Information
Services
Program
(ISP)

Information Systems Planning Report

Transportation Sector

INPUT®

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INFORMATION SYSTEMS PLANNING REPORT

TRANSPORTATION SECTOR

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Table of Contents

I	Major Issues	1
	A. Driving Forces	1
	B. Issues and Objectives	3
	C. Impact of New Technology	4
II	New Applications	7
III	Budget Analysis	9

Exhibits

I

-1 Transportation—Driving Forces 2
-2 Transportation—Key Issues 4
-3 Transportation—Objectives 5
-4 Transportation—Impact of New Technology 6

II

-1 Transportation—Source of Development Resources—Major Applications 8

III

-1 Transportation—1987 Budget Distribution and 1988 Projected Growth 10
-2 Transportaiton—Assignment of Application Development Staff 11

I

Major Issues

I

Major Issues

A

Driving Forces

The transportation industry sector comprises the airline, railroad, trucking, and other transportation segments. Deregulation and economic conditions have contributed to increased competition and consolidation within each of the segments, as well as competition between the modes of transportation and the development of intermodal transportation offerings.

The U.S. airline industry is highly concentrated, with twelve major carriers accounting for 84% of all revenue passenger miles at the end of 1986. Although passenger traffic increased in 1986, operating profits for the year were below previous years' levels due to increased airfare discounting. The industry continued to benefit from lower fuel prices, and in some cases, lower labor costs. However, these post-deregulation airlines are struggling to restrain costs further, in order to remain both competitive and profitable.

In recent years, a restructuring of the freight railroad industry has occurred. The result has been fewer and larger railroads and more intermodal companies. For the year 1986, rail revenue ton miles were approximately equal to 1985 levels because of to improved industrial production in the fourth quarter. During most of the year, however, operating revenues were below 1985 levels due to fuel cost savings being passed on to customers and increased competition from other modes of transportation. One area of the rail industry—rail piggyback traffic—has grown dramatically since deregulation in 1981.

Financial pressures have increased for trucking firms operating in the highly competitive deregulated environment. While fuel costs have decreased, labor costs and insurance premiums have increased. The more progressive trucking companies have been able to offset the effects of intense price/service competition by implementing successful marketing

strategies and improving efficiencies in operations. Marginal carriers, on the other hand, have been marked by failures, bankruptcies, reorganizations, acquisitions, and mergers.

Delivery services on shipments by single-mode trucking or intermodal air and trucking operations have become very competitive and reliable. The fast-growing air cargo and air express markets have increased competition among surface carriers and intermodal surface and air carrier operations in meeting just-in-time inventory and other requirements. The air cargo industry segment is showing signs of a shakeout similar to that experienced by the passenger airlines since deregulation. Of the largest U.S. air freight carriers, only three or four are expected to survive the next few years.

Future growth in the domestic water transportation industry segment is tied closely to domestic economic conditions. U.S.-flagged foreign trade lines are dependent on domestic and international economic conditions and foreign trade.

Exhibit I-1 outlines driving forces in the transportation industry.

EXHIBIT I-1

TRANSPORTATION DRIVING FORCES

- Deregulation
- Competition
- Restructuring of the Industry
- Economic Conditions

B

Issues and Objectives

Key issues for transportation company IS departments include cost control and profitability, company productivity, information access, communications, and improved services to end-user departments as well as to customers.

- Cost control is essential for transportation companies operating in the deregulated environment. IS managers are searching for ways to improve productivity in developing and implementing information services as well as in providing transportation services.

- IS departments are acutely aware of the need for information. Managers need information to make decisions quickly. For example, the airlines use information systems to determine how much discounting must be done in order to maximize revenues. LTL trucking operations use information systems for packing and routing shipments to improve productivity and maximize revenues.

- Communications needs are especially high in the transportation industry due to the many remote sites involved. These sites are often mobile, a situation that presents additional challenges.

- Customers in the transportation industry increasingly expect new services. IS departments must find ways of providing these services so that their companies remain competitive. For example, IS departments implement systems that permit customers to pinpoint the location of goods being shipped at any given time. Other customers require the electronic transfer of data for billing, orders, and routing (EDI).

The following objectives, identified by IS managers, center on profitability and the need to remain competitive:

- Reducing costs, including equipment maintenance and personnel costs, while maintaining the resources needed to develop new systems and maintain existing systems.

- Developing new applications, while improving the application development process. This process involves obtaining better tools for the application development staff.

- Develop efficient data communications networks to improve data transfer between various points of transaction involving customers, as well as within their organizations.

- Selecting and implementing software products and other information services that will fulfill the requirements of end-user departments and improve service offerings to customers.

- Purchasing hardware that will meet IS needs and be most reliable and cost-effective in the long run.

Key issues and objectives for IS managers in the transportation industry are shown in Exhibits I-2 and I-3.

EXHIBIT I-2

TRANSPORTATION KEY ISSUES

- Cost Control/Profitability
- Improved Company Productivity
- Information Access/Communications
- Improved Services to User Departments and Customers

C

Impact of New Technology

Transportation companies gain their respective competitive advantages through the use of information technology and by increasing productivity, decreasing costs, and improving customer services. Often, in the deregulated environment, these items are essential for a company to even remain in operation.

Information technology, such as data communications, is especially important to transportation companies due to the volatile and very competitive nature of the industry. In addition, innumerous points of transaction are characteristic of the industry. Data communication networks relay essential, current information to managers for decision making in areas such as pricing. These networks also provide ways to offer additional customers services, such as shipment tracking and electronic billing.

EXHIBIT I-3

TRANSPORTATION OBJECTIVES

- Reduce Costs/Increase Profitability
- Increase Transportation System Productivity
- Increase Programmer Productivity
- Improve Application Development Process
- Develop/Implement Applications for Improved Customer Services
- Improve Data Communications Networks
- Purchase Hardware

Electronic Document Interchange (EDI) is becoming a major information technology within the transportation sector. EDI was pioneered by the trucking sector and has grown in importance with the major companies. In the railroad sector, also one of the early users, it is becoming a requirement of doing business with the major railroads for bills of lading. Because the transportation industry interacts with all other industries, this sector continues to be a driving force for EDI.

Exhibit I-4 outlines the impacts of new technology on the transportation industry.

EXHIBIT I-4

TRANSPORTATION IMPACT OF NEW TECHNOLOGY

- Increased Productivity
- Lower Costs
- Improved Customer Services
- Data Transfer within Organization
- Data Communication between Points of Transaction
- Applications at User Department Levels

II

New Applications

II

New Applications

INPUT's respondents reported that 50% of major new applications planned for 1988 will be developed internally. Eleven percent (11%) of the major projects planned will be contracted out fully to professional services (External) organizations. The remaining 39% will be combination efforts involving both internal application development staff and external professional services (Both) organizations (see Exhibit II-1).

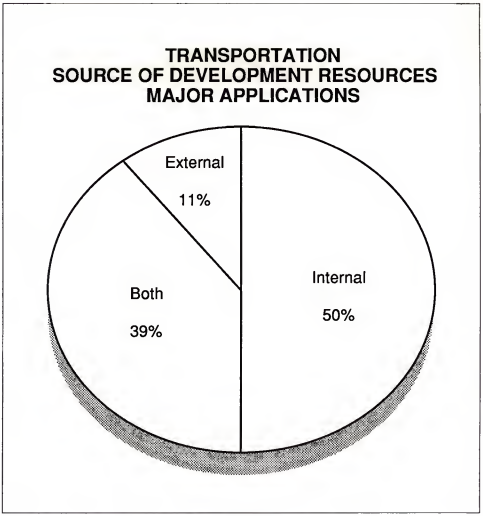
Respondents identified the following cross-industry and industry-specific applications to be implemented in 1988:

- Budgeting
- General Ledger
- Accounts Payable
- Accounts Receivable
- Fixed Assets
- Integrated Accounting
- Frequent Flyer Accounting
- Payroll
- Flexible Benefits
- Crew Management
- Enhancements to Reservation System
- Scheduling
- Logistics Control
- Materials Management
- Maintenance Management
- Shipping/Invoicing
- EDI
- Sales Tax
- Simplified Rating
- Sales Analysis
- Yield Management
- Exception Reporting
- Flight Operations

- Database Management
- Desk-top Publishing
- Image Processing
- Private Network

The breadth of this list reflects the diversity of the subsectors within transportation, the level of competitiveness brought on by deregulation, and the value of information systems technology to this information-intensive industry.

EXHIBIT II-1



III

Budget Analysis

III

Budget Analysis

IS budgets as a percentage of total corporate revenue averaged 1.0% for transportation respondents in 1987. During 1987, IS spending increased an average of 2% over 1986. This modest increase compares with a 10% increase that had been projected by those companies surveyed about one year ago. Plans to increase spending for information systems were modified due to increased price competition, resulting in less than expected revenue levels, and because of continued restructuring of the industry, leading to consolidation.

Respondents whose IS budgets increased in 1987 attributed increases to corporate growth, IS personnel expenses, computer hardware, communications, and the implementation of new applications. IS managers in the transportation industry expect to increase spending for information services by 7% in 1988. Exhibit III-1 shows the 1987 budget distribution and projects the growth of budget categories in 1988. As in 1987, the most significant budget increases for 1988 will be in the areas of IS personnel, computer hardware, and communications.

IS personnel will be involved in developing and implementing new applications, as well as enhancing and maintaining existing systems. Thirty percent of application development personnel within IS organizations are assigned to the development of new systems, thirty-three percent are assigned to the enhancement of existing systems, and thiry-seven percent are assigned to the maintenance of existing systems (see Exhibit III-2).

Increases in hardware budgets for 1988 were consistent (5-6%) across all categories of hardware—mainframes, minicomputers, microcomputers, mass storage devices, and other hardware, including peripheral devices—although allocation of the total IS budget to each of these categories of hardware varies.

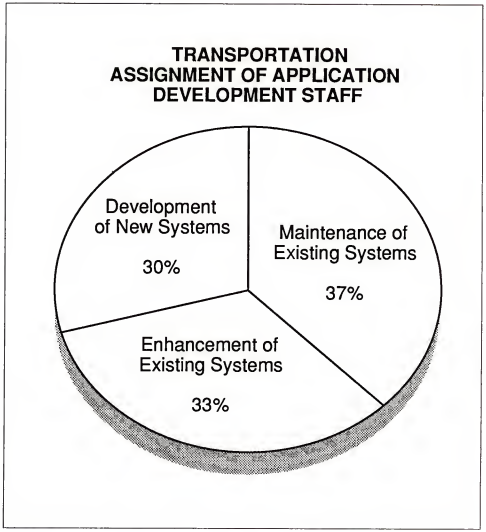
EXHIBIT III-1

TRANSPORTATION 1987 BUDGET DISTRIBUTION AND 1988 PROJECTED GROWTH

BUDGET CATEGORY	PERCENT OF 1987 I.S. BUDGET	1988 PROJECTED GROWTH (Percent +/-)
Personnel Salaries and Fringes	43	8
Mainframes	10	6
Minicomputers	3	5
Microcomputers	1	5
Mass Storage Devices	3	6
Other Hardware	5	6
Total Hardware	22	6
Data Communications	7	6
Voice Communications	5	5
Total Communications	12	6
Professional Services	5	2
Processing Services	0*	10
Application Software	1	2
System Software	3	3
Hardware Maintenance	8	1
Software Maintenance	2	4
Total External Products/Services	19	5
Other	4	4
Total	100	7

*Less than 1%.

EXHIBIT III-2



Many companies currently handle voice communications separately from the IS budget. Respondents with IS budgets that include both data and voice communications plan to increase spending in both areas during 1988.

Respondents reported that total corporate IS expenditures included the corporate IS budget as well as some information systems expenditures of end user departments. However, user departments are generally responsible for purchasing PCs and other related items. Processing services, such as on-line data base access, are also often purchased directly by user departments. In addition, some IS expenditures are charged back to user departments. IS managers indicated a trend toward charging more of their services back to the user departments.

About INPUT

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

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

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

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

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