Information Services Industry Program (ISIP)
Annual Client Presentation
1983

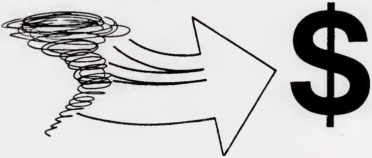
INPUT

001MCP3

INPUT

INPUT Presents . . .

PROFITING FROM THE WHIRLWIND OF CHANGE



INPUT

002MCP3A

INFORMATION SERVICES INDUSTRY PROGRAM (ISIP)
ANNUAL CLIENT PRESENTATION
1983

PROFITING FROM THE WHIRLWIND OF CHANGE

Table of Contents

Competitive Overview (continued)

Revolution in End-user Computing (continued)

Market Outlook (continued)

Market Outlook (continued)

AGENDA

- Introduction
- Executive Summary
- Competitive Overview
- Industry Trends
- End-user Computing
- Market Outlook
- Conclusions and Recommendations

INPUT

THEME

Market's rapidly changing character requires a higher degree of business strategy integration.

INPUT

TODAY'S OBJECTIVE

- Describe Major Market Directions and Changes for 1983-1988

- Suggest High-potential Strategies and Actions

INPUT

INPUT PROGRAMS

- Information Systems Program (ISP)
- Information Services Industry Program (ISIP)
- Company Analysis and Monitoring Program (CAMP)
- Field Services Program (FSP)
- Federal Information Systems and Services Program
- Custom and Multi-client Research

INPUT

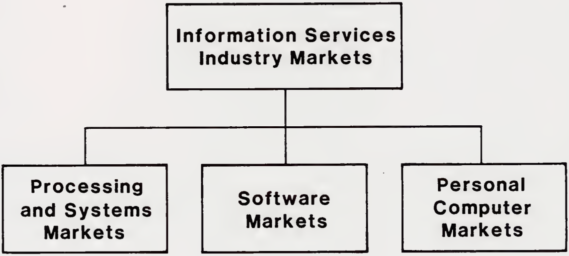
THEME

This integration combines previously distinct . . .

- **Markets**
- **Products**
- **Distribution Channels**
- **Delivery Modes**

INPUT

1984 MARKET ANALYSIS AND PLANNING SERVICE (MAPS)



INPUT

1984 MARKET ANALYSIS AND PLANNING SERVICE (MAPS)

Information Services Industry Markets
• Inquiry Service and Support
• Joint Client Conference
• Executive Bulletins, Seminars
• Acquisition Strategy Report
• Annual Industry Report Series
• Market Alert: Banking/Finance
• Market Alert: Discrete Manufacturing

INPUT

1984 MARKET ANALYSIS AND PLANNING SERVICE (MAPS)

Software Markets
• Annual Report - 1984-1989 • Annual Presentation • Five Market Reports - IBM Software Strategy - Software Productivity - Integrated DBMS - Applications - Fourth Generation Languages - Professional Services

INPUT

1984 MARKET ANALYSIS AND PLANNING SERVICE (MAPS)

Processing and Systems Markets
• Annual Report - 1984-1989 • Annual Presentation • Five Market Reports - On-line Data Bases - Telecommunications - PC-to-mainframe - Successful RCS Strategies - Small Organizations

INPUT

1984 MARKET ANALYSIS AND PLANNING SERVICE (MAPS)

Personal Computer Markets
• Annual Report - 1984-1989   • Annual Presentation   • Five Market Reports   - PC-to-mainframe   - Applications Transfer   - PC Software Support   - Pricing and Distribution   - Home Computers

INPUT

8EMCP3

KEY ISSUES

- Integrating PCs with Processing Services
- Best Strategies for Processing Services Vendors
- Response to Potential Software Price Erosion
- Outlook for Data-based Services
- Competing Against Better Financed Vendors

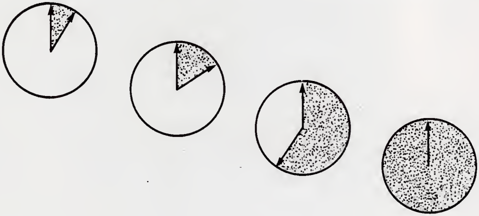
INPUT

EXECUTIVE SUMMARY

- Growth by Delivery Mode
  - 1983 Versus 1982
  - Five-year Forecasts
- Recap of Key Issues

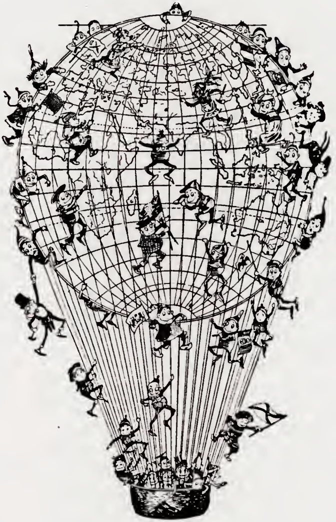
INPUT

THE INFORMATION SERVICES INDUSTRY IN 60 SECONDS



INPUT

OPPORTUNITIES ABOUND

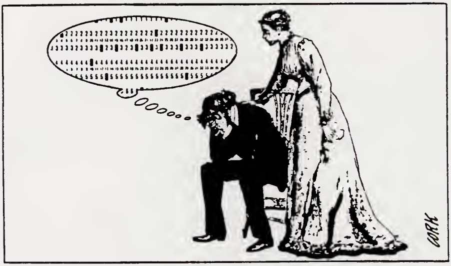


INPUT

BUT DISAPPOINTMENTS CAN OCCUR

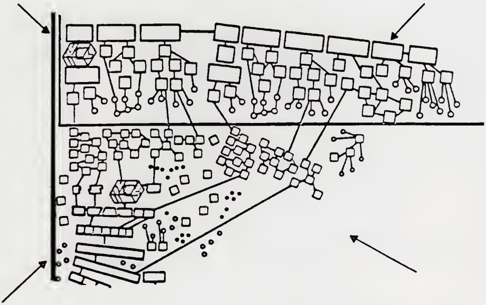
INPUT

THE PAST IS GONE FOREVER



INPUT

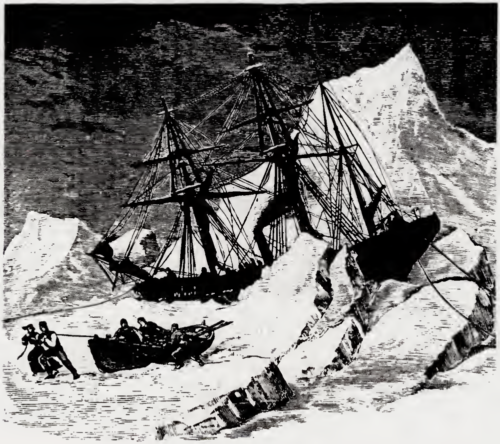
EVERYTHING IS CHANGING



INPUT

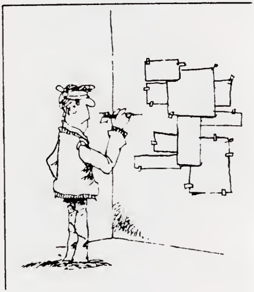
025MCP3

FLEXIBILITY IS CRUCIAL



INPUT

SELECT OPPORTUNITIES CAREFULLY



INPUT

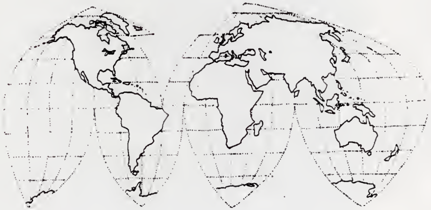
026MCP3

INPUT

SEEK DEPENDABLE PARTNERS

INPUT

THERE'S A WORLD OF OPPORTUNITY



INPUT

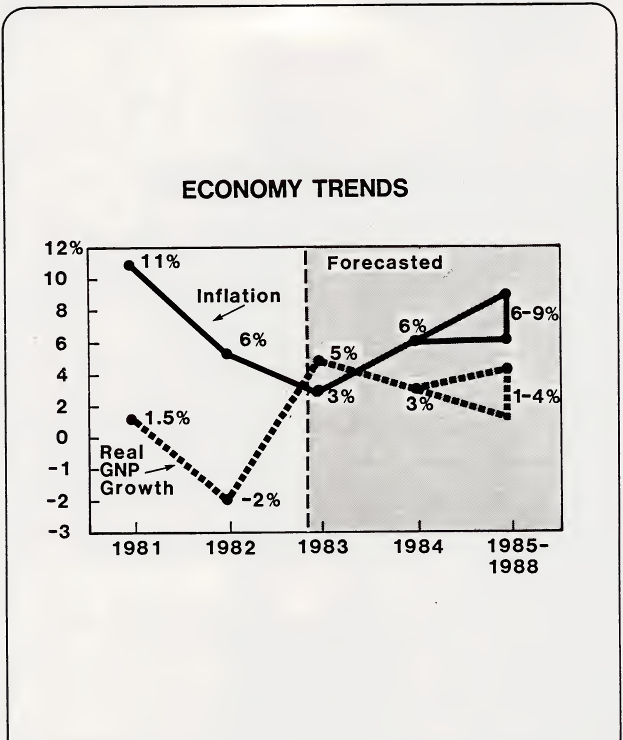
FORECASTS

INPUT

FORECAST PARAMETERS

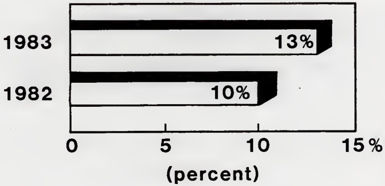
- U.S. Noncaptive User Expenditures
- Calendar Year
- Current Dollars
- AAGR = Average Annual Growth Rate

INPUT



ECONOMY TRENDS
12%
10
8
6
4
2
0
-1
-2
-3
11%
Inflation
6%
Forecasted
5%
3%
6%
6-9%
3%
1-4%
1.5%
Real
GNP
Growth
-2%
1981
1982
1983
1984
1985-
1988
INPUT

PROCESSING SERVICES ANNUAL MARKET GROWTH

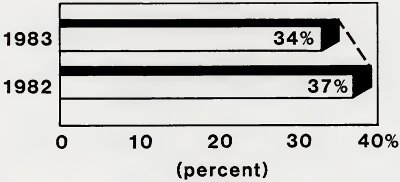


INPUT

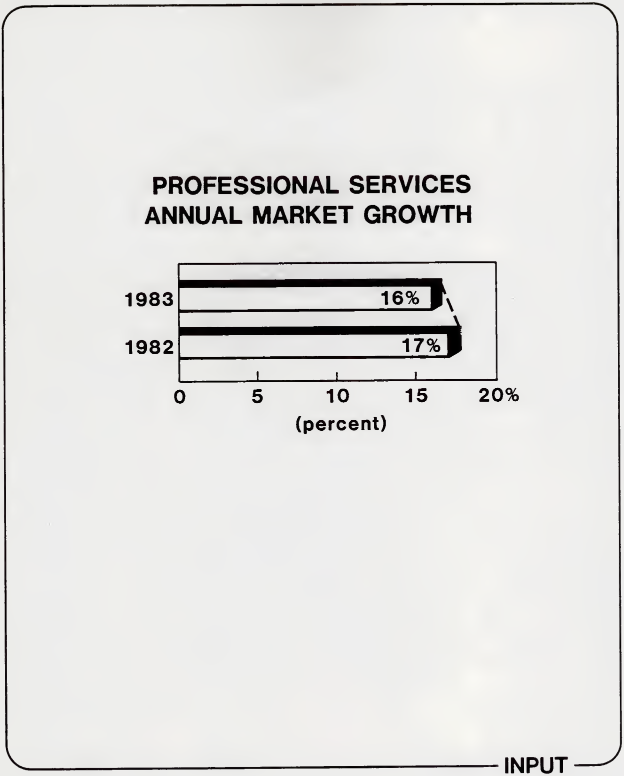
036MCP3

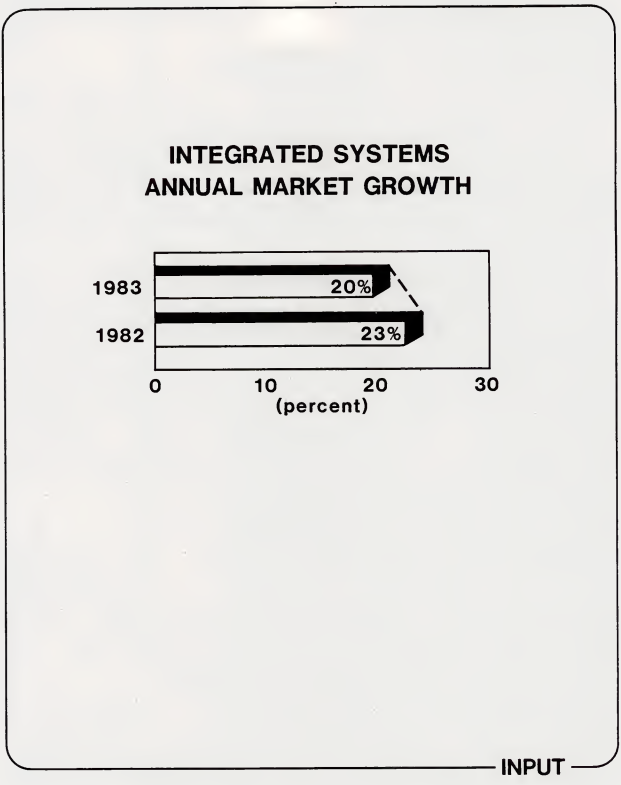
INPUT

SOFTWARE PRODUCTS ANNUAL MARKET GROWTH



INPUT

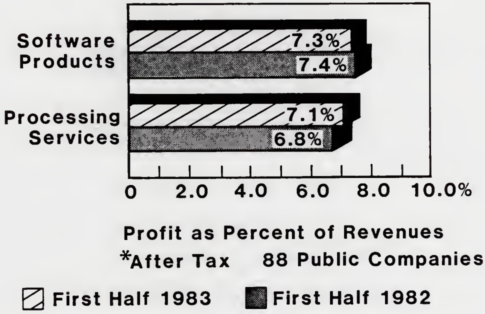

PROFESSIONAL SERVICES
ANNUAL MARKET GROWTH
1983
16%
1982
17%
0
5
10
15
20%
(percent)
INPUT



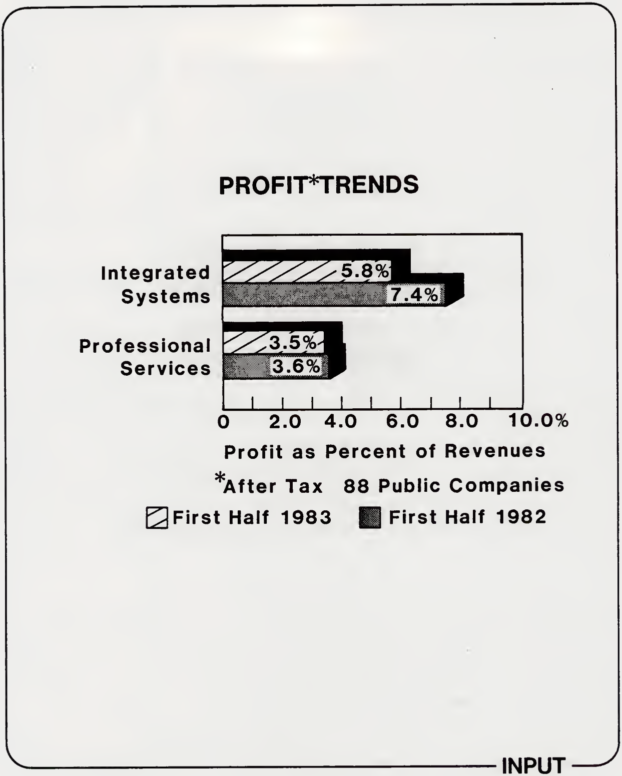
042MCP3

INPUT

PROFIT* TRENDS

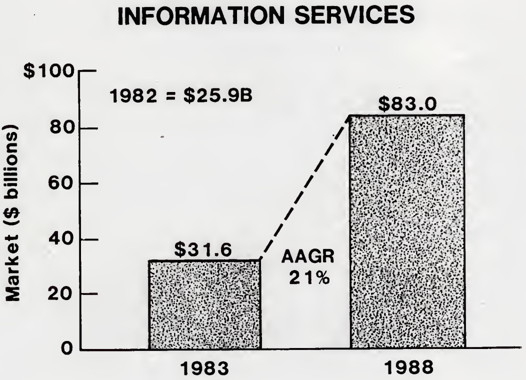


INPUT



43BMCP3

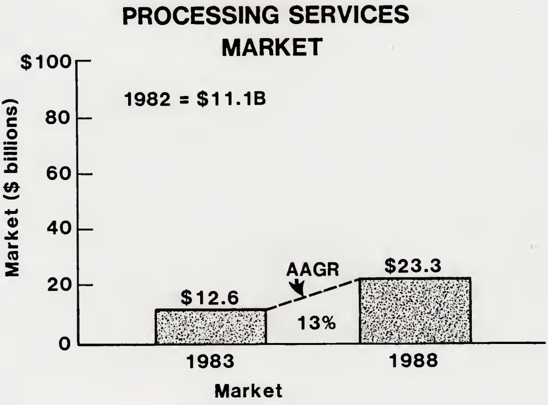
INPUT



INPUT

044MCP3

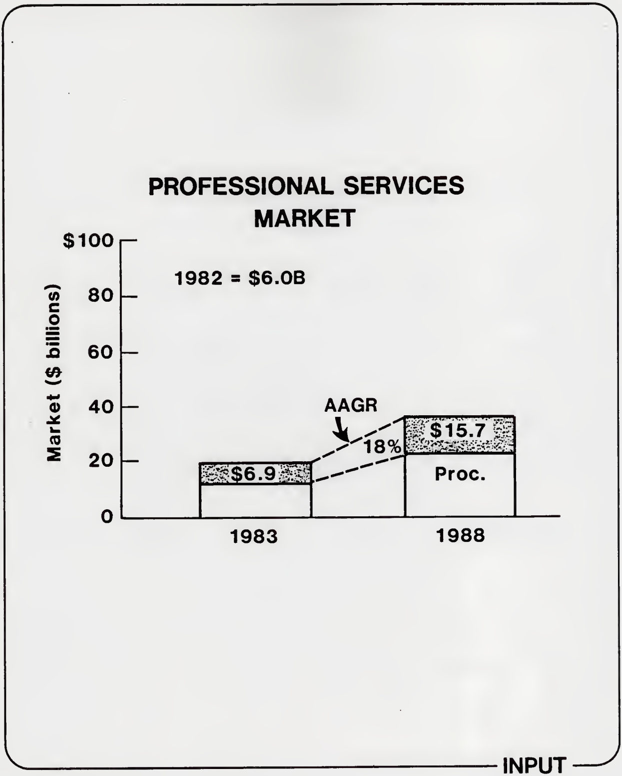
INPUT



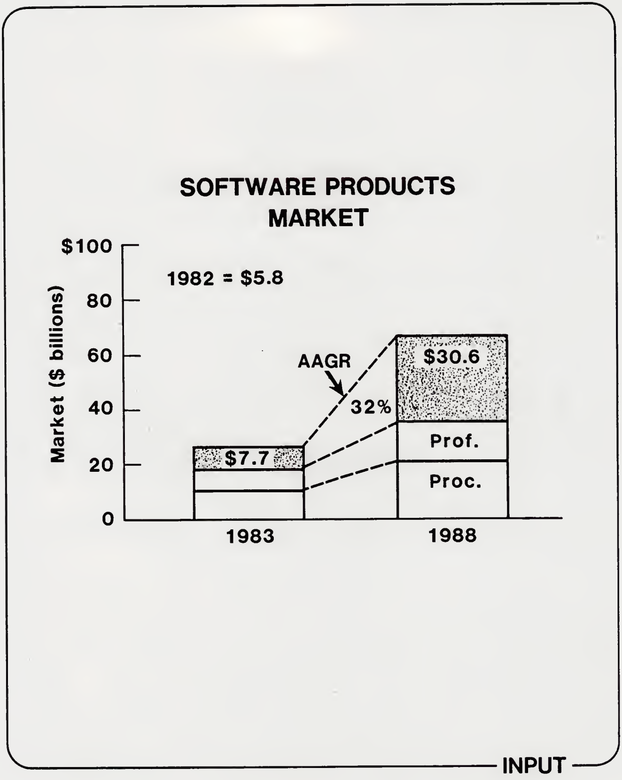
INPUT

045MCP3

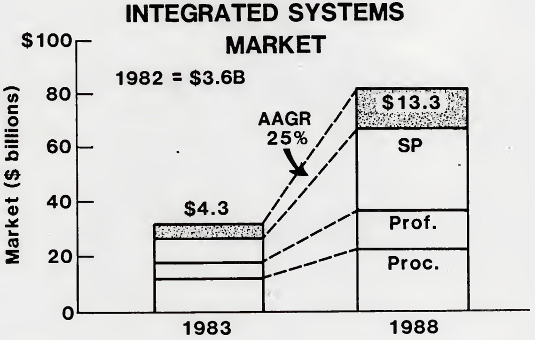
INPUT


PROFESSIONAL SERVICES
MARKET
$100
80
60
40
20
0
Market ($ billions)
1982 = $6.0B
AAGR
18%
$6.9
$15.7
Proc.
1983
1988
INPUT

046MCP3


SOFTWARE PRODUCTS MARKET
$100
80
60
40
20
0
Market ($ billions)
1982 = $5.8
AAGR
32%
$7.7
$30.6
Prof.
Proc.
1983
1988
INPUT

047MCP3



INPUT

048MCP3

INPUT

III. COMPETITIVE OVERVIEW

- Largest
- Fastest Growing
- Acquisitions, Disengagements

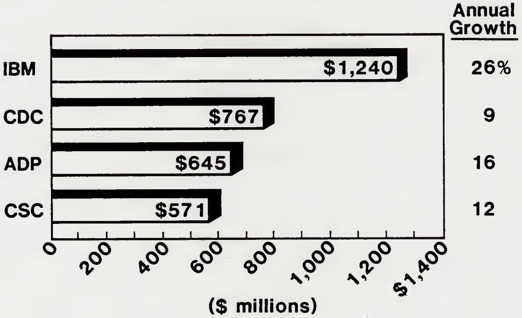
INPUT

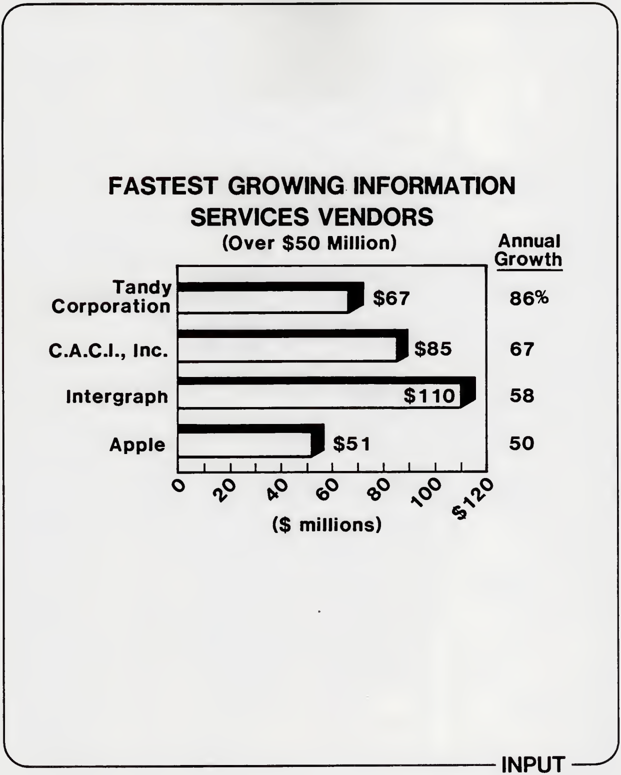
VENDOR DATA

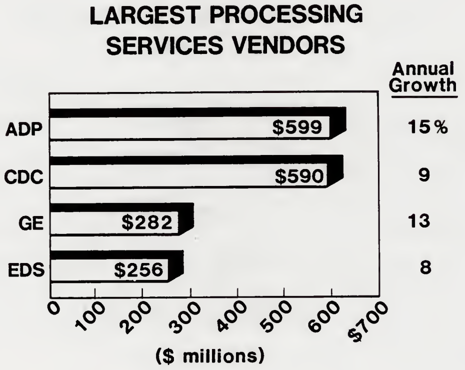
- 1982 Calendar Year
- U.S. Revenue
- Noncaptive

INPUT

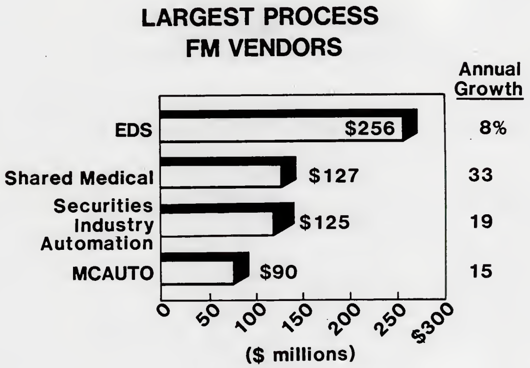
LARGEST INFORMATION SERVICES VENDORS




FASTEST GROWING INFORMATION SERVICES VENDORS
(Over $50 Million)
Annual Growth
Tandy Corporation
$67
86%
C.A.C.I., Inc.
$85
67
Intergraph
$110
58
Apple
$51
50
0
20
40
60
80
100
$120
($ millions)
INPUT

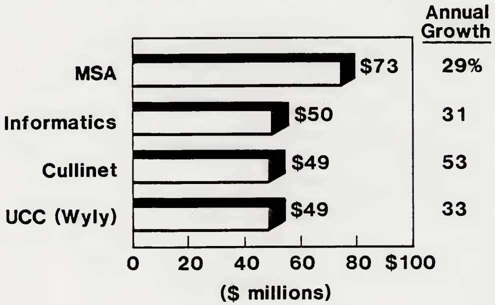

LARGEST PROCESSING SERVICES VENDORS
Annual Growth
ADP
$599
15%
CDC
$590
9
GE
$282
13
EDS
$256
8
0
100
200
300
400
500
600
$700
($ millions)

INPUT

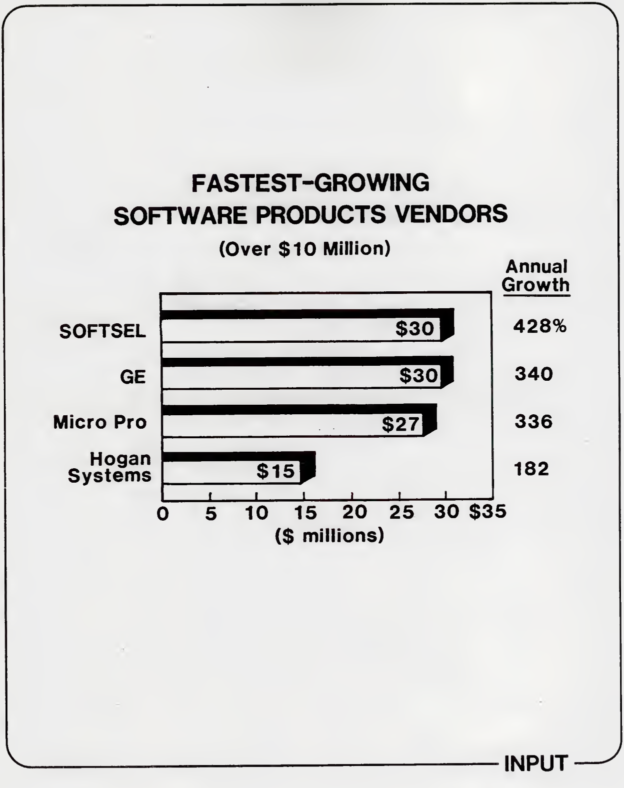

LARGEST PROCESS
FM VENDORS
Annual Growth
EDS
$256
8%
Shared Medical
$127
33
Securities Industry Automation
$125
19
MCAUTO
$90
15
0
50
100
150
200
250
$300
($ millions)

INPUT

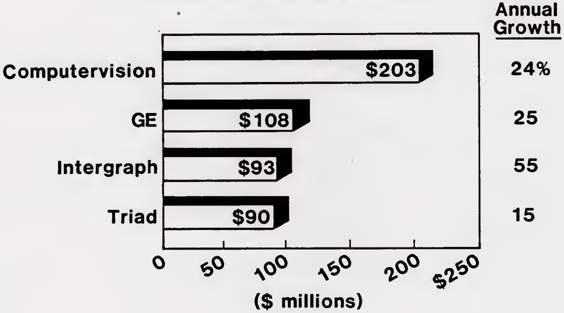
LARGEST INDEPENDENT SOFTWARE PRODUCT VENDORS



INPUT

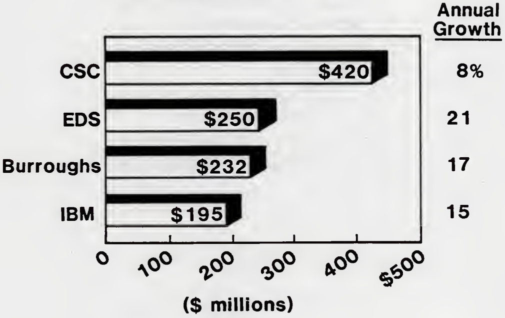

FASTEST-GROWING
SOFTWARE PRODUCTS VENDORS
(Over $10 Million)
Annual Growth
SOFTSEL
$30
428%
GE
$30
340
Micro Pro
$27
336
Hogan Systems
$15
182
0
5
10
15
20
25
30
$35
($ millions)
INPUT

LARGEST INTEGRATED SYSTEMS VENDORS

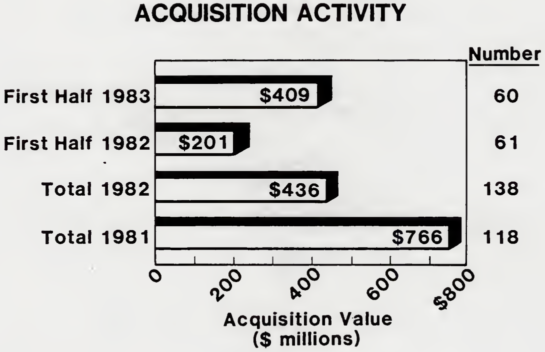


INPUT

LARGEST PROFESSIONAL SERVICES VENDORS



INPUT



SOURCE: Broadview Associates

INPUT

ACQUISITIONS

Acquirer	Acquired
Dun & Bradstreet	McCormack & Dodge
Martin Marietta Data Systems	Mathematica
Scientific Software	Intercomp Development & Engineering

INPUT

ACQUISITIONS

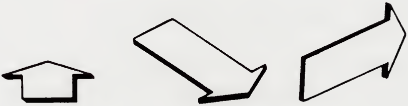
Acquirer	Acquired
ADP	GTE Telenet Services
AGS	Micro America Distributing
Computer Associates	IUS

INPUT

DISENGAGEMENTS

Disengaged By	Disengaged Unit	Sold To
Chase Manhattan Bank	Managistics, Inc.	Bank of America
ADP	CPI, Inc.	Continental Corp.
American General	NLT Computer Services	Management Group

INPUT



INDUSTRY TRENDS

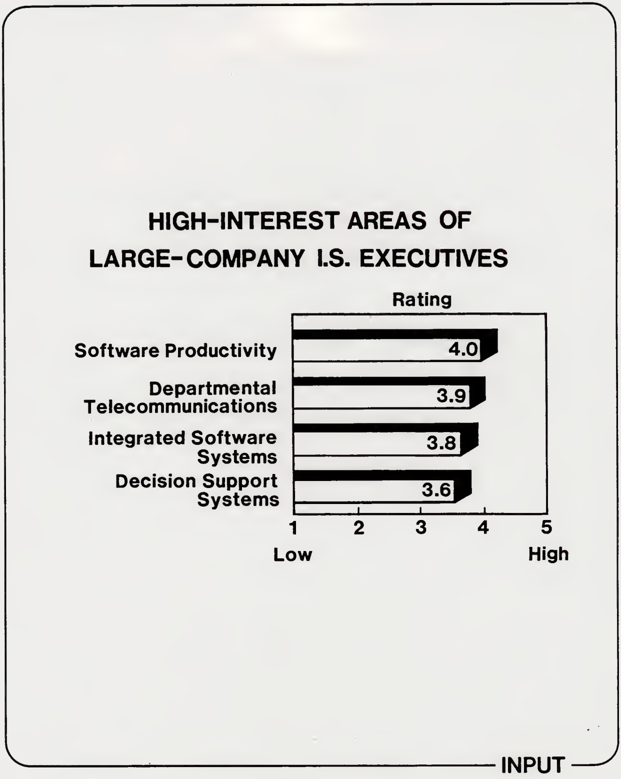
- I.S. Manager's Perspective
- Hardware
- Software
- Telecommunications
- Implications for People

INPUT

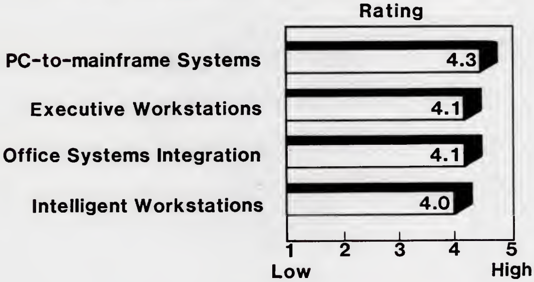
TOP CONCERNS OF I.S. MANAGERS

Top Problems	Top Objectives
1. Software	1. Software
2. Personnel	2. Hardware
3. User Relations	3. Personnel

INPUT

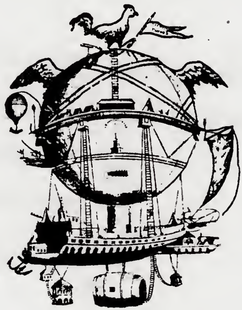

HIGH-INTEREST AREAS OF
LARGE-COMPANY I.S. EXECUTIVES
Rating
Software Productivity
4.0
Departmental Telecommunications
3.9
Integrated Software Systems
3.8
Decision Support Systems
3.6
1
2
3
4
5
Low
High
INPUT

HIGH-INTEREST AREAS OF LARGE-COMPANY I.S. EXECUTIVES



INPUT

HARDWARE



INPUT

MID-80s CENTRAL COMPUTERS

- Will Concentrate On:
  - Large Shared Data Bases
  - Data Archiving and Retrieval
  - Large Transaction-driven Data Capture
- Will Decline in Price 10% Annually

INPUT

MID-80s END-USER COMPUTERS

- A $5,000 "370/158" will sit on one square foot of your desk.

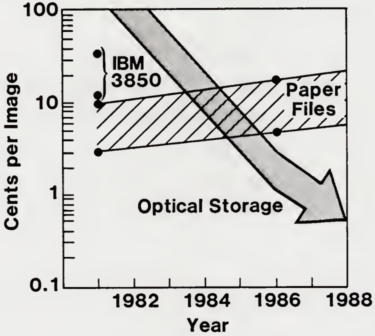
INPUT

WORKSTATIONS

- More Integration
  - PCs
  - Telephone
  - Voice/Data/Text/Graphics
  - Local Area Network
- IBM/Rolm = Stronger Voice Commitment

INPUT

OPTICAL STORAGE TO BECOME 10 TIMES CHEAPER THAN PAPER



INPUT

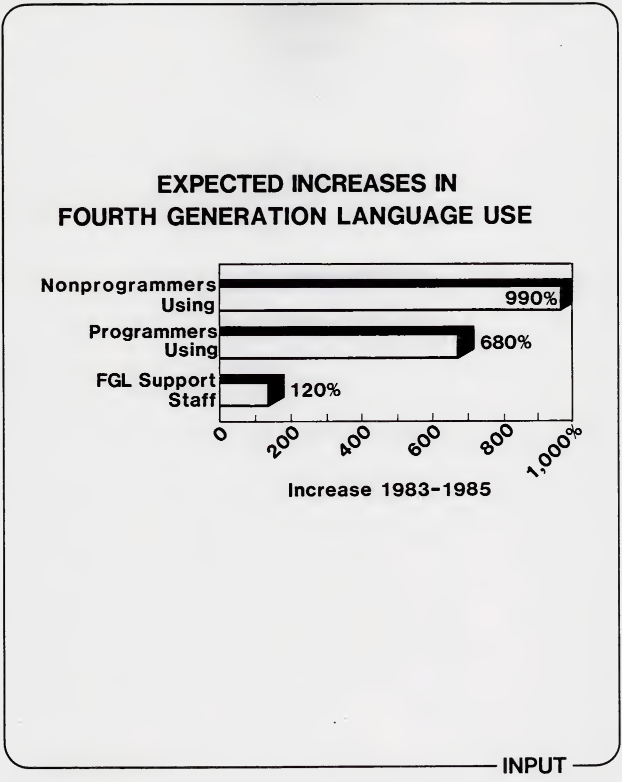
SOFTWARE

INPUT

FOURTH GENERATION LANGUAGE CONVERSION TARGETS

Characteristic	Importance
User Willing to Assume Responsibility	High
Constantly Changing User Needs	High
Defined User System Ownership	High

INPUT


EXPECTED INCREASES IN
FOURTH GENERATION LANGUAGE USE
Nonprogrammers Using
990%
Programmers Using
680%
FGL Support Staff
120%
0
200
400
600
800
1,000%
Increase 1983-1985
INPUT

084MCP3A

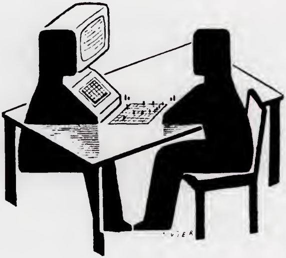
DESIGN FOR RISING USER EXPECTATIONS

- Comprehensive Integration
- Windowing
- Better Ergonomics
  - Icons, Help Functions
  - Grows with User
  - Response: 0.1 Second

INPUT

EXPERT SYSTEMS GAINING COMMERCIAL ACCEPTANCE

- Medicine
- Law
- Business



INPUT

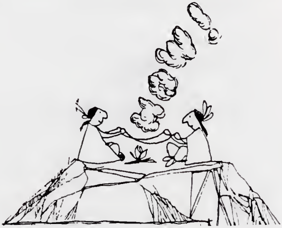
085MCP3

SOFTWARE RECOMMENDATIONS

- Upgrade Current Products with . . .
  - DBMS
  - Fourth Generation Languages
  - Friendlier User Interfaces

INPUT

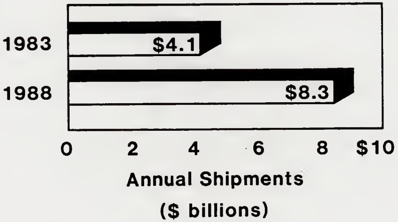
TELECOMMUNICATIONS



INPUT

TELECOMMUNICATIONS TRENDS

- Equipment Shipments to Double



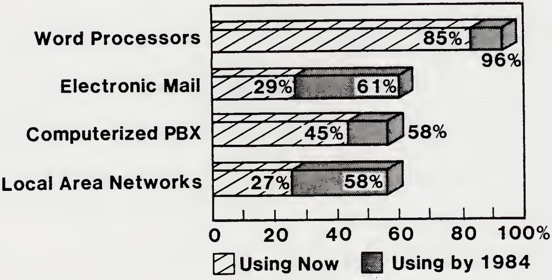
INPUT

TELECOMMUNICATIONS TRENDS

- Rapid Growth for:
  - Private Networks
  - LANs
- High-speed Voice and Data Integration

INPUT

MORE TELECOMMUNICATIONS-BASED APPLICATIONS



INPUT

IMPACT OF AT&T BREAKUP

- Radically Different Environment
- Rate Hikes
- Usage-based Pricing

INPUT

IMPACT OF AT&T BREAKUP

- Emergence of Multiple Leased Line Suppliers
- More Bypass Vendors
- Competition in Your Business

INPUT

IMPACT OF AT&T BREAKUP ON I.S. MANAGERS

- Must Do More Network Managing, Planning
- Evaluate More Vendor Options
- Must Reassess Current Network Cost Effectiveness
- More Interest in Technology Directions

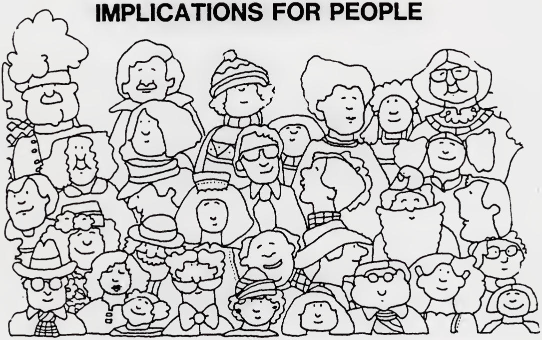
INPUT

IMPACT OF AT&T BREAKUP: VENDOR IMPLICATIONS

- Cost Savings Appeal
- Higher Demand For:
  - Error-free Services
  - Network Software (Gateways, Protocol Converters)
  - Network Management Consulting

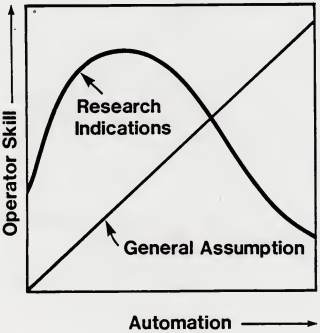
INPUT

IMPLICATIONS FOR PEOPLE



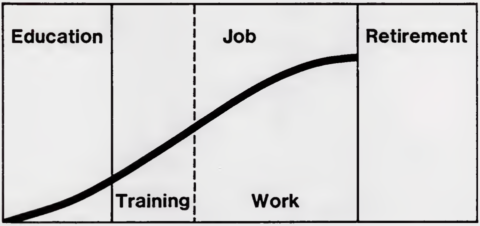
INPUT

SKILL VERSUS AUTOMATION

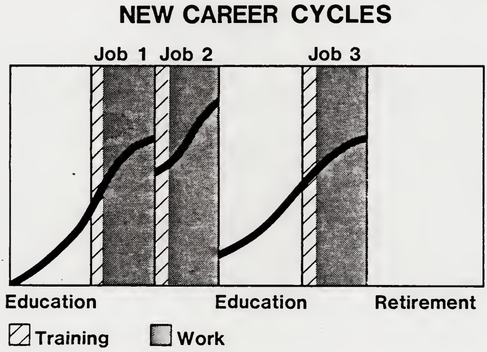


INPUT

OLD CAREER CYCLES

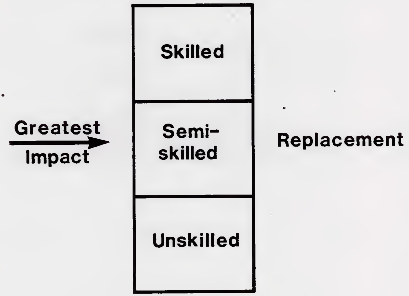


INPUT


NEW CAREER CYCLES
Job 1
Job 2
Job 3
Education
Education
Retirement
Training
Work

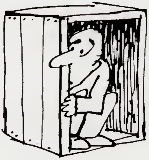
INPUT

WORKFORCE IMPACT



INPUT

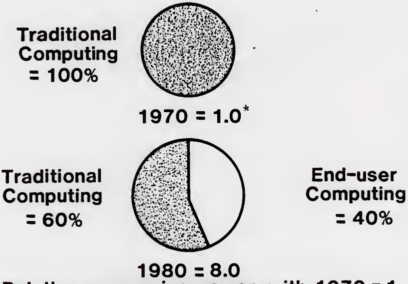
REVOLUTION IN END-USER COMPUTING



- Scope
- Information Centers
- Personal Computers
- Office Systems

INPUT

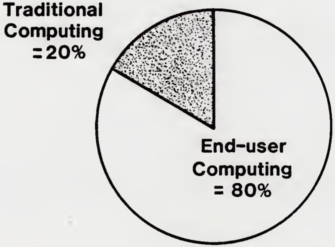
CHANGES IN COMPUTING FOCUS



*Relative processing power, with 1970 = 1

INPUT

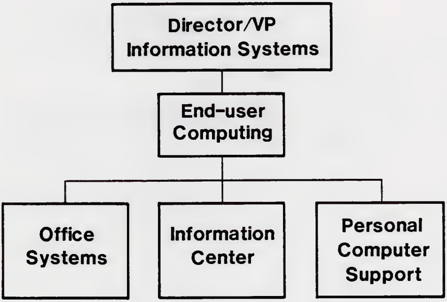
CHANGES IN COMPUTING FOCUS



1990 = 160.0
Relative processing power, with 1970 = 1

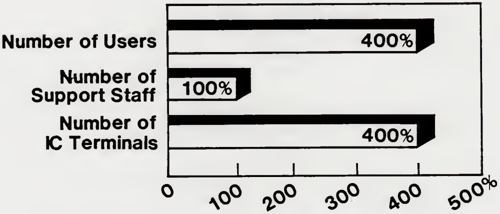
INPUT

"END-USER COMPUTING" ORGANIZATION



INPUT

INFORMATION CENTER GROWTH, 1983-1985

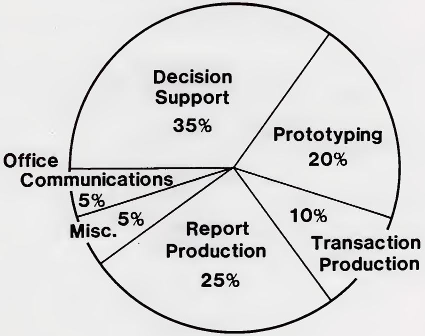


INPUT

104MCP3

INPUT

TYPICAL INFORMATION CENTER APPLICATIONS

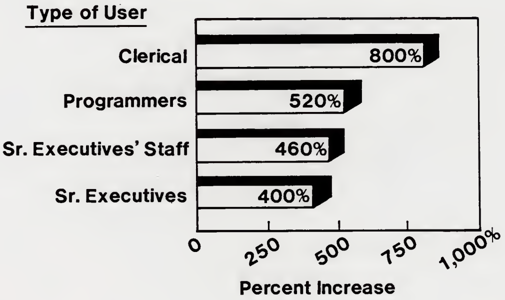


INPUT

105MCP3

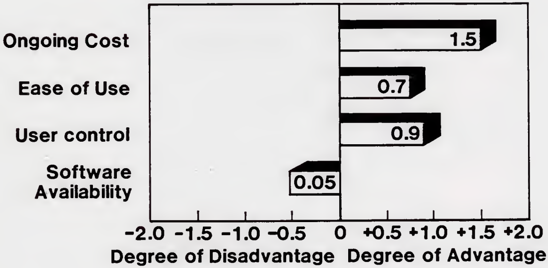
INPUT

INCREASE IN TYPE OF INFORMATION CENTER USER, 1983-1985



INPUT

THE INFORMATION CENTER COMPARED TO RCS



INPUT

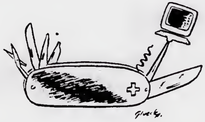
107MCP3

INFORMATION CENTER OPPORTUNITIES

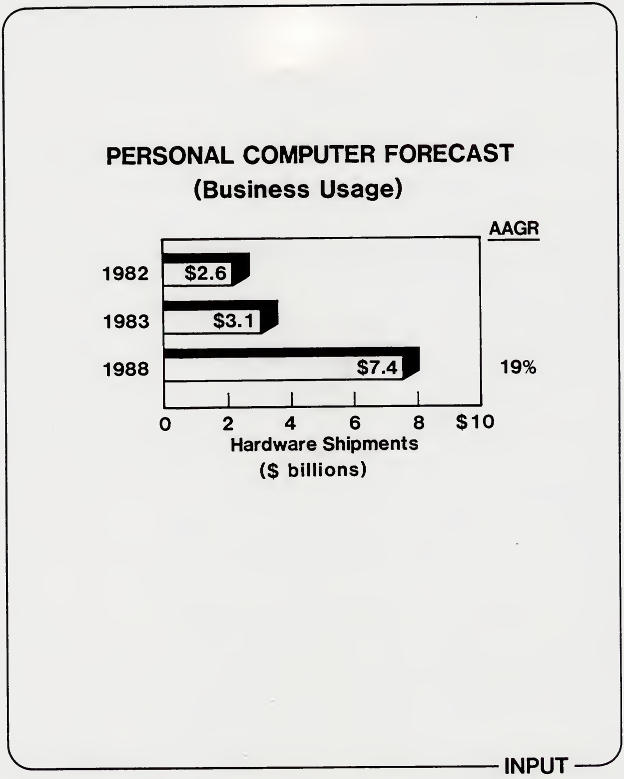
- RCS Entry to I.S. Manager
- Support and Training
- Software

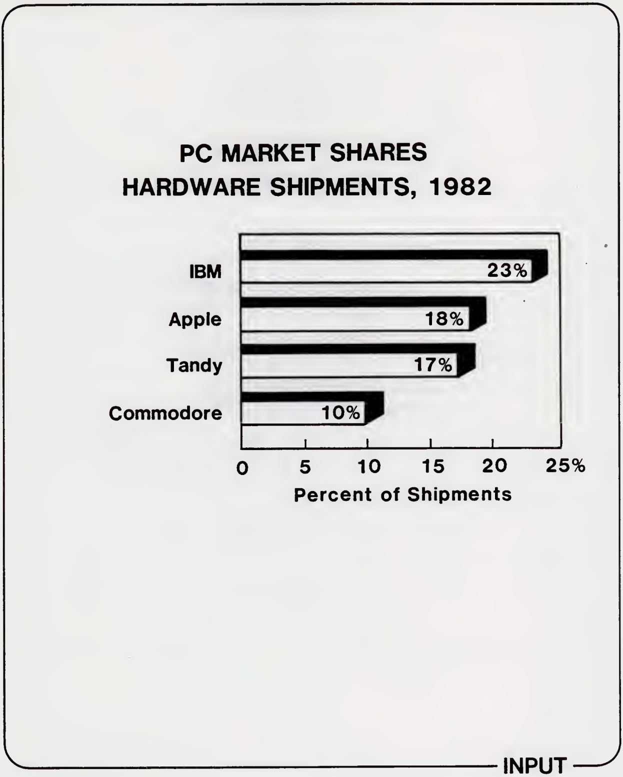
INPUT

PERSONAL COMPUTERS

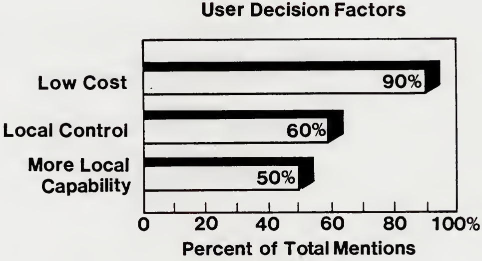


INPUT


PERSONAL COMPUTER FORECAST
(Business Usage)
AAGR
1982
$2.6
1983
$3.1
1988
$7.4
19%
0
2
4
6
8
$10
Hardware Shipments
($ billions)
INPUT


PC MARKET SHARES
HARDWARE SHIPMENTS, 1982
IBM
Apple
Tandy
Commodore
23%
18%
17%
10%
0
5
10
15
20
25%
Percent of Shipments
INPUT

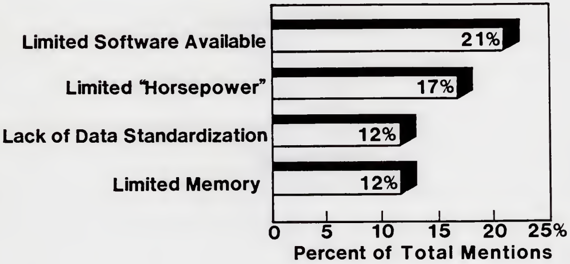
WHY PCs?



- Sound Familiar?

INPUT

SHORTCOMINGS OF PCs



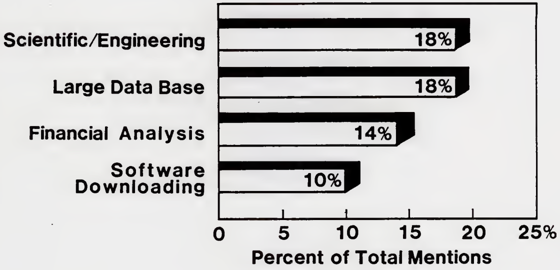
INPUT

PC HARDWARE TRENDS
(Business Usage)

- 20% Annual Price Decline
- More:
  - Interconnections
  - Multi-user Systems
  - Fixed Disk Storage
  - Quality Printers
- Evolving to Small Business Systems

INPUT

APPLICATION CHARACTERISTICS DESIRED BUT CONSIDERED INFEASIBLE ON PCs



INPUT

PC SOFTWARE TRENDS

- Higher Level Operating Systems
- Enhanced Portability
- Improved Data Security
- More DBMS-based Applications
- Wider Pricing Ranges

INPUT

PC OPERATING SYSTEMS

- Many Options (PC-DOS, CP/M, UNIX, XENIX, p-System, PICK, etc.)
- Corporations Beginning to Standardize
- Shakeout Coming

INPUT

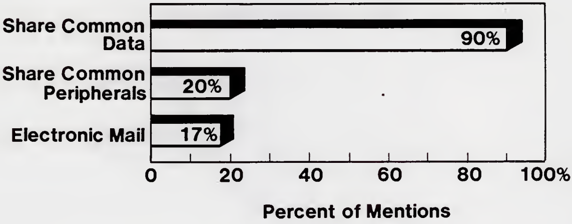
PC OPERATING SYSTEMS

- Evaluate Carefully:
  Vendor Friendly $\neq$ End-user Friendly

- Likely Volume Winner: PC-DOS

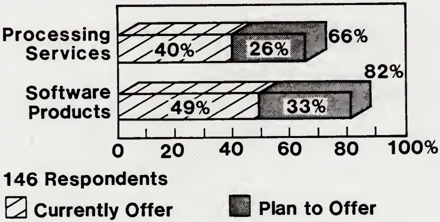
INPUT

PURPOSES OF INTERCONNECTING PCs



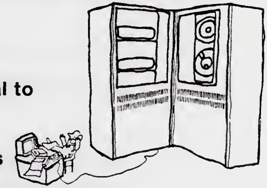
INPUT

VENDOR INVOLVEMENT WITH PERSONAL COMPUTERS



INPUT

PC-TO-MAINFRAME OFFERINGS



- PC Shift from Personal to Departmental Use
- Explosion of Products
- Leadership from Mainframe Vendors

INPUT

PC DISTRIBUTION IMPLICATIONS

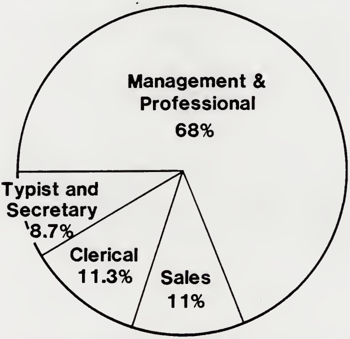
- Distribution Channel Selection Is Critical
- Brand Name Recognition a Key Asset
- Watch Out for . . .
  - Crowded Dealer Shelves
  - Dealer Shakeout
- Consider Mainframe Sales Force

INPUT

OFFICE SYSTEMS

INPUT

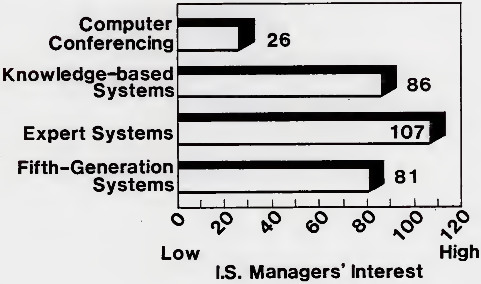
THE PROFESSIONAL: THE EMERGING OFFICE SYSTEMS USER



Office Categories by Salary Cost

INPUT

INTEREST IN NEW OFFICE TECHNOLOGIES



INPUT

126MCP3

LAN DIRECTIONS

- Fewer Single-vendor LANs
- Reduced Cost Per Connection
- Progress toward Standardization
- IBM Entry

INPUT

OFFICE SYSTEMS IMPLICATIONS

- Go with Likely Desktop Winners
- Establish Competitive Edge Via . . .
  - Exceptionally User Friendly Systems
  - High Quality Training and Support
  - Data Security Features
  - Application Integration

INPUT

MARKET OUTLOOK

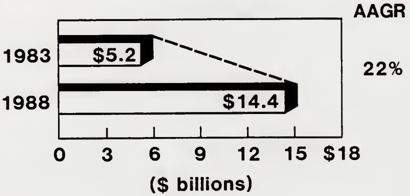
- **Industry Sectors**
- **Delivery Mode Outlook**

INPUT

BANKING AND FINANCE

INPUT

BANKING AND FINANCE



INPUT

132MCP3

INPUT

TRENDS

- New Banking Options
  - Insurance, Real Estate
  - Information Services
- Entry of Nonbanking Competitors

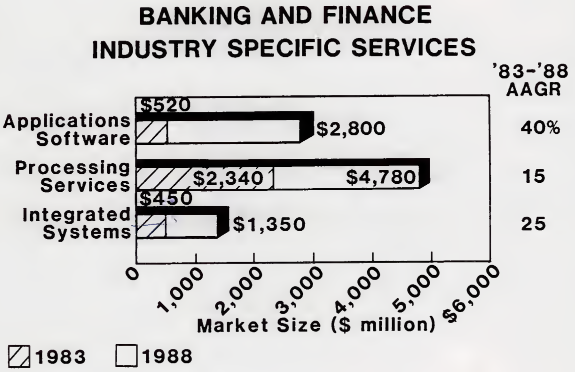
INPUT

Banking and Finance

MORE COMPETITION FOR VENDORS

- Large Banks
- IBM
- Current Vendors
  - More Banking Departments Served
  - More Delivery Modes Offered

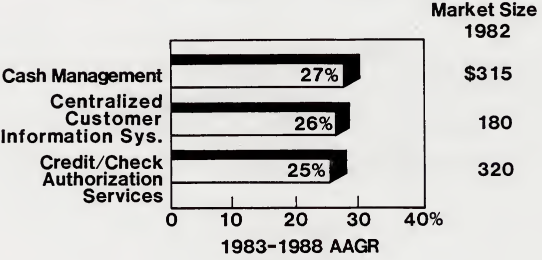
INPUT



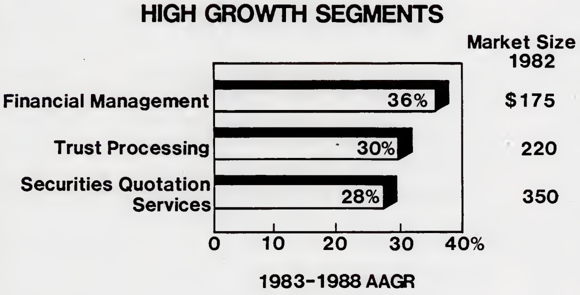
BANKING AND FINANCE
INDUSTRY SPECIFIC SERVICES
'83-'88
AAGR
Applications Software
$520
$2,800
40%
Processing Services
$2,340
$4,780
15
Integrated Systems
$450
$1,350
25
0
1,000
2,000
3,000
4,000
5,000
$6,000
Market Size ($ million)
1983
1988

INPUT

HIGH GROWTH SEGMENTS



INPUT


HIGH GROWTH SEGMENTS
Market Size 1982
Financial Management
36%
$175
Trust Processing
30%
220
Securities Quotation Services
28%
350
0
10
20
30
40%
1983-1988 AAGR

INPUT

RECOMMENDATIONS

- Evaluate High Potential Application Areas
  - Integrated Trust/Retail/Wholesale Banking
  - Brokerage Services
  - Automated Cash Management Decisions
  - Planning Models
  - Home Banking

INPUT

Banking and Finance

RECOMMENDATIONS

- Upgrade Existing Products With:
  - DBMS
  - Fourth-generation Languages
  - Voice Response

INPUT

Banking and Finance

RECOMMENDATIONS

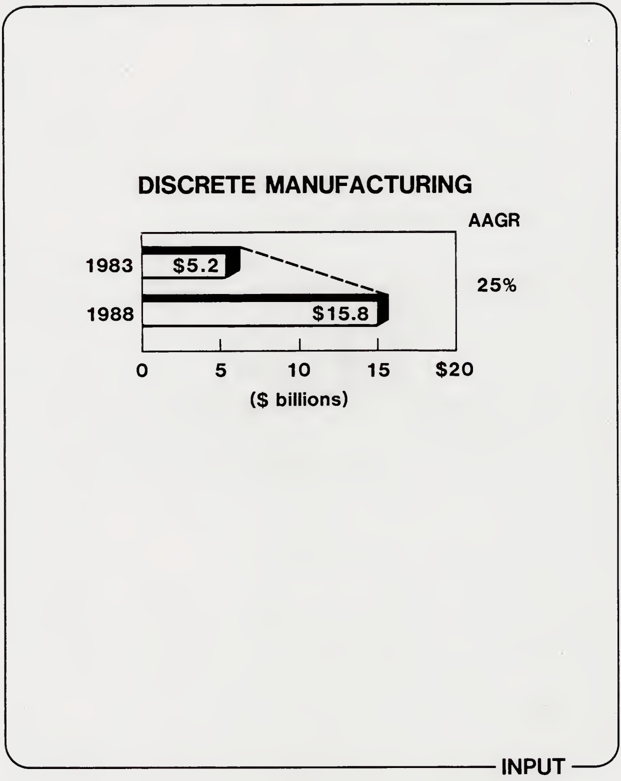
- Place Strategic Emphasis On:
  - Application Integration
  - PC, Turnkey-based Services
  - Client Involvement in Product Design

INPUT

DISCRETE MANUFACTURING

INPUT

141MCP3



143MPC3

INPUT

Discrete Manufacturing

KEY MANUFACTURING ISSUES

- Processes Becoming More Complex
- Increasing Domestic, Foreign Competition
- Excessive
  - Plant Capacity
  - Factory Downtime
  - New Product Launch Duration

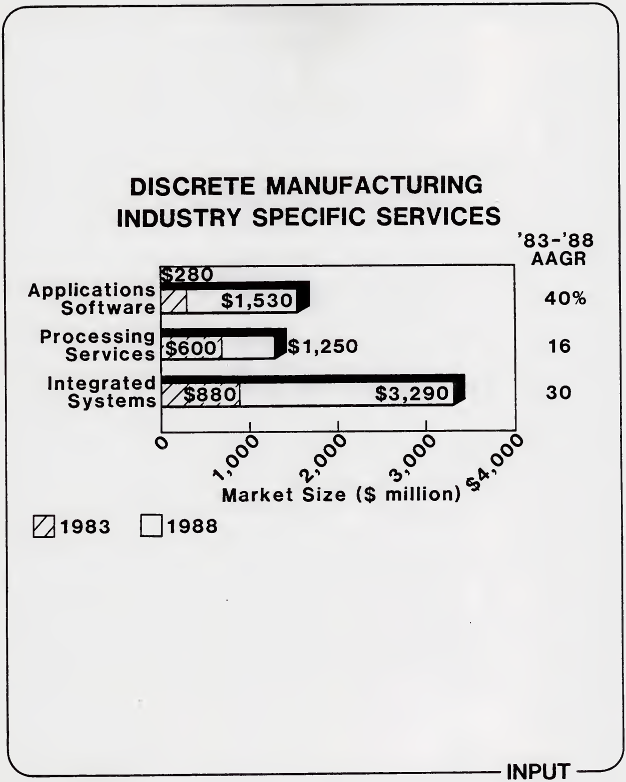
INPUT

Discrete Manufacturing

TRENDS

- CAD/CAM Changing Rapidly
  - Design (Not Drafting) Preference
  - Integrated Approach Wanted
- Robotics Gaining Momentum
- Machine Vision Systems Emerging

INPUT



143A MCP3

INPUT

Discrete Manufacturing

COMPETITIVE ACTIVITY

- Hardware Vendors Seeking Software
- Some Financial Hiccups
- IBM - Computervision Agreement

INPUT

Discrete Manufacturing

RECOMMENDATIONS

- Target
  - Improved MRP Systems
  - Network Services Linking Suppliers, Distributors
  - CAD/CAM Integration
  - Robotic Applications Simulation

INPUT

Discrete Manufacturing

RECOMMENDATIONS

- Emphasize Software
- Expand Professional Services
- Narrow Market Focus

INPUT

ENGINEERING AND SCIENTIFIC

INPUT

149MCP3

Engineering and Scientific

PROFILE

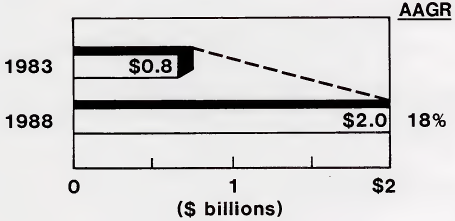
- Strong Economic Recovery
- Pent-up Demand
- Faster Design and Analysis Cycles
- More Engineering Audits
- More "Validated" Software
- Engineering Workstations Up 35% Annually

INPUT

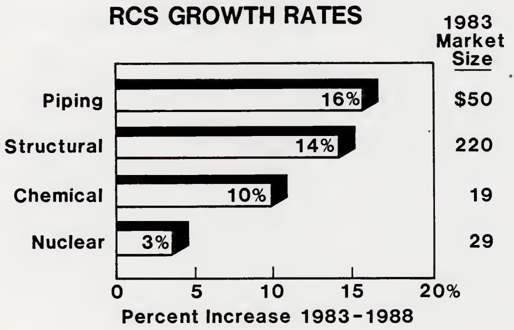
150MCP3

Engineering and Scientific

TOTAL MARKET 1983 - 1988



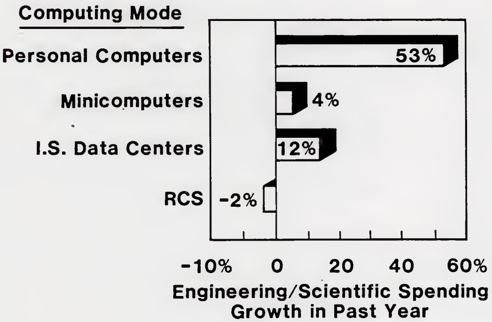
INPUT



INPUT

152MCP3

APPLICATIONS GOING IN-HOUSE



INPUT

153MCP3

CUSTOMER NEEDS ARE CHANGING

- Customers Still Want:
  - Support
  - Good Price/Performance
  - Engineering/Scientific Software

INPUT

CUSTOMER NEEDS ARE CHANGING

- But No Longer Value:
  - Supercomputers
  - RCS Business Relationships

INPUT

155MCP3

INPUT

Engineering and Scientific

RECOMMENDATIONS

- New Looks are Required
  - Offer Integrated Systems of Engineering Workstations Tied to Networks
  - Offer Engineering Data Bases for Cost and Design

INPUT

Engineering and Scientific

RECOMMENDATIONS

- Maximize Support and Minimize Costs
  - Centralize Applications Expertise
  - Offer Regional Training
  - Deemphasize Local Support

INPUT

Engineering and Scientific

RECOMMENDATIONS

- Distribute Hardware
  - Branch Office Mainframes
  - User Site Hardware

INPUT

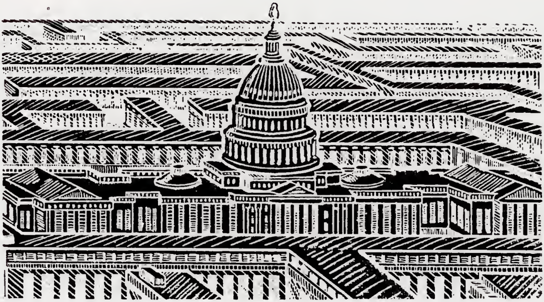
Engineering and Scientific

RECOMMENDATIONS

- Broaden Computing Mode Support
  - Integrate Small Computers
  - Maximize Proprietary Software
  - Offer Integrated Systems
  - Support User Site Software

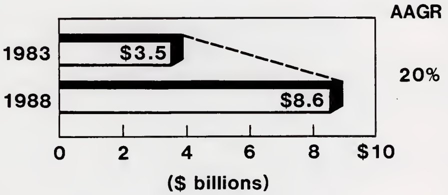
INPUT

FEDERAL GOVERNMENT



INPUT

FEDERAL GOVERNMENT



INPUT

EMBEDDED COMPUTER RESOURCES

- Exempt from Brooks Act
- 25-fold Inventory Increase (1980 to 2000)
- Support SW Paces Applications

INPUT

EMBEDDED COMPUTER RESOURCES

- Inadequacies:
  - Standardization
  - Technology Base
  - Transferability
  - Management Discipline
- ECR Modelling on Commercial ADPE

INPUT

WHERE ARE THE PROGRAMMERS?

- 33% Annual Turnover
- 40% Shortfall in 1990
- ECR SW Logistics Demand
- Productivity Aids
- Retraining Needs
- Commercial Market Impact

INPUT

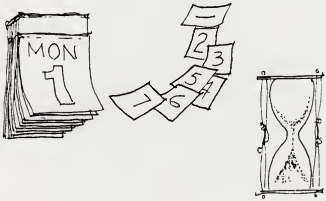
Federal Government

CONCLUSIONS

- Soaring Federal Market
- PC-driven Management Tools
- Software Engineering Disciplines
- Embedded Computer "Bow Wave"
- Skilled Labor Demand Impact

INPUT

INSURANCE



INPUT

PROPERTY/CASUALTY TRENDS

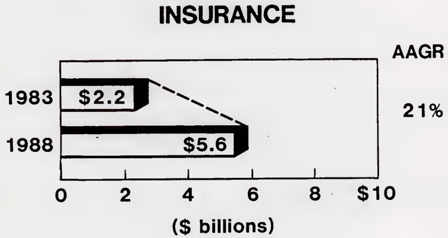
- Unfavorable Business Conditions
- - Overcapacity, Increased Competition
  - Underwriting Losses
- Information Services Needs
  - Better Agent Support
  - Better Underwriting Data

INPUT

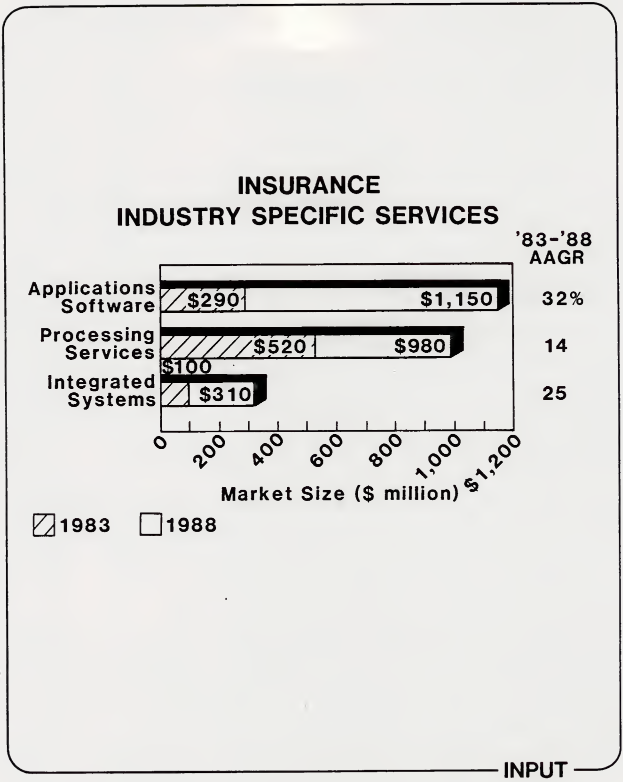
LIFE/HEALTH TRENDS

- Changing Product Mix
- Increased Self-insurance
- Non-insurance Competition
- Information Services Needs
  - Move Flexible Support Systems
  - Better Agent Support

INPUT



INPUT


INSURANCE
INDUSTRY SPECIFIC SERVICES
'83-'88
AAGR
Applications
Software
$290
$1,150
32%
Processing
Services
$520
$980
14
$100
Integrated
Systems
$310
25
0
200
400
600
800
1,000
$1,200
Market Size ($ million)
1983
1988
INPUT

MCP3

Insurance

COMPETITIVE ACTIVITIES

- ISA Redirection
- PMS = Major P&C Software Vendor
- Multiple PC-based Services
- PC Companies Offering Agency Automation
- IVANS in Test Mode

INPUT

Insurance

RECOMMENDATIONS

- Explore Opportunities Such As:
  - IVANS Tie-in Service
  - Commericial Lines Software
  - Third-party Benefit Administrators
- Keep Insurance Industry Expertise Visible

INPUT

MEDICAL

INPUT

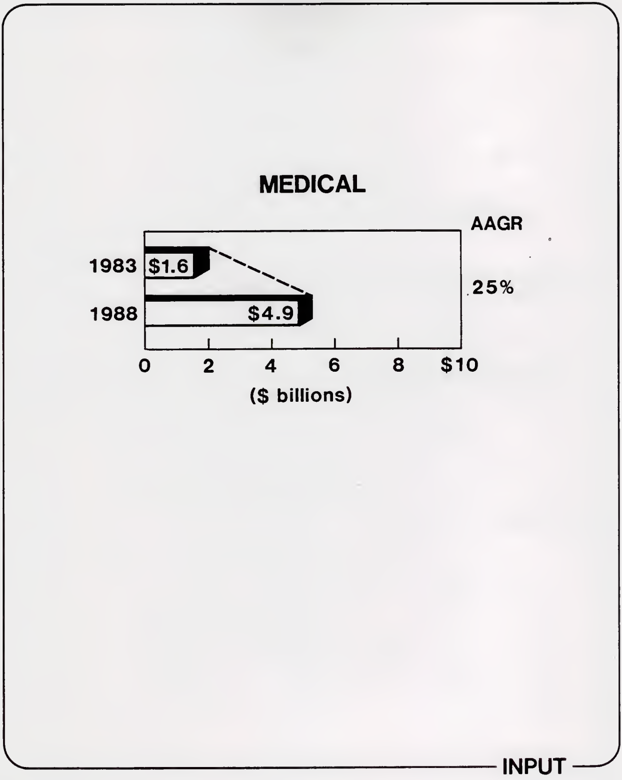
174MCP3

Medical

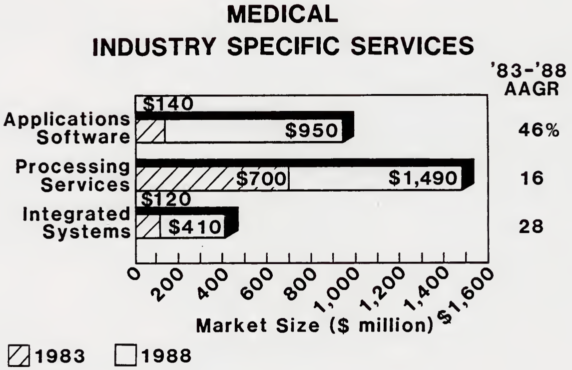
CHANGING STRUCTURES

- Intense Competition
- New Cost-sensitive Environment
  - Hospitals ⟶ Ambulatory Care
  - Larger Group Practices
- HMO, Chain, Walk-in Growth
- Large Corporation Management

INPUT



MEDICAL
AAGR
1983
$1.6
1988
$4.9
25%
0
2
4
6
8
$10
($ billions)
INPUT



INPUT

MCP3

INPUT

SYSTEMS IMPLICATIONS

- Diagnosis-related Group (DRG) Reporting
- More Hospital Robotics
- More Expert Systems

INPUT

Medical

COMPETITIVE ACTIVITY

- More Joint Marketing
- More Insurance, CPA Vendors
- Vendor Diversification to Physician Market
- IBM More Aggressive

INPUT

Medical

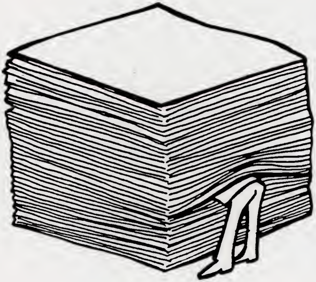
RECOMMENDATIONS

- Explore Emerging Application Opportunities
  - Cost Measurement Systems
  - Patient Data Bases
- Target Chains
- Emphasize Service/Software Support

INPUT

180MCP3

ON-LINE DATA BASES



INPUT

DATA BASE SERVICES

- More Cost-effective Storage, Processors, and Terminals
- More Outlets
- Better Network Management
- Better Information Handling Software
- But Higher Communications Costs

INPUT

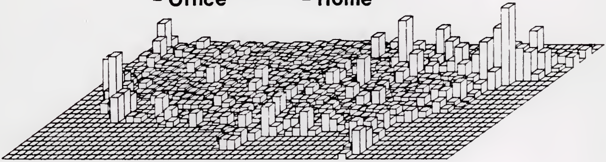
DATA BASE SERVICES DEMAND

- Market Conditioning through Advertising
- Broader Base of Customers
- More Demand for Qualified Information
- Need for Interrelated Data

INPUT

DATA BASE SERVICES DRIVING FORCES

- Shift from Dedicated to PC Terminals
- PC Proliferation Creating Millions of Access Points
  - Office
  - Home



INPUT

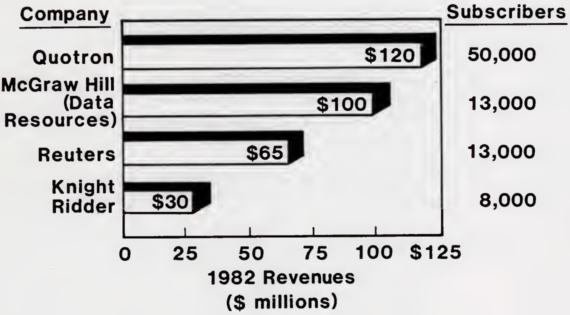
DATA BASE VENDORS

- Dominant Vendors by Application

Economic	- DRI & IDC
Stock Quote	- Quotron
Credit	- Telecredit, TRW
Real Estate	- PRC
Legal (Text)	- Mead Lexis

INPUT

ON-LINE DATA BASE VENDOR PERFORMANCE



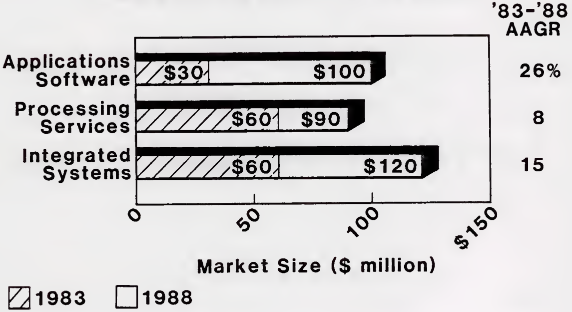
INPUT

DATA BASE-RELATED OPPORTUNITIES

- Provide Distribution Channel For Publishers
- Target Home-based PCs
- Use Spin-off Data From Transaction Processing
- Improve Data Handling and Interface Software

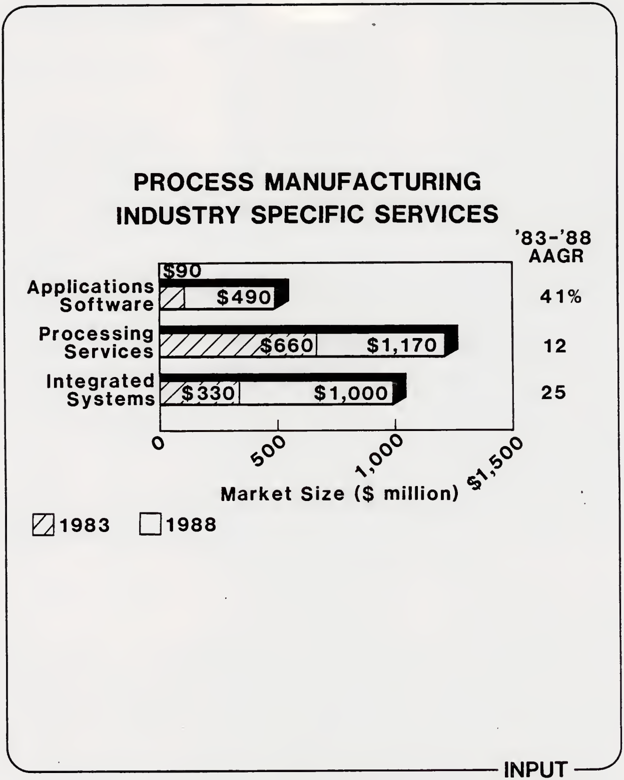
INPUT

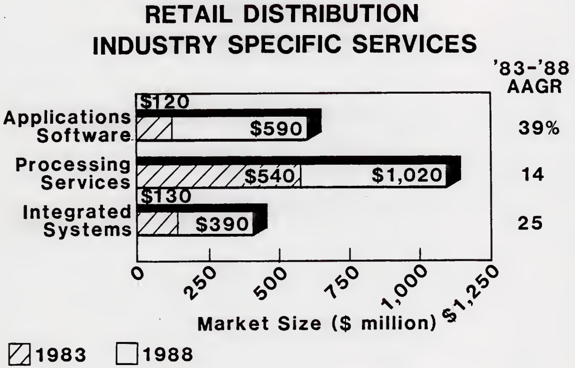
EDUCATION INDUSTRY SPECIFIC SERVICES



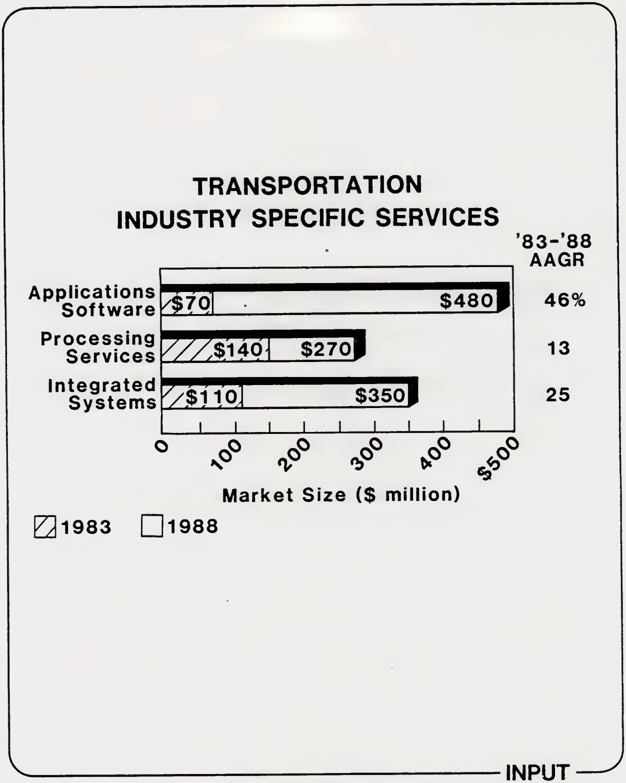
INPUT

MCP3


PROCESS MANUFACTURING
INDUSTRY SPECIFIC SERVICES
'83-'88
AAGR
Applications
Software
$90
$490
41%
Processing
Services
$660
$1,170
12
Integrated
Systems
$330
$1,000
25
0
500
1,000
$1,500
Market Size ($ million)
1983
1988
INPUT

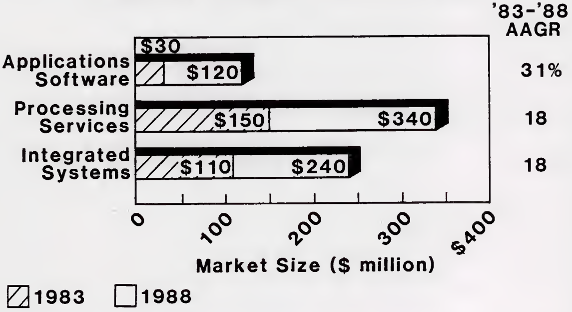

RETAIL DISTRIBUTION
INDUSTRY SPECIFIC SERVICES
'83-'88
AAGR
Applications Software
$120
$590
39%
Processing Services
$540
$1,020
14
Integrated Systems
$130
$390
25
0
250
500
750
1,000
$1,250
Market Size ($ million)
1983
1988

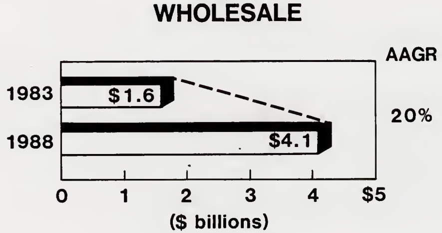
INPUT


TRANSPORTATION
INDUSTRY SPECIFIC SERVICES
'83-'88 AAGR
Applications Software
$70
$480
46%
Processing Services
$140
$270
13
Integrated Systems
$110
$350
25
0
100
200
300
400
$500
Market Size ($ million)
1983
1988
INPUT

MCP3

UTILITIES
INDUSTRY SPECIFIC SERVICES



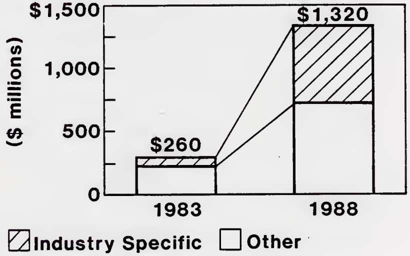


INPUT

185MCP3

INPUT

VALUE-ADDED NETWORK SERVICES MARKETS

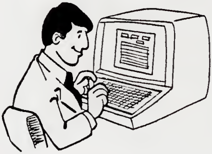


INPUT

MPC3

INPUT

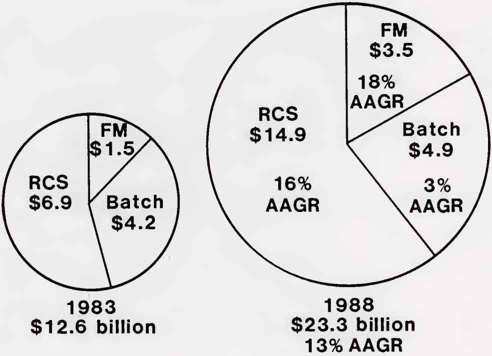
PROCESSING SERVICES OUTLOOK



- Services Mix
- PC Impact and Response
- Recommendations

INPUT

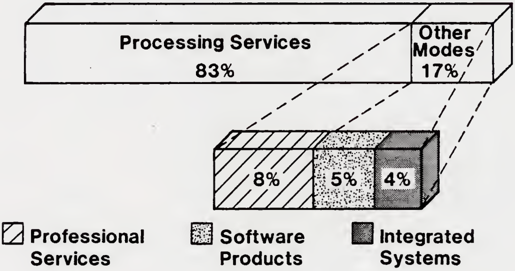
PROCESSING SERVICES GROWTH



INPUT

199MCP3

EXPANSION TO MULTIPLE DELIVERY MODES



INPUT

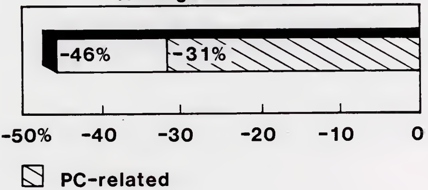
201MCP3

INPUT

USE OF RCS

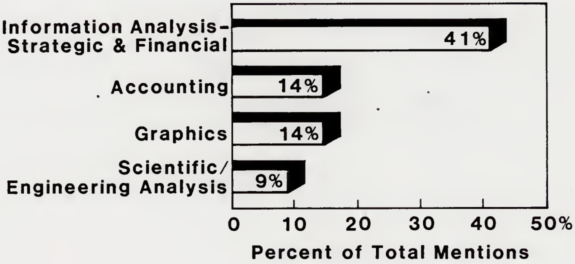
- 48% of Respondents Reported Decline in RCS Use

Average Decrease



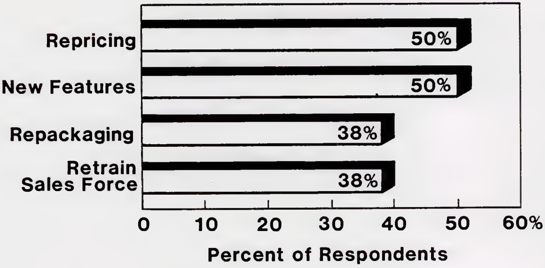
INPUT

RCS APPLICATIONS DISPLACED BY PCs



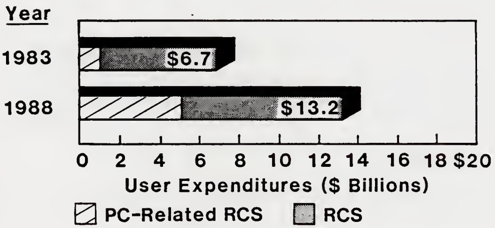
INPUT

RCS DEFENSIVE STRATEGIES



INPUT

PC-RELATED RCS TO BE 33% OF U.S. REVENUES BY 1988



INPUT

RCS GROWTH STRATEGIES UNLIKELY TO BE DUPLICATED BY PC TECHNOLOGY

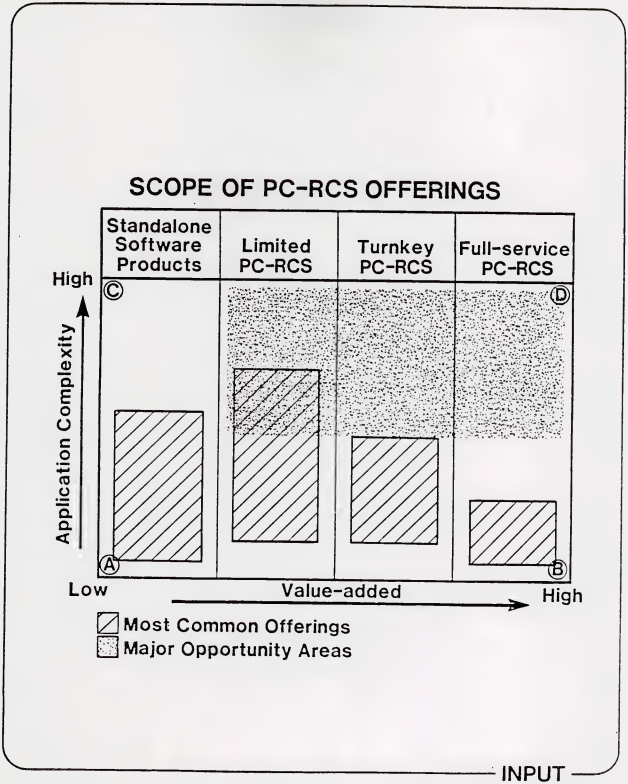
- Strong Customer and Application Knowledge
- Communications (Value-added and LAN)
- Large Data Base Applications
- Large Transaction-oriented Applications

INPUT

RCS GROWTH STRATEGIES UNLIKELY TO BE DUPLICATED BY PC TECHNOLOGY

- Full Range of Customer Support
- Local Sales/Support Offices
- RCS Vendor Accountability

INPUT



SCOPE OF PC-RCS OFFERINGS
Standalone Software Products
Limited PC-RCS
Turnkey PC-RCS
Full-service PC-RCS
High
Application Complexity
Low
Value-added
High
C
D
A
B
Most Common Offerings
Major Opportunity Areas
INPUT

211MCP3

PC-RCS IMPLEMENTATION CONSIDERATIONS

- Stay in Mainstream With . . .
  - Hardware
  - Operating Systems
- Keep Design Open-ended
- Provide Good Ergonomics

INPUT

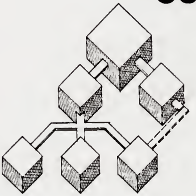
Processing Services

RECOMMENDATIONS

- Focus on Selected Market Segments
- Expand Delivery Mode Alternatives
  - Software Products
  - Professional Services
  - Integrated Systems
- Increase PC-RCS Offerings

INPUT

SOFTWARE PRODUCT OUTLOOK



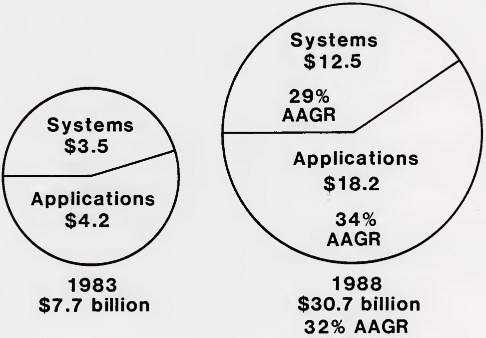
Profile

Trends

Recommendations

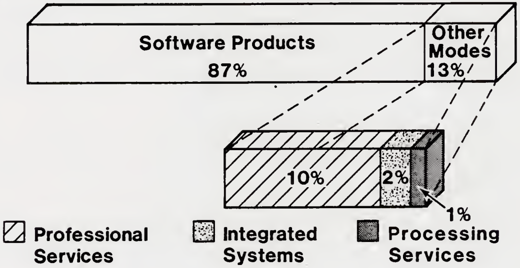
INPUT

SOFTWARE PRODUCTS GROWTH



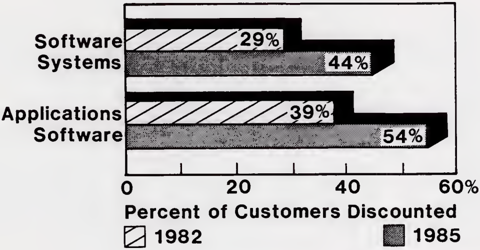
INPUT

DISTRIBUTION OF SOFTWARE PRODUCTS COMPANIES' REVENUE



INPUT

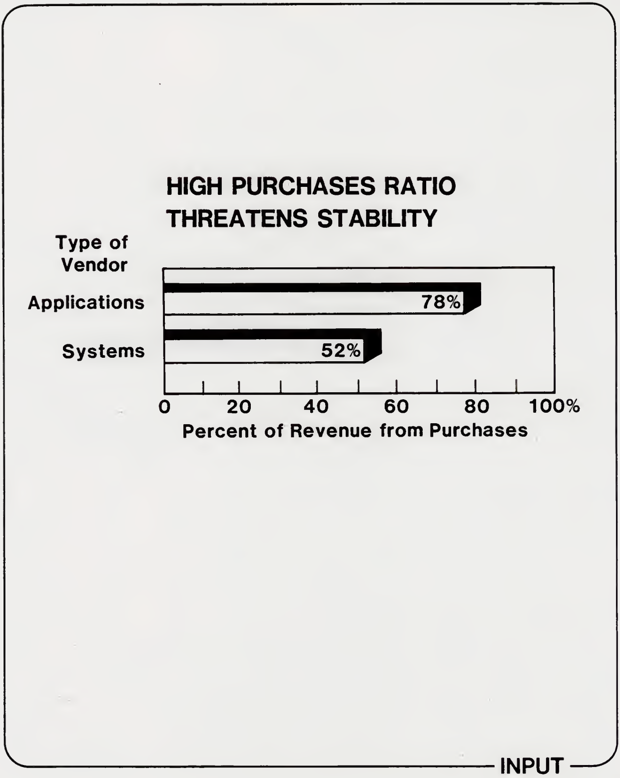
DISCOUNTING TO INCREASE



INPUT

217MCP3

INPUT


HIGH PURCHASES RATIO
THREATENS STABILITY
Type of
Vendor
Applications
78%
Systems
52%
0
20
40
60
80
100%
Percent of Revenue from Purchases
INPUT

SOFTWARE PRODUCT TRENDS

- 82% of Vendors To Have PC Offerings
- More Joint Ventures
- New Entrants
- Increased Acquisitions by Large Companies
- Emergence of Software Product Holding Companies

INPUT

SOFTWARE PRODUCT RECOMMENDATIONS

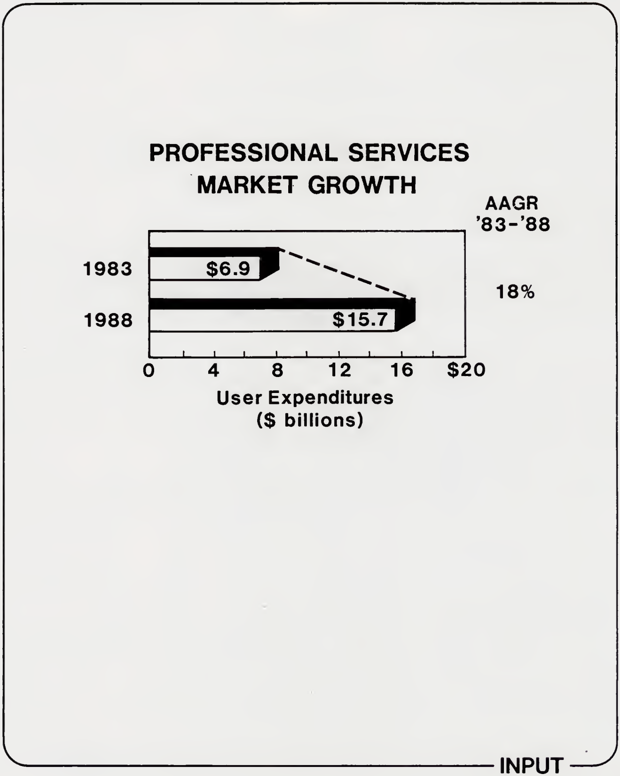
- Use PCs to Pull Mainframe Sales
- Market Mainframe Versions of PC Successes
- Use Third Parties to Accelerate Market Penetration
- Increase Lease Bases to Stabilize Revenue Swings

INPUT

PROFESSIONAL SERVICES OUTLOOK

- Profile
- Trends
- Recommendations

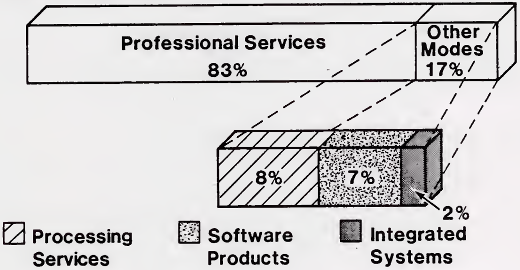
INPUT



223MCP3

INPUT

DISTRIBUTION OF PROFESSIONAL SERVICES COMPANIES' REVENUE



INPUT

224MCP3

Professional Services

TRENDS

- Growth Variance by Geography
- Enhanced Activity by RCS Vendors
- More E&T Competition From Hardware Vendors

INPUT

Professional Services

RECOMMENDATIONS

- Establish Speciality Skills
- Expand Alternative Delivery Modes to Known Markets
- Seek Joint Marketing Relationships

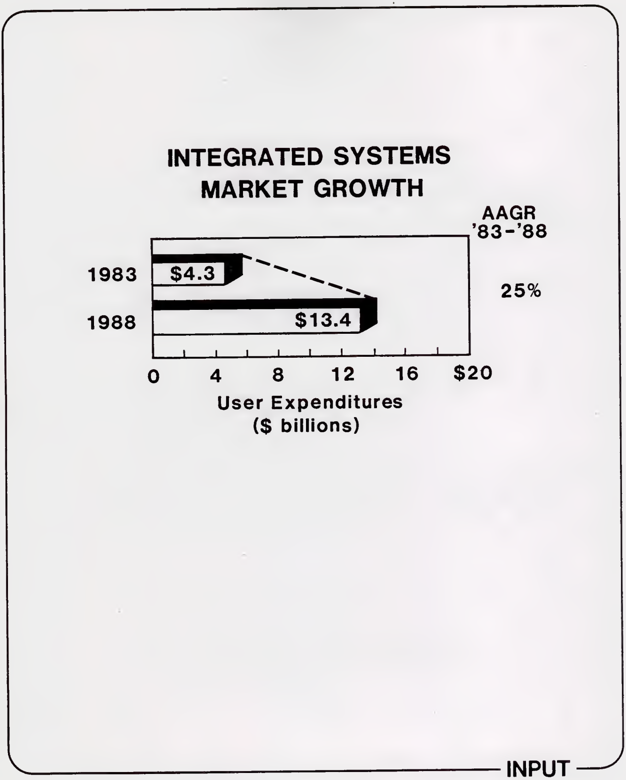
INPUT

226MCP3

INTEGRATED SYSTEMS OUTLOOK

- Profile
- Trends
- Recommendations

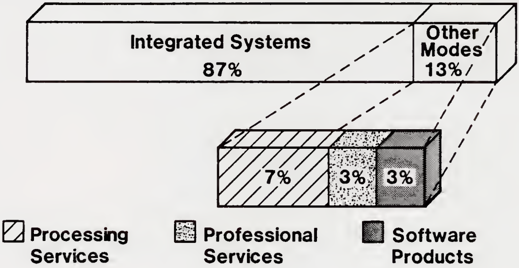
INPUT



228MCP3

INPUT

DISTRIBUTION OF INTEGRATED SYSTEMS COMPANIES' REVENUE



INPUT

Integrated Systems

TRENDS

- Expanding Service Offerings
  - Service/Software More Important than Price
  - Enhanced Account Control
- Competition From Nonturnkey Vendors

INPUT

RECOMMENDATIONS

- Offer Variations of Service
  - RCS Version
  - Rental Systems
  - Software Products
- Develop PC Tie-ins
- Expand Field Service Role

INPUT

CONCLUSIONS AND RECOMMENDATIONS

INPUT

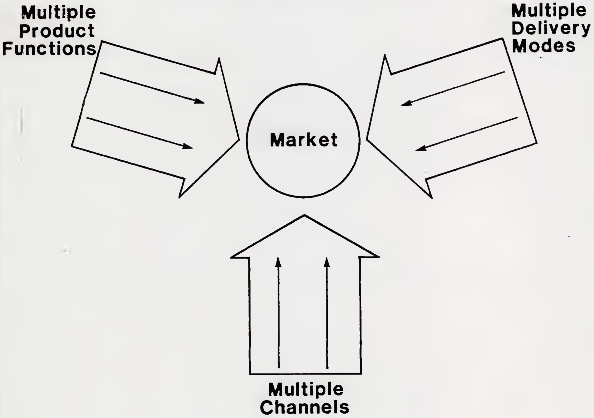
THE INDUSTRY TODAY

- Demand Exploding
- Technology Creating More Options
- Users Want Best of Both Worlds
  - More Powerful Systems
  - Easier Use
- Competition Becoming Better Financed

INPUT

Recommendations

USE INTEGRATED STRATEGIES TO LEVERAGE MARKET EXPERTISE



INPUT

234MCP3

INPUT

Recommendations

OFFER MULTIPLE PRODUCT FUNCTIONS

- Previously Separate Functions
  - LISA
  - (LOTUS 1-2-3, Context MBA)
- Link to Other Vendors' Systems
  - VisiAnswer/Answer DB

INPUT

Recommendations

USE MULTIPLE DELIVERY MODES

- Competitive Edge Is Market Knowledge
- Software Product Versions
- Complementary Data Base Services

INPUT

Recommendations

USE MULTIPLE DISTRIBUTION CHANNELS

Examples:

Artificial Intelligence, Inc. ——→	IBM (INTELLECT)
VisiCorp ——→	Informatics, ADR
AGS Computers ——→	Micro America Distributing
SEI ——→	Client Banks

INPUT

EXAMPLES OF MULTIPLE DELIVERY MODES

RCS (Martin Marietta) ⟶ Systems Software (Mathematica)

RCS (ADP,CSC) ⟶ VAN (Autonet)

Turnkey Systems (ASK) ⟶ RCS (ASKNET)

INPUT

SUMMARY

- Provide Multiple Approaches to Selective Markets
- Leverage Partnership Opportunities

INPUT

SUMMARY

- Embrace End-user Computing
- Accelerate PC-oriented Services
- Design for Three Levels
- Focus on Ergonomics

INPUT

1983 - 1988

UP,

UP,

AND AWAY!

INPUT