Systems Integration and Systems Operation Markets
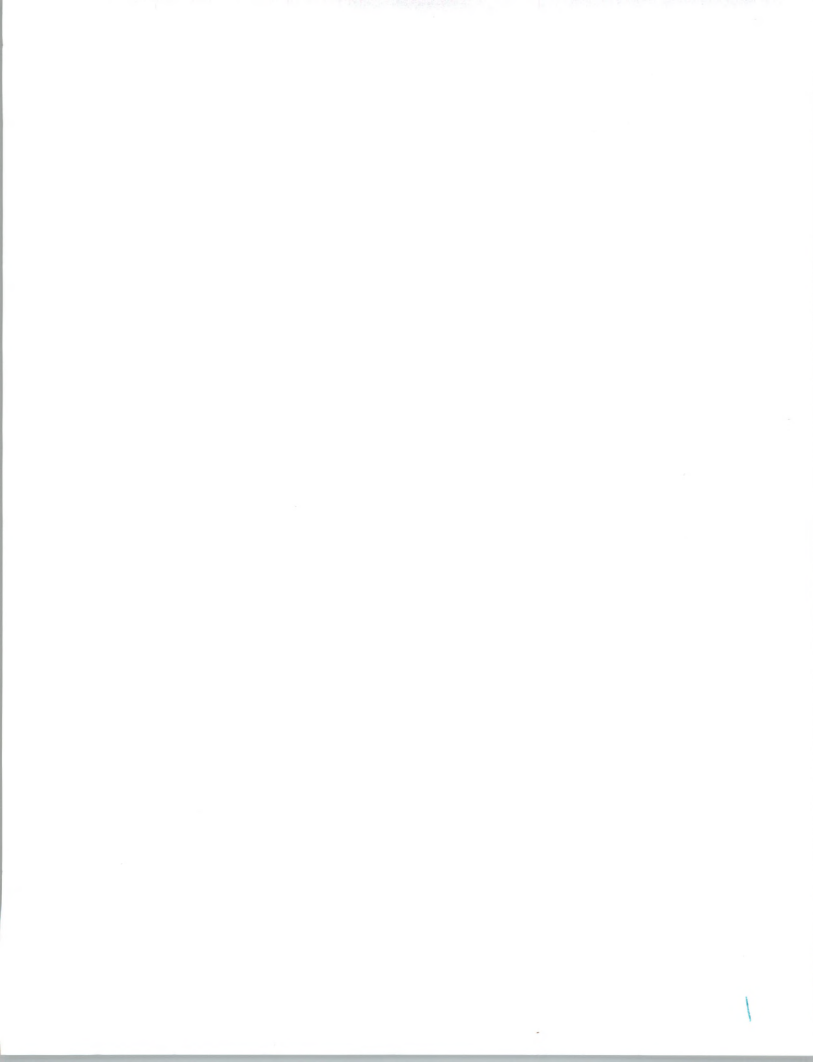
Systems Integration and Systems Operation Markets

Systems Integration

SI Definition

- A business offering
- Complete solution to complex requirement for:
  - Information systems
  - Networking
  - Automation
- Custom selection and implementation of products and services

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

Major Buyer Issues

- Core business focus
- Competitive demands
- Increasingly complex solutions

INPUT

Major Buyer Issues

- Users becoming buyers
- New technology application
- Unavailable skills

INPUT

Major Vendor Issues

- Consolidations and alliances
- Focus on repeatable solutions
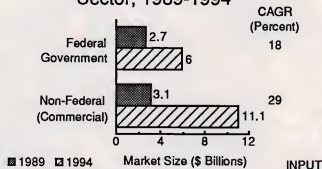 - Risk reduction
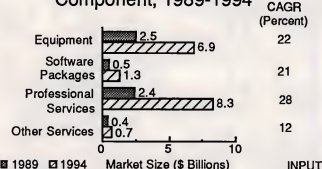 - Productivity

INPUT

Major Vendor Issues

- Full service suppliers
  - "Business change" consulting
  - Systems operation
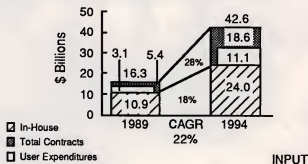- Increasing competition
  - Skills
  - Clients

INPUT

INPUT

U.S. Systems Integration Market by Sector, 1989-1994

CAGR (Percent)

Federal Government: 2.7 (1989), 6 (1994) — 18

Non-Federal (Commercial): 3.1 (1989), 11.1 (1994) — 29

■ 1989 ▨ 1994   Market Size ($ Billions)   INPUT

U.S. Systems Integration Market by Component, 1989-1994

CAGR (Percent)

Equipment: 2.5 (1989), 6.9 (1994) — 22

Software Packages: 0.5 (1989), 1.3 (1994) — 21

Professional Services: 2.4 (1989), 8.3 (1994) — 28

Other Services: 0.4 (1989), 0.7 (1994) — 12

■ 1989 ▨ 1994   Market Size ($ Billions)   INPUT

Commercial Systems Integration Project Value and Expenditures, 1989-1994

$ Billions

1989: 3.1, 16.3 (5.4), 10.9
1994: 42.6, 18.6, 11.1, 24.0
28%, 18%
CAGR 22%

▨ In-House
■ Total Contracts
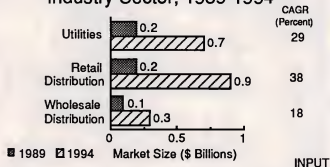□ User Expenditures

INPUT

Key Commercial SI Market Factors

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

INPUT

INPUT

U.S. Systems Integration Market by Industry Sector, 1989-1994

	Market Size ($ Billions)	CAGR (Percent)
Discrete Manufacturing	0.8 / 3.5	35
State & Local Government	0.5 / 1.4	24
Banking/Finance	0.3 / 1.3	33

■ 1989 ▨ 1994   Market Size ($ Billions)

INPUT

U.S. Systems Integration Market by Industry Sector, 1989-1994

	Market Size ($ Billions)	CAGR (Percent)
Utilities	0.2 / 0.7	29
Retail Distribution	0.2 / 0.9	38
Wholesale Distribution	0.1 / 0.3	18

■ 1989 ▨ 1994   Market Size ($ Billions)

INPUT

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

Non-Federal Network/Systems Integration Market, 1989

Network $0.8 — Both $1.0 — Systems $2.1

Network Integration $1.8 billion

Systems Integration $3.1 billion

INPUT

INPUT

4
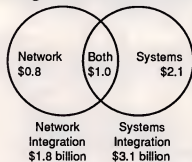
Trends in SI Profitability

Commercial SI Profitability

- 43% Increasing
- 57% Stable

Federal SI Profitability

- 36% Decreasing
- 45% Stable
- 18% Increasing
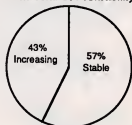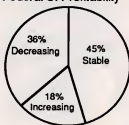
INPUT

Vendor Selection Criteria

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

INPUT

SI Vendor Capabilities Needed

Ranking	Capability
1	Program management
2	System design/architecture
3	Business consulting
4	Software development

Ranked by vendors

INPUT

SI Vendor Capabilities Needed

Ranking	Capability
5	Vertical industry knowledge
6	Facilities management and operations skills
7	Software products
8	Hardware products

Ranked by vendors

INPUT

INPUT

Buyer Acceptance Methodologies

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

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

SI Competition Ranked by Vendors

- Commercial
  - Andersen Consulting
  - EDS
  - IBM
  - DEC

By Number of Mentions

SI Competition Ranked by Vendors

- Federal
  - CSC
  - EDS
  - IBM
  - BCS, PRC (tied)
  - TRW, MMDS (tied)

By Number of Mentions

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

Future Trends

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

INPUT

Conclusions

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

INPUT

Conclusions

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

INPUT

INPUT

9

Conclusions

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

INPUT

Vendor Recommendations

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

INPUT

Systems Operations

INPUT

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

INPUT

10

"Old"
Facilities Management
- Focus on computer operations

"New"
Systems Operations
- Development, planning, control, operations

Systems Operations Characteristics

- Method of Operation
  - Remote
  - On-site
  - Distributed

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

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

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

System Operations Characteristics

- Ownership of central systems
  - Vendor-owned
  - Customer-owned

INPUT

Systems Operations Characteristics

- Uniqueness of resource use
  - Single customer, dedicated resources
  - Multiple customers, shared resources

INPUT

Systems Operations Processing Services

- Fastest-growing segment of processing market
- Changing attitudes of IS executives
- Non-IS executive involvement
- Emerging systems vendors' strategies

INPUT

INPUT

13

**Systems Operations
Driving Forces**

- Increasing complexity of operations
- Scarcity and expense of required talents
- Costs and problems of systems upgrades
- Service level requirements
- Backup requirements

INPUT

**Systems Operations
Driving Forces**

- Systems integration creates opportunities
- Reduction of costs through sharing
  - People
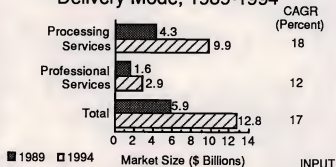 - Software
  - Computer systems
  - Networks

INPUT

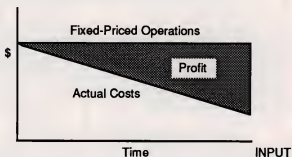**Systems Operations and
Competitive Advantage**

- Operations advantages hard to achieve
- Avoidance of operations disadvantages imperative
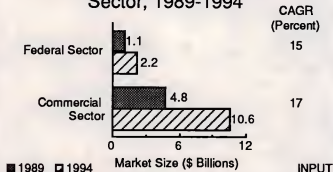- Advantage/disadvantage comes from applications

INPUT

**U.S. Systems Operations Market by
Delivery Mode, 1989-1994**

		CAGR (Percent)
Processing Services	4.3 / 9.9	18
Professional Services	1.6 / 2.9	12
Total	5.9 / 12.8	17

0 2 4 6 8 10 12 14
■ 1989 ▢ 1994   Market Size ($ Billions)

INPUT

INPUT

14

Systems Operations Efficiency Yields Profits

U.S. Systems Operations Market by Sector, 1989-1994

CAGR (Percent)

Federal Sector — 1.1 / 2.2 — 15

Commercial Sector — 4.8 / 10.6 — 17

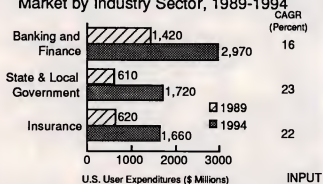■ 1989 ☐ 1994 Market Size ($ Billions)
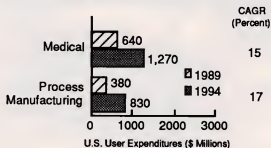
Trends in Systems Operations

- Network management contracts
- Development and operations in agreements
- Shared resources approach
- Mixed hardware offerings
- Vertical market focus

Processing Services Systems Operations Market by Industry Sector, 1989-1994

CAGR (Percent)

Banking and Finance — 1,420 / 2,970 — 16

State & Local Government — 610 / 1,720 — 23

Insurance — 620 / 1,660 — 22

☐ 1989 ■ 1994

U.S. User Expenditures ($ Millions)

INPUT

INPUT

Processing Services Systems Operations Market by Industry Sector, 1989-1994

	CAGR (Percent)
Medical — 640 / 1,270	15
Process Manufacturing — 380 / 830	17

☑ 1989 ■ 1994

U.S. User Expenditures ($ Millions): 0 1000 2000 3000

INPUT

Industry Margins Vendors' View

	Profit Margins (Percent)
Commercial	15
Federal	9

INPUT

Vendor Strategies

- Systems integration projects lead to SO opportunities
- "Flow-through" creates profit opportunities
  - Add-on equipment
  - Software
  - Supplies

INPUT

Vendor Strategies

- Project managers are critical skills
- Winning vendor hiring of on-board staff
- Focus on equipment inventory management
  - Technology insertion
  - Residual values
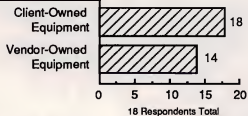- Full-service providers

INPUT

INPUT

Systems Operations Study

- 20 vendors
- 68 users or potential users
  - 24 current SO users
  - 24 would consider use
  - 20 definite "no's"
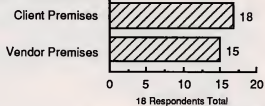
Service Modes
Surveyed Vendors

Service Provided On:

Client-Owned Equipment	18
Vendor-Owned Equipment	14

0 5 10 15 20
18 Respondents Total

Service Modes
Surveyed Vendors

Service Provided On:

Client Premises	18
Vendor Premises	15

0 5 10 15 20
18 Respondents Total

Service Modes
Surveyed Vendors

Service Provided On:

Equipment Dedicated to Single Client	16
Equipment Shared by Multiple Client	12

0 5 10 15 20
18 Respondents Total

Client Service Preference Vendors' View

Service Provided On:

Client-Owned Equipment — 10
Vendor-Owned Equipment — 4

0 5 10 15 20
18 Respondents Total
INPUT

Client Service Preference Vendors' View

Service Provided On:

Client Premises — 10
Vendor Premises — 4

0 5 10 15 20
18 Respondents Total
INPUT

Client Service PreferenceVendors' View

Service Provided On:

Equipment Dedicated to Single Client — 11
Equipment Shared by Multiple Client — 2

0 5 10 15 20
18 Respondents Total
INPUT
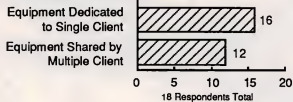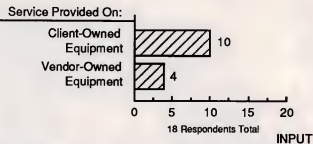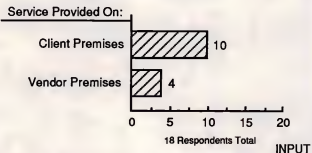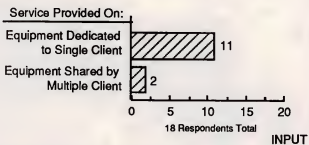
Systems Operations Vendor Pricing

Fixed-Price — 17 / 14
Cost Plus — 14 / 6
Transaction Volume — 10 / 2
Other — 5 / 2

□ Offered
■ Preferred

0 5 10 15 20
Vendors' View
INPUT

INPUT

18
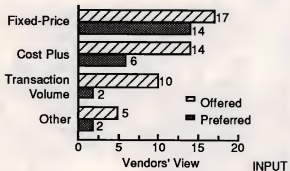
Systems Operations Firms Other Offering

Capability	Number Offering	High Importance
Systems integration services	19	16
Software development service	19	11
Software maintenance	19	11
Education/Training/Documentation	19	6

INPUT

Systems Operations Users Surveyed
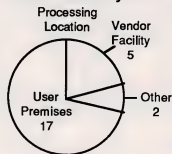
Equipment Ownership

Vendor 8

User 16

INPUT

Systems Operations Users Surveyed

Processing Location

Vendor Facility 5

Other 2

User Premises 17

INPUT

Systems Operations Users Surveyed

No 2

Other 2

Yes 20

Dedicated Equipment

INPUT

INPUT

Systems Operations Users Surveyed

Contract Pricing

Segment	Value
Other	11
Fixed-Price	11
Transaction Volume	2
Cost Plus	2
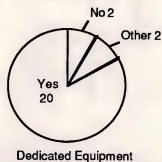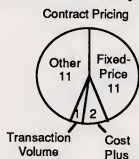
INPUT

User Satisfaction with SO Vendor Performance

Criterion	Rating
Quality of Work	4.4
Cost of Service	3.7
Performance	4.1
Ability to Make Changes	3.6
Cost of Changes	3.9

Scale: 1 Dissatisfied — 5 Satisfied
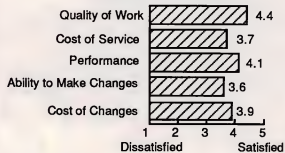
INPUT

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

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

INPUT

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

Systems Operations Vendor Selection Criteria—Buyers' View

Ranking	Criteria
7	Reduced capital investment
8	Near-term cash flow improvements
9	SO performed in client facility
10	Labor relations/unions
11	SO performed in vendor location

INPUT

Leading Systems Operations Vendors

Vendor	Market Share (Percent)
EDS	16 *
Computer Sciences	5
Shared Medical Systems	3
Boeing Computer Services	3
Systematics	3

*Non-GM

INPUT

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

INPUT

21

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

---

Systems Operations Targets

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

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

---

Who is the SO Buyer?

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

22

What is the SO Buyer Looking For?

- Depends on the prospect
- Requires customized marketing

What are the SO Buyer's Key Motivators?

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

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

SO Terms Characteristics

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

23

"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

Therefore Do Not Use the Term "Computer Utility"

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

Platform Systems Operations = Computer/Systems Utility

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

24

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

Prospect View of System Utility Relationship

- Should become stronger over time
- Opportunity for service expansion

Systems Utility Partnering Opportunity

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

Impact on Existing Markets

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

25

"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

"Systems Utility" Market Potential

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

INPUT

"Systems Utility" Market Potential

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

INPUT

"Systems Utility" Market Potential

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

INPUT

INPUT

26

Conclusions

- Renewed acceptance of systems operations
- Market entry by large vendors
- Track record is important
- Systems integration will provide systems operations growth impetus

Conclusions

- Economic factors will continue to create user demand for systems operations
- Commercial sector is most attractive
- Profits through productivity and technology leverage
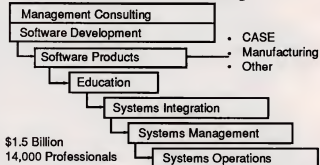
Recommendations

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

Competitive Trends

Andersen Consulting

Management Consulting
Software Development
  Software Products   • CASE
    Education   • Manufacturing
      Systems Integration   • Other
        Systems Management

$1.5 Billion
14,000 Professionals
          Systems Operations

INPUT

Computer Sciences Corp/Infonet

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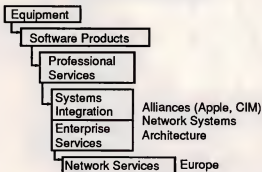 - Tax and credit
  - Professional services/SI

INPUT

Computer Sciences Corp/Infonet

- Acquisitions key to commercial activities
  - Index
  - Computer Partners

INPUT

Digital Equipment

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

INPUT

INPUT

EDS

- Industry leader in systems operations
- Aiming for very large accounts
- Industry-oriented
  - Finance
  - Insurance
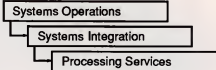 - State and local government
  - Banking

INPUT

EDS

- Broad range of systems: IBM, DEC, HP
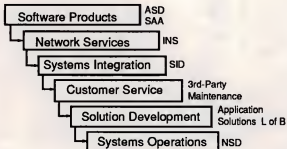- Ownership position in HDS
- Strong network capability
- Global

INPUT

EDS

Systems Operations
   Systems Integration
      Processing Services

INPUT

IBM

Software Products — ASD / SAA
  Network Services — INS
   Systems Integration — SID
    Customer Service — 3rd-Party Maintenance
     Solution Development — Application Solutions L of B
      Systems Operations — NSD

INPUT

INPUT

IBM

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

IBM National Services Division

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

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
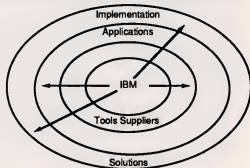 - Systems operations studies
  - Conversion services

IBM Investments in Software/Services Firms

- Worldwide scope
  - 19 in U.S.
  - 24 in Europe
  - 20 in Far East
- Leverage for IBM greater than percent of equity indicates
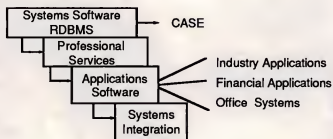- Investments will continue

30

IBM Investment Strategy

INPUT

Oracle

INPUT

Aerospace Subsidiaries

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

INPUT

Aerospace Companies

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

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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

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Japanese Companies

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

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Summing It Up

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

Accomplished through:
- Self-funded expansion
- Consolidation—partnering/acquisitions

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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.

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

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

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

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