← Integration

1987

Integration → Network

INPUT

NOTES:

USM1-AG-5

Research Update

1985	1987	1989 →
	Integration	
Voice	Voice	Voice
Data	Data	Data
	Graphics	Graphics
	Video	Video
		?

INPUT

NOTES:

USM1-AG-6

Current Status

Trends and Directions

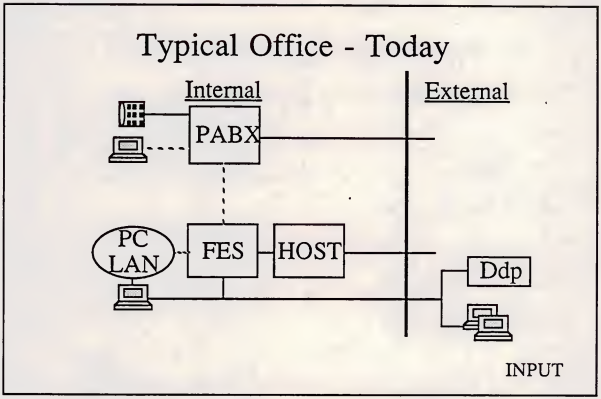
Management Understanding

Market

INPUT

NOTES:

USM1-AG-7



NOTES:

USM1-AG-8

Trends and Directions
Driving Forces

Factors	Application Voice/Data	Application ISDN
New Applications	I	
Cost Savings	I	
Improved Quality	I	
New Technology	E	E

INPUT

NOTES:

USM1-AG-9

Trends and Directions
Driving Forces

Factors	Application Voice/Data	Application ISDN
New Services		E
Competition	E	E
Standards		E
Greater Bandwidth		I

INPUT

NOTES:

USM1-AG-9a

Trends and Directions
Driving Forces

Factors	Application Voice/Data	Application ISDN
Competitive Advantage	I	I
Business Globalization		E
Systems Integration	I	I

INPUT

NOTES:

USM1-AG-9b

Trends and Directions

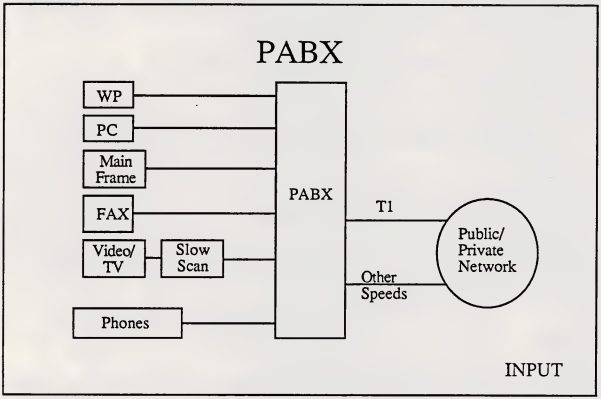
Primary Integration Methods

- PABX
- Public Network
- T1 Multiplexer/Switch
- ISDN

INPUT

NOTES:

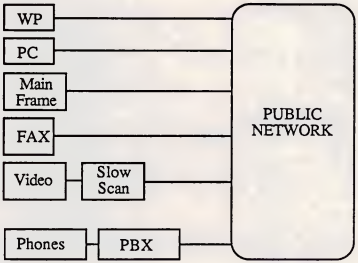
USM1-AG-10



NOTES:

USM1-AG-11

Public Network

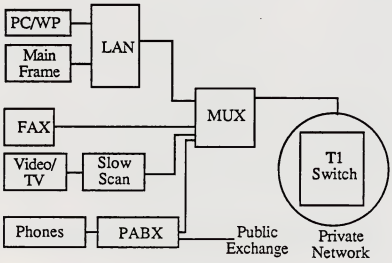


INPUT

NOTES:

USM1-AG-12

T1 Multiplexer/Switch



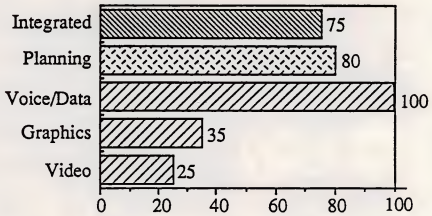
INPUT

NOTES:

USM1-AG-13

Management Understanding

Voice/Data Integration (Percent)



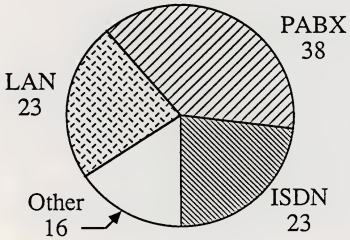
INPUT

NOTES:

USM1-AG-14

Management Understanding

Voice/Data Integration (Percent)



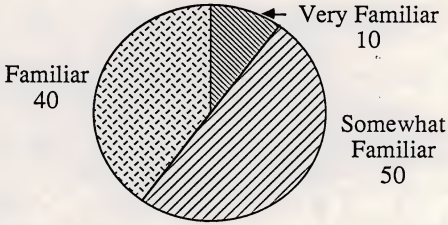
INPUT

NOTES:

USM1-AG-15

Management Understanding

ISDN Awareness (Percent)



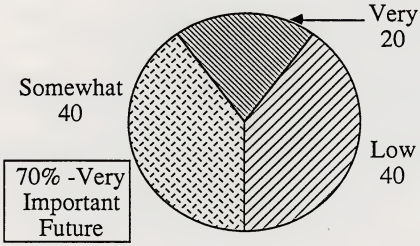
INPUT

NOTES:

USM1-AG-16

Management Understanding

ISDN Importance (Percent)

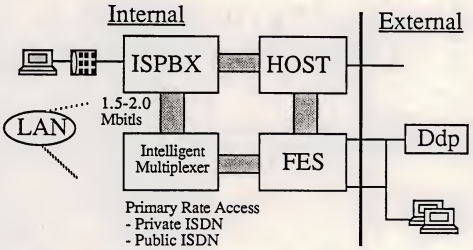


INPUT

NOTES:

USM1-AG-17

Typical Office Configuration-Late 1990s



INPUT

NOTES:

USM1-AG-20

STRATEGIC CONSIDERATIONS

WHAT IS INTEGRATION?

INPUT

NOTES:

USM1-AG-23

Strategic Considerations

No Single Solution

User Requirements Vary

No Dominant Method

Development Focus

- Primarily External
- Bigger/Faster Highways

INPUT

NOTES:

USM1-AG-25

Strategic Considerations - Present

Short Term
- Reduce Operating Costs

Hardware
- Fiber Optics
- Multiplexers
- PABX

INPUT

NOTES:

USM1-AG-26

Strategic Considerations - Present

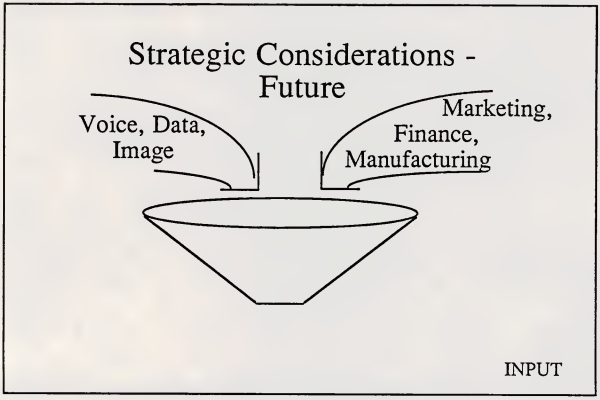
Single Use Islands
- Departmental LANS

Future Value Question
- Increased Data
- Increased Cost
- Strategic Use

INPUT

NOTES:

USM1-AG-26a



NOTES:

USM1-AG-27

Strategic Considerations

Voice/Data Integration

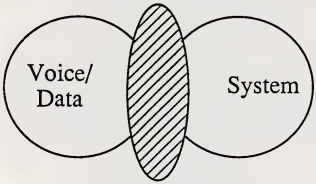
Systems Integration

INPUT

NOTES:

USM1-AG-28

Strategic Considerations

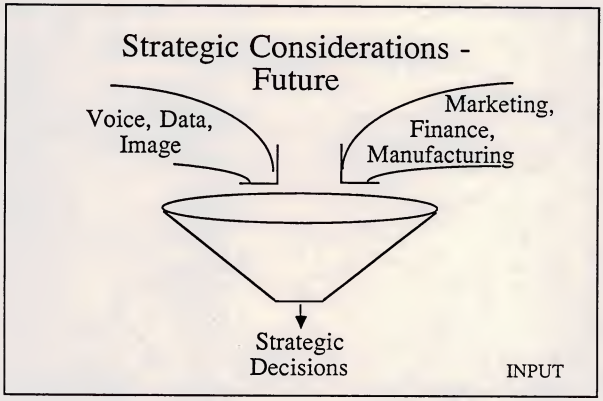


Corporate Network
Integration

INPUT

NOTES:

USM1-AG-29



NOTES:

USM1-AG-27a

Research Update

1985	1987	1989 →
	Integration	
Voice	Voice	Voice
Data	Data	Data
	Graphics	Graphics
	Video	Video
		Systems

INPUT

NOTES:

USM1-AG-30

About INPUT

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

The company carries out continuous and in-depth research. Working closely with clients on important issues, INPUT's staff members analyze and interpret the research data, then develop recommendations and innovative ideas to meet clients' needs. Clients receive reports, presentations, access to data on which analyses are based, and continuous consulting.

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

Formed in 1974, INPUT has become a leading international planning services firm. Clients include over 100 of the world's largest and most technically advanced companies.

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Fax: 011-03-864-4114

INPUT®
Planning Services for Management

Information Services Industry Vendor Questionnaire

I. Company Background Data

Company name: _____

Headquarters address: _____

_____

Headquarters telephone: ( )_____

Key Executives:

CEO _____
Marketing _____
Operations _____
Development _____
Support _____

Number of employees associated with information services activities:

Marketing/Sales _____
Computer Operations _____
Research & Development _____
Customer Support _____
Finance/Admin. _____
IS Total _____
Company Total _____

Please provide a brief statement of the principal business of your firm.

_____

_____

Year company was incorporated or founded: _____

Ownership: ❑ Public ❑ Private ❑ Owned by another company

If owned by another organization, please indicate legal relationship with parent:

❑ Subsidiary ❑ Division Other: _____

Parent company's name: _____

II. Revenues

Please indicate annual revenues for United States, non-captive information services (revenues from sources outside your own corporate structure).

	Fiscal Year Ending___/86 Mo	Fiscal Year Ending___/87 Mo	Fiscal Year Projection Ending___/88 Mo
Revenues - ($ Millions)	$M	$M	$M
Revenue Growth % From Previous Year	%	%	%
• From price increases	%	%	%
• From acquisition	%	%	%
• From new products	%	%	%
• sales volume	%	%	%
• Total	%	%	%

% of Last Year's Revenues From:

United States _____% Canada _____% Europe _____% Asia Pacific (Total) _____%
Japan (only) _____% Latin America _____% Other _____%

III. Delivery Modes

Please indicate the % of your non-captive, United States information service revenues generated by the following delivery modes. (See definitions attached, if necessary.) The blanks offset to the right are sub-sets of larger categories on their left. Total of major categories A through E should be 100% of revenues.

A. Software Products ....._____%

1. Applications Software ....._____%
   - Mainframe....._____%
   - Minicomputer....._____%
   - Workstation/PC ....._____%

2. Systems Software....._____%

   a. Systems Control....._____%
   - Mainframe ..... _____%
   - Minicomputer..... _____%
   - Workstation/PC..... _____%

   b. Data Center Management Tools ....._____%
   - Mainframe ..... _____%
   - Minicomputer ..... _____%
   - Workstation/PC..... _____%

   c. Application Development Tools....._____%
   - Mainframe ..... _____%
   - Minicomputer..... _____%
   - Workstation/PC..... _____%

B. Processing/Network Services _____%

1. Processing Services ....._____%
   - Transaction Services....._____%
   - Utility Services....._____%
   - Other Services....._____%

2. Network Services....._____%
   - Value-Added Network Services (VANS)....._____%
   - Electronic Data Interchange (EDI)....._____%

3. Electronic Information Services....._____%
   - Databases....._____%
   - News ....._____%
   - Videotex....._____%
   %

4. Systems Operations (facilities management of vendor-owned systems)....._____%

C. Turnkey Systems..... _____%

1. Equipment ..... _____%
   - Mainframe ..... _____%
   - Minicomputer ..... _____%
   - Workstation/PC..... _____%

   %
2. Packaged Software ..... _____%
3. Customized Software..... _____%

D. Systems Integration..... _____%

100%

- Equipment..... _____%
- Packaged Software..... _____%
- Customized Software..... _____%
- Professional Services (for Systems Integration Only) ..... _____%

%

E. Professional Services.... _____%

- Consulting ..... _____%
- Education & Training..... _____%
- Software Development ..... _____%
- Systems Operations (facilities management of client-owned systems)..... _____%

%

Total A-E..... 100 %

IV. Computer Hardware

Please list the most important mainframe, minicomputers, and personal computers installed in your organization: (do not include peripherals & terminals)

Quantity	Manufacturer	Model	Operating System
1.			
2.			
3.			

V. Subsidiary Operations:

Please provide the following information for all active subsidiaries or divisions owned by your company that are engaged in information services activities.

Name of Company: _____

Headquarters Address: _____

City, State, Zip: _____

President's Name: _____

Telephone Number: ( ) _____

Information Services Provided:

- ❑ Processing Services
- ❑ Software Products
- ❑ Professional Services
- ❑ Turnkey Systems
- ❑ Systems Integration

On the following pages, please provide your firm's revenues, by industry, for the service delivery modes applicable to your business.

Please send us your product literature for our files and reference use, and add INPUT to your mailing list for press releases and financial reports. Thanks very much for your assistance.