The Evolving Role of Systems Management

Jean-Paul Richard
Principal Consultant

INPUT, INC.

Contents

- Market Definitions
- SM Service Options
- Driving Forces

INPUT

Notes

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Contents

- Vertical Markets
- Major Vendor Strategies
- Issues/Trends
- Conclusions/Recommendations

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Notes

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Systems Management

- Systems integration
- Systems outsourcing
  - Applications management
  - Applications maintenance
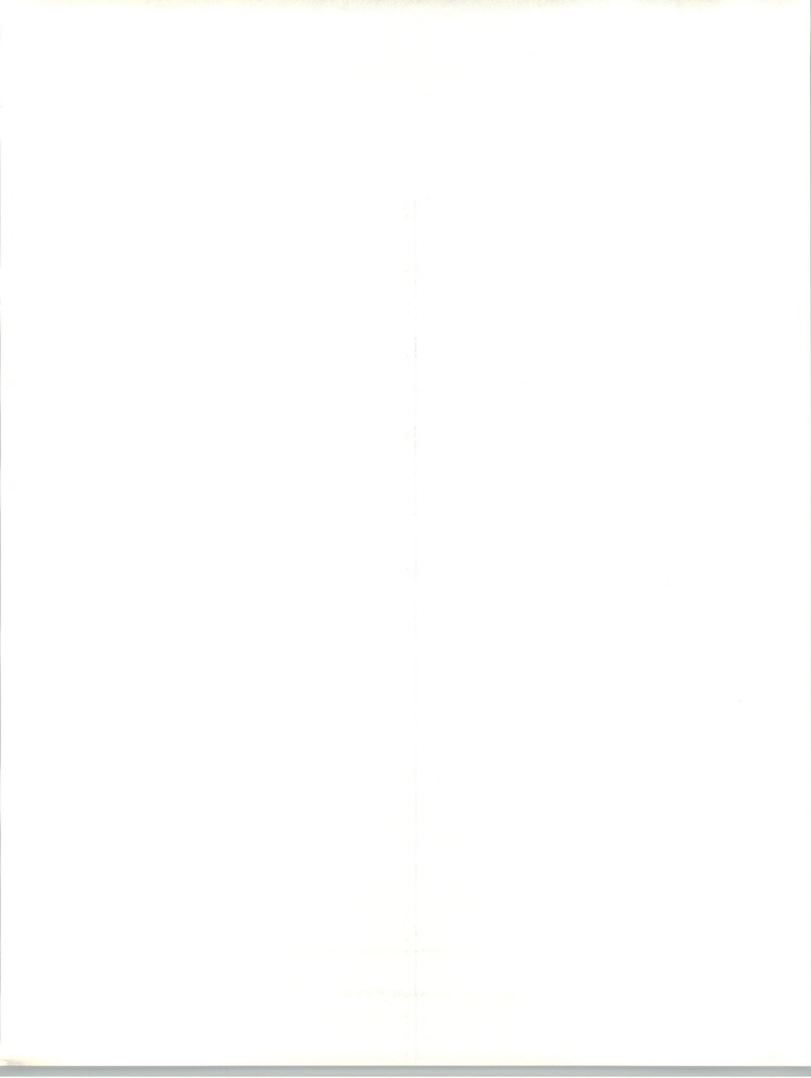 - Desktop services

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Systems Integration

- Project oriented
- Complete solution
  - Information systems
  - Communications
  - Automation

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Systems Integration

- Customized products
  - Selection
  - Implementation

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Typical SI Project Tasks

- Systems design
- Selection/configuration of equipment and network
- Selection/development of applications software
- Installation of equipment and software

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Notes

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Systems Operations

- Long-term commitment
- Management of information processing operations
- Platform operations
  - Processing only

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Notes

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Systems Operations

- Applications operations
  - Processing
  - Applications software
    - Maintenance
    - Development

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Notes

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Systems Operations Options

- Client or vendor premises
- Dedicated or shared equipment
- Applications development
- Systems and applications software

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Notes

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Systems Operations Options

- Maintenance
- Disaster recovery and backup facilities
- Vendor or client staff

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Notes

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Applications Management

- Emerging opportunity
- Maintenance of software
  - Systems
  - Applications

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Notes

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Applications Management

- Development of applications software
  - Design
  - Language selection
  - Development
  - Test/implementation

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Notes

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Applications Management Functions

- Technology assessment of packages
- Upgrade installed base
- Modify vendor and client packages

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Applications Management Functions

- Convert existing code to advanced languages

- Provides consulting services for new applications

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Notes

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"Outsourcing"

- Not a delivery mode
- Any of the above
- A step in SM evolution

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Evolution of Outsourcing

Type of Prod. or Service	1960s	1970s	1980s	1990s
Applications Software	Packages		Turnkey	Appl. Mgmt.
Professional Services	Consulting	Dev.		SI

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Notes

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Evolution of Outsourcing

Type of Prod. or Service	1960s	1970s	1980s	1990s
Processing Services	Remote Processing		FM	SO

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Notes

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Systems
Management
Service Options

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User Perspective
Spending on Services

Applications Management — 25%
Computer Operations — 49%
Systems Development — 26%

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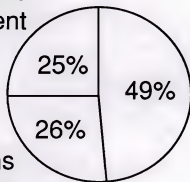
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Vendor Perspective
Spending on Services
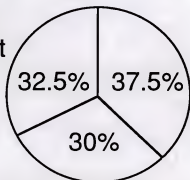
Applications Management — 32.5%

Computer Operations (including existing data center equipment) — 37.5%

Systems Development (including new project equipment) — 30%

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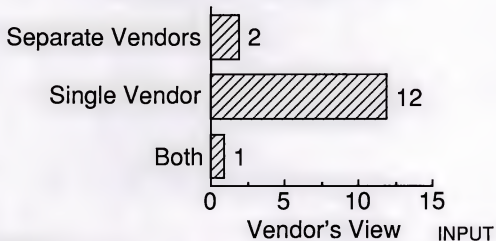
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Single versus
Separate Vendors

	Vendor's View
Separate Vendors	2
Single Vendor	12
Both	1

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Notes

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Systems
Management
Driving Forces

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Systems Management Environmental Factors

- Global market growth
- Rapidly changing technology
- Corporate restructuring/merging
- Economic adjustments/ downsizing

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Driving Forces

Environment	Impact
Globalization	Networks
Specialization	Strategic systems
Pace of change	Rapid response deployment
Integration	Systems compatibility

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Vertical Market Activity

- Banking/finance
- Discrete manufacturing
- Federal market
- State/local government
- Utilities

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Notes

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Key Factors
Banking/Finance

- Positive
  - Consolidation of operations
  - Savings and loan retrenchment
  - New product/service introduction
  - Strong cost pressures

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Notes

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Key Factors
Banking/Finance

- Negative

  - Internal staff resistance

  - Unique industry knowledge

  - Complex multihardware
    environment

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Notes

Key Factors
Discrete Manufacturing

- Positive

  - Islands of automation integrated

  - Data base use increasing

  - Customized solutions preferred

  - Batch-oriented systems replaced

  - Distributed PCs/workstations INPUT

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Notes

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Key Factors
Discrete Manufacturing

- Negative

  - Infrastructure in place

  - Build rather than buy

  - Industry experience prerequisite

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Notes

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Key Factors
Federal Government

- Positive
  - Technical staff shortages
  - Shared implementation risks
  - Information technology upgrades
  - Service demands increase

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Notes

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Key Factors
Federal Government

- Negative
  - Deficit-limited budget
  - Greater protest activity
  - Existing systems maintenance

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Notes

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Key Factors
Federal Government

- Negative
  - Slow standards implementation
  - Extended implementation schedules

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Notes

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Key Factors
State/Local Government

- Positive
  - New program/service demands
  - Shortage of qualified staff
  - Increasing network demands

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Key Factors
State/Local Government

- Negative
  - 82,000 government units
  - Emphasis on local vendors
  - Federal budget reduction impact
  - Federal revenue-sharing ended

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Key Factors—Utilities

- Positive
  - Competitive use of technology increasing
  - Hardware/software obsolescence
  - Repetitive tasks automated

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Notes

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Key Factors—Utilities

- Negative
  - Day-to-day orientation
  - Limited number of establishments
  - Financial constraints
  - Incentive for in-house capacity

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Notes

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Major Vendor Strategies

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Notes

IBM

- Traditional strengths
  - Marketing
  - Customer support
- Broadest product line
- Worldwide deployment

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Notes

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IBM

- Separate subsidiary (ISSC)
- Use IBM marketing strength
- Respond to "trading area" needs
- Capitalize on software/industry alliances

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Notes

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EDS

- Longest experience with FM
- SI considered separate business
- No built-in hardware/software capability
- Telecommunications strength
- SO principal focus

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Notes

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EDS

- Major equity investment to gain business
- Reduce GM-derived revenue
- Aggressive "independent" marketing units
- Acquire vertical market expertise

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Andersen Consulting

- Wide industry knowledge
- Rapid expansion of consulting
- Worldwide presence
- Extensive employee development

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Notes

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Andersen Consulting

- Several major "early" wins
- Uses SI as entree
- Targeting major vendors
- Aggressive use of alliances

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Notes

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CSC

- Strong federal market position
- Systems integration
- Worldwide presence
  - Acquisitions
  - Build on existing base

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Notes

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CSC

- Shift emphasis to commercial
- Strategic acquisitions
  - Index Group
  - Cleveland Consulting
- Federal experience synergy

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Leading Vendor Strategies

- Acquisition and equity positions
- Long-term alliances
- Staff training and development
- Systems management service offering
- Reduction of single industry dependence

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Notes

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Major Industry Trends 1991

- Full-service vendors' dominance

- Strategic alliances and niche acquisitions

- Users buying solutions—not technology

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Notes

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Major Industry Trends
1991

- Secondary vendors seek participation
- Corporate data center outsourcing
- User focus on core businesses

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SM Market Characteristics for the 1990s

- IT solutions complexity
- Commitment size and length
- Vendor breadth of assumed responsibility

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Notes

SM Market Characteristics for the 1990s

- Partnership versus supplier/subcontractor
- Professional services component

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Likelihood of Using SM in Future
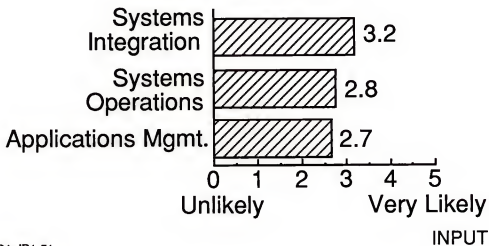
Category	Value
Systems Integration	3.2
Systems Operations	2.8
Applications Mgmt.	2.7

0 1 2 3 4 5
Unlikely — Very Likely

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Emerging "Outsourcing" Trends

- Applications management
- Applications maintenance
- Transition management

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Conclusions

- Increasing core business focus
- Shifting vendor strategies to provide all IS functions
- Full-service vendors sought
- Alliances offer full range of services

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Notes

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Conclusions

- Outsourcing activity increasing
- Applications management important vendor-provided service
- In-house IS staff role shift to strategic planning

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Notes

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Recommendations

- Capitalize on existing relationships
- Provide full-service range
- Expand into applications management
- Refocus client on strategy issues

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Notes

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Jean-Paul Richard
Principal Consultant

PROFILE

CAPABILITIES

- Mr. Richard has 22 years of experience in the data processing industry. He has served as a systems analyst and has held management positions in marketing, field and headquarters sales, as well as strategic planning.

BACKGROUND

- Mr. Richard will participate in a wide range of activities at INPUT. His skills and experience will be utilized in the FISSP program and the Systems Operations Program in particular.

- Prior to joining INPUT, Mr. Richard served in a variety of business development functions at Boeing, emphasizing acquisition of federal government business. At General Electric Information Services, he held positions as manager of sales planning and sales administration. He also managed sales and marketing offices in Canada and France for General Electric Information Services.

- Mr. Richard began his data processing career as a systems analyst in a manufacturing environment where projects included capacity planning models and simulation of test environments. He moved to a client service environment supporting a range of firms from insurance companies to chemical manufacturers.

EDUCATION

- B.S., Chemistry, Northeastern University, Boston, Massachusetts

- M.S., Industrial Management, Sloan School, MIT, Cambridge, Massachusetts

THE EVOLVING ROLE OF
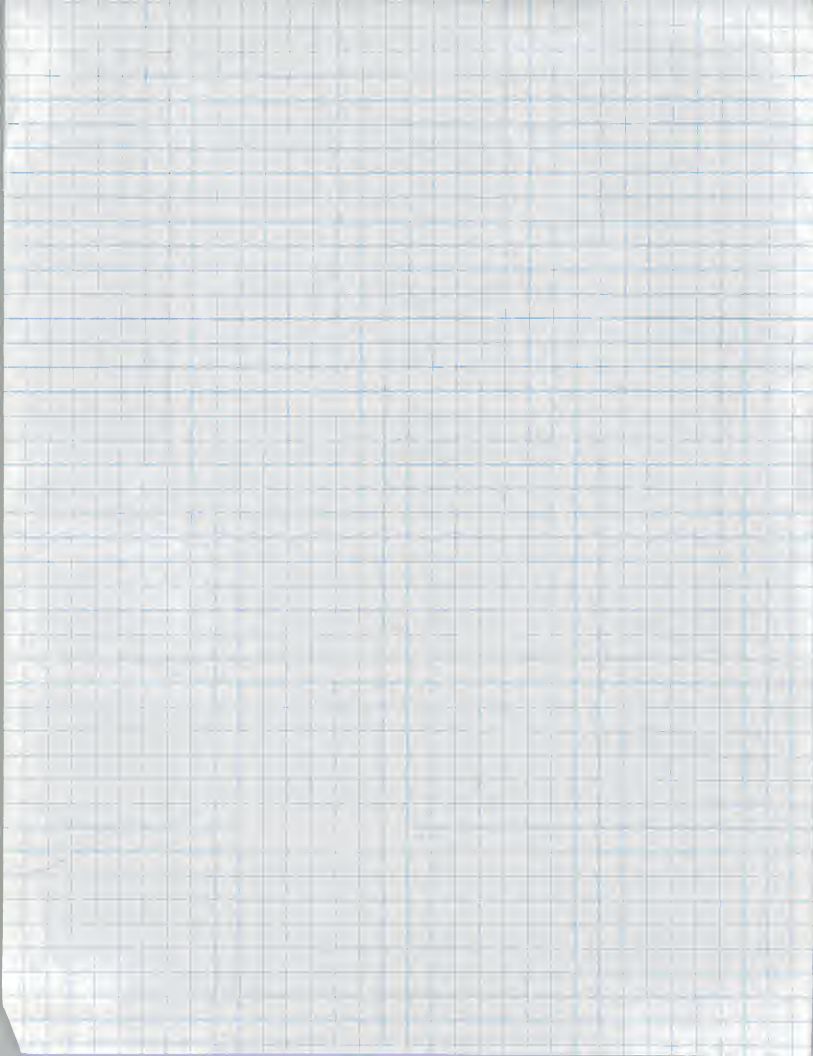
SYSTEMS MANAGEMENT

JEAN-PAUL RICHARD

PRINCIPAL CONSULTANT

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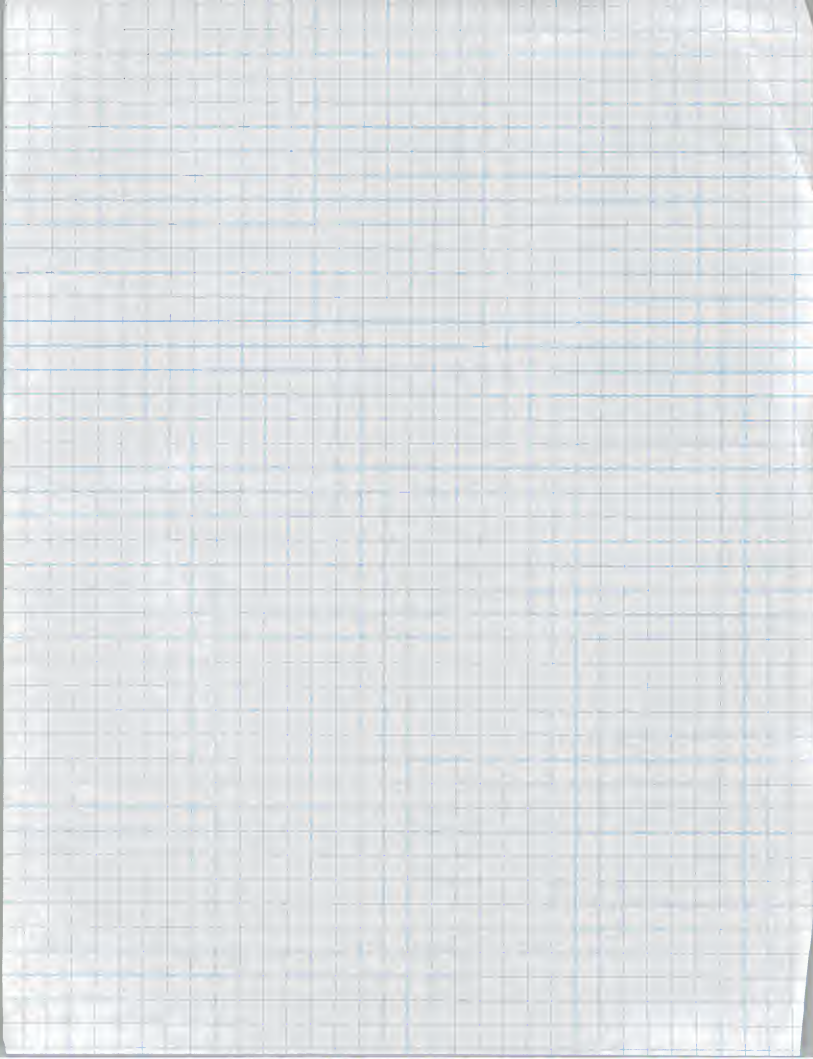
CONTENTS

MARKET
- ~~DEFINITIONS~~

- SM SERVICE OPTIONS

- DRIVING FORCES

- ~~USERS PERSPECTIVE~~

SISM 3
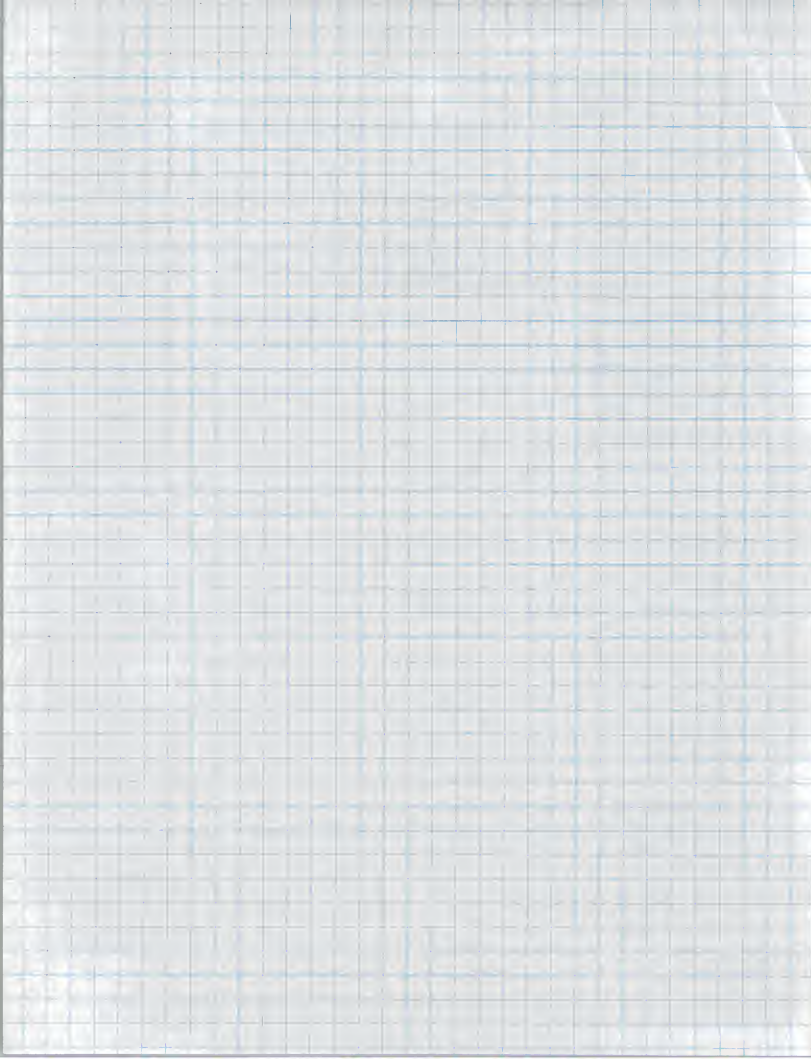
CONTENTS (CONTINUED)

- VERTICAL MARKETS
- ~~DRIVING FORCES~~

MAJOR
- ^VENDOR STRATEGIES

- ISSUES / TRENDS

- CONCLUSIONS / RECOMMENDATIONS

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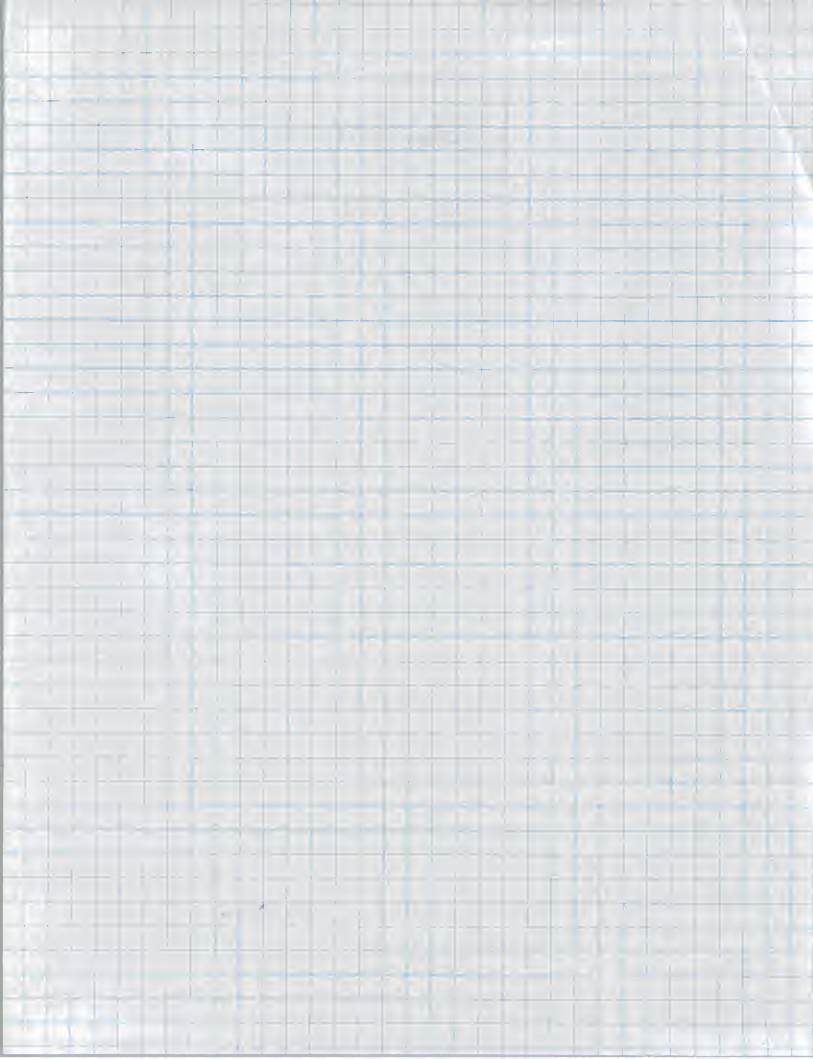
SYSTEMS INTEGRATION

- PRODUCT OFFERING

- COMPLETE SOLUTION
    - INFORMATION SYSTEMS
    - ~~NETWORK~~ COMMUNICATIONS
    - AUTOMATION

- CUSTOMIZED PRODUCTS
    - SELECTION
    - IMPLEMENTATION
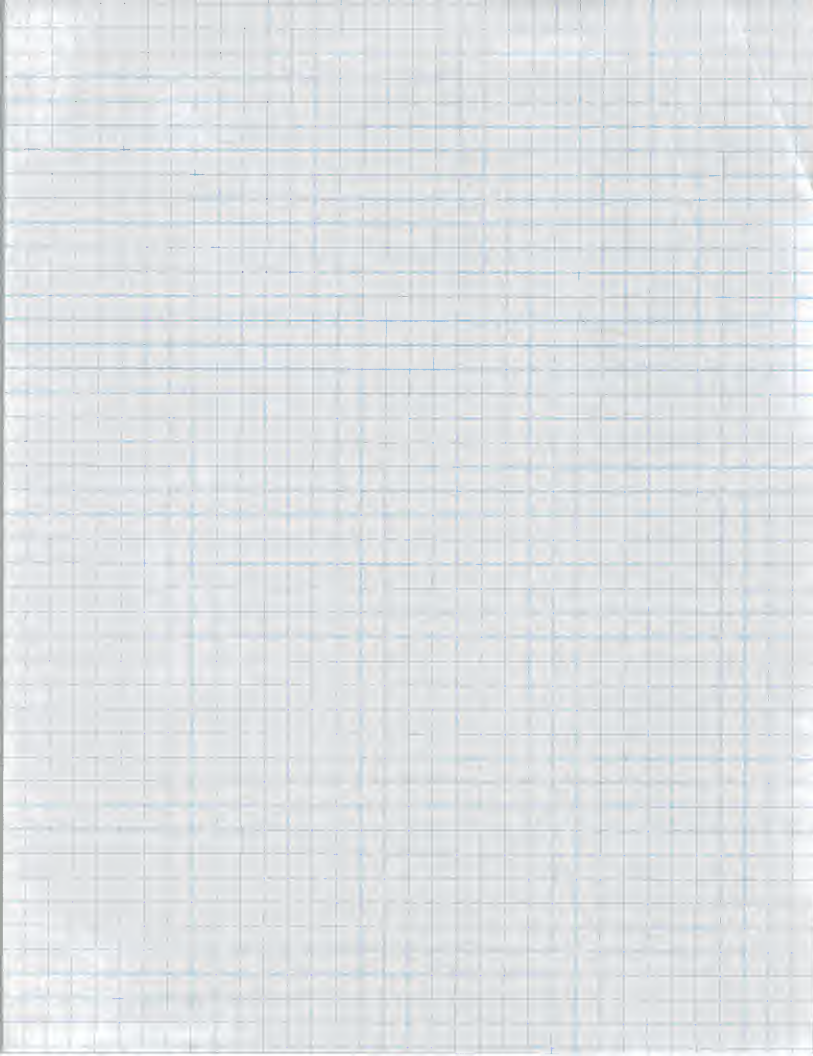
SYSTEMS MANAGEMENT

- SYSTEMS INTEGRATION

- SYSTEMS OPERATIONS

- APPLICATIONS MANAGEMENT

- "OUTSOURCING"
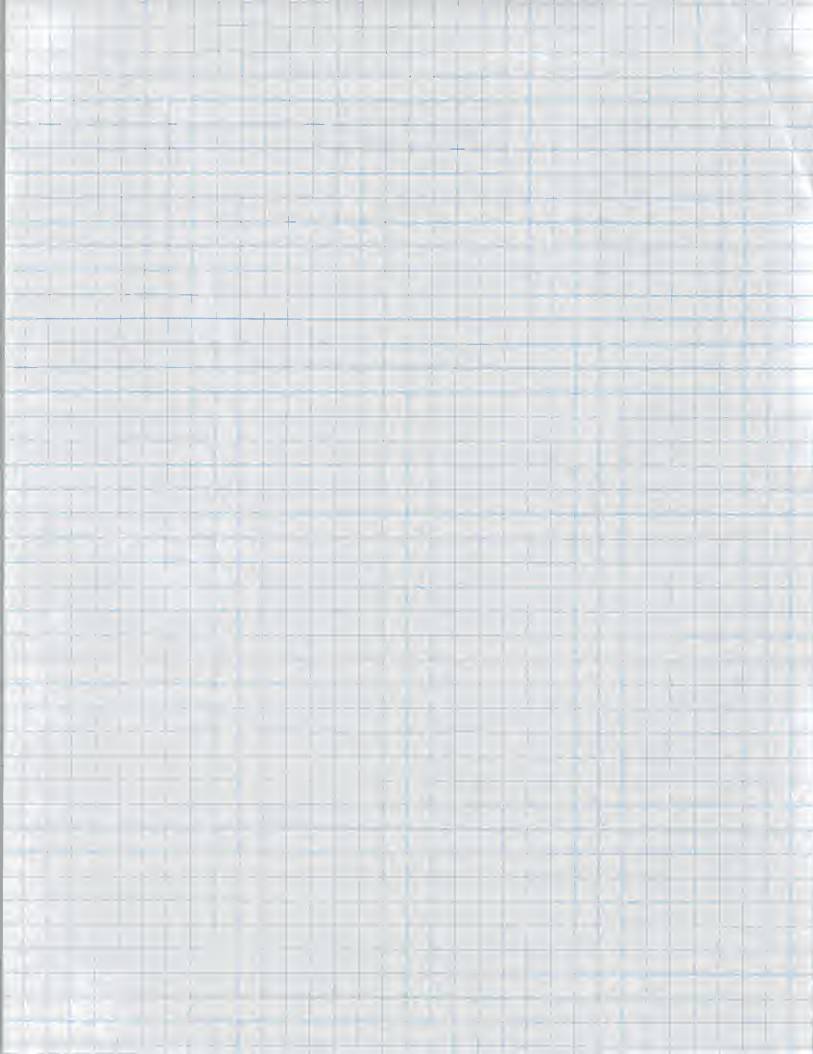
~~Exhibit IV-3~~

Typical ~~Tasks of~~ SI Project~~s~~ Tasks

✓ *	Total Project Management
*	~~Process Feasibility and Trade-off Studies~~
✓ *	Systems Design
✓ *	Selection/Configuration of Equipment and Network
✓ *	~~Selection of Systems Software~~
✓ *	Selection/Development of Applications Software
✓ *	Installation of Equipment and Software
*	~~Systems Integration (equipment and software)~~
*	Testing and Demonstration of System
*	Documentation
*	Client Staff Training
*	Systems Operations
*	Maintenance of Equipment and Software
*	Financing

SISM 7

The operative word in the definition is *complete.* Assume a large organization, whether government or private is not relevant, with executives responsible for coordinating information management. What might they require? Their organization may well have hundreds or thousands of computers designed by different manufacturers at different times. They will want those computers to be able to communicate with each other, either as local area networks or between offices scattered around the country. As circumstances dictate, they will want these corporate networks to be able to do whatever is needed: sending electronic mail, generating recurring reports, tapping into corporate mainframes and data bases, tying into public telecommunications networks, or building private networks that can carry voice and data. The task of the systems integrator is to make all this possible.

But the corporate user wants systems integration without disrupting the organization. This implies several conditions. First, integration must be implemented gradually, with new functions added only after older ones have been assimilated. Second, the products of different vendors should function as full and equal members of the total system. Third, integrated systems should be so powerful that they make few demands on users. That is, they should be flexible, easy to enter and exit, and transparent to the user.

Systems integration is becoming important because the pioneering days of office automation and end-user computing are over. Beginning in the late 1980s, the U.S. information services industry entered a new phase. Older services, such as claims processing, remote computing or the development of standardized software packages, remain important, but the companies that provide them will either find new opportunities or cease growing. Increasingly, large client organizations seek to pull together all of their hardware and software, especially when different manufacturers produce them. Those companies with the necessary skills to pull it all together see tremendous opportunities in a new area: systems integration.

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B
Market Definitions

The following sections consider the main components of systems management. For each IS element, INPUT provides a market definition, considers some typical tasks, and reviews the perceptions of users contacted by INPUT about the ways in which such services are being provided. This section reviews in turn systems integration, systems operations, and applications management and concludes by providing a working definition of systems management.

1. Systems Integration

Systems integration is a business offering that provides a *complete* solution to an information system, networking or automation requirement through the custom selection and implementation of a variety of information system products and services. Exhibit IV-2 summarize the principal elements of this definition.

Exhibit IV-2

SI Market Definition

Business Offering

Complete Solution to Complex Requirement for:

- Information Systems
- Networks
- Automation

Custom Selection and Implementation of Products and Services

A systems integrator is responsible for the overall management of a systems integration contract and is the single point of contact and responsibility to the buyer for the delivery of the specified system function, on schedule and at the contracted price. Exhibit IV-3 indicates typical tasks on SI projects.

INPUT

SYSTEMS OPERATIONS

- LONG TERM COMMITMENT

- MANAGEMENT OF INFORMATION
    PROCESSING OPERATIONS

- ~~PLATFORM OPR~~
- PLATFORM OPERATIONS
    - PROCESSING ONLY
- ~~APPLICATIONS OPERATIONS~~

- APPLICATIONS OPERATIONS
    - PROCESSING

        - APPLICATION SOFTWARE
            - MAINTENANCE
            - DEVELOPMENT
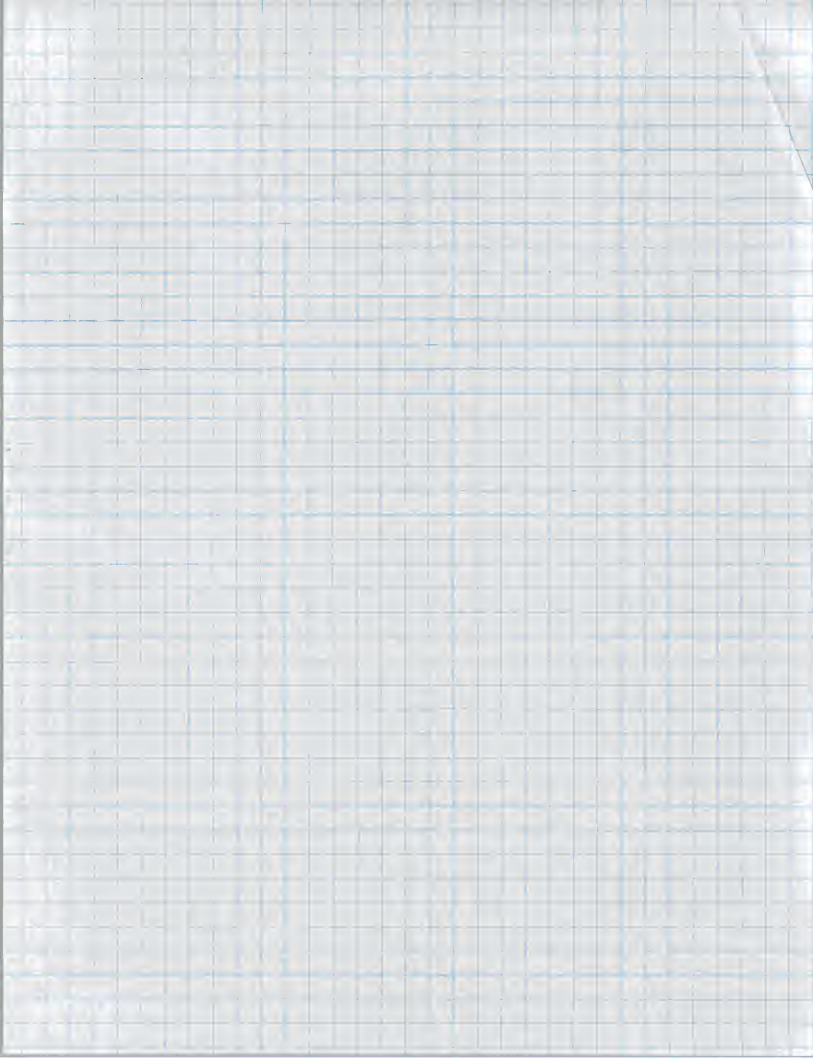
Exhibit IV-8

Primary Reasons for SO Contracting

	Importance
Lower Operating Expense	4.2
Better or More Flexible Service	3.3
Lack of Capital	2.9
Lack of Skills	2.8
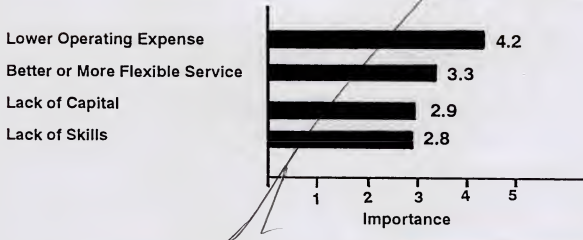
* Users surveyed by INPUT for this study ranked lower operating expense as the most important reason for outsourcing systems operations. While the per-unit cost of information processing has continued to drop, executives often see delivery costs go up at a rate greater than the growth of the business. With growing financial pressures, there is a need to find ways to reduce, or at least contain, the cost spiral.

* Some companies believe that a vendor is in a better position to meet service-level commitments than an internal operations department. Removed from internal political considerations, a vendor is guided by contracted commitments and is not subject to internal pressures. Moreover, a full-service vendor offers users many options in procuring services, as Exhibit IV-9 shows.

Exhibit IV-9

Systems Operations Options

> * Client or Vendor Premises
> * Client- or Vendor-owned Equipment
> * Dedicated or Shared Equipment
> * Applications Development
> * Systems and Applications Software Maintenance
> * Equipment Maintenance
> * User Training
> * Disaster Recovery and Backup Facilities
> * Vendor or Client Staff
> * Management of Communications Networks
> * Participation in IS Strategy
> * Function as "Fiscal Agent" for Client

Exhibit IV-7

Importance of SI Vendor Offering Other Services

Systems Operations	1.9
Applications Management	3.3

Importance
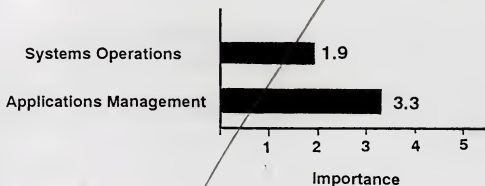
The tendency of those firms contracting with vendors was to use them on a case-by-case basis and, frequently, to work with several different integrators on as many projects. For many of the firms surveyed, the implication behind their responses is that there is no necessary connection between calling in a vendor to complete a project and establishing a long-term relationship for end-to-end systems operations.

2.   Systems Operations

a.   Systems Operations in the Commercial Sector

Systems operations involve the operation and management of all or a significant part of the user's information systems functions under a long-term contract. The vendor can either provide platform services with the user retaining all responsibility for applications maintenance and development, or the vendor can provide applications services where it provides platform services and also manages the maintenance of the applications inventory.

Systems operations vendors now provide a wide variety of services to support existing information systems. The vendor can plan, control, provide, operate, maintain and manage the majority of all components of the user's information systems, either at the client's or the vendor's site. Systems operations are also known as *resource management* or *facilities management*.

There are four primary reasons that companies contract for systems operations. They are summarized in Exhibit IV-8.

INPUT

APPLICATIONS MANAGEMENT

- EMERGING OPPORTUNITY

- MAINTENANCE OF SOFTWARE
  - SYSTEMS
  - APPLICATIONS

→ - DEVELOPMENT OF APPLICATIONS
                        SOFTWARE

  - DESIGN
  - LANGUAGE SELECTION
  - DEVELOPMENT
  - TEST / IMPLEMENTATION
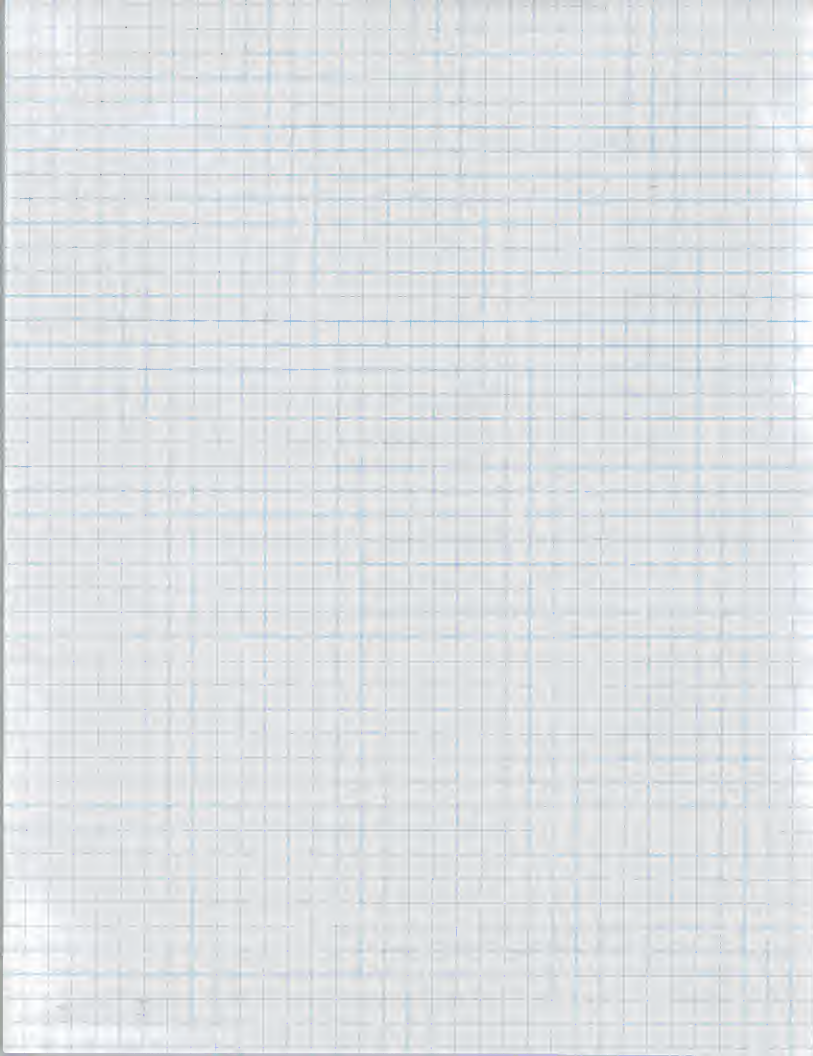
Many of the same vendors that market systems integration and systems operations services market applications management. For many vendors, maintaining a client's installed base of software is simply a logical extension of its existing product and service lines. As mentioned in the preceding subsection, a vendor can support systems operations in one of three ways: platform operations, applications operations, or using software provided by a third party.

*   In platform operations, the vendor provides the computer processing capacity and/or network without taking responsibility for the applications the client develops and maintains.

*   In applications operations, the vendor is responsible for the complete systems function, including equipment, telecommunications requirements, and applications software. This usually involves maintenance, development, and upgrade functions.

*   A third-party vendor with expertise in specific markets develops and maintains application software.

Applications management falls predominantly within the second category. A vendor, for example, will operate a corporate or government financial processing center. In addition to responsibility for day-to-day operations, the vendor will modify the software to meet changing needs, maintain or upgrade code, and add applications not covered in the vendor's platform. Thus, a vendor might add or upgrade a module for tracking inventory and receivables, add programs to handle electronic order generation and customer invoicing, and transport financial information to a relational data base environment. Exhibit IV-14 identifies functions incorporated in applications management.

Exhibit IV-14

Applications Management Functions

*   Technology Assessment of ~~Vendor~~ Packages

*   ~~Purchase of Vendor Offerings~~

*   Upgrades ~~Client's~~ Installed Base

*   Modifies Vendor and Client Packages

*   Converts Existing Code to ~~More~~ Advanced Languages

*   Provides Consulting Services when ~~Client Considers~~ For New Applications ~~for Data Center~~   SI SM 3

INPUT considers applications maintenance an emerging outsourcing opportunity. The maintenance of the existing application investment is the greatest inhibitor to the ability of information systems to progress in the eyes of management. A small but growing number of vendors are proving they can do it better at lower costs, using disciplined methodologies, re-engineering tools and

INPUT

entry-level staff with strong management. The opportunity exists to outsource maintenance and use internal staff to attack the backlog.

It remains, however, for many user organizations to recognize the potential in outsourcing applications management. Perhaps the key factor driving organizations to outsource applications management is the discovery that no commercial package does it all. In the Federal processing environment, the General Services Administration maintains multiple-award schedule contracts for financial and accounting software that conforms to the specifications for "core" financial systems laid down by the government. After three years, only five vendor packages are on the schedule, and most agencies report that they have to supplement them either with their own customized packages or commercial offerings not on the schedule.

Another factor working in vendors' favor is their customers' desire to avoid costly software modifications, if possible. In particular, they would prefer to avoid the complications that arise when they have to run the same applications on equipment from different manufacturers. Using the vendor already selected to run systems operations minimizes the problems involved in working with software that does not precisely meet users' needs.

Only 20 percent of the users contacted by INPUT outsourced applications management--an even smaller percentage than outsourced systems operations. One user noted that his organization was not outsourcing applications management because *"most of the existing applications base is homegrown and old. We don't think we can do this effectively, and we will wait to outsource until a rewrite."*

Another user told INPUT that his organization would not outsource because *"we want control internally. We have established staff, a good skill base, and investment in software."*

Exhibit IV-15 lists the reasons users give for their reluctance to outsource applications management.

Exhibit IV-15
Reasons for Not Considering Applications Management Functions
* Most Applications are Generated Internally
* Client Wishes to Maintain Control
* Outsourcing not Economical
* Takes Too Long for Vendor to Master Installed Base
* Lack of Perceived Requirement for Outside Support
* Impact on Existing IS Staff

INPUT

"OUTSOURCING"

- NOT A DELIVERY MODE
- ANY OF THE ABOVE
- A STEP IN SM EVOLUTION
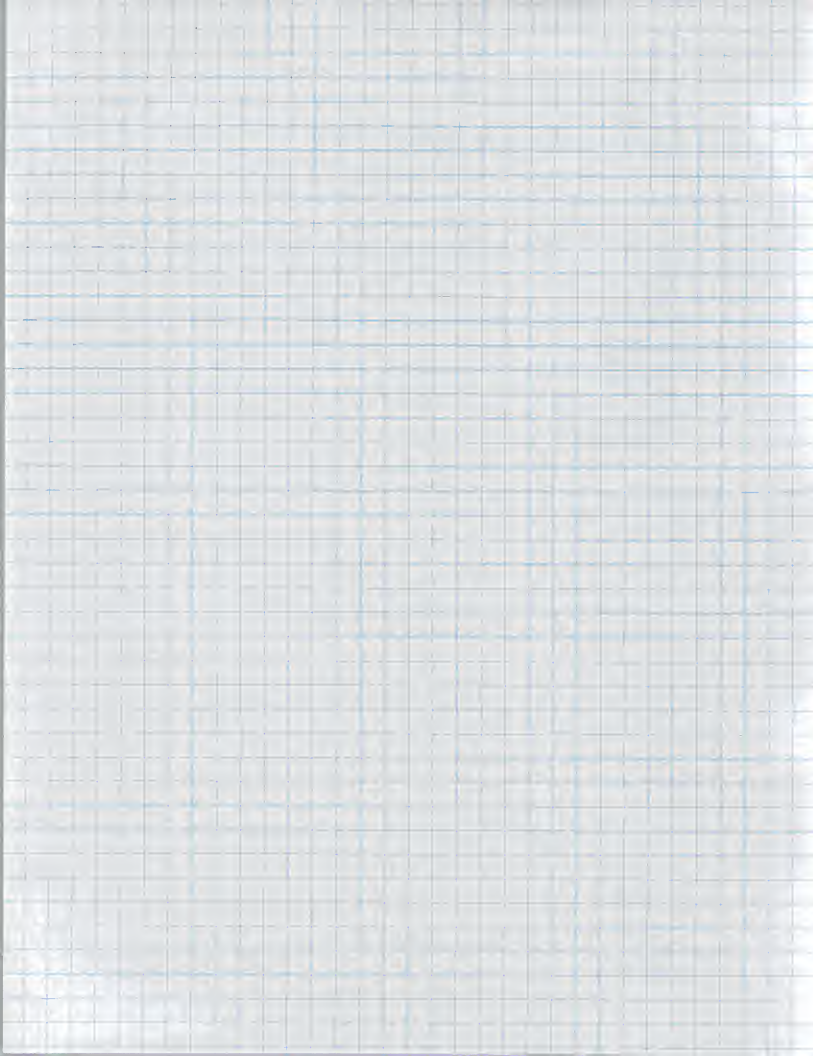
Exhibit IV-1

Evolution of Outsourcing

Type of Product or Service	1960s	1970s	1980s	1990s
Applications Software		~~Applications~~ Packages	Turnkey ~~System~~	*APPLICATIONS* ~~Applications~~ Management
Professional Services		Consulting ~~Contract~~	~~Applications~~ Development	*S I* ~~Systems~~ Integration
Processing Services	*remote*	~~Specific~~ ~~Processing~~ ~~Services~~	*F M* Facilities Management	*S O* ~~Systems~~ Operations *S I S M*

14A

* Applications software began as - and to some degree remains - a product-only-based business. Over time some vendors began to provide a complete system that included the computer software and installation - turnkey systems. Today, the leading vendors are providing professional services to customize, integrate and even maintain the application. The product will be only a small part of the sale in the 1990s.

* The professional services vendor started by selling planning and requirements specifications or by being a programming contractor--somewhat of a jack of all trades. The next step was to merge these two services and develop the entire application. Now professional services firms offer complete solutions to complex requirements for information systems, networks, office automation, and much more.

* Processing services began by providing very specific individual services, such as payroll or timesharing. That expanded in many directions. What was once called facilities management has been renamed *systems operations,* and the focus has shifted from computer operations to planning and control, and some elements of development.

* To a growing degree, the focus is on the dismantling of data centers, with the client turning to vendors to provide services from the vendor's data centers - a processing utility.

In short, where IS hesitated to go outside and usually did so only on a subcontractor basis, now IS is looking at the entire requirement and buying a bigger piece from a single vendor.

IV. USER REQUIREMENTS

This chapter provides a framework for analyzing the considerations that lead
users to outsource information systems (IS). INPUT considers outsourcing an
evolving concept and trend in the information systems and services market. It is
not a new delivery mode, but includes all of the products and services within the
information systems and services industry, as categorized by INPUT's delivery
mode structure.

This chapter will provide a brief historical perspective before defining the
principal systems management functions that will dominate the markets of the
1990s: systems integration, systems operations, and applications management,
all of which can be classified as systems management activities. It will conclude
with a discussion of the requirements that vendors must satisfy in working with
IS users.

A
An Historical Perspective

As Chapter III showed, the concept of outsourcing information systems products
and services is not new. In fact, the value of IS has always been based on
acquiring and applying products and services from a unique set of vendors. At
first, only hardware and systems software were acquired; now a complete set of
products and supporting services, including management, is available.
Throughout the past three decades, the complexity and variety of capabilities
available for sale by information systems and services vendors have increased.

Exhibit IV-1 traces the evolution of three primary INPUT delivery modes:
applications software, professional services, and processing services. Each has
moved from a singular product or subcontractor mode in the early 1970s to a
complex partnership-based suite of products and services as we enter the 1990s.

INPUT

SYSTEMS
MANAGEMENT
SERVICE
OPTIONS

no slide SISM 16

SISM 15
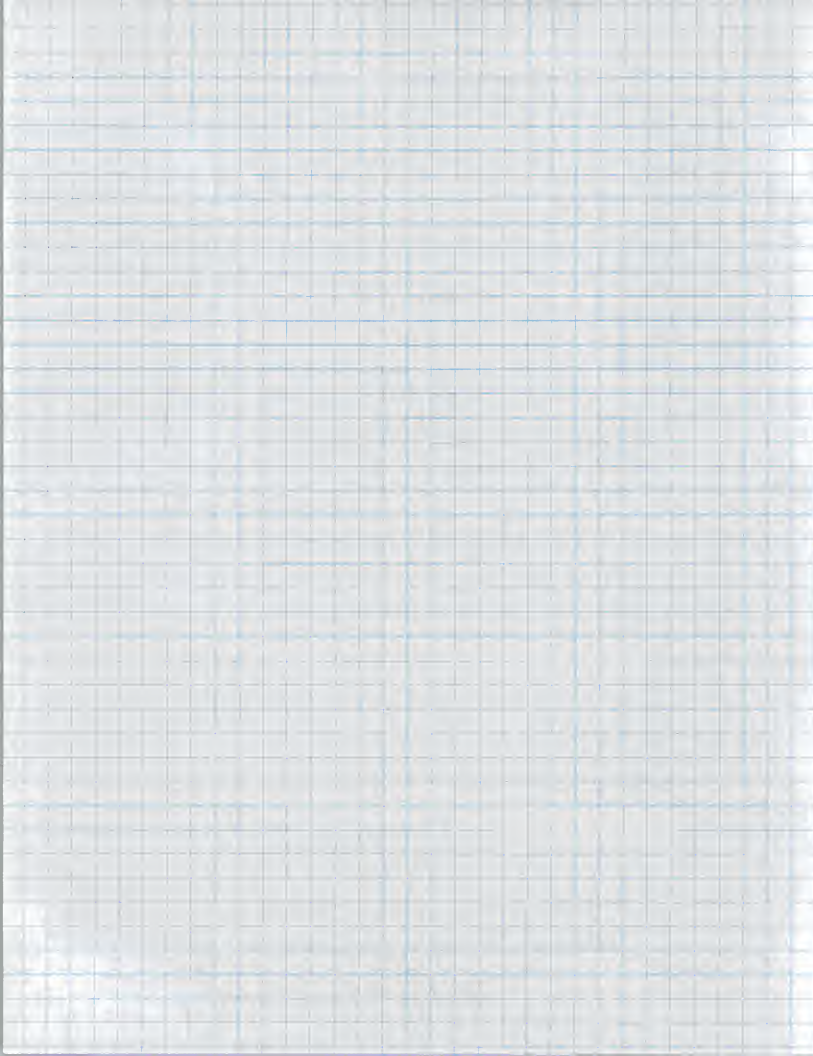
The logic of information management is driving more and more organizations toward long-term relationships with one or a few service organizations. If these relationships correspond to the current spending for information services, vendors will be working predominantly in systems operations. Exhibit IV-16 breaks down current spending by commercial organizations for information services: Nearly half the total is going for computer operations, with the rest divided almost equally between applications management and systems development.

User Perspective

Spending on ~~Systems Management~~ Services

Computer Operations

49%

Applications Management

25%

Systems Development

26%

SISM 17
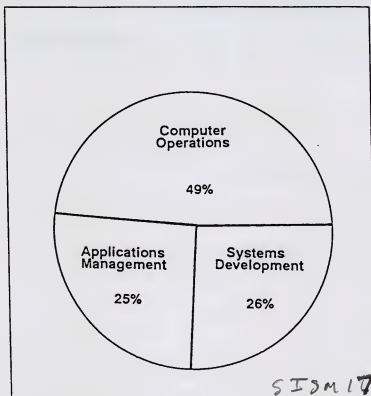
When INPUT asked users which of the three services discussed they were likely to use in the future, they responded that they were most likely to use systems integration, and only slightly less likely to use the other two services. EDS and IBM were the most frequently cited systems management vendors. Exhibit IV-17 details their responses.

INPUT

As with other systems management functions, the outsourcing of applications management can be perceived as a threat to the client's organization. The vendor is not simply taking over a function already performed adequately in-house. Instead, the vendor is proposing to add value to the existing base--not least by inserting technology that may significantly improve operations. And such changes may--but need not--displace many of the client's IS staff.

Despite the small sample of applications management users, the level of satisfaction was the highest for any of the services considered. The range was from 3 to 5, with an average of 3.75. Interestingly, although IBM was cited as a systems operations vendors, it was not cited as an applications management vendor, along with EDS and Andersen Consulting.

4.   Systems Management - A Working Definition

Systems management is the totality of services that vendors can offer customers in managing their information effectively. It includes the full range of services traditionally supplied by internal data processors: systems integration, systems operations, applications management, and the ancillary services needed in implementing each one.

Systems management is more than the sum of its parts--although many users have yet to realize this. There is a certain reluctance on the part of users to turn over all of their information-related operations to vendors. Many are willing to use vendors for systems integration projects, fewer for systems operations, and fewer still for applications management. And yet, the capability of tying all these functions together is definitely present.

As discussed earlier, outsourcing is qualitatively different from what it was a few years ago. Most significantly:

*   The breadth of services from a single vendor

*   The inclination to buy from a single vendor

*   The magnitude of the professional services content of most outsourcing relationships

*   The amount of management responsibility assumed by the outsourcing vendor

Outsourcing is more than systems integration and systems operations--including new and expansive combinations of existing products and services to provide applications management, transition management, and applications services. Information systems and services vendors are shifting their strategies to provide broad, flexible products and services to meet outsourcing requirements. These vendors market a combination of professional services, systems operations, applications development, and support--and within vertical industries, focus on applications software as well.

SOSM1   IV-17

INPUT

services, all of them wanted to be perceived as being able to move easily from one to another. Typically, a vendor brought in on a systems integration project would try to compete for contracts to manage a client's data center and installed base of applications software.

* Clients want firms that can do more than routine maintenance and operations. On the basis of the user and vendor surveys INPUT conducted, there seems to be a shift of corporate resources away from computer operations to more demanding systems development and applications management. Exhibit VI-7 shows vendor responses when asked what percent of client organzation IS monies are going to the three systems management areas that are the subject of this report.

Exhibit VI-7

Percentage of Funds Going to Systems Management Services

Computer Operations (including existing data center equipment)	37.5%
Systems Development (including new project equipment)	30%
Applications Management	32.5%

* Even systems operations is becoming less routine than it may once have been. The larger SO contracts are multiyear contracts that often require the vendor to upgrade and add to the client's installed software and hardware base.

Indeed, it is becoming harder than ever to draw a hard and fast distinction between systems development and systems operations, since the former often leads to management contracts, while the latter requires the vendor to "refresh" the technologies on which the client operates.

There are some countercurrents that suggest that the trend toward outsourcing may be reversible. One vendor contacted by INPUT thought that, with outsourcing, organizations may lose control of their operations. Another vendor went further; organizations will move applications in house, once they master the technology. According to this view, outsourcing is a strategy for the short term, for some large clients.

Yet this is distinctly a minority view. When INPUT asked users for their level of satisfaction with the outsourcing of systems management services, it was generally high: 3.050 for systems integration, 3.7 for systems operations, and 3.75 for applications management. While some clients may bring services back in house, the greater threat to vendors is that potential customers will not "buy in" in the first place.

VI. SYSTEMS MANAGEMENT OPTIONS AND STRATEGIES

Research conducted by INPUT strongly suggests that there is an emerging market for systems management services distinct from the more traditional systems integration and systems operation markets. Surveys of users reveal that they would prefer end-to-end services: whether to free them to concentrate on their core businesses, to bring down costs, or simply to enjoy the flexibility that comes from having just the skills you want when you want them.

A
Systems Management Services

From their perspective, vendors are confirming the existence of this new market, even though eight out of 15 vendors, a slight majority, do not use the term systems management in their practices. For one thing (as Exhibit VII-1 in the next chapter reveals), a majority of the larger IS vendors now see themselves as full-service firms that offer most of the services clients claim to need. For another, as Exhibit VI-1 shows, the great majority of vendors agree that clients who utilize all three services - SI, SO, applications management - prefer to use a single vendor to provide all three.

Exhibit VI-1

Systems Management Services

Single versus Separate Vendors
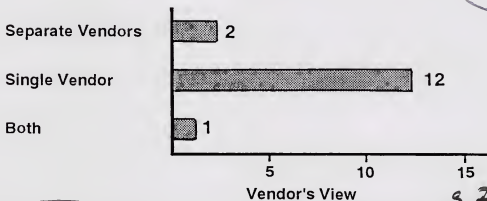
The different trends reinforce each other. A certain need creates the opportunity, which stimulates demand, which creates further opportunities. A company that specializes in, say, systems integration discovers more of its clients looking to it to run its data center or maintain its inventory of applications software. And certain developments in the private and public sectors open new opportunities: for example, the outsourcing of Eastman Kodak's data center to IBM and DEC, or the consolidation of Federal processing of payroll, personnel and accounting systems.

SYSTEMS MANAGEMENT

DRIVING FORCES
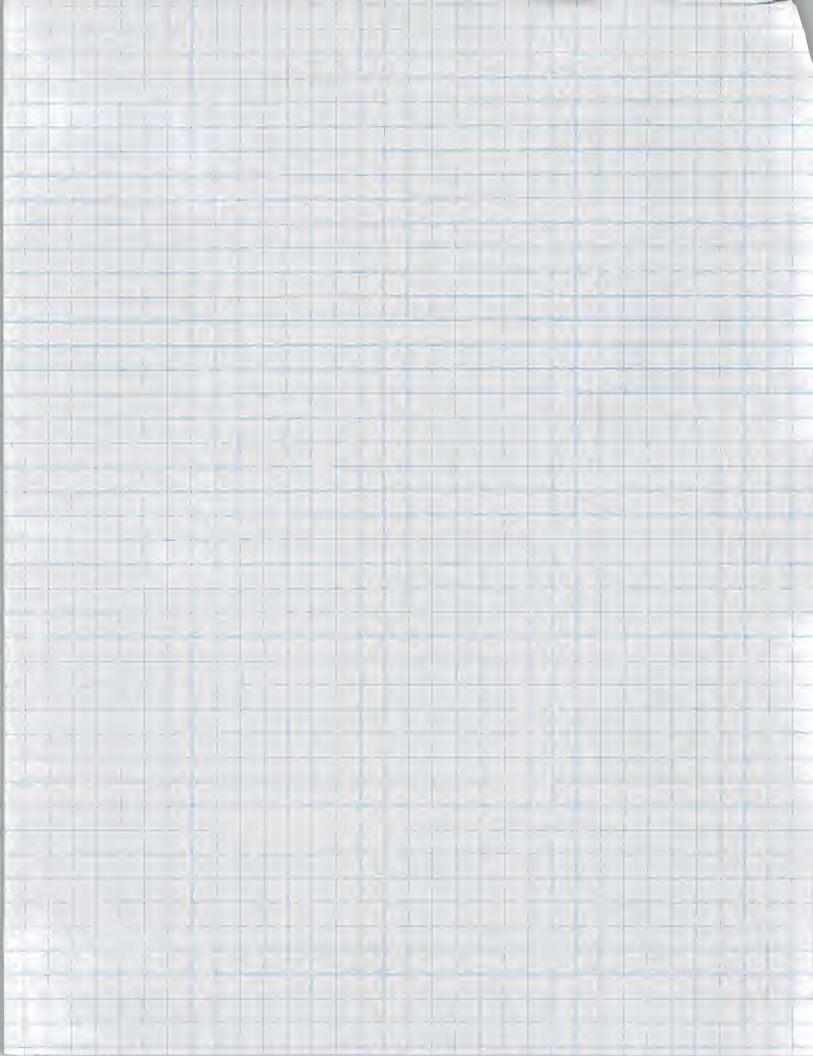
B
Major SO Buyer Issues 1991

Similar forces are at work in systems operations markets, as Exhibit II-2 shows.

Exhibit II-2
Major SO Buyer Issues - 1991
*   Information Systems Key to Business Success
*   Need to Reduce Operating Costs/Preserve Capital
*   Challenge to Keep Abreast of Technology
*   Lack of Skilled Personnel

Companies are increasingly deciding to contract with systems operations
vendors, many of whom provide systems integration as well. At the same time,
they are turning the management of their applications software over to vendors -
either full-service firms or smaller, more specialized firms that are moving into
systems management.

C
Systems Management Environmental Factors

The forces listed in Exhibit II-3 are causing prospects to systems management
vendors for innovative solutions to complex problems. As the global business
community becomes smaller, more demands are placed on a corporation's
processing and communications infrastructure. Eventually, it becomes more
cost-effective to seek an external solution to these burgeoning demands.

Exhibit II-3
Systems Management Environmental Factors
*   Global Market Growth
*   Rapidly Changing Technology
*   Corporate Restructuring/Merging
*   Economic Adjustments Leading to Downsizing
*   Government Systems Requirements

~~SM MARKET~~

DRIVING FORCES

ENVIRONMENT	IMPACT
GLOBALIZATION	NETWORKS
SPECIALIZATION	STRATEGIC ~~DEVEL~~ SYSTEMS
PACE OF CHANGE	RAPID RESPONSE DEPLOYMENT
INTEGRATION	~~OPEN~~ SYSTEMS ~~COMPATIB~~ COMPATIBILITY
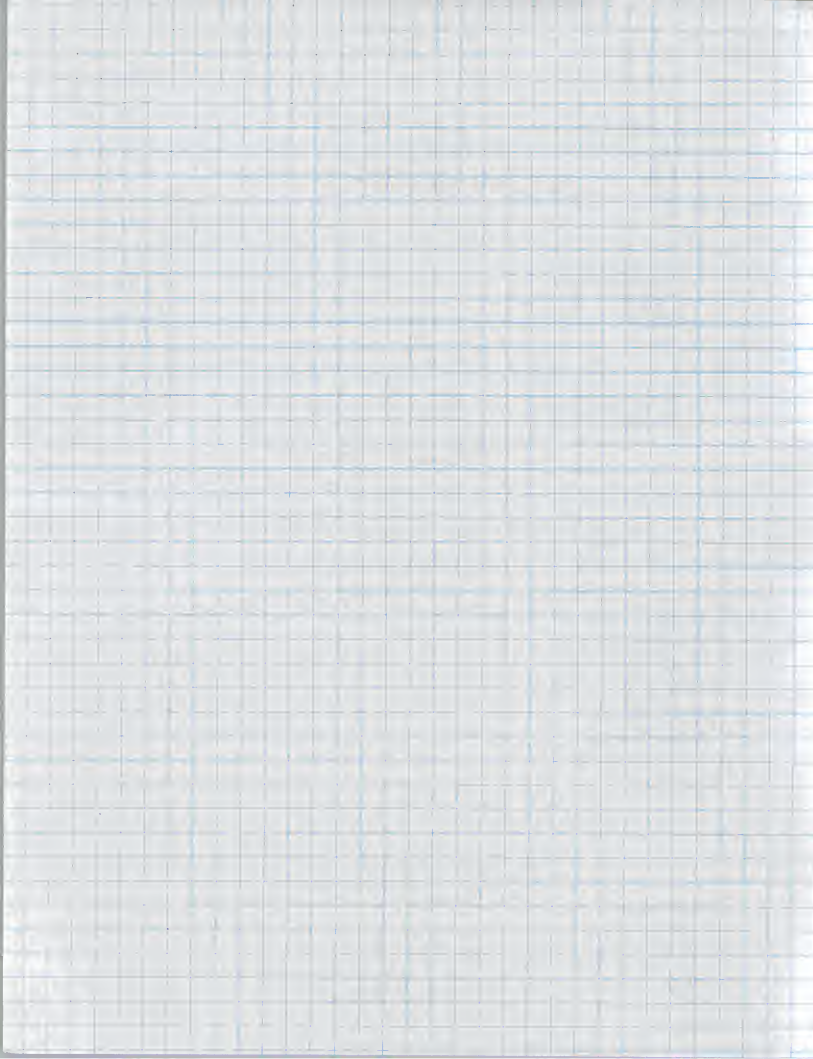
VERTICAL

MARKET ACTIVITY

- BANKING / FINANCE
- DISCRETE
  MANUFACTURING
- FEDERAL MARKET
- STATE / LOCAL GOVERNMENT
- UTILITIES
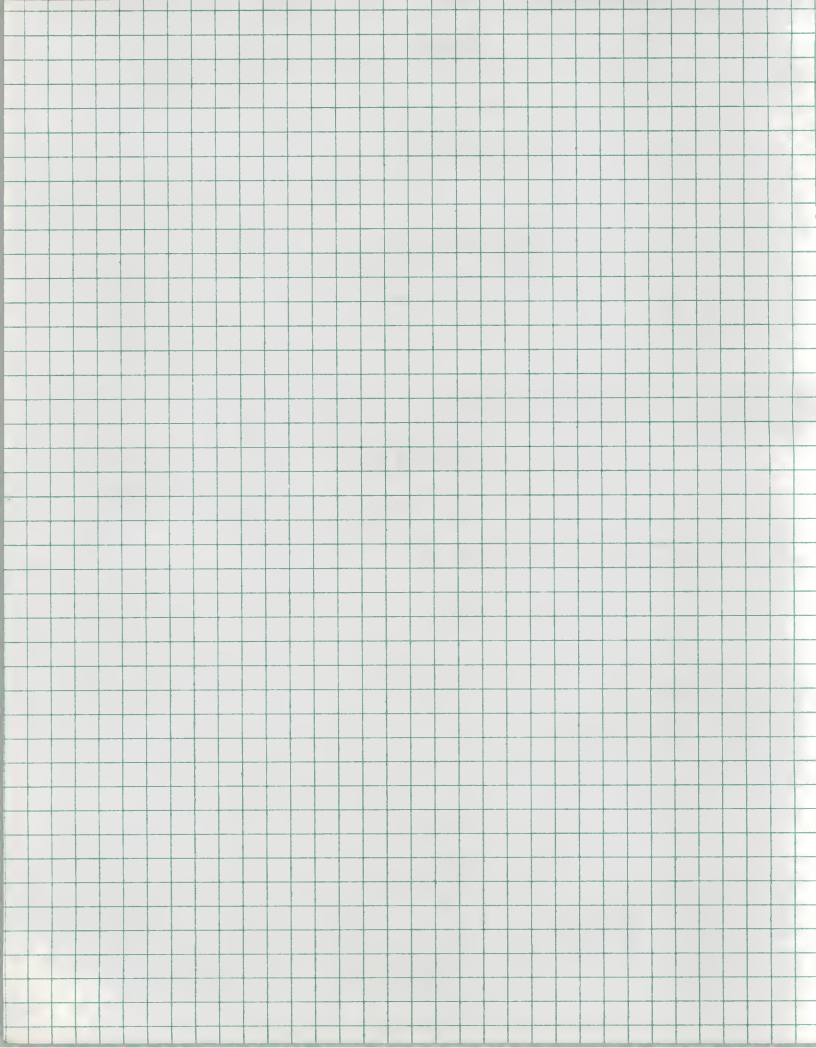
SISM 2B

EXHIBIT V-22 KEY FACTORS IN BANKING/FINANCE INDUSTRY

* Positive
    --Consolidation of commercial banking operations
    --Savings and loan retrenchment
    --New product/service introduction accelerating
    --Strong cost pressures emerging

* Negative
    --Strong internal staff in large banks
    --Unique industry knowledge required
    --Complex multihardware environment growing

Consolidation has continued in the banking industry, on one hand motivated by declining profitability of commercial banks and on the other, necessitated by the S&L crisis. All of this has put enormous stress on in-house IS staff. Highly specialized experience, which may not be available in small institutions, is needed for short periods. The average life cycle of current systems is becoming shorter, so that more frequent upgrade or replacement is essential.

Financial managers need more information and supporting analyses to make the decisions that will make their firms competitive. Portfolio and credit services require customer services and account managers to interact with most of the previously independent departments of financial institutions.

Distributed data processing will need to operate with centralized applications, employing standardized network protocols--all at the lowest possible cost.

Control, integrity, and security of frequently sensitive data continue to be major concerns of banking and financial management. These concerns must be satisfied in an increasingly cost-conscious environment.

The potential for both systems integration and systems operations in this sector appears to be lower than predicted earlier.

In SI this sector, though still among the top three vertical industries in prospective growth rates and expenditures, lags state and local government and discrete manufacturing in expenditures and is exceeded only by the much smaller miscellaneous industries category in growth.

into major industry groups such as aerospace, automotive, metal
fabrication, electrical, electronic, telecommunications,
textiles, industrial machinery and tools industries.

The IS environment in discrete manufacturing seems stable,
perhaps even mature. Decreasing hardware costs, better
price/performance ratios, and emphasis on purchasing rather
than leasing equipment have all served to create a very large
base of installed systems, including both hardware and
software.

In many firms, the IS and production organizations function
independently of each other, seldom sharing the same processing
platforms. Information systems that process the financial,
sales, and administrative aspects usually come under the
control of the IS organization. CAD/CAE/CAM systems tend to be
the responsibility of the production/operation departments, and
often do not involve the IS department. However, the newer
MRPII, MPCS, and CIM technologies merge the separate function.
Further, new systems that integrate the sales, purchasing,
invoicing, production, and inventory control functions will
push IS into interactive, on-line, and real-time or near real-
time modes of operation.

Exhibit V-9 [10] indicates those factors that will promote or
inhibit automation in this sector.

EXHIBIT V-10

KEY FACTORS IN DISCRETE MANUFACTURING INDUSTRY

* Positive
    -- ~~Integration of~~ islands of automation _integrated_
    -- Increased ~~use of~~ data base, _use_. _increasing_
    -- ~~Preference for~~ customized solutions _preferred_
    -- ~~Replacement of~~ batch-oriented systems _replaced_
    -- ~~Network~~ distributed PCs/workstations
    SISM 26

* Negative
    -- In-place infrastructures
    -- ~~Tendency~~ to build rather than buy
    -- Industry experience prerequisite
    SISM 27

The integration of all aspects of production is leading to two
developments: the integration of factory floor automation with
engineering design and production planning, and the need to
match production to demand. Rapid reference to buying patterns,
material supply schedules, and production capacity is
increasing the use of on-line data bases. The uniqueness of
many markets and processes creates a preference for customized
solutions that could product a competitive edge.

In systems integration, agencies are pressing for more flexible and advanced resources to meet rising executive, legislative, and citizen service expectations. Expenditure rates will decline in the 1990s, but will continue at a positive level throughout the decade, for the reasons seen in Exhibit V-8.

[handwritten: below the rates experienced in the latter part of the 1980s; growth]

EXHIBIT V-8   KEY FACTORS IN FEDERAL GOVERNMENT MARKET

* Positive
    --Productivity improvements
    --Technical staff shortages
    --Shared implementation risks
    --Information technology upgrades
    --Service demand increases   *[handwritten: S ISM 28]*

* Negative
    --Deficit-limited budget
    --Greater protest activity
    --Existing systems maintenance
    --Slow standards implementation
    --Extended implementation schedules   *[handwritten: S ISM 29]*

Agencies are looking for integrated systems that will improve the productivity of both staffs and facilities without significant operating budget increases. Existing personnel policies and the heavy software maintenance load cause continued shortages of in-house technical staffs. Implementation and initial operating support must come from commercial organizations to meet the service demands.

User-based service demands continue to increase, steadily exceeding the ability of the in-house IS staff to satisfy them. In some cases, contractors are expected to provide full operational support of newly implemented SI projects for up to 10 years after acceptance.

Several factors tend to inhibit the Federal SI market, however. The two most significant are budget cuts to reduce the Federal deficit, and greater protest activity by disappointed bidders. Budget restrictions are forcing consolidation or outright cancellation of a number of agency-desired SI projects.

The cost of existing systems maintenance continues to rise rapidly, diverting support funds that are needed to acquire system upgrades and requirements.

Implementation of new information system standards that foster greater competition and substantially improve connectivity between systems has not been as rapid as expected.

Much like the Federal government, state and local governments are under intense financial pressure, as requirements for services increase without corresponding improvements in the tax base. The passage of Gramm-Rudman-Hollings also curtailed Federal support of state governments. Major vendors look to this sector to generate significant revenue opportunities in the next five years.

If past contracting patterns continue, 45% of state and local government spending will come from state government, 30% from cities, 14% from counties, and only 11% from districts and other authorities. Proposals to move more data processing activities in-house have been blocked by staff retention problems and information systems demand growth that continues to exceed available in-house resources. Use of contract services is seen as more economical and politically more desirable, since it avoids the hiring of more government employees.

Despite budget limitations, state and local IS departments are taking on new responsibilities. The demand for new services, especially on-line systems for health and social services and public safety, has led to the replacement of older batch-processing systems by interactive on-line service systems. Exhibit V-10 highlights the factors affecting this market.

EXHIBIT V-10   KEY FACTORS IN STATE AND LOCAL GOVERNMENT
                    MARKET

        * Positive
            --New program and service demands
            --Shortage of qualified in-house staff
            --Increasing network and resource-sharing
              demands   SISM 30

        * Negative
            --Dispersed market (82,000 government units)
            --Emphasis on local vendors
            --Federal budget reduction impact   SISM 31
            --Federal revenue-sharing ended   S

Connectivity between systems has been resolved at state and large metropolitan centers by reliance on commercial networks from the common carriers.

Unfortunately, this market is large and geographically dispersed, presenting a significant problem for marketing and sales activities. The wide separation of opportunities also

KEY FACTORS - UTILITIES

* Positive
  -- Increasing competitive use of technology
  -- Hardware/software obsolescence
  -- Automation of repetitive tasks   SI 15 M 3 2

* Negative
  -- Day-to-day orientation of IS
  -- Limited number of establishments
  -- Financial constraints
  -- Incentive to build up in-house capacity   SI 5M 3 B

Utilities are discovering the use of technology for maintaining a competitive edge. Customer files are becoming data bases to market new products and services to existing customers. AI-based automated process control is helping to minimize materials consumption and optimize resource applications. There is much more interest in long-term hardware planning and in curtailing rapidly escalating operations and management costs associated with outdated equipment.

Among the negative factors vendors confront in this market is the day-to-day orientation of IS and its reluctance to expand beyond current capabilities. Another factor is the limited number of large utilities, particularly for gas and electricity.

INPUT forecasts that SI this sector will grow from approximately $69 million in 1990 to $929 million in 1995, at a CAGR of 15%. The 1990 growth rate is significantly lower than that forecast in 1990. INPUT has identified a significant volume of SI work in electric utility plant and grid management that it had not recognized in earlier forecasts. The result is a much larger market in 1990 and 1995.

The CAGR for systems operations from 1990 to 1995 is 5%, the same as in the 1989 forecast. Both the processing services mode and the professional services mode are growing at the same rate, although the amount of professional services work is only 15% of the total. Major Systems Operations
Vendors have taken over bill collecting, consumer interface and accounting functions, that include an increasing amount of applications support, the latter is allowing the utilities to focus on their core services.

(5) Banking and Financial Services

This sector covers commercial banks, thrifts, security and commodity brokerages, and other financial services such as credit union and cooperatives. Exhibit V-12 lists the external pressures on information systems and services in this sector.

13

insert
appl vs.
platform

MAJOR
VENDOR
STRATEGIES

SIsm 34
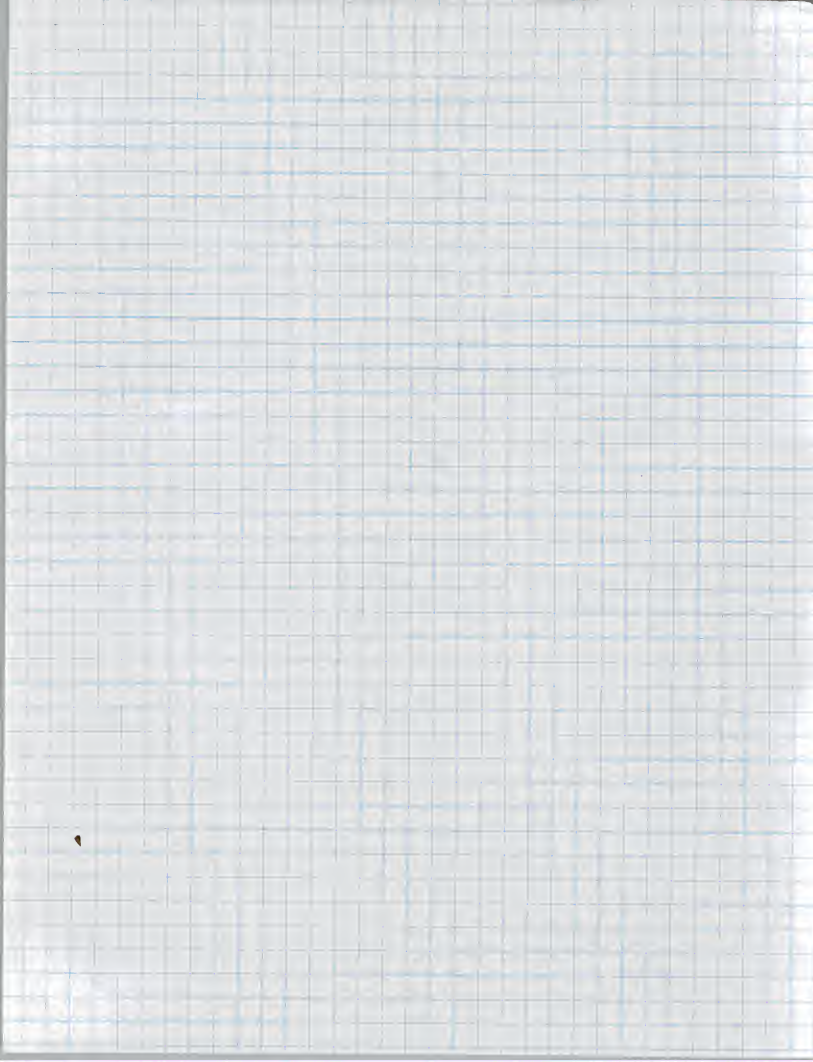
~~SISM~~

IBM

- TRADITIONAL STRENGTHS
    - MARKETING
    - CUSTOMER SUPPORT

- BROADEST PRODUCT LINE

- WORLD WIDE DEPLOYMENT

IBM
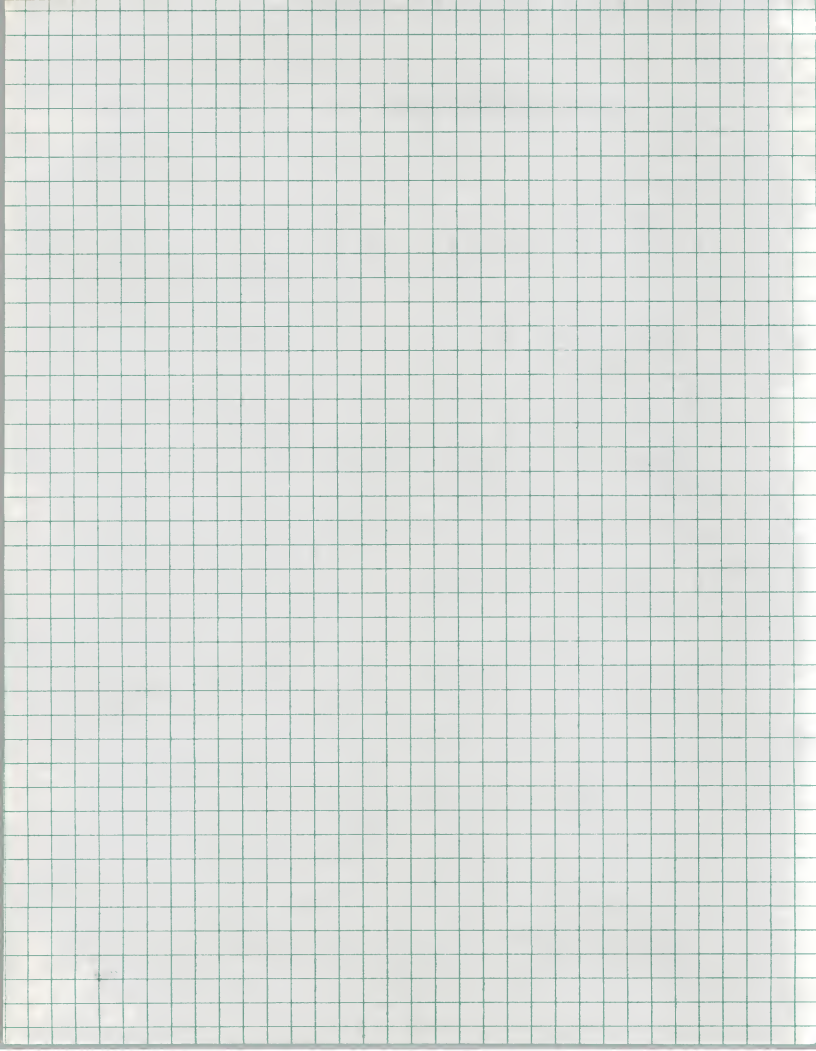
- SEPARATE SUBSIDIARY (ISSC)
- USE IBM MARKETING STRENGTH
- RESPOND TO "TRADING AREA" NEEDS
- CAPITALIZE ON SWARE/ ~~INDUSTRY~~ ~~STRENGTH~~ ALLIANCES

EDS
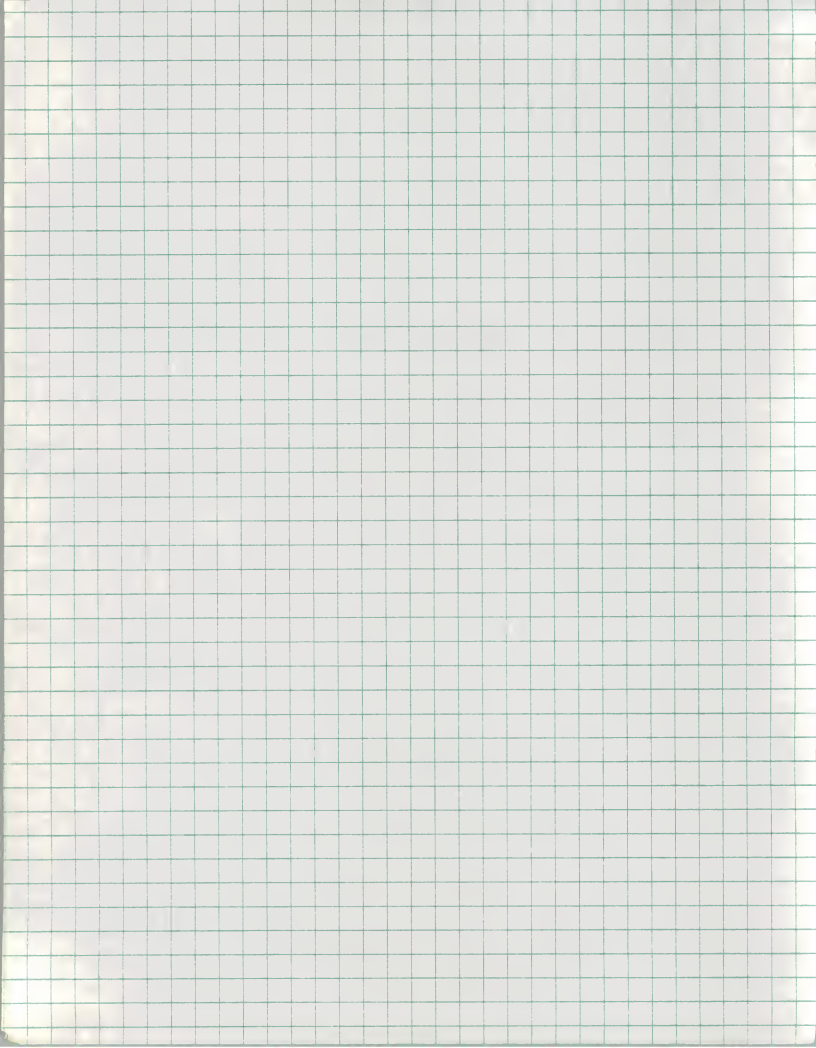
- LONGEST EXPERIENCE WITH FM
- ~~CONSIDERED~~ | SI | separate BUSINESS
- NO BUILT-IN HDWE/SFWE CAPABILITY
  TELECOMM STRENGTH
  ~~AGGRESSIVE MARKETING STRATEGY~~
- SO PRINCIPAL FOCUS
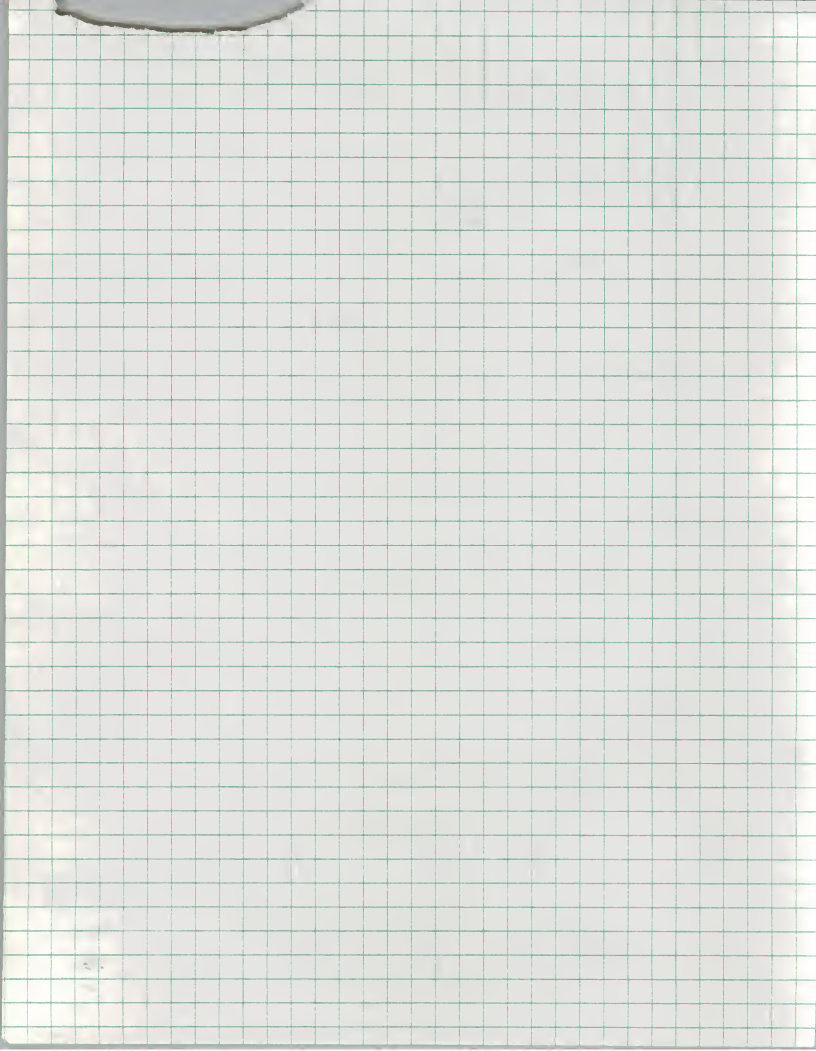
EDS

- MAJOR EQUITY INVESTMENT
        TO GAIN BUSINESS

- REDUCE GM-DERIVED REVENUE

- AGGRESSIVE "INDEPENDENT" MARKETING
                    UNITS

✗ · ACQUIRE VERTICAL MARKET EXPERTISE

ANDERSEN CONSULTING

- WIDE INDUSTRY KNOWLEDGE ~~DIVERSE~~ ~~PRESENCE~~
- RAPID EXPANSION OF CONSULTING
- WORLD WIDE PRESENCE
- EXTENSIVE EMPLOYEE DEVELOPMENT

39
24
SISM
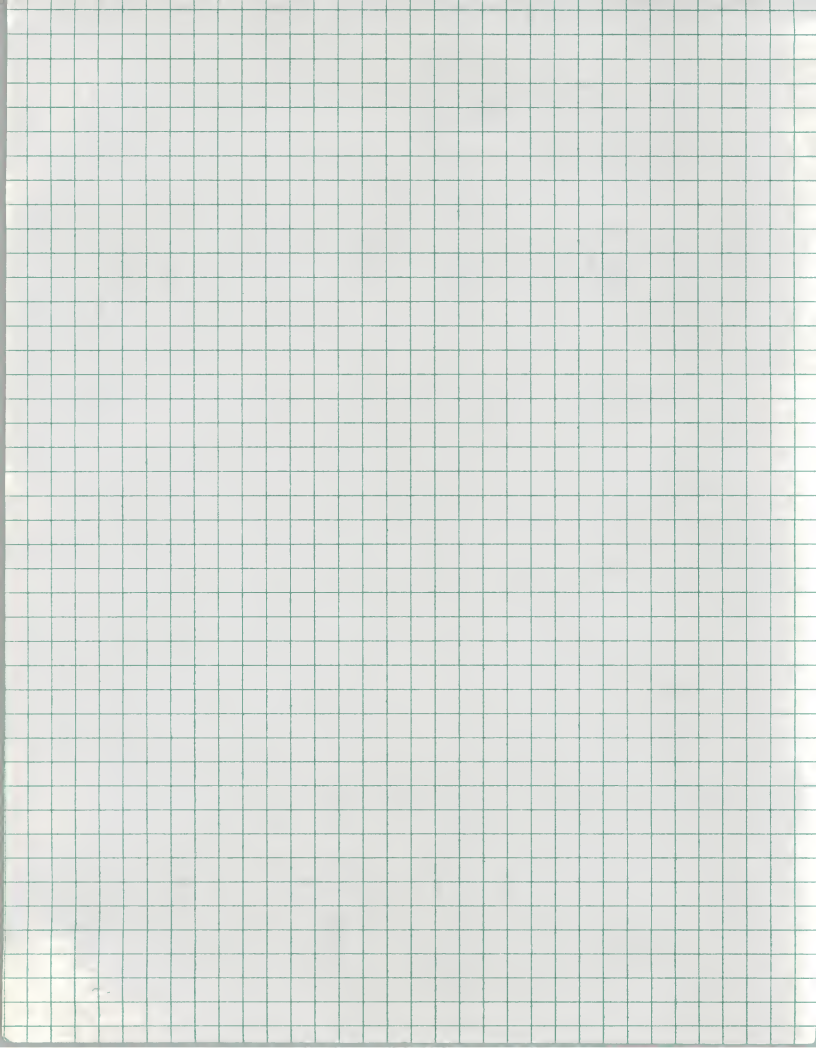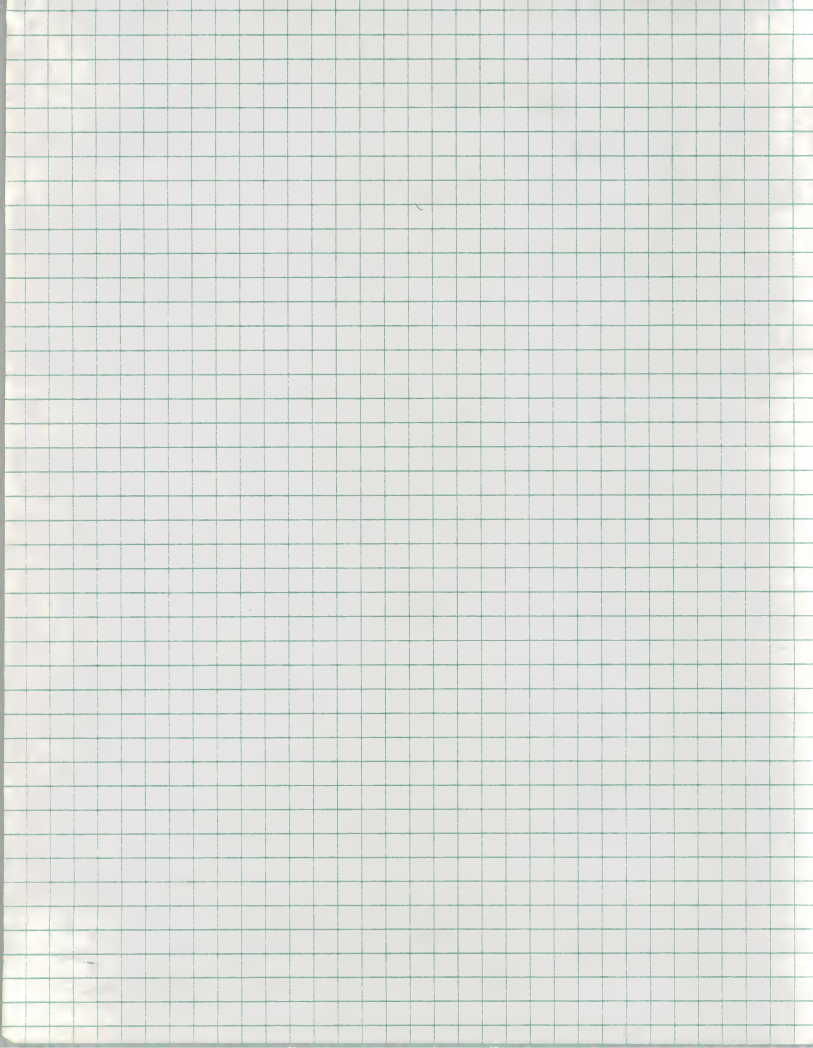
ANDERSEN CONSULTING

- SEVERAL MAJOR "EARLY" WINS
- USES SI AS ENTREE
- TARGETING MAJOR VENDORS
- AGGRESSIVE USE OF ALLIANCES

40

SISM-9

CSC
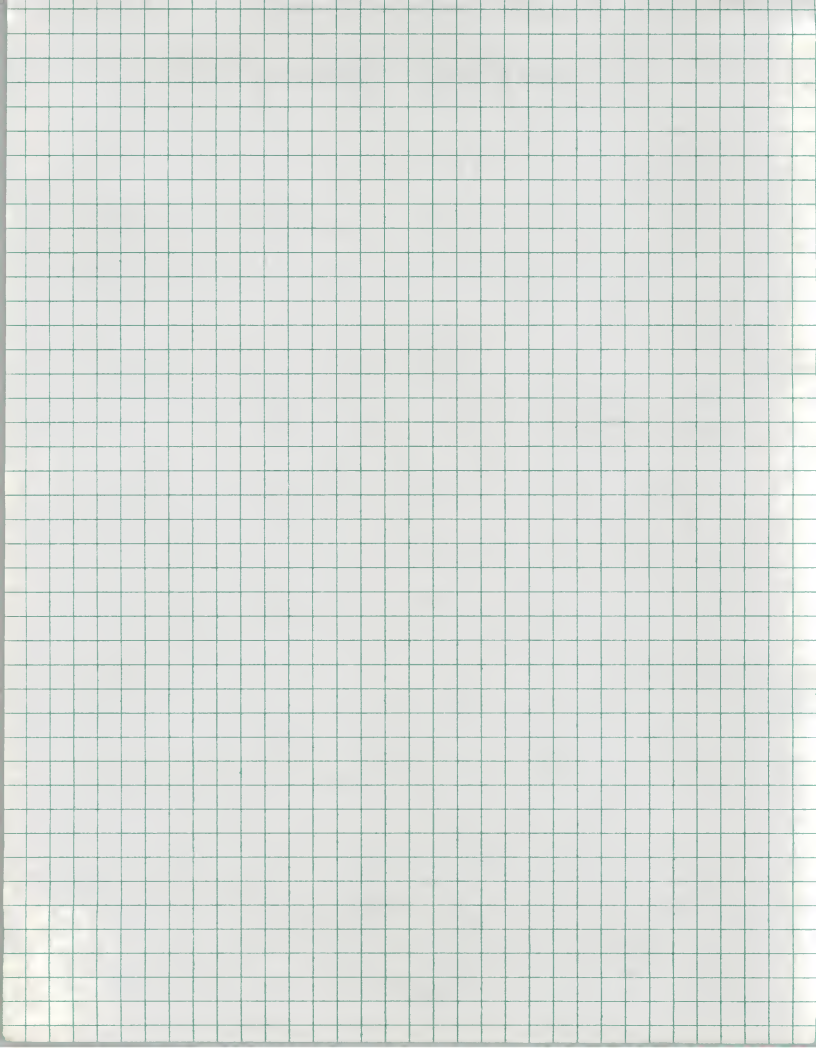
STRONG   MARKET POSITION
- SHIFT FROM FEDERAL TRADITIONS

- ~~STRONG SYSTEMS INTEGRATION~~

- SYSTEM INTEGRATION

- WORLD WIDE PRESENCE
  - ACQUISITIONS
  - BUILD ON EXISTING BASE

41

SISM
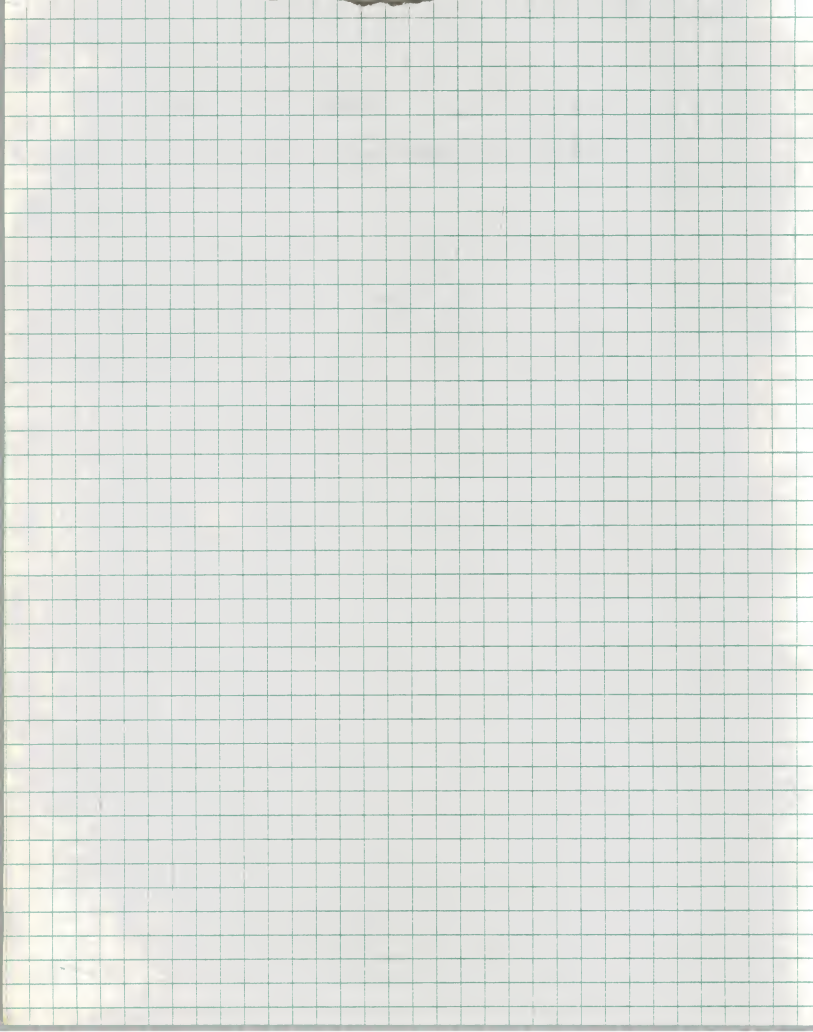
CSC

EMPHASIS

- SHIFT $\land$ TO ~~MORE~~ COMMERCIAL ~~MARKETS~~ ~~ACCOUNTS~~

  STRATEGIC
- ~~AGGRESSIVE~~ ACQUISITIONS
    - INDEX GROUP
    - CLEVELAND CONSULTING

- CAPITALIZE ON FEDERAL EXPERIENCE

  [SYNERGY]

42

SISM
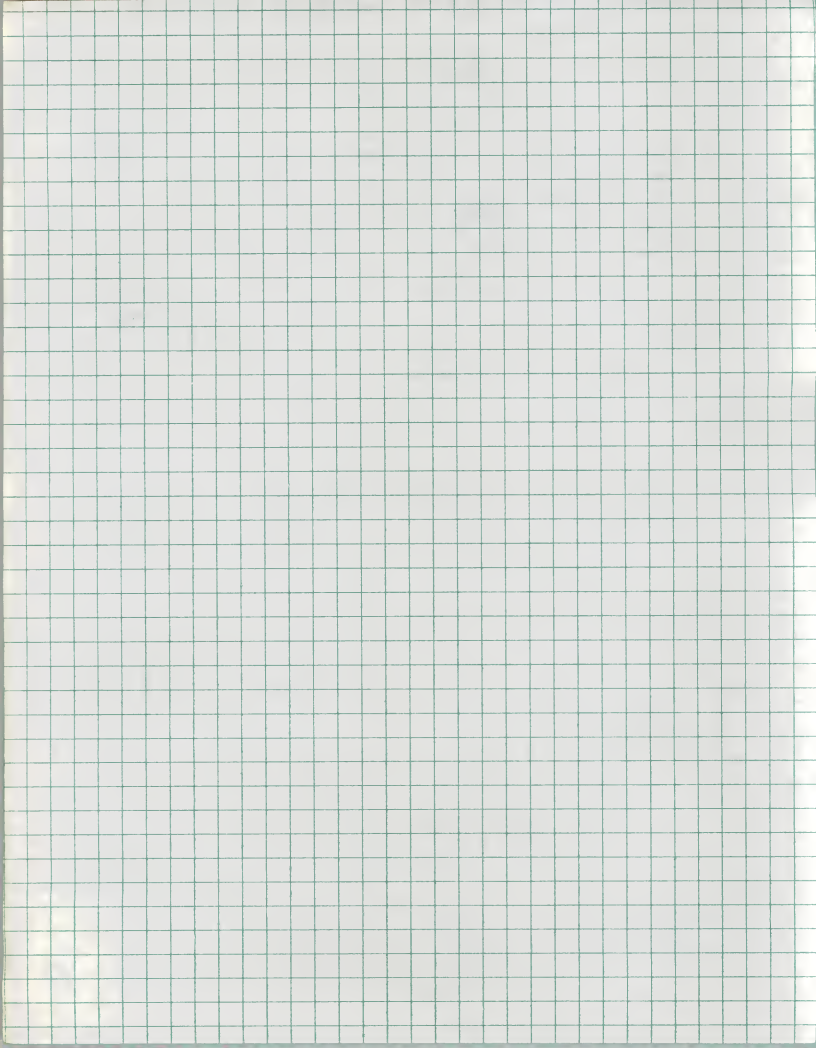
expertise unavailable within the organization, and the cost involved in running data processing centers. A few vendors did, however, note that outsourcing could lead to the client losing control of operations.

E
Leading Systems Management Vendor Strategies

Other than the desire to get more business, there is no single feature that characterizes the systems management industry as a whole, as illustrated in Exhibit II-5. Hardware vendors, like IBM and DEC, are becoming systems integrators and operators of data centers. Service firms, like EDS, that focused historically on systems operations, are moving aggressively into systems integration and applications management. And vendors, like Computer Sciences and PRC, that focused on Federal markets are trying to reduce their dependence on one client by getting more commercial business.

Exhibit II-5

Leading Systems Management Vendor Strategies

| |
| --- |
| *   Acquisition and Equity Positions |
| *   Long-Term Alliances |
| *   Staff Training and Development |
| *   System Management Service Offering |
| *   Reduction of Single Industry Dependence |

---

*   Even the largest vendors do not have all the expertise necessary to manage major commercial and government contracts. This is why EDS and CSC have purchased or taken equity positions in several smaller firms and established alliances with major hardware manufacturers.

*   There is increased emphasis on training and staff development. In this regard, IBM and Andersen Consulting have been models in this respect, with the former applying satellite communications to educating its professional staff, and AC training its personnel for a variety of assignments.

*   Vendors are beginning to use systems management as a term to describe the range of services they offer. Although usage varies, the strategy of end-to-end provision of services is one the most successful vendors have been pursuing for several years.

II.   EXECUTIVE OVERVIEW

Systems management, which comprises systems integration, systems operations and applications management, is becoming a major factor in information services markets. Increasingly, large commercial and private organizations are turning to outside vendors, either because they lack the internal staff to manage major automation projects, or to concentrate on their core businesses, or both.

A
Major Industry Trends - 1991

Based on research discussed in this report, INPUT believes that the markets for all of the major systems management services will increase throughout the 1991-1996 period. Exhibit II-1 lists current industry trends.

~~Exhibit II-1~~
Major Industry Trends - 1991
*   Full-Service Vendors' Dominance
*   Strategic Alliances and Niche Acquisitions
*   Users Buying Solutions - Not Technology
*   Secondary Vendors Seek Participation
*   Corporate Data Center Outsourcing
*   User Focus on Core Businesses

Many internal information systems organizations no longer control IS budgets, as user organizations become buyers of solutions and control the solution budgets. Users also seek new technologies, such as artificial intelligence, advanced telecommunications and relational data base management systems. To gain access to these technologies they are turning outside, particularly to the larger full-service vendors - EDS, Computer Sciences, Andersen Consulting.

Other vendors are moving to provide a range of services beyond their historic specialties. In particular, systems integration has become a high-level distribution channel for the complete range of information and telecommunications products and services. It provides or limits product access to the largest users in government and U.S. industry, just as they are seeking one-stop shopping and vendors who are full-service providers.

~~Outsourcing~~ Characteristics for the 1990s

IT Solutions Complexity

Commitment Size and Length

Vendor Breadth of Assumed Responsibility

Partnership versus Supplier/Subcontractor

Professional Services Component

~~Systems Management~~   SISM 36

---

*   The size and length of the commitments that buyers (users and
information systems) are willing to make will be much larger and longer. The
focus will be on solutions - not the bits and pieces that have been the general
buying patterns of the 1970s and 1980s. The buyer will turn to a single purchase
point, a full-service vendor who can deal with complex problems.

*   The vendors who are leading the way in the changing information
systems and services market are also changing.

-    They are now ready, able and willing to take on a broad set of
responsibilities and to invest in the relationship with the client.

-    They are interested in long-term versus short-term relations with
their primary customers. The goal is a partnership - not a subcontractor
relationship - that leads to long-term client relationships and account
control.   This partnership makes the vendor's investment possible and of
mutual value.

*   The typical outsourcing relationship includes a much greater service
element than before.

-    First, there is a large component of professional services as the
buyer looks outside for expertise as well as technology solutions.

-    Second, the vendor is providing a significant management
component that simply was not provided previously. Relationships are
being formed at a much higher level of client and vendor management.

Outsourcing is causing some fundamental changes in the structure of the
information systems and services market. It affects traditional application
software, turnkey systems and, most important, has created the newer delivery
modes of systems integration and systems operations.

INPUT

the laboratory or shop floor and the chief executive. Further, there are large service organizations able and willing to take on the routine functions that any organization over a certain size must manage: payroll, data processing, distribution, transportation.

There is another side to this delegation of functions. An organization that surrenders too many functions to outsiders runs the risk of losing control over those functions. It can be argued that an organization must retain certain capabilities: whether to be a "smart buyer," or simply to evaluate the technical competence of the vendors to whom it increasingly turns. The corporate or government sponsor does not wash its hands of management responsibilities when it contracts for IS operations. Quite the contrary; it often takes more judgment to delegate the operation and work with a vendor than to retain control in-house.

But, whether organizations elect to retain some functions or turn them over to outsiders, outsourcing is only likely to grow in importance. For that reason, it is necessary to provide a working definition, especially as it pertains to IS functions.

Outsourcing is defined as the contracting of IS functions to outside vendors. Outsourcing should be viewed as the opposite of *insourcing*: anything that IS management has considered feasible to do internally (e.g., data center operations, applications development and maintenance, network management, training, etc.) is a potential candidate for outsourcing.

IS has always bought systems software, as it is not feasible for companies to develop it internally. However, all other delivery modes represent functions or products that IS management could choose to perform or develop in-house. Viewed this way, outsourcing is the result of make-or-buy decisions, and the outsourcing market covers any product or service where the vendor must compete against the client firm's own internal resources.

C
IS Organizations in the 1990s

In the 1990s there will be no single IS solution to the problems - and opportunities - discussed above. Rather, there will be several kinds of organizations working with vendors and their IS staff to make the most efficient and intensive use of their resources. Exhibit III-3 highlights the environment within which vendors are offering systems and services - an environment very different from what it was five years ago.

INPUT

Exhibit IV-17

Likelihood of Using Systems Management Components in the Future

Systems Integration	3.2
Systems Operations	2.8
Applications Management	2.7

1   2   3   4   5
Unlikely   Very Likely
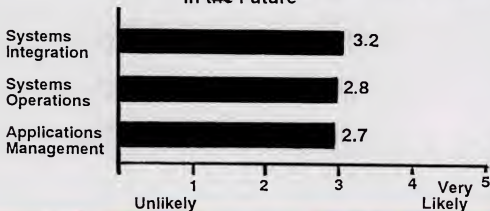
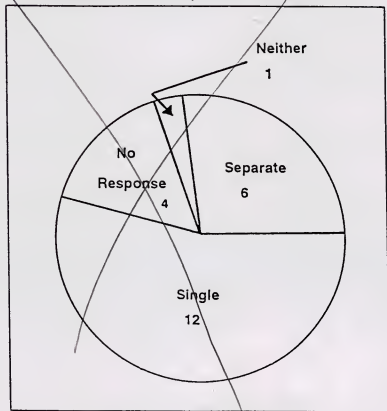The majority of users indicated a distinct preference for using a single vendor to provide all three services, rather than separate vendors for each service. Exhibit IV-18 shows this preference for a single end-to-end vendor.

Exhibit IV-18

Systems Management

Single versus Separate Vendors

Neither
1

No Response
4

Separate
6

Single
12

SOSM1   IV-19

     INPUT

In sumary, many existing vendor-user relationships are evolving into true partnerships. Where partnerships exist, it is the management process along with a broad base of expertise that is most critical to services. The customer comes to depend on the vendor for day-to-day, minute-to-minute support. The scope of the relationship is broad, dealing as it does with a large set of individual services. The timing of the relationship is designed to be open-ended, since it starts with a long-term commitment of three to five years. Most important, if both parties will the relationship to succeed, it can have significant, lasting organizational impacts.

C
Systems Management Requirements

The word *requirements* can be construed in two compatible senses. First, it means that users need end-to-end systems management that can be met by the vendor organizations just described. Second, both vendor and user must satisfy certain preconditions (requirements) if systems management is to succeed. This section consider the second meaning of requirement.

The first of these preconditions is the desire of both parties for a continuing partnership. Yet the result of many major outsourcing decisions remains an objective-based relationship that is tied to fairly specific but complex goals. The user-client will often begin by calling in a vendor for a specific assignment--one that may ripen into a partnership. In effect, the different functions that system management embraces are eventually "bundled" into a single working agreement.

The different functions comprising systems management can lead to long-term relationships:

*   An applications maintenance relationship, if successful, will extend over a long time and can expand to cover a complete set of applications and even new development.

*   A systems integration relationship can become, or include from the beginning, systems operation requirements.

When the change occurs, it is critical that the client and vendor recognize the differences in characteristics of the changed relationship. The result will probably mean a redefinition of the business relationship.

A good systems management relationship presupposes a certain kind of client, one whose concern for solution overrides any concern with where that solution originates. They are generally committed to using information systems to improve productivity, and they know their technology well enough to understand where and how outsourcing can improve operations.

INPUT

EMERGING "OUTSOURCING" TRENDS

- APPLICATIONS MANAGEMENT
- APPLICATIONS MAINTENANCE

- TRANSITION MANAGEMENT
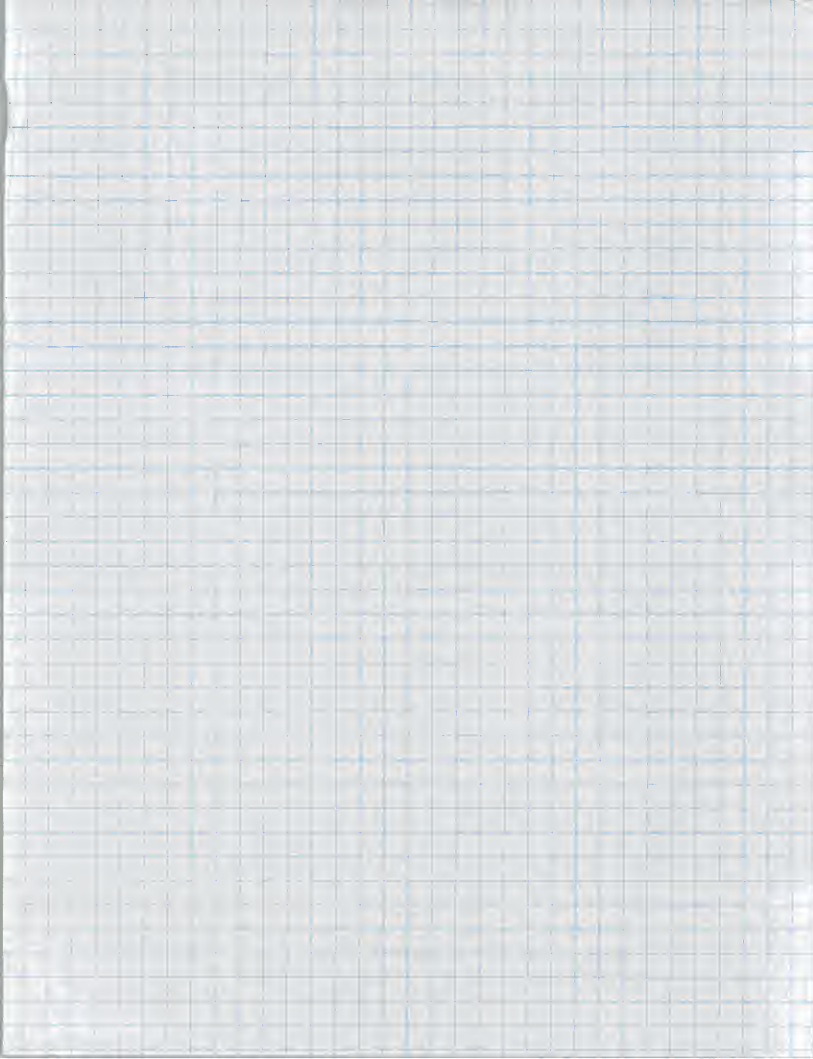
VIII. CONCLUSIONS AND RECOMMENDATIONS

A
Conclusions

A review of conclusions drawn from research for this report indicates clearly that
the issues related to growth of the systems management market are
predominantly business, not technical, issues. Exhibit VIII-1 highlights key
conclusions.

~~Exhibit VIII-1~~
Conclusions
*   Increasing Core Business Focus
*   Shifting Vendor Strategies to Outsourcing IS Functions
*   Full-Service Vendors Sought
*   Alliances Offer Full Range of Services
*   Outsourcing Activity Increasing
*   Applications Management Important Vendor-Provided Service
*   In-house IS Staff Role Shift to Strategic Planning

*   Companies are focusing increasingly on their core businesses. Activities
that detract from executive attention on competitive positioning, product
differentiation and strategy, or overall growth are candidates for outsourcing.
While there is resistance to contracting for systems management, the resistance is
primarily from information systems management, not executives.

*   The progressive information systems and services vendors are shifting
their strategies to provide broad, flexible products and services to meet
outsourcing requirements. These vendors market a combination of professional
services, systems operations, applications development, and support--and within
vertical industries, focus on applications software as well.

*   Companies seek full-service vendors for many reasons: to lower costs,
increase flexibility, remain competitive, or use skills unavailable in-house. In
systems management, one thing often leads to another. A vendor brought in on a
system integration project may very well receive a contract to manage the
customer's data center and upgrade its installed base of applications software.

RECOMMENDATIONS

- CAPITALIZE ON EXISTING RELATIONSHIPS
- PROVIDE FULL SERVICE RANGE
- EXPAND INTO APPLICATION MGT.
- ~~PROMOTE~~ REFOCUS ~~OF STO~~ ON STRATEGY ~~ISSUES~~
- REFOCUS CLIENT ON STRATEGY ISSUES

51
50
SFSM