

July 2, 1987

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Dear
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:

Electronic Data Interchange (EDI) is the electronic transfer of business information between organizations in a structured application. The parties may have different processors and data formats, in which case translation between common formats or standards is required.

EDI offers economies by reducing manual document preparation costs and by eliminating errors caused by rekeying information. Further, EDI information can be integrated with other applications.

The enclosed report, U.S. Electronic Data Interchange Services, 1987-1992, is one in a series of studies focused on EDI markets and implementations. This study describes EDI activities in 23 industries, analyzes issues affecting acceptance of EDI, and projects future developments. Market forecasts and recommendations to industry participants and users are included.

A companion report, EDI Service Provider Profiles, will be available shortly.

Your comments and queries are welcome.

Sincerely,

Victor S. Wheatman
Manager, EDI Planning Service

VSW:m1

Enclosure



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EDI SERVICE PROVIDER PROFILES

MAY 1987



Published by
INPUT
1943 Landings Drive
Mountain View, CA 94043
U.S.A.

Electronic Data Interchange Planning Service (EDIPS)

EDI Service Provider Profiles

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EDI SERVICE PROVIDER PROFILES

ABSTRACT

Electronic Data Interchange (EDI) is the electronic transfer of standard business transaction information between organizations in a structured application. The trading partners may have different processors and data formats, in which case translation between common formats or standards is required.

EDI offers economies by reducing manual document preparation costs and by eliminating errors caused by rekeying information. Further, EDI information can be integrated with other applications for the generation of management reports and other purposes.

This report profiles 19 EDI services and 9 companies planning or positioned to provide EDI services.

The study is one of a series examining EDI markets and implementations.

The report contains 90 pages, including 6 exhibits.



EDI SERVICE PROVIDER PROFILES

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I INTRODUCTION



I INTRODUCTION

- Several of the major Value-Added Networks (VANs) and Remote Computing Services (RCS) provide EDI services, as do several smaller RCS firms.
- This report, a companion study to INPUT's U.S. Electronic Data Interchange Services, 1987-1992, profiles these companies and their services, estimates their market shares, and analyzes their stated or apparent strategies.
- Additionally, the report discusses potential market participants and briefly discusses the role of EDI software providers.





II THIRD-PARTY SERVICE PROVIDERS



II THIRD-PARTY SERVICE PROVIDERS

A. GENERAL ELECTRIC INFORMATION SERVICES COMPANY (GEISCO)

I. BACKGROUND

- GEISCO (Rockville, MD), established in 1984, is a division of General Electric. It provides the Mark*Net VAN, available in over 750 cities worldwide with 600 access points in the U.S.

2. SERVICES

- GEISCO offers a broadly based service, with applications supporting international commodities, securities and currency markets, and international banking. Other industries served include manufacturing, shipping, retail, health care, and computer hobbyists.
- GEISCO provides access to a variety of processing services including a national clearinghouse for health care insurance claims, financial institution automated clearinghouse services, and payment systems.
- Quik-Comm electronic mail service includes WPXchange, a storage and retrieval capability linked to the E-mail service, featuring word processing and document translations between incompatible computers.



3. GEISCO AND EDI

- GEISCO works with industry groups to develop alliances and win endorsements for its EDI services. The company operates a general purpose EDI network and a medical insurance claims service and developed a manufacturing EDI network for an industry group.
- GEISCO's EDI and EDI-related services are:
 - EDI*Express (domestic).
 - Trade*Express (international).
 - EMC*Express (health claims processing).
- CAD/CAM engineering and specification drawings will be transmitted through a planned service called Design*Net.
- GEISCO's EDI*Express operates as part of the Mark III teleprocessing service. It supports X12, TDCC, international standards, and private formats through various access methods and protocols.
- EDI*Express provides mailbox service or optional out-dialing. Billing can be shared by trading partners, and detailed billing is newly available.
- Several microcomputer software packages are available, providing menu-driven communications and form-fill screens. There is also a mainframe translator sold, now in its first release. GEISCO's EDI software packages will be examined in a companion report from INPUT's EDI Planning Service Program.



- GEISCO's EDI support program, formerly called Quik Connect, is now called RAMP. It includes trading partner consultation, documentation, training guides, professional services, and a toll-free EDI help desk.
 - EDI services are sold in a "ramp up" process which sells to the largest members of a trading group in a consultative process, then uses telemarketing and other methods to sign smaller accounts in the group.
- GEISCO developed Transnet for the Motor and Equipment Manufacturers Association (see this chapter, Section M.
- GEISCO also markets a third party's health care claims clearinghouse, (National Electronic Information Corporation in Secaucus, NJ) as the EMC*Express service, using UB 82 and HCFA 1500 formats. NEIC is discussed in this chapter, Section R.
- GEISCO is actively pursuing international EDI applications and supports the GTDI international standard. Trade*Express is designed for mailboxing and transmission of trade documents.
 - Trade*Express, targeted to exporters, freight forwarders, banks, carriers, custom house brokers, and others involved in international trade, integrates EDI, electronic mail, a bulletin board for sharing information, computer conferencing, and trade data base inquiry and retrieval capabilities.
 - Through the First National Bank of Chicago, GEISCO supports the bank's Accelerated Trade Payments service for international trading companies to improve international financial transactions.
 - In the United Kingdom, GEISCO Ltd. has joined with STC International Computers Ltd. (formerly ICL) to form International Network Services Ltd., offering EDI services.



4. FINANCIALS

- In 1984, the company spent \$20 million upgrading equipment, spending another \$8 million in 1985.
- As did many information service companies, GEISCO experienced difficulties during 1985, resulting in staff cutbacks.
 - The company announced the cutbacks were part of a restructuring leading to a tighter business focus.
 - Company officials acknowledge that network-based services contributed only 10% to the business. However, company officials established a 1986 goal of increasing the contribution of network services to 20%.
- At the end of 1986, GEISCO had another reorganization with the renamed EDI area (now called Worldwide Intercompany Logistics Business), suffering a few position losses.
- In 1986, GEISCO invested an estimated \$15 million and the skills of approximately 150 professionals in EDI, focusing individuals on specific industry segments. INPUT believes this investment has been marginally scaled back, and that the company's EDI unit is not expected to breakeven until 1988.
- As of March 1987, GEISCO claimed 700 corporate users of EDI*Express, up from the December 1986 customer count of 510.
- INPUT estimates GEISCO's 1986 VAN revenue in the \$40-50 million range, with EDI accounting for approximately \$6.5 million.



5. STRATEGIES

- GEISCO's corporate philosophy is that the company will not enter any business where it cannot achieve a dominant or near dominant position.
 - Rather than solely providing basic network services, such as electronic mail, GEISCO is positioning its data transmission, remote processing, and industry-specific applications in targeted markets.
 - GEISCO's plan is to leverage the worldwide network presence and to focus on selected cross-industry applications. GEISCO earlier defined "focused markets" as including EDI itself, business logistics (or the movement of goods and materials), and international trade. The renaming of its EDI division reflects this approach.
- Parent General Electric, with \$2.3 billion in cash, has been reportedly investigating additional and possibly large acquisitions as part of a fast-growth plan. Although the recently acquired RCA Cyclix VAN has been sold, additional buys of information services companies are possible.
- Within EDI, the company is intent on signing with agents to sell its services with industry-specific software and hardware.
 - For example, Apparel Computer Company (New York/Concord, CA), American Business Computer (Farmington Hills, MI, selling primarily to the auto industry), and MSA (Atlanta, GA) have agreements with GEISCO.
 - MSA is integrating EDI software purchased from TranSettlements (Atlanta, GA) into its mainframe accounting and inventory management packages and will engage in joint marketing efforts with GEISCO.

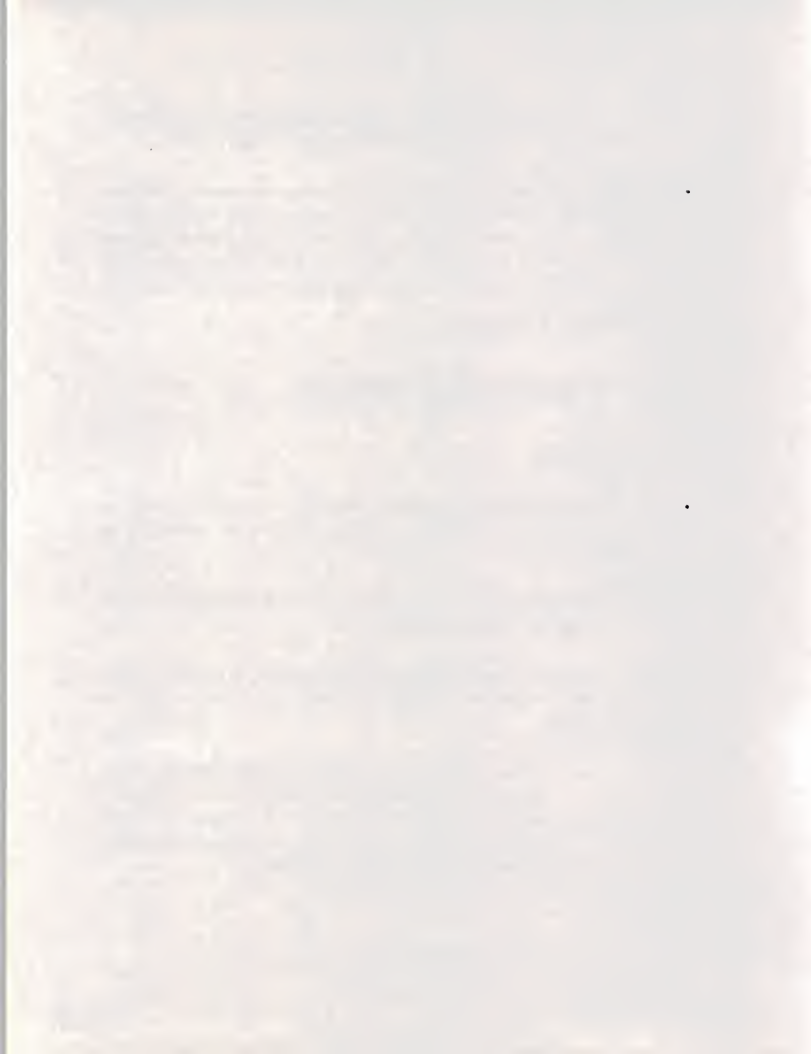


- A generic pharmaceutical data base provider (Distribu*Net, Dania, FL) is using GEISCO for data base distribution and EDI applications.
- GEISCO apparently feels an aggressive approach to the domestic and international EDI market will bring it long-term relationships with its customers, agents, business partners, and private EDI network users. Once signed, users may be reluctant to move to another firm. Thus, gathering market share early in the game may well be worth the significant investment GEISCO has made.

B. MCDONNELL DOUGLAS CORPORATION (MDC)

I. BACKGROUND

- In 1984, McDonnell Douglas purchased Tymshare and its VAN, Tymnet. These and other acquired companies have been placed in the Information Services Group.
 - Until late 1986, EDI was provided by the McDonnell Douglas Electronic Data Interchange Systems Company.
 - Now, EDI services and MDC's other electronic messaging units have been merged into the Applied Communications Systems Company (ACS).
 - Among other services, ACS provides the OnTyne E-mail service, logistics information for shippers, and OrderXchange, a remote order entry management and sales communications system for sales representatives and customers to electronically transmit and verify ordering information.



- Tymnet serves approximately 65 international access points and over 500 U.S. cities. International access is supported via International Record Carriers (IRCs); however, the company's majority ownership of FTCC (an IRC) was recently sold to a unit of Pacific Telecom.

2. SERVICES

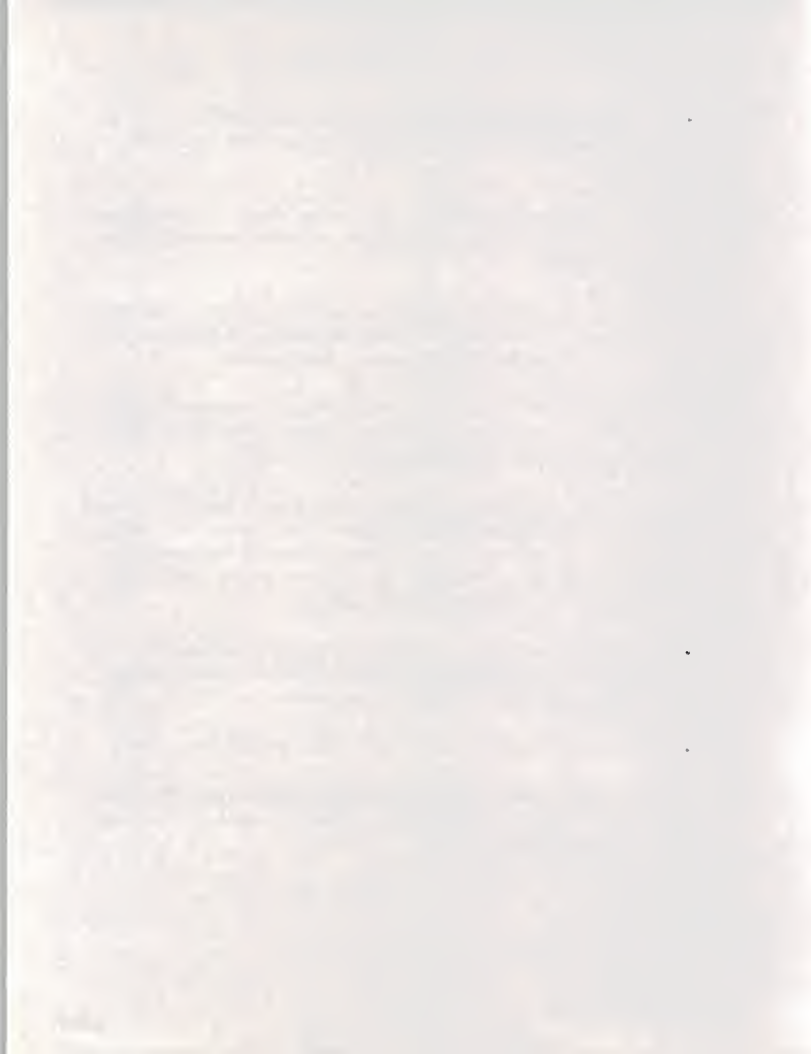
- The Information Services Group sells services to vertical and horizontal businesses through focused operating groups and also provides products and services to other ISG companies.

3. MCDONNELL DOUGLAS AND EDI

- The principal EDI service, EDI*Net, was introduced in 1981. It supports mailbox and outdial services using TDCC, X12, international GTDI, and UCS standards.
- EDI*Net clients are predominantly in the transportation, grocery, electronics, telecommunications, aerospace, oil, and warehousing industries.
 - No log-in service is provided in accordance with UCS (grocery) standards. This permits non-customers to access EDI*Net customers who are trading partners through the network. Subscribers pay the charges.
 - In 1985, the company tripled personnel support for the EDI development and marketing to a staff of approximately 75. INPUT estimates that 100 staffers are currently dedicated to EDI and messaging services at McDonnell Douglas.
- EDI transactions on EDI*Net are growing 10% monthly. In February/March 1987 the company's single-day volumes continually set new internal records.



- In late 1986, a joint venture with British Telecom for EDI services in the U.K. was abandoned by both firms citing belief the market had not developed as expected.
- However, INPUT believes the venture failed due to fundamental cultural differences between the companies and marketing/sales problems.
 - BT is technologically driven and production-oriented while MDC is marketing-oriented. The two organizations did not work well together at functional or administrative levels.
 - The U.K. marketing effort was targeted toward innovative EDI users who were primarily committed to the development of another vendor's EDI service (ICL's Tradanet).
 - BT's sales force was familiar with selling to telecommunications managers, while EDI needs to be promoted at a general management level. Telecom managers are often removed from decision-making and new development and are an inappropriate target for early market development.
- MDC officials report work to license the company's EDI technologies to public telephone and telegraph agencies (PTTs), with the goal of providing gateways to the U.S. service for international EDI applications.
- Other EDI services offered by MDC are related to transportation logistics:
 - MDC-Trace traces motor and air carrier shipments, permitting carrier performance analysis, improving inventory control, and helping to expedite shipments.



- Data Collection provides air, rail, and motor shipment status messages, a method of collecting inbound and outbound shipment status messages from carriers.
 - The rail data collection service uses Shipper's Assistance Message (SAM) service provided through a dedicated line from RailInc (see profile, this chapter), as well as information from railroads not on the SAM system.
 - The rail service also provides Car Location Messages (CLMs), Car Location Inquiries (CLIs), and Car Location Updates (CLUs) for tracing containers, piggy-backs, and rail cars.
 - Rail service is part of Railtrack, a component of Tymshare's Rail Fleet Management Services. Railtrack merges user and railroad data into an on-line data base to provide shipment status and other information.
 - Railtrack provides physical car tracking, mileage accounting (to resolve report discrepancies and to handle mileage credit recovery), bad order analysis (to analyze trends in bad order incidents by leasing companies and carriers), route analysis, mileage reporting, and audit services (a joint venture with Freight Rate Service Company of Kansas City (MO) which invoices separately).

4. FINANCIALS

- In fiscal year 1985, ISG reported nearly \$110 million in losses on revenue of \$1.1 billion (a revenue increase of 13%). This performance was blamed on industry sluggishness and adjustments for corporate reorganizations.



- Plans for new services were delayed, a manufacturing operation was closed, new executives were named, and workers were laid off.
- INPUT believes cost cutting, while resulting in a later return to profitability, reduced the company's EDI marketing investment and caused McDonnell Douglas to lose some momentum.
- Irrespective of group losses, Tymnet's business grew nearly 30% in 1985.
- For the first three quarters of 1986, ISG reported continuing losses of over \$75 million, due to rapid amortization of the costs of acquiring other information systems companies and the continuing computer slump.
- In fourth quarter 1986, the Information Services Group had its first pre-tax profits since establishment, with earnings of \$5.6 million compared with a \$22.9 million loss for the 1985 quarter.
- INPUT estimates Tymnet's 1986 service revenue in the \$115-125 million range and EDI revenue in the \$6-7 million range.
- Approximately 450 companies use MDC's EDI services.

5. STRATEGIES

- In addition to network and processing services, McDonnell Douglas provides EDI consulting and will provide EDI "courseware," sponsoring educational programs.
- MDC says EDI*Net services are "open" rather than "closed" to a few industry segments, with its "no log-in" service expanding use to non-subscribers.

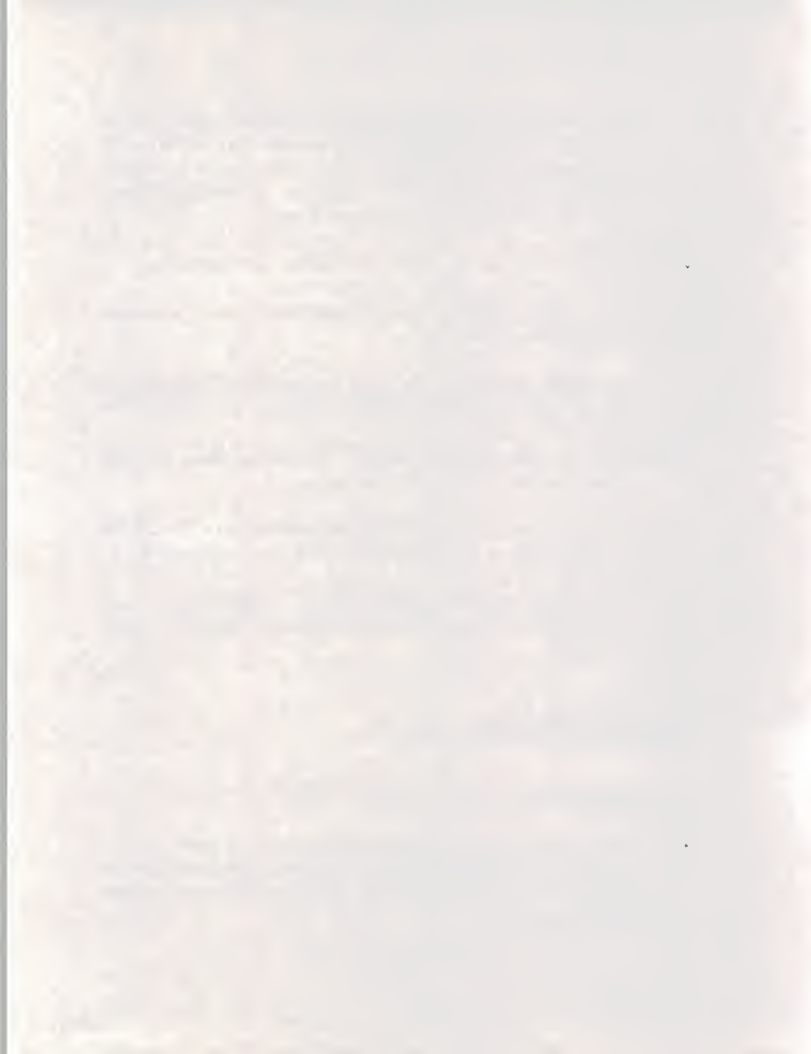


- The company's strategy has been to recruit companies representing many industries to its EDI services, with these companies drawing trading partners to the network for data interchanges. This contrasts with the strategies of other VANs taking a more targeted approach. A new large accounts management program will focus on major corporations.
- MDC earlier distributed micro software, an activity now discontinued.
 - The network found that only 5% of its EDI traffic could be attributed to software it distributed.
 - Instead, the company has a software certification program which recommends several alternate packages to clients and prospects.
- In 1986, the company began upgrading its central processors from IBM mainframes to Tandem fault tolerant computers.
 - In mid-1987, the company is scheduled to release EDI Version 2.0, with plans to convert all customers to the new system within one year.
 - These technical improvements will support additional EDI services such as transaction totaling, extensive management reports, and detailed billing.

C. STERLING SOFTWARE

I. BACKGROUND

- Sterling Software (SSW) is essentially a holding company for eight information service businesses. The company has over 5,000 customers including 85 of the Fortune 100, over 80 of the 100 largest U.S. commercial banks, and numerous government agencies.



- In August 1985, SSW purchased Informatics General, a 23-year old processing, professional services, and software vendor (Columbus, OH), for \$126 million.
- Informatics provided Ordernet EDI services to several industries. Ordernet is now part of Sterling Software's Information Services Group.
- Although hostile, the takeover was successful. Informatics was quickly blended into SSW, and key officials were coaxed to stay on board with attractive incentive programs.

2. SERVICES

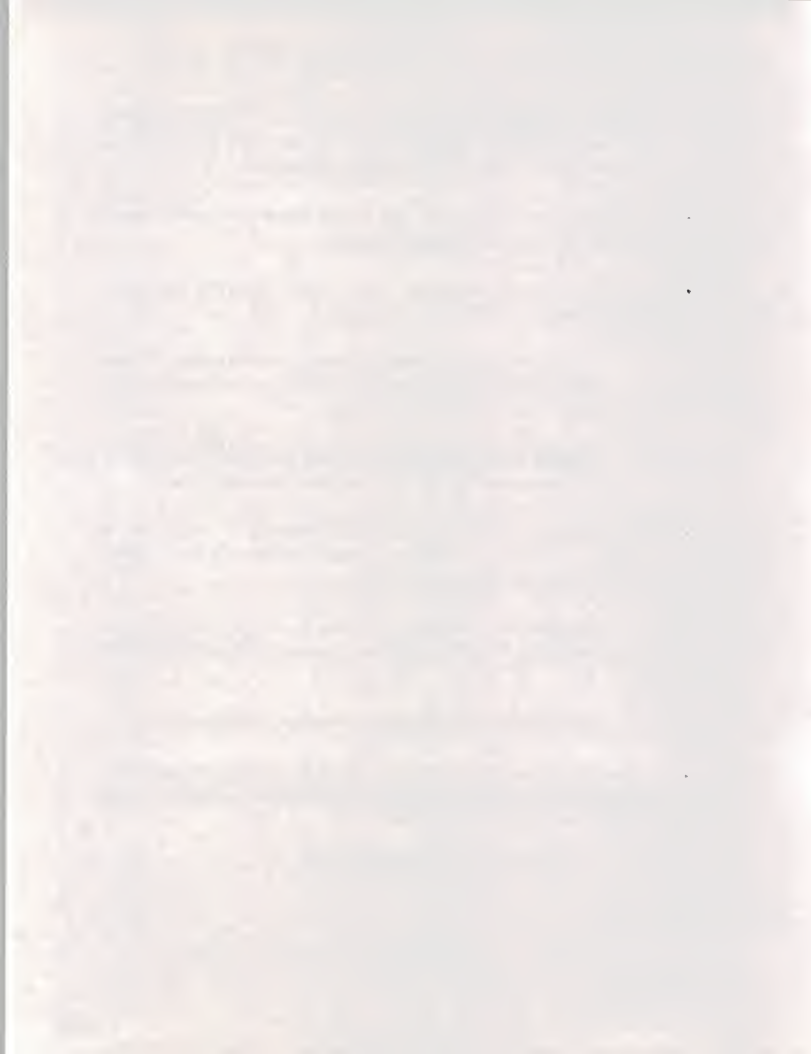
- Through its wholly owned subsidiaries, Sterling Software acquires, develops, markets, and supports a broad range of systems and applications software and professional services oriented toward IBM mainframes.
- There are five operating groups--Systems Software, Federal Systems, Professional Services, Information Services, and Financial Software, each with one or more operating divisions. The Business Management group was sold in 1986.

3. STERLING SOFTWARE AND EDI

- Informatics General began its Comm-Net EDI services to the pharmaceutical industry in 1975. Now, as part of SSW, Ordernet serves several additional industries using both industry-specific formats and newly ANSI X12 standards.
- These industries include grocery, hardware and housewares, medical/surgical distribution, service merchandising, ocean freight, warehousing, and suppliers to automobile manufacturers.



- Ordernet is a mailbox service (called a "clearinghouse" by the vendor), acting as a central repository of documents being transferred between distributors and manufacturers. Automatic forwarding is also available.
- Translation between X12 and industry-specific standards is available through the GENTRAN in-network translation service.
- Communications, supporting most devices, is primarily handled through toll-free numbers.
 - The company feels 800 numbers provide it with access from virtually all locations without dependence on packet network nodes and offers higher data speeds at no additional cost.
 - Ordernet processors handle incompatible line speeds, communications protocol differences, and industry-specific format conversions.
- The American Hardware Manufacturers Association (AHMA) chose the company to provide the EAGLE automated purchase order entry system, which now functions as part of Ordernet.
 - Operation and marketing of services is handled under a licensing agreement with AHMA subsidiary American Hardware Data Systems, Inc.
 - AHMA managed system funding, development, and testing.
- Electronic transmission of hospital chargebacks between wholesalers and pharmaceutical manufacturers is available, using the three National Wholesale Drugists' Association (NWDA) formats:
 - Bid Award Notification to Wholesaler.



- Chargeback Debit Memo to Manufacturer.
- Chargeback Reconciliation to Wholesaler.
- Auto-Comm for the U.S. auto industry supports ordering and supply documents. SSW has distributed software from Qaid Automotive Systems, Ltd. (Milton, Ontario) which conforms to AIAG-recommended specifications.
- EDI-UCS service is for the grocery industry, and Ordernet supports inter-network traffic with McDonnell Douglas' EDI-Net at no additional user cost. Direct Order Entry (DOE) is provided service merchandising companies, warehousing service is supported using WINS standards, and the company is initiating services to the transportation industry using TDCC standards.
- A one-year service agreement is renewable on a monthly basis after the first year. There is a start-up fee to defray initialization and testing costs. Monthly minimums, processing, and connect time charges apply.
- Sterling Software also offers a Micro Workstation based on IBM PCs, XTs, ATs or compatibles.
 - The turnkey systems are called Systems for Retailing (SFR) and Systems for Distribution (SFD), with approximately 200 installations.
 - Retailers in sporting goods, computer store chains, and speciality retailing operations of major corporations (such as Gillette, Woolworth, and Hershey Foods) are among users.
- The company claims growth of 50%-70% over the last five years in EDI services and processes 80% of the pharmaceutical industry's purchase orders, with service to nearly all of the top wholesalers and manufacturers.



- Sterling has signed with the Association of Veterinary Medicine Manufacturers for EDI services and claims to serve more grocery industry accounts than any other third-party service provider, a claim disputed by McDonnell Douglas.
- Ordernet has a media conversion service, formerly operated jointly with First National Bank of Chicago.
 - Electronic documents are sent to Sterling for conversion to paper.
 - Paper documents are mailed from Columbus, and a facsimile service is planned.
 - After receiving an invoice, the purchaser notifies Ordernet to transmit remittance information through an electronic payment system.
 - Reconciliations and summary reports are provided.
- The media conversion service speeds the process by one to two days and allows trading partners to operate in a wholly electronic environment, cutting costs and reducing clerical activities. It is intended for companies which would otherwise concurrently use both electronic and paper documents.
- In 1985, the company completed a software development project for the Department of Defense, automating all U.S. Army commissaries in Europe and the Near East. In late 1986, the Air Force Commissary service began pilot testing of UCS standard communications through Ordernet, with plans for 140 locations to communicate with military brokers.
- Sterling Software also developed the initial service offering for International Health Information Applications, Inc.
 - IHIA provides information on 100,000 drugs and creates a data base of drug use through data capture and retrieval procedures. Called



Medimetrik, the service protects personal and organizational information, reporting aggregate data which cannot be traced to an identifiable single source.

- Ordernet is also involved in tracking drug purchases for mainland Chinese hospitals.
- Pharmaceutical companies can access Medimetrick on-line for market research and sales management. The technique is also being applied to veterinary medicine.

4. FINANCIALS

- Sterling Software's 1986 revenue was \$234 million, up from \$172 million in 1985, with a full year's contribution from Informatics.
 - Income before taxes was \$15.3 million, an increase from \$5.8 million for 1985, including an extraordinary charge to prepay the high interest debt incurred buying Informatics General.
 - Without the charge, after tax income increased to \$8.2 million, representing a 175% increase from the previous year.
- For first quarter 1987, revenue amounted to \$45.3 million, a 24.2% drop from the \$69.5 million reported a year earlier due to divestiture of certain businesses.
 - Quarterly earnings of \$3.7 million were reported (before taxes) compared to \$4.4 million for the earlier year's quarter, a decrease of 0.7%; however, profitability increased.
- The Information Services group's 1985 revenue increased to \$47.9 million from 1984's figure of \$44.1 million. Revenue for 1986 was \$39 million.



- Ordernet has approximately 650 customers. INPUT estimates Ordernet's 1986 service revenue at \$4.8 million.
- Company officials say the company is expected to grow in each of its operating groups, both internally and through acquisition of additional products or firms.
- While revenue is forecast to increase moderately, earnings and cash flow are projected to increase substantially with profit margin improvements.

5. STRATEGIES

- Due to its relatively early market entry, Sterling Software holds a significant portion of the EDI service market based on numbers of customers.
- Ordernet claims to be market-driven. Accordingly, through continual monitoring of industry practices and needs and through its users groups, it seeks to anticipate market demands in order to respond to them.
- In 1987, Ordernet expanded its X12 EDI services to support all current transaction sets, in addition to the industry-specific standards supported earlier. This action was taken to broaden service to an industry cross-section and to provide X12 services to current customers expanding their EDI capabilities with suppliers and distributors.
- Sterling Software is unique among EDI service providers in that it has data capture and retrieval capabilities.
 - This makes it possible, with participant approval, to create data bases using network traffic.



- Originally developed to track the flow of drug information through hospitals, additional applications of the technique are possible.
- Sterling Software's corporate strategy is to select market niches offering high growth potential; acquire successful businesses providing services and products to those niches; group them by target markets; give them marketing, financial, and management support as needed; and help the units maintain their autonomy as a way to keep them productive.
- Sterling Software became the company it is today through acquisitions.
 - Company officials state Sterling will pursue large acquisitions. Although no major acquisitions have been made since the purchase of Informatics General, it is possible this strategy will be applied in the EDI arena to strengthen current markets or gain entry into new ones.
 - Another option is strategic partnering with a network provider.
- Sterling Software's development of international EDI capabilities for Army and Air Force Commissaries may lead to further involvement in international EDI and for other government agency paperless procurement activities.

D. IBM'S INFORMATION NETWORK (IIN)

I. BACKGROUND

- The Information Network was formed in 1982 as an Independent Business Unit (IBU) within IBM, offering SNA networking and remote processing services.
- IIN was upgraded in 1985 with new computer center facilities and other measures designed to improve large users' abilities to connect their own SNA networks and to link with other customers.



- Earlier, IIN maintained nodes in a few U.S. cities representing a majority of its large mainframe customer installations. Now dial-up access is possible in over 100 cities with projected 1987 expansion to 200 access points.
- IIN may also be accessed through Telenet.

2. SERVICES

- IIN supports two services:
 - Network Services for linking a customer's mainframes and terminals in a managed SNA network environment.
 - Information Exchange which provides "store and forward" and other value-added services, including EDI.
- The target markets for IBM's Information Network are best described as "dedicated IBM shops" with users in electronics (mostly IBM and suppliers), textiles, insurance, and telecommunications.
- In 1986, IBM announced Intercontinental Information Services to link transnational offices in the U.S., Asia, Europe, Africa, and the Middle East with data processing, office system, and file transfer services.

3. IBM AND EDI

- IIN hosts Advanced Transaction Rearrange and Conversion System (AD/TRACS) from Advanced Technology Systems (Norcross, GA) for on-line EDI translations and also for its Insurance Communications Services.
 - IIN's Insurance Communications Service performs EDI processing, message switching, and protocol conversions between independent insurance agents and corporate underwriters.



- The Insurance Value Added Network Service (IVANS - discussed later in this chapter) uses IBM's service supplemented with customized facilities and supervisory and support services.
- IBM appears to be placing more attention on EDI services.
 - For example, in late 1986, IIN began distributing microcomputer EDI software from Metro Mark, Inc. (Roslyn Heights, NY) and American Business Computer, Inc. (Farmington Hills, MI).
 - The one-time license fee of \$3,000 has been replaced with a \$30 per month fee.
 - Mainstream EDI standards, such as UCS, are now supported.
- Users of IIN's EDI capabilities include chemical, textile, automakers, medical insurance applications (a doctor can access an insurance carrier), and electronics firms.
- In electronics, parent company IBM is using the network to communicate with suppliers.
- While there are approximately 700 manufacturers on IBM's Information Network, approximately 150 are EDI users.

4. FINANCIALS

- IBM's 1986 corporate statement shows an overall revenue increase of 2.4%. However, IBM's software and services businesses grew by 24% in revenue.
- With regards to the Information Network, company representatives indicate business doubled in 1985, and access charge price cuts were implemented in



August 1986 to further encourage use. However, in early 1987 prices were raised an average 6% to stem declines in overall corporate profitability.

- INPUT estimates 1986 services revenue for the Information Network in the \$80-120 million range, with noncaptive VAN services accounting for approximately \$10-20 million in user expenditures, and EDI services accounting for approximately \$2.5 million.

5. STRATEGIES

- IBM's EDI sales strategy is to target corporate executives, rather than take a bottom-up approach with IS or functional department management.
- IBM is pursuing international EDI markets through its Intercontinental Information Services. In the U.K., the company has joined with a group of shipping interests to promote Shipnet services.
- Domestically, with IBM's software and services businesses doing better than hardware, the company's often predicted shift of direction may be closer to revealing itself, with increasing emphasis on EDI services probable.

E. CONTROL DATA CORPORATION

1. BACKGROUND

- CDC markets computer equipment, associated maintenance services, computer services, and financial services.



2. SERVICES

- CDC's computer services, software products, professional services, and turnkey systems are dispersed among several operating units such as:
 - Business Services Group targeting various vertical markets including broadcasting, banking/financial services, manufacturing, and legal services as well as Fortune 1000 and small businesses.
 - Computer Systems and Services provides Computer Integrated Manufacturing (CIM), Computer Aided Design (CAD), Computer Aided Manufacturing (CAM), and Computer Aided Engineering (CAE) services and scientific information services.

3. CDC AND EDI

- CDC's Redinet Intercompany Business Transaction System (Redilbits) was announced in late 1984 and introduced in Spring 1985 under a joint marketing agreement with AT&T.
- The system uses AT&T's Accunet as the transmission network, with AT&T responsible for network marketing under the name of RediAccess.
- EDI software running on CDC's processors was developed by Program Sciences Incorporated (PSI).
- Control Data handles EDI processing, installs and maintains customer premises equipment, and administers the software through an arrangement with PSI.
- In late 1986, several micro-based EDI software and communications packages were introduced.



- RediNet supports all X12 standards. The service has been endorsed by the American Supply and Machinery Manufacturer's Association, the National Industrial Distributor's Association, and the Southern Industrial Distributor's Association.
- Redi-Agent service is a customized EDI transaction retrieval and forwarding service designed to assist suppliers in accessing large companies maintaining private EDI networks.
 - Control Data acts as an authorized agent to access and retrieve business information from one or several private EDI systems.
 - Translations, as necessary, are performed.
 - Data is then forwarded to the customer's Redinet mailbox or delivered via a dial-out service directly to the company.
- Redi-Agent obviates the supplier's need to handle this activity directly or to develop customized EDI interfaces to private networks.
- RediNet has approximately 100 users.

4. FINANCIALS

- Control Data has reported heavy losses (primarily in the hardware area) and there has been earlier speculation the company would be acquired.
 - Fourth quarter 1986 losses of \$226 million were reported, including a \$139 restructuring charge and one-time charges of \$69 million as the company refocuses its business.
 - Charges include costs associated with workforce reductions and facility closings.



- Restructuring charges included reserves for writing down investments in several areas and downsizing the data processing portion of its Scientific Information Services.
- Revenue for the period was reported at \$904 million, and total 1986 revenue was \$3.35 billion, compared to \$3.68 billion for 1985.
- CDC officials maintain the company's financial situation is much improved and that CDC is committed to the EDI business as it works to return to profitability. The Business Services Group, which includes EDI, is said to be profitable.

5. STRATEGIES

- CDC's overall strategy is to engage only in businesses that are a strategic fit and meet its criteria for financial success.
- CDC markets the EDI processing service through its Lakewood (OH)-based MIS division.
 - This approach was taken to combine product ownership, technical expertise, and marketing.
 - The company feels this integration will lead to superior service, one of the few areas where a vendor can differentiate, and better responsiveness to customers' needs.
 - Since inquiries regarding EDI often originate from IS departments, having technically-oriented personnel as the first customer interface can lead to innovative responses to technical considerations. The company believes this approach may make the difference in closing sales.



- By jointly marketing EDI services with AT&T, Control Data shares its costs. Marketing costs can severely impact profitability and may be one reason why AT&T's own Net 1000 failed.
- Control Data's earlier proposed Network Transfer Service EDI clearinghouse has been abandoned.
 - It was intended to encourage third-party vendors to address inter-networking issues.
 - Currently, RediNet does support internetworking with both GEISCO and McDonnell Douglas, only charging for one side of transactions forwarded or received through a third party.
- By offering micro software, CDC feels it is facilitating users at smaller companies who need to electronically communicate with larger trading partners as a condition of doing business.
- RediNet pricing is based on volume and delivery priority, with volume discounts available. The company does not charge a start-up fee. There are also no monthly minimum or per transaction storage or connect-time charges.

F. AMERITECH SERVICES

- Ameritech Services (Schaumburg, IL), a subsidiary of the RBOC and Groupe Francais D'Informatique (GFI-Paris), are jointly engaged in a research, development, and one-year trial of a service called DOMINI.
 - GFI is a wholly owned subsidiary of Scicon International, a division of British Petroleum.



- DOMINI will offer EDI, E-mail, and computer conferencing.
- GFI is contributing hardware, software, and data processing equipment.
- Ameritech will supply its local area data transport network (LADT).
- GFI has an X.400 standard E-mail product called Comutex 400, and a modified version will be used for DOMINI.
- The trial service will not require a waiver of the Modified Final Judgement, which restricts BOCs from offering information processing services, since GFI will be performing these functions.
- A service bureau will be established in one of Ameritech's BOCs, with services offered solely within that BOC's local access and transport area (LATA).

G. COMPUERVE INCORPORATED

I. BACKGROUND

- CompuServe (Columbus, OH), formed in 1969, was acquired by H&R Block, Inc. in 1980.
- Services are oriented to both consumer and commercial accounts. Its target markets are hobbyists, the financial community, and POS credit card processing firms (VISA and seven others).
- Transaction processing in 1985 is said to have increased 25 times over 1984 volume (to 4.2 million transactions monthly), becoming one of the fastest growing company activities.



- CompuServe's Network Services is a VAN available to corporations, government agencies, and financial institutions with access in over 200 U.S. cities and 196 countries via IRC gateways. Additional access is possible through other VANs.

2. SERVICES

- In addition to POS services, other services include electronic mail, on-line data bases, shopping services, airline ticket reservations, and financial services including economic analysis, discount securities trading, home banking, and international funds transfer for overseas credit union members.
- The EasyPlex (consumer) and Infoplex (business) electronic mail services and MCIMail were linked in early 1986 in the first U.S. connection between E-mail systems. Infoplex is used by approximately 150 Fortune 1000 companies.
- CompuServe has an agreement with Computer Sciences Corporation for CSC to market CompuServe's services.
- CompuServe has made known its desire to acquire companies offering new skills and technologies which will strengthen existing businesses.
 - Candidates may be service businesses providing on-line communications (E-mail and/or private, customized information services), data bases, shopping services, POS communication services, health care eligibility verification services, or facilities management companies.
 - They are also interested in OEM relationships fostering sales to Fortune 1000 and major financial institutions.
 - Targeted markets include: investment banking, pharmaceuticals/chemicals, retail, restaurants, and high technology firms.



- The company has established a goal of increasing the current subscriber base of approximately 300,000 to 1 million within three years by adding additional services, using new marketing strategies, entering joint ventures with other companies, and adding business subscribers.

3. COMPUSERVE AND EDI

- CompuServe is expected to announce its EDI service in July 1987. The company has been providing private EDI networking for its customers and is responding to their demands for a system supporting public standards.
- CompuServe has an exclusive agreement with two Japanese firms (Fujitsu and Nissho Iwai) to provide international services between Japan and the U.S., such as financial market information exchanges, positioning the company for further overseas activities.

4. FINANCIALS

- Fiscal 1986 year revenue totaled nearly \$85 million, an increase of 23.4% from the previous year with \$10 million in pretax earnings, an increase of nearly 40%.
 - Approximately one-half of its revenue is from remote computing services.
 - Communications services accounted for an estimated \$8 million in annual revenue.
 - The balance of the company's revenue is derived from data base access and other services.



- Revenue for the third quarter ending January 31, 1986 were \$21.5 million, an increase of nearly 22% from the same period a year earlier. Revenue for the nine month period increased 26% to \$62.4 million.
- Parent company H&R Block reported 1986 fiscal year revenue of \$606.7 million and net earnings of \$60.1 million.
- H&R Block is participating in the Internal Revenue Service's testing of electronic personal tax return filing services, described in Chapter IV.
- CompuServe has approximately 750 employees and claims more than 200 large corporate users in addition to individual service subscribers.

H. WESTERN UNION CORPORATION (WU)

I. BACKGROUND

- The pioneering Upper Saddle River (NJ) company is facing significant challenges including administrative and organizational problems which have developed over its long history.
- As a result, the company has reduced its work force by one-fifth, renegotiated union contracts, reorganized its corporate structure, sold certain assets, and focusing its efforts on its core business as a record carrier, electronic mail service vendor, and provider of private data networks.
- The company has seen erosion in its customer base for private data networks due to increasing charges by the local telephone companies for leased lines. WU is trying to move this traffic to its packet switched data network and is seeking to upgrade its current telex customers to electronic mail services.



2. SERVICES

- WU, through subsidiary corporations, offers a wide range of networking services including:
 - Telex, TWX, and Worldwide Telex.
 - EasyLink electronic mail, mailgram, telegram, and cablegram service. Electronic mail services include volume mailing of computer-originated messages.
 - Long-distance (voice) services.
 - A voice mail resale business.
 - Special systems and services for voice, data, graphics, and broadcasting, as well as money transfer service.
 - Intracompany private messaging via Infocom services.
- In late 1986, WU opened its internal Packet Transport Network or PTN-I (which supports Easylink) to provide packet switching services for business customers. The network can also access EasyLink and data base services.
 - Additional access points are planned by mid-1987, bringing the network to 180 cities.
 - Both domestic and international services are planned with POS networks and EDI services viewed as primary opportunities.



3. WESTERN UNION AND EDI

- Western Union will introduce EDI services in conjunction with its E-mail EasyLink services in third quarter 1987.
- Although the company has experienced financial difficulties, company officials maintain that by layering EDI services onto its existing network services and using its current marketing organization, it will be able to participate with a relatively small investment.
- WU is expected to leverage its international capabilities into the global market, and may target retail distribution (among others) domestically.
- EasyLink E-mail services claims approximately 150,000 subscribers and volume of 7 million messages monthly.

4. FINANCIALS

- Western Union has sold several divisions, including its Government Systems, attempting to return to profitability.
- In 1984, WU posted a \$58.4 million loss on revenue of \$1.1 billion and in 1985 reported a \$370 million loss primarily due to a write-down on certain transmission and switching equipment. The write-down was part of a financial restructuring and a renegotiation process with its lending institutions.
 - The company's estimated debt is nearly \$1 billion.
 - Its external auditors had qualified the 1984 and 1985 financial reports, due to uncertainty over the availability of financing to meet debt obligations.



- In September 1986, Western Union announced approval by its Board to enter into a letter of intent for acquisition by an investor group consisting of Pacific Asset Holdings, a private financial services organization, and MDC Holdings, Inc., a publicly traded national homebuilder and financial services company.

I. EDS COMMUNICATIONS CORPORATION

I. BACKGROUND

- EDS Communications is essentially a start-up venture within the EDS organization. INPUT believes part of the company's charter may be the task of bringing various EDI activities within EDS under one unit.
- In October 1984, General Motors acquired EDS and its subsidiaries to provide GM with the expertise to automate its processing, manufacturing, and communications and to provide a vehicle for diversification into information services.
- Prior to the GM purchase, EDS had brisk acquisition activity, primarily in processing services but also in turnkey systems vendors.

2. SERVICES

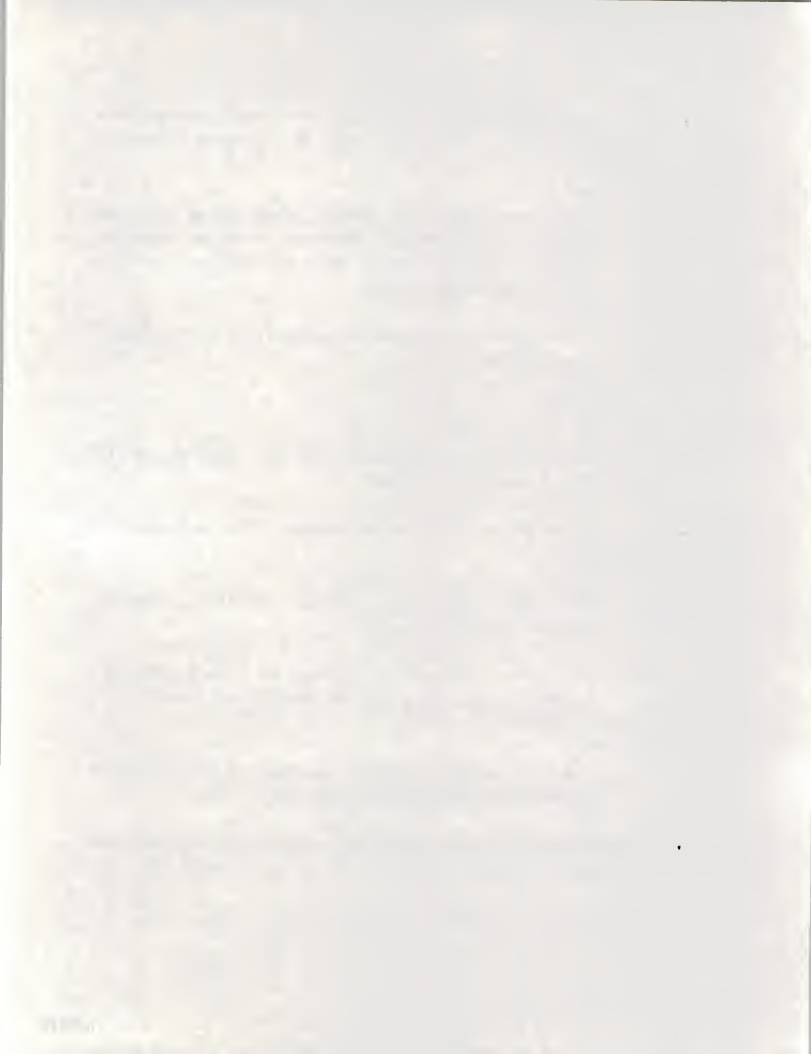
- EDS is a leading services company, providing facilities management processing for insurance, government funded health insurance, telecommunications companies, and the banking industry.
- EDS offers commercial systems integration services, managing the project during development, and managing the facilities after the system is built.



- EDS Communications is expected to leverage the company's communications experience and its EDS Net technology for commercial development activities.
- EDS Communications will provide communications professional services, including equipment evaluation, acquisition and installation, network services, and facilities management of corporate networks using the international EDS Net.
- Approximately 600 staffers were transferred from EDS' Communications Services Division.

3. EDS AND EDI

- EDS was responsible for a major commercial systems integration project for K-Mart, which included EDI components.
- An EDS project team is working to harmonize GM's decentralized EDI approach.
- The company consists of many units, each with its own management structure and methodologies.
- GM has been using proprietary standards but is now adopting AIAG standards, which, in turn, are being submitted for approval as X12 transaction sets.
- EDS is also investigating additional paper-based transactions within the GM environment which could migrate to EDI.
- EDS operates I Share (Warren, MI) as the EDS Supplier Information System for small suppliers to GM.



- The system handles materials releases, advanced shipping notices, and E-mail. It works on a packet network called PacketPlus (a sub-network of EDS Net) and was developed by the Demand Systems Division of EDS.
- Registration is \$375 and users are charged computer work units (\$0.35 prime time, \$0.25 non-prime time) and connect time at \$9.00 an hour.
- I-Share will add other EDI documents to its transmissions as the need arises.
- Another EDI-like service is Dealerline, a remote computer service dedicated to automobile dealerships.
 - It supports financial, parts, services, and sales applications.
 - EDS does not sell the service outside of GM. Rather, Dyatron (Birmingham, AL) markets portions of Dealerline to non-GM dealers to expedite marketing of the system in all areas and to take advantage of Dyatron's expertise in the auto dealership industry.

4. STRATEGIES

- One area believed under examination by EDS Communications is EDI; however, there does not appear to be a clearly defined EDI strategy.
 - The budgetary and administrative processes involved in establishing EDS Communications are slowing the unit's development.
 - GM's shaken relationship with its subsidiary could color the approach both EDS and GM take to electronic data interchange.



J. KLEINSCHMIDT COMPUTER

I. BACKGROUND

- Kleinschmidt (Deerfield, IL) traces its origins to its 1913 founding as Kleinschmidt Electric Company which developed patents for mechanical teleprinting machines, a business sold in the 1930s to Western Electric as the Teletype Corporation.
- In the early 1940s, as Kleinschmidt Labs, the company sold hardened teletype and other equipment to the military and railroads. Its railroad sales served as the basis for providing car location and shipper administrative messages (CLM and SAM) to the industry starting in 1979.
- In the 1950s, the company was acquired by SCM Corporation (New York).
 - SCM, with 20,000 employees, is involved in chemicals, oil refining, paper, food products, and typewriter manufacturing.
 - In 1985, SCM reported \$2.2 billion in sales and net income of \$41.8 million. The company reported Kleinschmidt had a good year as sales of its services continued at high levels.
- In 1986, SCM was purchased by Hanson Trust PLC, incorporated in the U.K., and its U.S. arm, Hanson Industries (New York, NY).
 - Hanson is an industrial management company with subsidiaries in a wide range of businesses including building materials, retailing, electrical and gas equipment, food products, textiles, tools, and industrial products.



- Hanson has 92,000 employees and reported 1986 sales of \$4.3 billion with \$365 million in net income.
- After the purchase of SCM, Hanson sold certain operations, including Kleinschmidt.
- Kleinschmidt was sold in late December 1986 to a management group for \$1.85 million in cash and \$3.24 million in notes and royalties.

2. SERVICES

- In addition to EDI and CLM/SAM services for shippers, Kleinschmidt provides parts for its installed base of teleprinting machines and leases turnkey railroad yard management systems based on Tandem computers.
- Additionally, the company sells some utilities software for Tandem computers.

3. KLEINSCHMIDT AND EDI

- Kleinschmidt provides EDI mailbox and translator services to a cross-section of industries in support of shipping information--railroads, grocery and food processing, warehousing, chemicals, petroleum, consumer products, forest products, brokerage firms, distributors, and trucking carriers in the U.S. and Canada.
- The company receives some transactions from Railinc (see profile, below) at customers' request for enhanced management reports and other advanced services.
- For its translation services, the company works with users who do not conform to EDI standards in developing a data mapping methodology to convert data into transmittable standard formats.



- While the company supports various industry standards, it does not require users to submit data in specific industry standards.
- Rather, Kleinschmidt can accept a customer's existing formats and translate them to public standards. The company claims this approach as a competitive advantage.
- Customers can dial the service via asynchronous or synchronous communications protocols, directly or through 800 numbers. Alternately, Kleinschmidt will call the customer's computer on a prearranged schedule, and customers can access the service through Tymnet.

4. FINANCIALS

- In 1986, Kleinschmidt achieved pre-tax profit of \$1.2 million on sales of \$6.2 million.
- INPUT estimates the company's EDI revenue in the \$2.5-3.5 million range, with the balance representing turnkey system leasing, parts, and software sales.
- INPUT estimates Kleinschmidt has 300 customers for EDI and CLM/SAM services, with those customers exchanging documents with an additional several hundred trading partners.
- The company's net assets total \$1.9 million.

5. STRATEGIES

- This company's approach to EDI can be called "low key." In the past, requests for information have resulted in computer printouts about the company and its capabilities.



- Kleinschmidt is riding the crest of growing interest in EDI and is benefitting from major railroad incentives being offered shippers to use EDI for bills of lading and other documentation. Company officials indicate its 1986 EDI activity grew substantially greater than 100%.
- Several firms have indicated interest in purchasing the company for its involvement in EDI; however, company officials indicate that they politely listen, but there is no interest in being acquired at the current time.
- Due to its small size, Kleinschmidt says it can pay more attention to a customer's needs and can provide better service than a larger vendor. It will also recommend that prospects use several vendors to compare service and also reduce reliance on one service.

K. RAILINC CORPORATION

1. BACKGROUND

- RailInc (Washington, DC) is a wholly owned data processing and telecommunications subsidiary of the Association of American Railroads (AAR).
- Railinc started as a service exclusively for railroads and later added services for other users such as the big three automakers, other large shippers, private fleet managers, and suppliers.

2. SERVICES

- In addition to EDI services (described below), RailInc provides industry statistics, rate information, customized software, telecommunications, and remote computing services.



- RailInc operates and maintains a private network called TeleRail Automated Information Network (TRAIN II). Dedicated lines connect to primary users with toll-free dial-in circuits, used for 80% of its traffic and available for lower volume use.
- Direct and dialed 2,400-4,800 bps, bisynchronous (3780) protocol connections are provided to major users, and error correction is being added for low-speed asynchronous access.
- Most major rails in the U.S. and several in Canada use the network in some fashion or another, although use is concentrated in the Eastern U.S. because the network is based on the location of corporate railroad headquarters.

3. RAILINC AND EDI

- Railroads automatically send data to RailInc's computers where it forms a data base. Data is processed twice daily and deposited into users' electronic mailboxes.
- Information covers some two million freight cars, trailers, and containers operating on facilities owned by approximately 500 railroads.
- RailInc's two primary EDI services (which are really logistics services) are SAM (Shipper Assist Message) service for high-volume users and CARLO (Car Location Message Dial-In Service) for low-volume needs, both developed by the AAR and the National Industrial Traffic League.
- In addition to car location messages (CLMs), administrative and tracing messages, waybills, and invoices are exchanged between carriers and shippers using TDCC, ANSI X12, and standards developed by RailInc. Use of these applications is growing.



- Translations are provided as needed.
- Some transactions are transferred to Kleinschmidt at customers' requests for report generation and other features not available on RailInc.
- RailInc's Car Location Message (CLM) from AAR member railroads is also available through McDonnell Douglas' EDI-Net which adds additional railroad information to its service.
- Interline billing and settlement data between trucking firms and railroads is frequently interchanged through TranSettlements (see next profile).
- RailInc offers users microcomputer communications software and has newly introduced a microcomputer-based EDI package called EDI Synapse.

4. FINANCIALS

- Forty major rail carriers use RailInc's services, and about 70% of all interline (between railroads) waybills are exchanged on the network.
- RailInc officials report May 1986 volume for EDI applications through the network was just under three billion characters. EDI formatted waybills represent one-third of network traffic, but the CLMs represent the most volume.
- Between May 1986 and September 1986, freight bill EDI volume increased five or six times, with purchase orders and other traffic showing equivalent gains.
- INPUT estimates RailInc's 1986 EDI revenue to be under \$1 million.



5. STRATEGIES

- RailInc is an RCS clearinghouse for interline information and billing settlements.
 - Much of this traffic is not EDI as information is transferred via computer tapes.
 - However, the company reported in late 1986 that all of this processing is moving on-line with plans that all bill interchanges will be done via true EDI.
- Since it is a for-profit subsidiary, RailInc can pursue business opportunities in non-rail industries, but INPUT feels the company's efforts will be directed primarily at rail customers and major railroad users.
 - For example, RailInc tested the applicability of TRAIN II to manage automobile inventories for U. S. automakers who maintain their own rail cars for transporting inventory between facilities.
 - Other possible areas of involvement are electronic funds transfer, interchanges between railroads and ocean carriers, and data interchanges with U.S. Customs.
- RailInc offers its communications and processing services to make rail freight hauling more attractive than the alternatives. Besides the other benefits of EDI, having shipment location information assists manufacturers in reducing inventory and planning production schedules.



L. TRANSETTLEMENTS, INC.

1. BACKGROUND

- TranSettlements (Atlanta, GA) is an EDI communications and software provider supporting ANSI X12, TDCC, AIAG, and other standards. It was established in 1977 as a subsidiary of Transus (formerly Georgia Highway Express), a family-owned company.

2. SERVICES

- TranSettlements is the major EDI service provider to the motor transportation industry, with TranSend services used by trucking companies, major shippers, and service organizations in the industry. The company also customizes software and provides consulting services.
- Processing is handled through a computer center located in Annapolis (MD).
- TranSettlements is seeking other transportation segment and general business opportunities.

3. TRANSETTLEMENTS AND EDI

- TranSettlements traces its EDI involvement to the 1979 introduction of an EFT automated payment transfer service, followed by an electronic invoicing service (using proprietary formats) in 1982, and freight invoicing using TDCC formats in 1983.
- TranSend now handles freight bills, bills of lading, and remittance notices (which can be sent directly to payment centers), as well as other EDI transactions.



- Communications are handled through dial-up WATS lines with most protocols supported. In late 1986, the company was in final testing of SNA protocols.
- The company provides EDI and other software consulting. Its mainframe EDI software (TranSlate) was first introduced in 1982.
 - In late 1986, TranSlate was licensed to Management Sciences of America (MSA - Atlanta, GA).
 - MSA will integrate the translation software with its Expert series of purchasing, inventory, accounting, and other mainframe packages.
 - TranSettlements software is also distributed through Supply Tech, Distribution Sciences, Crowntek, and several other firms.
- The EDI software market is covered in greater depth in a companion INPUT report.
- TranSettlements' customers include approximately 20 motor carriers, 15 shippers, and service organizations. Rail and air carriers use TranSend for interchanges between transportation mode carriers (intermodal communications), often through internetworking with Railinc and Kleinschmidt Computer.

4. FINANCIALS

- TranSettlements' parent firm (Transus) is privately held with estimated 1986 revenue of \$150 million.
- INPUT estimates TranSettlements' 1986 EDI revenue at under \$1 million.



5. STRATEGIES

- TranSettlements has newly added educational workshops to its services, geared to EDI implementors and planners. It maintains an active user group which provides suggestions on its products and services.
- The company's mainframe software package has been one of the few mainframe EDI packages available and is well recognized in the industry. Accordingly, it was chosen by MSA for integration with its products.
 - This will create additional revenue for TranSettlements which does not have the marketing ability to represent its product more broadly.
 - The link with a major software firm is important to the company's hoped for participation in markets broader than its core business in transportation.

M. TRANSNET

I. BACKGROUND

- Developed in 1975, Transnet is one of the first electronic ordering systems originally used by five companies in the automotive parts after-market.
- Services were later expanded to additional users, and administration of the network was transferred to the Motor and Equipment Manufacturing Association (MEMA), an industry trade association.



2. TRANSNET AND EDI

- Although Transnet's development predates ANSI EDI standards, its services are clearly EDI. The association recently introduced ANSINet to complement Transnet and recommends ANSI X12 format use on the new system.
- Transnet users enter orders on their order entry systems and batch transmit them to Transnet for distribution to suppliers.
 - Minimally, Transnet validates order formats and separates them for transmission to suppliers.
 - The network offers several options such as validation of part numbers and measuring units, accumulated prices, or weight in any given transaction, order consolidation, management report, and E-mail.
 - Errors are reported to the user for correction.
- The system uses GE Information Services Corporation's value-added network for telecommunications services.
- Transnet has been selected by the Automotive Industries Association for use in Canada and the Bearing Specialist's Association and the Automotive Warehouse Distributor's Association representing large automotive replacement part wholesalers who send products to distributors and volume retailers.

3. FINANCIALS

- Approximately 85 manufacturers, representing most automotive after-market suppliers, and 4,000 wholesalers and retailers, representing 80% of the largest distributors, use the system. Others users are in the industrial, heavy duty equipment, and appliance industries.



- Suppliers pay use fees based on the GE network's retail pricing. Buyers do not pay use charges.
 - In 1986, Transnet processed 50 million line items representing approximately 450,000 monthly orders.
 - Since Transnet receives GE's services at discount rates, the margin realized supports Transnet's operations.
- INPUT estimates Transnet's revenue between \$0.5 and \$1.0 million annually.

4. STRATEGIES

- Customers can use the value-added reports and features to enhance their services to buyers.
- MEMA will be adding additional transactions to the ANSINet service, to eventually marry the two systems for ordering and other document interchanges.
- Also MEMA is developing PC front-end software to facilitate use.
- The National Automotive Parts Association, representing a closed group of a few companies, has its own order entry system, also operated on GE's network, called NAPA-Net which is similar to Transnet.



N. CROWNTEK COMMUNICATIONS, INC.

1. BACKGROUND

- This Markham, Ontario company is a member of the Crowntek group, which in turn, is part of Crownex, Inc., an integrated services company involved in insurance, financial services, health care, as well as information technologies.
- Earlier known as Datacrown, the company was formed in 1972 by the merger of a subsidiary of Crown Life Insurance Company and another data processing company.

2. SERVICES

- Crowntek Communications handles IBM-based processing and network services, while other divisions sell value-added integrated computer systems, software, consulting, and education.
- The company operates the Canadian National Communications Network to deliver services.
- Through its Polaris Technology Corporation subsidiary (Toronto), the company offers consulting, professional services, and project management services in Canada and the U.S.

3. EDI AND CROWNTEK

- Crowntek entered the EDI market in May 1986 as the first Canadian-owned full EDI service provider.
- The company provides mailboxing, networks, translations, microcomputers, and professional services.

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- Crowntek's processing activities are limited to Canada; therefore, user expenditures for its EDI services are not included in the market forecast.

4. FINANCIALS

- The Crowntek group posted 1985 revenue of \$168.3 million (Canadian), a 28% increase from 1984's figure of \$131.6 million, but nevertheless representing a loss of \$6.7 million compared to profits of nearly \$11 million in the previous year.
 - Due to these unsatisfactory results, the company was reorganized, and cost cutting measures were implemented.
- The company is making heavy investments in software development and, therefore, significant profitability is not expected until 1988.

5. STRATEGIES

- EDI services are one part of Crowntek's overall strategy to meet large corporate and government users' information services needs. The company is developing a range of intelligent network services, as well as enhancing its facilities management capabilities.
- Crowntek coined the term "shared processing," a concept representing long-term processing service contracts replacing in-house computers.
- Although the market for timeshared processing is declining, Crowntek has retained clients by reducing rates. To combat shifting customer directions toward dedicated processing, the company provides facilities management services, thus competing against client inclinations to take processing in-house.



O. FIRST NATIONAL BANK OF CHICAGO (FIRST CHICAGO)

- First Chicago is the tenth largest bank in the U.S. It examined EDI as both a market opportunity and a user, establishing EDI relationships with its suppliers and linking with several third-party service vendors to offer trade payment services.
- The bank pioneered EDI for a major insurer and established multibank interfaces in pilot projects on corporate trade payments.
- Using GEISCO's international network, First Chicago offers the Accelerated Trade Payments (ATP) service, designed to speed the process by which international trading partners receive payment.
 - ATP customers can shorten the time it takes to present documents to their banks by 4 to 18 days.
 - Credits which are reimbursable overseas can be transmitted to First Chicago's international offices for payment by local banks.
 - User benefits are improved cash flow and increased interest income.
- First Chicago, working with Sterling Software's Ordernet division, formerly operated a conversion center issuing paper documents from EDI data and converting paper to EDI formats for trading partners. Now Sterling Software operates this service alone to reduce users' costs.
- First Chicago sees EDI as a strategy for expanding its wholesale banking financial services.
 - It believes financial institutions will play a major role in processing payment information as well as handling their traditional banking



functions, with substantial benefits to be realized by integrating and automating these functions.

- First Chicago specializes in "one-stop shopping" for corporations needing national remittance processing (e.g., insurance, automotive, etc.) and operates five interconnected processing centers nationwide.
- The bank has established a market niche in offering manufacturing and transportation industries freight payment, reconciliation, and invoicing services.
- The company's strategy is to create systems designed for specific industries. For example, automated freight payments are offered by the Comtrac subsidiary. An invoice pay venture with Sterling Software is designed for the hardware industry.

P. BANK OF BOSTON

- The Bank of Boston has been providing freight bill payment services for approximately 30 years. It has been receiving increasing volumes of data electronically from transportation carriers, forwarders, and shippers (sometimes through TranSettlements) using TDCC and other EDI formats.
 - These documents are matched with carrier information for payment by the bank's freight payment operation called Freight Controller.
 - Duplicates are flagged. Audits, analysis, and management reports are optional.
 - The system is designed to reduce freight billing and payment operations and is recommended for shippers or motor carriers with over 500 monthly freight bills.



- While only major carriers are now submitting payment information electronically, the bank expects EDI volume to double this year. Currently, 10% of all transactions received by its freight payment service are EDI.

Q. OTHER BANKS

- Several other banks offer services which can be linked to EDI, and others (such as Bankers Trust, Northern Trust Company, Mellon Bank) are believed to be investigating further participation.
- Eight are participating with General Motors Corporation to integrate electronic payments with GM's EDI applications. They are:
 - Chase Manhattan Bank.
 - Chemical Bank.
 - Citibank.
 - Pittsburgh National Bank.
 - Manufacturers National Bank of Detroit.
 - National Bank of Detroit.
 - Bank of America.
 - First National Bank of Chicago.



- EDI services in banking are usually related to the industry's Automated Clearing House (ACH) payment systems. However, there have been some problems in this relationship.
 - While feeling customer pressure to transfer payment information in association with actual payments, most banks are resisting limiting their participation to electronic funds transfer (EFT) applications.
 - Currently, the float time between payment authorization and the actual transaction is inconsistent under normal check-clearing procedures. More accurate pinpointing and control of funds transfer is seen as beneficial by cash managers.
 - Most transactions passing through ACH payment systems are consumer transactions such as direct deposits.
- In 1983, the National Automated Clearinghouse Association (NACHA) established a unique format for these payments, which is derived from ANSI X12 standards but not initially compatible with any industry EDI standards or with Bank Wire, SWIFT (Society for Worldwide Interbank Financial Telecommunications), or other organizational formats specializing in money transfers.
 - NACHA was criticized by EDI advocates for this lack of compatibility.
 - The NACHA inter-business corporate trade payments (CTP) program has not been successful partially due to incompatible formats.
 - Banks have marketed CTP as electronic checks, but this single feature approach is not enough reason to use it.
 - There are also concerns over financial control and security in the ACH payment systems, which, for the most part, are not encrypted.



- Further, a CTP transmission can fail because there are at least four intermediaries--originating bank, originating ACH, receiving ACH, and receiving bank.
 - INPUT's banking study found corporate trade payment use very low, with only 18% of the respondents in retail, utilities, manufacturing, and other sectors reporting participation.
 - Usage of CTP was not deemed very important, even by those using these services.
- The ANSI X9 (Banking) and X12 (EDI) committees, working with NACHA representatives have agreed to develop a standard allowing X12 formatted data to be transferred through bank networks and linked to a payment transaction.
- Use of NACHA formats for electronic payments has required a system separate from EDI transactions. Information may be passed to banks in X12 standards and translated to NACHA for communications between banks.
 - The new format, called CTX, will replace CTP, although an interim standard called Cash Concentration and Disbursement (CCD) has been modified by the U.S. Treasury to resemble X12. The Treasury will use this format for vendor payments.



R. NATIONAL ELECTRONIC INFORMATION CORPORATION (NEIC)

1. BACKGROUND

- NEIC (Secaucus, NJ) was formed in 1981 by 11 large private health insurance carriers as a clearinghouse to speed hospital claims processing. Services to physicians and dentists, through remote computing firms, were later added.
- Development and data processing, originally handled by Boeing Computer Services (Vienna, VA), was later taken over by NEIC staff.
- Currently, the company processes claims for 40 insurance companies, representing over 85% of group health insurance business. There are approximately 700 hospitals and other health care providers and 75 health claim processing vendors using NEIC.

2. SERVICES

- Upon hospital admission, insurance recipients present magnetic striped cards (called "the Stripe") to verify eligibility and establish proper billing procedures; however, the card is not required.
- Claims information can be submitted on computer tapes or transmitted via telecommunications links. Users of claims processing and billing services (i.e., RCS) can submit claims through their vendor.
 - NEIC edits claims for completeness, returning flawed submissions the next day for resubmission.
 - Validated claims are sorted and distributed in batch form to the appropriate insurance carrier.



- Exhibit II-1 shows NEIC's electronic claims processing cycle.
- The initial service, introduced in 1982, is called Health Claims Distribution System (HCDS).
 - A physician's version, called Medical Claims Distribution System (MCDS), allowing doctors to submit private commercial insurance claims, was introduced in 1985.
 - A Dental Claims Distribution System (DCDS) was added in 1987, involving 18 dental insurance carriers.
- In addition to providing a clearinghouse for claims handling, NEIC sells software to hospitals in support of its services.
- NEIC uses General Electric Information Services Company as the network for its hospital services. GEISCO itself sells NEIC's services to physician-oriented health care processing firms, through its EMC*Express EDI offering.

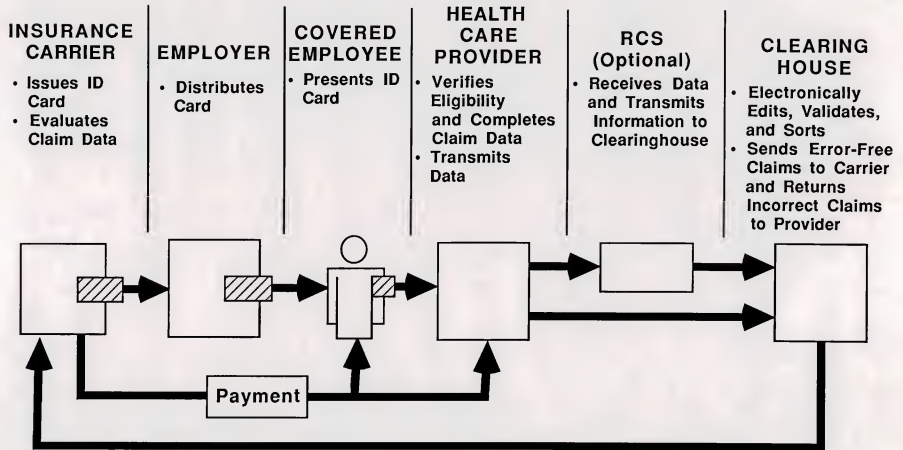
3. NEIC AND EDI

- NEIC accepts health care claims in electronic form based on formats developed by the Health Care Financing Administration (a department of the U.S. Health and Human Services Agency which administers Medicare).
 - These formats are called Uniform Billing 82 (UB 82), with which all hospitals submitting claims now comply, and HCFA 1500/MCM 821.
 - A format developed by the American Dental Association (ADA) covers dental claims.
- NEIC says that savings of \$1-3 per claim are possible by using its paperless claims system, and processing time can be reduced by as much as two weeks, improving cash flow.



EXHIBIT II-1

ELECTRONIC CLAIMS PROCESSING CYCLE





4. FINANCIALS

- INPUT estimates NEIC's 1986 revenue at \$5 million, with 90% representing processing (i.e., EDI) income which is billed at a flat yearly rate. The balance comes from software sold to hospitals.
- Claims volume processed in 1985 was an estimated 400% greater than 1984.
- Approximately four million claims were processed by NEIC in 1986.

5. STRATEGIES

- NEIC has developed business relationships with hospital turnkey systems providers such as McDonnell Douglas' Health Services Division (Hazelwood, MO) and Shared Medical Systems (Malvern, PA), supporting automatic transmission of claims data to NEIC as a byproduct of the billing process.
- It also has relationships with RCS firms providing processing to the industry and with hospital groups which support their members with data processing.
 - In total, approximately 100 RCS and turnkey firms provide NEIC services as an add-on to their services and systems.
 - This approach furthers NEIC's market reach more efficiently than direct sales efforts. However, the company does market to hospitals with in-house processing and to hospital groups.
- NEIC is working with Blue Cross/Blue Shield and other insurers to establish itself as a single source for claims submissions.
- The company maintains contact with its users through semi-annual conferences and newsletters. It has simplified the procedure for submitting



claims by relaxing the number of data fields required for electronic claims from 12 to four.

- Company officials indicate new types of services are being developed, such as coordination of benefits, electronic funds transfer, and pharmaceutical claims.

5. INSURANCE VALUE ADDED NETWORK SERVICES, INC. (IVANS)

1. BACKGROUND

- IVANS (White Plains, NY) is a non-profit membership company established by several property and casualty insurance companies to facilitate communications between independent agents and member carriers.

2. SERVICES

- IVANS uses the IBM Information Network's Insurance Communications Service for network services, including protocol conversions, messaging, and interactive inquiring. Services are provided at volume discounts.
- Independent property and casualty insurance agents can directly access a carrier's computers for rate quotes, filing new policies, modifying existing policies, or accessing customer information.
- Approximately 30 insurance company host computers are connected to the IVANS/IBM network, serving approximately 3,000 independent agents.



3. IVANS AND EDI

- Some of the communications taking place through IVANS is EDI in that it is machine readable interchanges, with other traffic as interactive RCS inquiries and E-mail services.

4. FINANCIALS

- IVANS operates on a non-profit basis, billing its member carriers direct costs. The operation is not yet at break-even levels. Expenses are currently higher than fees billed company membership, with the difference made up through assessments.
- IVANS officials indicate they billed member companies approximately \$6.5 million in 1986, while expenses were more like \$7.5 million. INPUT estimates 40% of this figure can be allocated to EDI services.

5. STRATEGIES

- IVANS is working in a fragmented marketplace with independent agents located throughout the country, each with priorities which may preclude the actions needed to access IVANS and gain the benefits offered. Accordingly, the technical and business training task has been difficult.
- Increasing IVANS use is important to the non-profit corporation in order to reduce the need for membership assessments.
- Company officials do see signs of accelerating adoption of the IVANS service. IVANS is experiencing growth as some large insurance carriers bring up several hundred agents as a group; however, other participating companies have been slower in their market development.



- Over the next five years, the company expects to see significant penetration in the independent agent market, a segment responsible for approximately one-third the nation's insurance coverage measured in premium volume. This means it expects to grow its current user base of 3,000 independents to approximately 25,000, or half the number of operating independent insurance agents.
- Exhibit II-2 lists the primary VAN and RCS EDI services and identifies their primary industry segment users.
- Exhibit II-3 provides INPUT's estimated market share by revenue for these service providers.
- Exhibit II-4 shows the primary service provider's market share by estimated number of customers.



EXHIBIT II-2

MAJOR VAN/RCS EDI SERVICES

VANS	SERVICE	PRINCIPAL USERS
McDonnell Douglas GEISCO Control Data IBM - Information Network	EDI*Net EDI*Express RediNet Information Exchange	Cross-Industry Cross-Industry: Transportation, Grocery, Retailers, Automotive, Health Care Insurance Cross-Industry Insurance (IVANS), Electronics, Chemicals, Textiles, Manufacturers
RCS FIRMS		
Sterling Software Kleinschmidt RailInc TranSettlements	Ordernet	Grocery, Pharmaceuti- cals, Medical/Surgical Supplies, Hardware Rail Transportation Rail Transportation Motor Transportation



EXHIBIT II-3

MARKET SHARE - SERVICES BY REVENUE, 1986

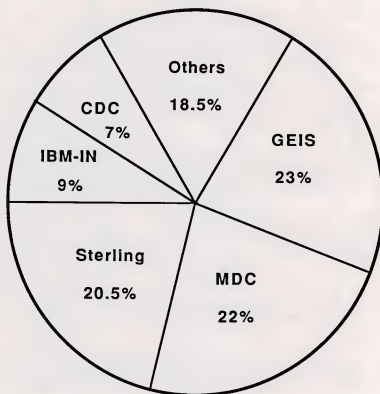
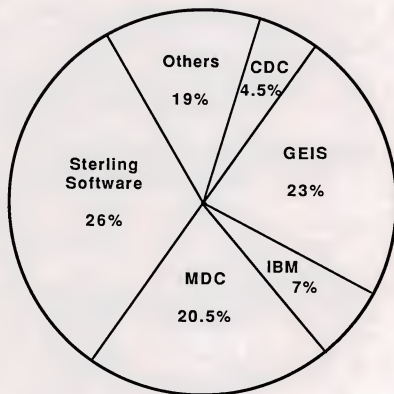




EXHIBIT II-4

EDI MARKET SHARE BY NUMBER OF CUSTOMERS*



* 1986 Estimates



III POTENTIAL MARKET PARTICIPANTS

III POTENTIAL MARKET PARTICIPANTS

- Several companies have the potential for offering EDI services. They include the largest value-added network (Telenet), AT&T (which discontinued its EDI service in 1986), and the Bell Operating Companies.
- This section examines their potential and prospects as EDI service providers.

A. AT&T

- AT&T formerly offered an EDI service called Information Interchange as part of the Net 1000 packet switched network/remote computing service.
- Net 1000 was withdrawn in June 1986 as not meeting profit objectives.
 - INPUT estimates 1985 revenue under \$3 million.
 - Some of the network's few customers were leaving.
- In addition to EDI, mortgage information, an automotive supply inventory service, and other remote computing were hosted by Net 1000.
- The original, perceived need for the combined network and RCS service was not cost-effective for many users, and for others it was not needed. Many



customers preferred to install applications on their own processors, including microcomputers.

- Additionally, AT&T had marketing problems. Rival firms told INPUT the company failed to follow through on competitive bids.
- Further, IBM mainframe users saw IBM's SNA-based Information Network as more trustworthy than Net 1000 which supported any combination of computers.
- Despite the failure of NET 1000, INPUT believes AT&T will remain involved in the EDI market.
 - Sources within AT&T suggest that although Net 1000 was withdrawn, pieces of the organization and the experience gained form the basis for possible reintroduction of EDI services.
 - AT&T maintains an EDI presence through a joint marketing relationship with Control Data's RediNet. RediNet uses Accunet facilities and is marketed as RediAccess by AT&T.
 - The company continues to promote what it calls Electronic Order Exchange (EOE), describing on-line order entry systems and EDI applications.
 - The company's continuing Accunet Packet Service, which was the backbone for Net 1000, is available in 99 U.S. cities.
 - Billed as a basic service rather than a value-added network, Accunet Packet Service supports X.25 traffic from the customer into the network.



- Data communications equipment and links to the service are the customer's responsibility.
 - Through the joint effort with CDC, EDI service can be accessed from a total of 150 locations.
 - CDC provides packet switching equipment and adds multi-protocol (asynch/bisynch/synchronous) support to the basic service.
- Accunet Packet Service is scheduled for expansion from 13 international interconnections to a total of 20 such links.
 - Connections with five local area data transport networks (LADTs), operated by LECs, are also planned.
 - In the future, per call billing, customer network management, and additional access will be supported as needs arise.

B. TELENET COMMUNICATIONS CORPORATION

I. BACKGROUND

- Telenet (Reston, VA) is now part of U.S. Sprint, formed jointly by GTE and U.S. Telecom. U.S. Sprint consists of two formerly separate and competing VAN and long-distance telephone networks.
- The first to use packet switching technology for public communications, Telenet was originally established in 1972 by Bolt, Beranek and Newman, Inc. (Cambridge, MA) and the original Telenet Communications Corporation which was acquired by GTE in 1979.



- Publicly-offered services began in 1975 as a "pure" communications service, unlike most VANs which were formed by unbundling communications from remote computing services.
- Even prior to absorbing the Uninet VAN, Telenet was the largest, and, INPUT believes, the most profitable value-added network.
- Telenet has access points in approximately 350 U.S. cities and overseas connections in 55 nations through its own nodes and other facilities. By merging with United Telecom's Uninet, the resulting VAN strengthens Telenet's VAN market dominance.
 - Telenet is adding another 110 access points in 1987.
- Telenet provides access to Telemail E-mail services with hard copy options and direct connections to Telecom Canada's Envoy, the first link between electronic mail systems, and with Japan's Acemail service.

2. TELENET AND EDI

- Telenet has apparently concluded that EDI is an opportunity, but not necessarily an immediate one. Also, any activity in new business development has probably been delayed by the merger.
- It is possible that Telenet's EDI services will include hardcopy options similar to mixed-mode electronic mail, incorporating emerging X.400 E-mail standards.
 - This strategy would work to overcome the user's problem of maintaining two systems, paper and electronic, with the attendant cost duplications, and will position Telenet's EDI service for future standards.



- Telenet has announced a compliance testing program between its X.400 message handling system implementation and those of computer manufacturers, such as DEC and Data General.

3. FINANCIALS

- Telenet has been profitable since 1983, although revenue is not separately reported by U.S. Sprint or earlier by GTE.
- Estimated 1986 revenue is in the \$180-200 million range, reflecting the merger of Uninet into Telenet.

C. COMPUTER SCIENCES CORPORATION (CSC)

1. BACKGROUND

- Founded in 1959, CSC (El Segundo, CA) is the largest independent professional services company in the industry, providing systems engineering and development, communications engineering, facilities management, and processing/network services. The company was one of the first remote computing services.
- CSC's international value-added network (INFONET) was formed in August 1983.
 - INFONET currently serves approximately 400 international cities, with links in 19 nations through dedicated lines and in 51 additional countries served via IRC connections.



- INFONET's international profile is enhanced by CSC representatives versed in local languages, customs, and procedures in many landed countries. Its orientation differentiates the network, which is well positioned for international EDI services.
- The company targets large multinational and multi-location organizations, including Fortune 1,000 companies, communications, distribution, and manufacturing industries. However, the majority of its business has come from federal and state agencies.
- CSC feels it has relied too heavily on government business and is working to expand its activities into more profitable commercial activities.

2. CSC AND EDI

- Some of CSC's EDI-related services are:
 - On-line inventory control.
 - Administrative information and software distribution between a software vendor's domestic headquarters and international offices.
 - Applications for the distribution industry.
 - Use of E-mail forms capability for EDI-like functions.
- EDI-related professional services activities include a systems integration and facilities management contract for an automated cargo clearance system.
 - The Miami International Cargo System (MICS) is described as the first fully integrated cargo clearance system in the U.S.



- The system is similar to those designed by CSC for England, France, and Australia.
- Subcontractor and frequent CSC partner is the British Telecommunications unit National Data Processing Service (NDPS).
- Working to provide a de facto standardized automated cargo clearance system for several U.S. ports, CSC and NDPS have worked toward additional contracts which represent an excellent position for developing a role in international EDI.
- CSC also developed a customized international sourcing network (called Sinet) for a garment manufacturer.
- The Notice E-mail service can handle form processing, store messages in a data base, transfer files, and link to the Telex network.
- CSC is believed to be investigating an adaptation of Notice for EDI applications, although it may seek to acquire a firm with EDI expertise, join with another vendor, or possibly work with one or several Local Exchange Carriers (LECs) for such services.
- Infonet is domestically limited to approximately 50 cities.
- Links through LEC local area data transport networks (LADTs) would expand its reach without a capital outlay.
- The company does interconnect with Tymnet and now, CompuServe, but with internetworking surcharges.
- CSC officials have shown interest in buying firms experienced in systems integration, health care, and/or financial services. In 1986, the company bought:



- Computer Partners, Inc. (Waltham, MA), a small professional services firm with approximately \$20 million in revenues, which custom designs computing systems.
- Comtec, Inc. (Farmington Hills, MI), an information systems supplier to health maintenance organizations, with annual revenue of approximately \$10 million.
- In late 1986, CSC announced an agreement for the Infonet division to market CompuServe services internationally. CompuServe is profiled below.
- CSC's international profile and its work for customs agencies suits it well for service to multinational corporations.
 - Its relationships with government agencies may also lead to governmental EDI projects.
 - Its professional services capabilities means it can handle complex projects and systems integration tasks.

3. FINANCIALS

- CSC is rebounding from a multiyear slump. It has announced a goal of more profitable commercial activities accounting for one-half of its activities (rather than the current one-fourth) by the 1990s.
 - This represents a shift in priorities from governmental contracts which are increasingly fixed-price and low-profit.
 - EDI processing or professional services would fit this direction.



- Fiscal year 1986 revenue for the company was \$838.6 million, a 16% increase over the previous year. Pre-tax income was reported at \$42.8 million, an increase of 36% (excluding one-time gains).
- In 1986, the Information Network Services Group accounted for 12% of the company's overall revenue or \$100.3 million, with 48% from federal, state, and local governments, 39% from commercial activities, and 13% from international business. INPUT estimates VAN revenue in the \$14-18 million range.
- The company expects as much as two-thirds of the group's revenue for fiscal 1987 will come from new communications and professional services activities.

D. BRITISH TELECOM PLC

- British Telecom Private Limited Company was created through the privatization of the former government telephone service monopoly.
- Since it is now participating in a competitive marketplace, the company will adapt to advancing technologies and users' needs for diversified services.
 - The former bureaucratic decision-making process is being changed, with several units formed to address specific market and customer needs.
 - BT is becoming more market driven and is more involved in international activities. It has developed strategic partnering relationships and made acquisitions to further these directions.
- As reported in the profile on McDonnell Douglas, the BT/McDonnell Douglas EdiNet joint venture in the U.K. was disbanded in late 1986.



- Within the U.K., British Telecom will probably wait for other computer service companies to create a market before capitalizing on the opportunity. Its strength is in supporting and maintaining commodity services, e.g., EDI, after a critical mass has been established and its growth is self-perpetuating.
- Also, the convergence of E-mail and generic EDI could lead to BT's X.400 messaging service becoming the major vehicle for U.K. EDI traffic in two or three years.
- BT's joint venture with McDonnell Douglas, part of a plan to enter U.S. markets, is not the only partnering example found.
 - A unit of the company has worked with Computer Sciences Corporation (CSC) to develop automated customs agency systems in the U.S. and elsewhere. These systems may have international EDI implications.
 - BT bought ITT's Dialcom (Silver Springs, MD) in 1986. Dialcom provides E-mail, forms processing, data base access, and other forms of remote computing services.
- BT is expected to leverage its experience managing large networks to offer total information solutions worldwide in both developed and developing areas.
- Despite the failure of the McDonnell Douglas relationship, INPUT expects BT will broaden its traditional U.K. base of operations partly through additional partnering and/or acquisitions.



E. MCI COMMUNICATIONS CORPORATION (MCI)

1. BACKGROUND

- MCI began as Microwave Communications, Inc. to provide short-haul communications links. These links became longer, and, overcoming AT&T's monopoly along the way, the company became the most successful inter-exchange carrier (IXC) with its own microwave, fiber optic, and satellite networks.

2. SERVICES

- The company, through its subsidiaries, provides various domestic and international services including voice, data, record, personal communications, and E-mail services.

3. MCI AND EDI

- Aside from offering networking in support of private EDI implementations, MCI is known to be monitoring EDI developments as a parallel technology to its MCI Mail services.
- The company's Scripts service permits EDI-like fill-in-the-blanks capabilities and could serve as a migration path for customers to true EDI services.

4. FINANCIALS

- In February 1987, MCI announced a fourth-quarter charge of \$502.5 million, resulting in a \$448.4 million net loss for the year, compared to net earnings of \$113.3 million for 1985.



- The write-down primarily related to the early 1986 acquisition of Satellite Business Systems from IBM in the complicated arrangement by which IBM purchased a share of MCI. Another portion of the write-down was for reorganization expenses and severance pay for over 2,000 dismissed employees.
- FY 1986 revenue of \$3.6 billion represented an increase of 41% over 1985 revenue of \$2.5 billion.

5. STRATEGIES

- MCI has announced it will support X.400 E-mail standards which may eventually incorporate EDI capabilities. For now, it is positioning its E-mail forms and hardcopy delivery options by allowing users to send EDI information to those not ready to electronically receive it.
- IBM's partial ownership of MCI may be a factor in its future direction.
 - IBM's resources could be helpful in new product development.
 - Although IBM's involvement is primarily an investment position rather than a functional merger, any MCI EDI initiatives could compete with IBM's Information Network's EDI Services and, therefore, may be discouraged.
- MCI's experience in the highly competitive interexchange carrier market has caused write downs and staffing cuts. This may suggest that the technical and marketing investment in any new EDI service would be examined carefully.
- However, as another E-mail vendor (Western Union) has indicated, entry into the EDI market need not be a major corporate investment, assuming the underlying infrastructure is in place to support the service.



- MCI International (Rye Brook, NY), an international record carrier, is also a potential market participant.

F. TRW, INC.

- TRW (Cleveland, OH) is a diversified international \$6 billion company providing products and services which have a high technological or engineering content to electronics, defense, space, information, automotive, and energy markets.
- The TRW Information Systems Group had 1986 sales approaching \$500 million and is expected to continuing growing at approximately 20% annually.
- To succeed in providing information systems and services, the company recognizes it must rapidly expand its existing businesses and use its data bases and technologies to develop new information products and services tailored to customer needs.
- Although not now involved in EDI, TRW is positioned for the marketplace services in several ways:
 - As a major user serving several markets involved in EDI.
 - As a potential service provider through its acquisition of Teknekron Financial Systems, Inc. which provides information processing systems and consulting services supporting the financial community.
 - As a provider of business credit information data bases.
 - As a professional services vendor, designing, developing, and installing complex government or commercial systems which may have EDI



components. For example, the company has developed secure message handling systems for defense agency departments.

- As a partial owner of TransTech Corporation (Pleasanton, CA), which provides turnkey systems to the trucking industry and which has the potential for adding EDI (logistics) functionality to its products.

G. AUTOMATIC DATA PROCESSING, INC. (ADP)

1. BACKGROUND

- ADP (Roseland, NJ) was formed in 1949 as Automatic Payrolls, Inc. with the name changed in 1960.
- Since the early 1960s, ADP has had an active acquisition program to diversify from its payroll services business, which still provides a major share of its revenue.

2. SERVICES

- The company provides RCS and distributed processing services to banks and other financial institutions, supplies on-line data bases, supports collision estimating for the insurance industry, and has services for automotive dealers.
- ADP's Network Financial and Communications Service group provides remote and on-site distributed processing through the Autonet international VAN.

3. ADP AND EDI

- ADP currently has no EDI services; however, it is positioned for services to the insurance industry through its collision estimating service which could



provide electronic claims filing, and also through its services to automotive dealers which could support purchasing applications.

- The company is adding additional applications to its service that are inquiry and sales oriented and, therefore, have EDI-like features.
- In early 1987, the company recruited an EDI veteran from another service provider for its distribution and manufacturing services area.
 - The company has had requests for EDI services from its users.
 - This action indicates an EDI service from ADP will be introduced, probably within the year.

4. FINANCIALS

- ADP reported revenue of \$1.2 billion in 1986, with net income of nearly \$106 million. In 1985, the company had revenue of \$1.03 billion and net income of \$87.6 million.
- For the first quarter of fiscal 1987, the company reported revenue of \$321.1 million with net earnings increased 22% to \$22.7 million.
 - Revenue increases were due to high transaction volumes in brokerage services and the acquisition of the Bunker Ramo stock quotation service.
 - Revenue growth of 15% is forecast for the year.
- The company overall has in excess of 150,000 customers and approximately 17,500 employees.



5. STRATEGIES

- ADP has a reputation for being conservative in its approach to new technologies, preferring to stay with proven techniques.
 - However, the corporate mission statement says ADP will work on the cutting edge of technology.
 - Regardless, EDI is an application of existing technology to recognized business needs.
- ADP's capabilities in consulting services are seen as a valuable means of keeping and adding customers.
- The company tends to exploit the niches it targets and has the resources needed to develop and support a prospective EDI service for its current customers and prospective clients.

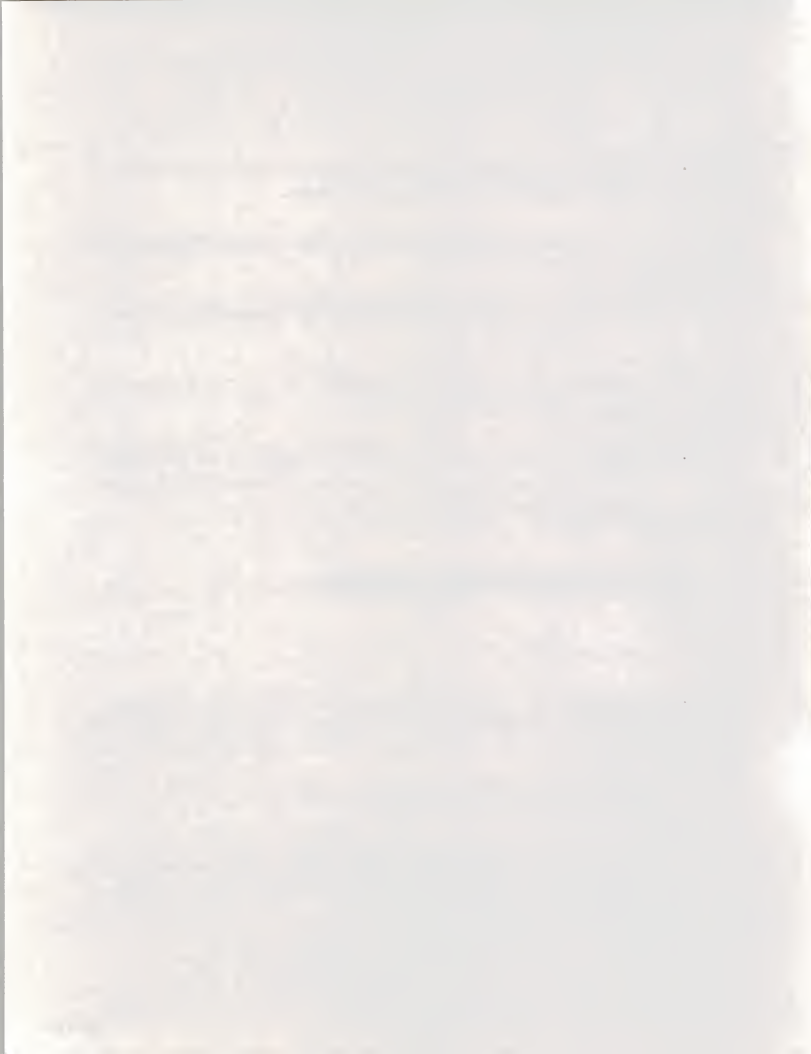
H. SHARED MEDICAL SYSTEMS CORPORATION

1. BACKGROUND

- This Malvern (PA) company provides remote computing and distributed processing services (DPS), plus turnkey systems and applications software to non-federal hospitals. It also provides facilities management to group medical practitioners.

2. SERVICES

- The Hospital's Services Division provides a distributed processing service though an integrated product called ACTION which runs on DEC VAX



minicomputers installed at the hospital and connected to the SMS data center via leased lines or new satellite links.

- SMS's data center primarily supports financial management applications for hospitals.

3. SMS AND EDI

- ACTION's processing functions are integrated, with most processing done on-site, while access to the SMS data center is provided through connections to non-SMS computers operated by insurers, government agencies, and hospital suppliers.
 - Thus, SMS places its system at the center of a network linking hospitals, insurers, government agencies, and hospital supply companies.
 - These links, therefore, support electronic data interchange applications.
 - Exhibit III-1 shows an extended SMS network.

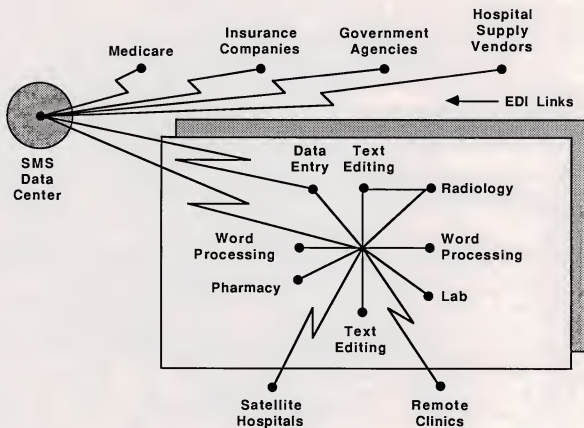
4. FINANCIALS

- SMS reported 1986 revenue of \$374.9 million, with net income of nearly \$32 million. In 1985, the company reported \$312.2 million in revenue and nearly \$42 million in net income. The company took a charge of approximately \$28 million against 1986 earnings for write-offs from discontinued operations in Japan.
- SMS estimates that approximately 60% of its total revenue is derived from remote processing, while one-third is from services and products associated with processing done on the client's premises.



EXHIBIT III-1

SHARED MEDICAL EXTENDED NETWORK





5. STRATEGIES

- SMS is the largest computer services vendor to the hospital industry.
- The company aggressively pursues renewal of processing services contracts with group hospitals as representing the greatest opportunities for its services. The renewal process can be supported by enhancing its services with EDI applications.
- The company has expanded the role of micros in its hospital information networks with EDI-related applications in Medicare cost reporting.
- By targeting the center of a large, integrated network for its system, Shared Medical demonstrates the importance of data communications as a driving force in the hospital data processing market.
- Unlike some firms which use DPS as an alternative delivery mode, SMS seems to be using the on-site products for competitive differentiation. It has added value to its offerings with data base access to the latest medical regulations, thus saving hospitals the costs of collecting frequently changing information themselves.
- Regarding SMS' strategy in EDI, the company appears to take a passive role. EDI traffic from its installed systems goes through SMS' central processing facility to trading partners, as shown in the exhibit.
 - However, since the company's target market is limited, expanded services and new market development is necessary for continued high growth rates.
 - Accordingly, a more active role for SMS in EDI services is possible.



I. BELL OPERATING COMPANIES

- As noted, Ameritech, working with a processing firm, will be offering EDI services.
- Most of the BOCs are currently prohibited from providing information services; however, the Justice Department has recommended the BOCs be allowed into several now prohibited businesses, including information services.
- EDI services fit within the scope of the Integrated Services Digital Network (ISDN) being tested by several BOCs, along with messaging, data base access, remote metering, and other applications.
- Several BOCs now operate or plan intralata packet network services called Local Area Data Transport (LADT) services with asynchronous to X.25 conversions.
 - These networks could funnel EDI traffic to third-party service providers or to a processing facility operated by the BOC itself.
 - Globenet, Inc. (Chicago), which earlier planned to provide interconnections between VANs handling protocol and communications conversions, now intends to develop an X.25 interexchange network to interconnect BOC packet switched services.
- INPUT is aware that several third-party service providers are looking for links to BOC packet networks. Tymnet has already linked with Southern New England's ConnNet, thus expanding the geographical reach for both companies.
- EDI success by the BOCs will be dependent on their abilities to promote, market, and provide EDI services within their primary service areas to customers who may consider them primarily as a local voice services carrier.



- The potential for locally-based EDI services between small businesses and their trading partners needs to be evaluated, since the potential traffic volumes may not justify market development.
- Another approach would be to target industry-specific groups which may be concentrated in a BOC's operating areas.
- Exhibit III-2 summarizes these potential EDI service providers.



EXHIBIT III-2

POTENTIAL EDI SERVICE PROVIDERS

COMPANY	COMMENTS
AT&T	Information Interchange Cancelled with Net 1000. Provides CDC's RediAccess Networking.
TELENET	Largest VAN. EDI Offering Expected This Year.
CSC	E-Mail Used for EDI-Like Applications. Positioned As International VAN.
BRITISH TELECOM	U.K. Joint Venture with MDC Cancelled. Bought ITT Dialcom in U.S.
MCI	Promotes E-mail Forms as EDI-Like Service. IBM's Partial Ownership may Discourage EDI Development.
TRW	Positioned for EDI in Several Industries and Through Equity Positions. Can Provide Professional Services.
ADP	Apparently Planning EDI Service.
BOCS	Deregulation Allows Participation in Information Services.



IV SOFTWARE VENDORS

IV SOFTWARE VENDORS

- The EDI software market is largely represented by small companies specializing in mainframe, mini, or micro software. Some of these firms are developing software for other processors, and others specializing in a vertical market are attempting to market their EDI software in other industries.
- The VANs and RCS third-party service providers also sell or certify software for EDI.
- One software company has formed a strategic alliance with a larger software firm, and several companies are distributed by third-party service providers.
- INPUT expects many of these firms to enter alliances with others and with professional services vendors.
 - Larger firms can offer marketing expertise and extensive user support programs. They typically have large customer lists beneficial to EDI software marketing efforts.
 - Such alliances may preclude later mergers and/or acquisitions.
- In addition to VAN and RCS firms, other EDI software vendors include:
 - American Business Computers (Farmington Hills, MI).
 - APL, Inc. (New Canaan, CT).



- DNS Associates (Lexington, MA).
 - EDI, Inc. (Hanover, MD).
 - Metro-Mark Integrated Systems (Roslyn Heights, NY).
 - Program Sciences, Inc. (Ridgefield, CT).
 - Supply Tech (Southfield, MI).
 - R.J. York and Associates (and their subsidiary EDI Solutions, Inc., Minneapolis, MN).
- The Transportation Data Coordinating Council/Electronic Data Interchange Association (Washington D.C.) also provides EDI software, as do several European suppliers.
 - Other firms, particularly large mainframe software vendors, are expected to enter the market.
 - The EDI software market is the subject of a companion INPUT report.



Executive Overview

**U.S.
Electronic
Data
Interchange
Services
1987-1992**

INPUT®



To Our Clients:

This summary is an excerpt from a full research report, U.S. Electronic Data Interchange Services, 1987-1992, issued as part of INPUT's Electronic Data Interchange Planning Service (EDIPS). A complete description of the program is provided at the end of this Executive Overview.

If you have questions or comments about this report, please call INPUT at (415) 960-3990 and ask for the Client Hotline.

ABSTRACT

Electronic Data Interchange (EDI) is the electronic transfer of standard business transaction information between organizations in a structured application. The trading partners may have different processors and data formats, in which cash translation between common formats or standards is required.

EDI offers economies by reducing manual document preparation costs and by eliminating errors caused by rekeying information. Further, EDI information can be integrated with other applications for the generation of management reports and other purposes.

This report describes EDI activities in 23 industries and analyzes issues affecting acceptance of EDI. Market forecasts and recommendations to industry participants are included.

The study is one of a series examining EDI markets and implementations.

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EDI Transmits Electronic Business Documents.....	1
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A. EDI TRANSMITS ELECTRONIC BUSINESS DOCUMENTS

- Electronic data interchange is the electronic transfer of business information between organizations in a structured application. It is process-to-process communication in machine readable format, overcoming organizational differences in computers, terminals, protocols, and data formats.
- While typical applications are the transfer of electronic purchase orders, invoices, bills of lading, and other documents, EDI exchanges are also used for the submission of health care insurance claims in the property/casualty industry and, recently, in the Internal Revenue Service's electronic filing program.
- For market analysis purposes, this study focuses on third-party EDI services and excludes consumer-oriented applications such as electronic shopping, Automatic Teller Machine (ATM) networks, Point of Sale (POS) terminals, and airline reservation systems.
- It also excludes person-to-person electronic mail which consists of textual messages between people rather than application-readable data.



**EDI TRANSMITS ELECTRONIC
BUSINESS DOCUMENTS**

- Machine Readable
 - POs, Invoices, etc.
 - Also Health Care Claims, Others
 - Not ATM, POS, or E-Mail
-



B. WHY USE EDI?

- Businesses have been electronically transferring standard business documents between trading partners for nearly 20 years. Large companies have been able to require smaller dependent suppliers to accept their defined formats.
- Now, smaller companies are using EDI, with new standard formats facilitating communications between dissimilar systems.
- EDI can lead to substantial cost savings in the exchange of routine business documents. Manually prepared paper documents can cost between \$8 and \$50. With EDI, the cost is below \$12, with the electronic portion costing under \$1.
- Other EDI benefits are:
 - Fewer errors due to misunderstandings or rekeyed data.
 - Faster responses due to nearly instantaneous electronic communications.
 - Better customer service due to integration with order processing and other applications.
 - Enhanced control through EDI integration with management report generators and forecast and statistical analysis packages.
 - Distribution of fixed information systems costs among more departments and functions.
 - Competitive advantage.



WHY USE EDI?

Reduced Expenses
Fewer Errors
Faster Turnaround
Improved Customer Service
Enhanced Management Control

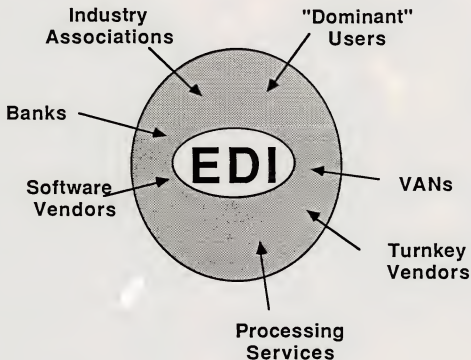


C. WHO PARTICIPATES IN THE EDI MARKET?

- Large companies use EDI to communicate with their trading partners to reduce costs.
- Third-party service providers offer EDI network management services, protocol/speed conversion, error correction, data validation, format translation, and store and forward services.
- EDI service participants include Value-Added Networks (VANs) and Remote Computing Services (RCS) such as McDonnell Douglas, General Electric Information Services, Control Data, IBM's Information Network, Sterling Software, TranSettlements, RailInc, and SCM Kleinschmidt. Other firms entering the market are ADP, Compuserve, and Western Union.
- Industry associations are helping to establish standards, design systems, endorse vendors, and represent users' interests.
- Banks see EDI as a cash management function and several are now involved in EDI.
- Software and turnkey systems vendors are also participating by adding EDI functions to their products or selling EDI services provided by others.



WHO PARTICIPATES IN THE EDI MARKET?



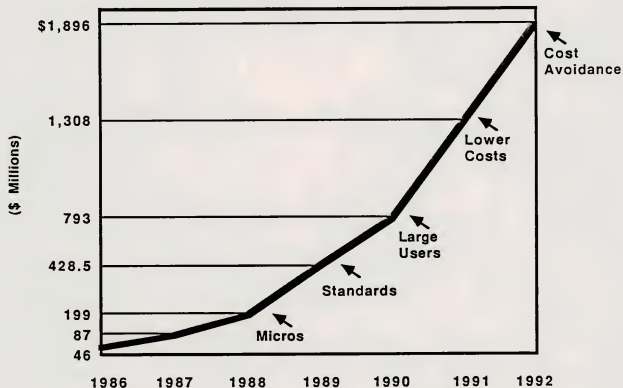


D. EXPONENTIAL EDI GROWTH: A \$1.9 BILLION MARKET BY 1992

- While EDI has been available for several years, it has not grown as its benefits would indicate. The reasons include a lack of awareness, low levels of computerization, standards acceptance, economic responsibility questions, and human factors.
- Due to the convergence of several technologies and business realities, INPUT believes EDI will grow substantially, creating new market opportunities. These factors include:
 - The acceptance of microcomputers and standards.
 - Lowering communications costs.
 - Large companies requiring suppliers to use EDI.
 - Need to cut costs.
- INPUT projects the market for EDI services will grow from an estimated \$46 million in 1986 to approximately \$1.9 billion by 1992, an average annual growth rate of 88%.



EXPONENTIAL EDI GROWTH A \$1.9 BILLION MARKET BY 1992



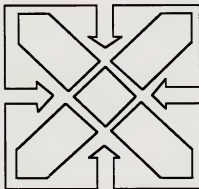


E. INCREASED EDI AWARENESS IS NEEDED

- INPUT found information services and corporate managers had limited but growing knowledge of EDI.
- INPUT's key recommendation centers on creating and building recognition of EDI's benefits.
- Market participant and industry groups should promulgate EDI awareness not only to IS but to corporate end-user departments such as purchasing, procurement, other business operations, and, perhaps most importantly, to corporate management.
- INPUT also recommends using the international EDI symbol as a marketing tool, more advertising about EDI, and the placement of general press articles, sponsored seminars, and user groups.



**INCREASED EDI
AWARENESS IS NEEDED**



- **Promote EDI Awareness:**
IS/Telecom
Corporate End Users
Corporate Management

F. EDI RECOMMENDATIONS: THIRD-PARTY SERVICE PROVIDERS

- Most of the major value-added networks and several remote computing services are now providing EDI services. Present and future participants should:
 - Use EDI to prevent customer "churn."
 - Work through trade associations to investigate EDI needs in currently unserved industry segments. Several EDI implementations began as association projects.
 - Position electronic mail with forms capability as "poor-man's EDI," using hardcopy options to extend use by of both EDI and E-mail.
 - Integrate internal forms management with EDI.
 - Consider unconventional pricing schemes such as flat rates and bonus plans and premiums to encourage use.
 - Improve internetworking capabilities to allow users to interchange data across competing networks.
 - Provide implementation consulting.
 - Provide gateways to industry-specific data bases and use system transactions as the basis for new on-line data bases.



**EDI RECOMMENDATIONS:
THIRD-PARTY SERVICES**

- **Use EDI to Keep Customers**
 - **Investigate Trade Association EDI Initiatives in Unserved Segments**
 - **Integrate EDI with E-mail Hardcopy Output**
 - **Integrate EDI with Internal Forms Processing**
 - **Create New Data Bases From EDI Transactions**
-



G. USER EDI RECOMMENDATIONS

- EDI developers need to sell the EDI solution internally, working through a task force representing all affected departments and educating corporate management to EDI's benefits.
- Trading partners and potential users also need to be encouraged to use EDI. This can be accomplished by providing EDI software and sharing EDI system development costs.
- While "closed" EDI systems may be advantageous, such implementations should use the X12 EDI standard and provide gateways to third-party services to keep options open.
- EDI systems can be developed in stages, building on existing on-line order entry or other information systems.
- EDI implementation assistance is available from third-party services, industry associations, and professional services firms. They can be used to speed development and minimize risks.



USER RECOMMENDATIONS

- Sell EDI Internally and to Trading Partners
 - Build EDI onto On-Line Order Entry or Other Information Systems
 - Use Development Assistance From Third Parties and Industry Associations to Minimize Risks
-





U.S. ELECTRONIC DATA INTERCHANGE SERVICES 1987-1992

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ELECTRONIC DATA INTERCHANGE PLANNING SERVICE (EDIPS)

INPUT's Electronic Data Interchange Planning Service (EDIPS) focuses on what is fast becoming a major computer/communications market opportunity. Through integration, EDI promises new efficiencies to user organizations in management of buying/selling relationships, cash, manufacturing, inventory, and transportation. Through sound data-based information, INPUT's EDIPS offers you new efficiencies in charting the course of your company.

Through EDIPS' monthly newsletters, timely news flashes, comprehensive studies, joint vendor/user conference, and telephone inquiry privileges, you will be informed, and stay informed, on the news, events, and issues impacting this burgeoning market.

EDIPS CLIENTS RECEIVE:

The EDI Reporter

Monthly analyses and news flashes on major events on EDI (for both users and vendors) categorized as follows: key issues, strategic planning, speculative scenarios, case studies, user/vendor perspectives, market intelligence, new products, and new technologies. A sampling:

Issue--Restraint of Trade and EDI Mandates

Issue--EDI Standards: X.12 and X.400

Issue--EDI and Internal Auditors

Events--First Chicago's Accelerated Trade Payments Program and EDI

Events--Report from the ANSI X.12 Committee Meeting

Events--Report from Compat '86, Paris, France

Case Study--Caterpillar's Private EDI System

Case Study--Abandoning an EDI Development Project

Scenario--Electronic Auctions and EDI

Scenario--A Global Electronic Trading Economy

Perspectives--Internetworking: It's Happening

Perspectives--Selling the EDI Data Base

Intelligence--Competitors View the Blues at EDINet

Intelligence--What's IBM's Information Network Up To?

Strategic Analysis Reports (SARS)

These comprehensive studies on significant topics in the EDI arena provide detailed analyses of market sectors, key issues, major events, and corporate strategies. Each report analyzes EDI opportunities and presents recommendations for action to both users and vendors. Six studies will be conducted in calendar year 1987:



Update on EDI Services

An update of INPUT's well received 1985 report examining the benefits and risks of electronic data exchanges for both users and vendors. Market participant profiles and directions will be described, market inhibitors and activators analyzed, and the forecast revisited.

EDI in Western Europe

Produced by INPUT's London research staff, this report examines the activities of participants such as EDINET, Ltd. (a joint venture between British Telecom and McDonnell Douglas) and Istel with its EDICT system. The report looks at the involvement of industry organizations such as Odette and the Article Numbering Association, and analyzes the market with forecasts provided.

EDI Software Markets

Examining the products and strategies of EDI software developers and the directions of major software vendors to integrate EDI functionality within traditional accounting, manufacturing, and other packages. Distribution channels and delivery modes (timesharing, licensing, processor size, etc.) will be discussed, the role of turnkey systems evaluated, with an analysis of the features users want most from EDI software.

Prospects for Paperless Government Procurement

Produced by INPUT's Washington D.C. staff, this report describes the General Services Administration's testing of an automated procurement system through ITT's Dialcom for soliciting and awarding goods contracts. The report examines the results and analyzes the impact of ITT Dialcom's purchase by British Telecom, evaluates the prospects for other vendors to participate, and describes the requirements for businesses selling to the government.

International EDI

With international trading strangled by paperwork, various initiatives to streamline operations have been suggested. This report examines the special requirements of international trading, profiling EDI services with international orientations. The role of GEISCO's Trade*Express, IBM's newly announced Intercontinental Information Services, and Computer Sciences Corporation's INFONET are described, the market is sized, and users' requirements are discussed.

A Guide to EDI Implementation

Oriented to users evaluating their EDI options, this report is also useful as a vendor training document. Internal versus third-party service decisions, software and hardware requirements, personnel and "political" issues are explored with detailed case studies presenting user organization experiences in approaching EDI solutions.

Joint Vendor/User EDI Executive Seminar

Presentations and interactive workshops in an informal setting at which INPUT's senior analysts and invited guest speakers facilitate direct discussion of timely topics in EDI. Users share needs, vendors present options, and both will reach a better mutual understanding of EDI issues and concerns. (Scheduled for Summer, 1987--location to be determined.)



Telephone Inquiry and Alert

This important service provides both real time answers to your unique EDI questions and timely notification of important developments in the EDI arena to a designated contact within your organization.

Annual Client Conference

You may attend INPUT's annual client conference to be held in the third quarter of 1987. This informative meeting will address the status and future of the information services industry, the competitive environment, important industry trends potentially affecting your business, the impact of new technology and new service offerings, and timely information services industry issues. Conference agenda, dates and location will be sent to you in the second quarter of 1987.

You will attend this dynamic conference with top executives from many of the industries leading, fastest-growing, and most successful vendor companies; and with top Information Systems managers from some of the world's most sophisticated user organizations.

Access to INPUT's Information Center

One of the largest and most complete collections of information industry data, INPUT's Information Center houses literally thousands of up-to-date files on vendors, industry markets, applications, current/emerging technologies, and more. In addition to the information contained in its files, the center maintains an 18 month inventory of over 130 major trade publications, vendor consultant manuals, economic data, government publications and a variety of important industry documents. You will have complete access to the Information Center.



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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