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# EDI

An Overview of  
Electronic  
Data  
Interchange  
in Canada

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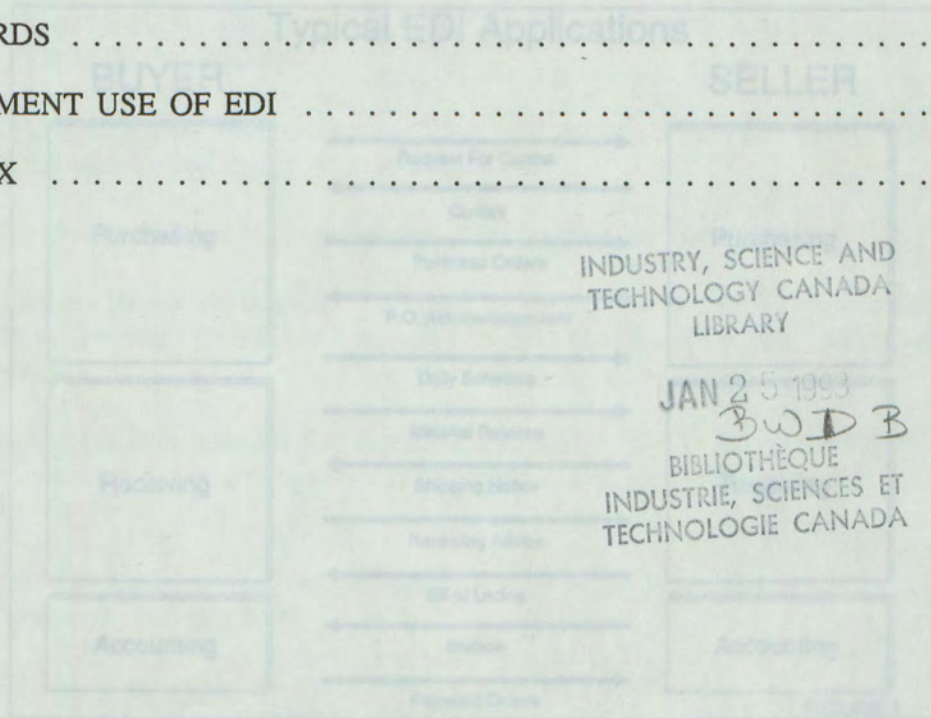


# ELECTRONIC DATA INTERCHANGE

## WHAT IS EDI?

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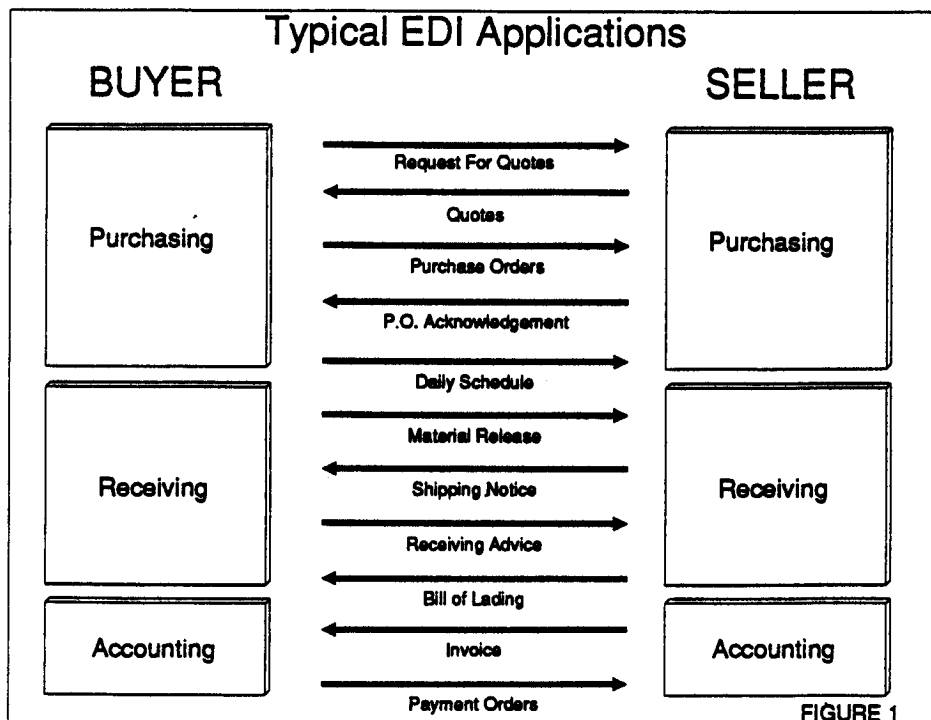
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# ELECTRONIC DATA INTERCHANGE

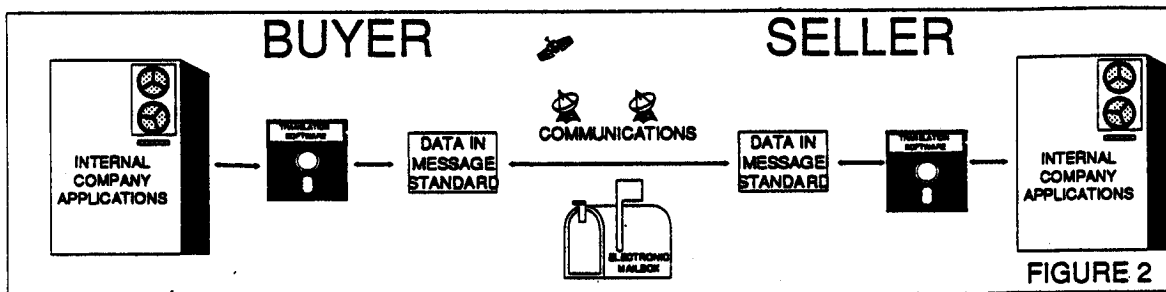
## WHAT IS EDI?

Electronic Data Interchange (EDI) is the transmission of information contained on business transaction documents (e.g. purchase orders, invoices, shipment notices, and debit and credit adjustments) electronically between parties, and possibly through intermediaries, in a structured format (i.e. a standard message protocol). By way of this format, the information can be entered from one computer to another without rekeying. Facsimile and E-mail transmission both require rekeying and are not considered part of EDI. Electronic Funds Transfer (EFT) although a specialized form of EDI, is generally considered separately because its use is limited to the banking industry. However, the banking industry has recognized the need for an EFT payment mechanism of some kind in EDI and is in the process of extending its EDI capabilities.



A typical EDI service is divided into three areas:

- a message standard (usually industry sector specific) that defines the sequence and format of the data to be exchanged;
- a translation software that converts the business transaction data from the company's internal data processing format to the EDI message standard and vice versa; and
- a communications network for sending and receiving the data between trading companies.



The benefits associated with EDI include:

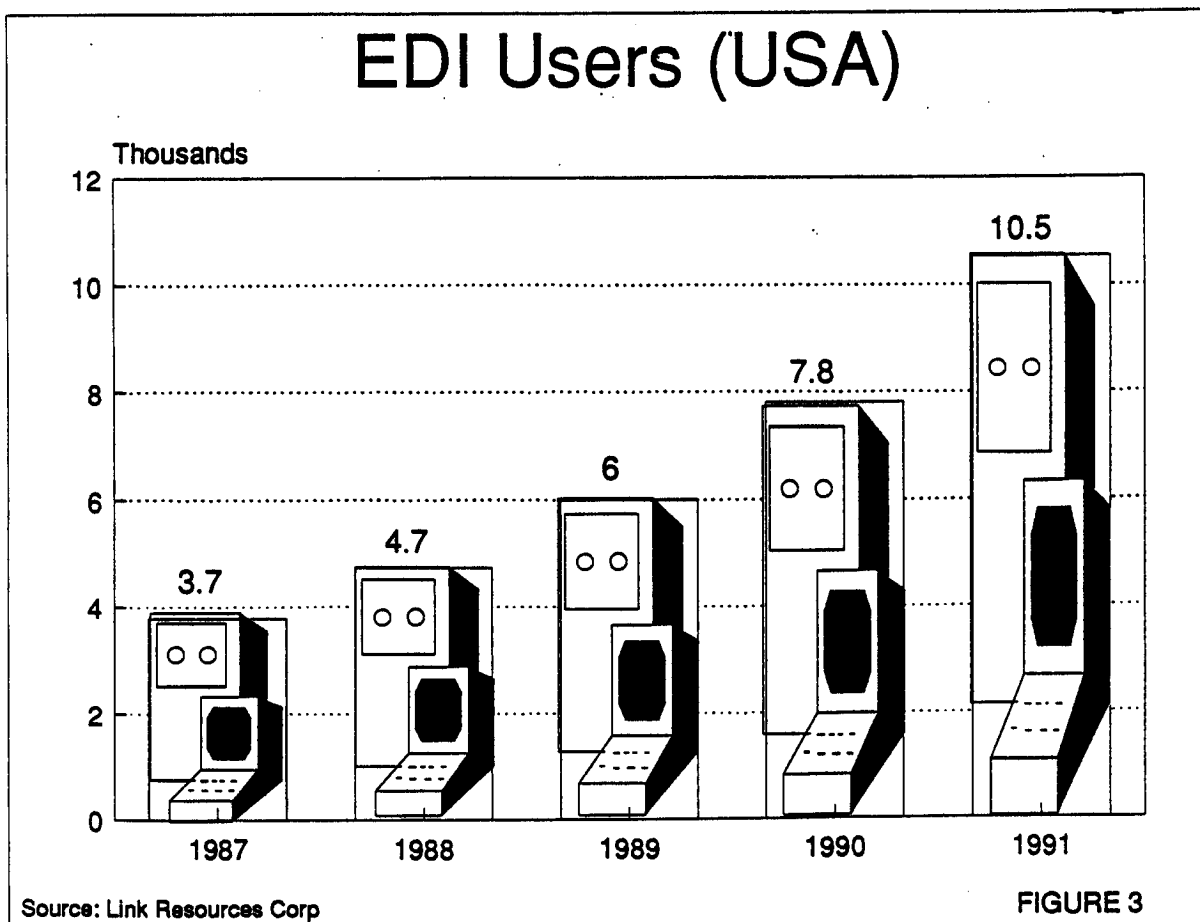
- **improved customer service** - faster and better quality order processing and information for customers;
- **improved stock management** - increased accuracy of sales predictions, reduced buffer stocks and faster turnaround;
- **improved cash flow** - accelerated sales/invoice/payment cycle;
- **reduced paperwork costs** - substantial savings to paperwork costs (e.g. data entry, mailing) which are estimated at between 3 and 15% of the value of a product;
- **improved information for decision support** - EDI's 24 hour availability and reduced rekeying errors provide for more up to date and accurate information; and
- **strengthened trading relationships** - EDI helps rationalize relationships between customers and suppliers.

A recent survey conducted by EDI Research, Inc. revealed that among companies, either using or planning to use EDI, quick response and/or quick access to customer information were the factors for turning to EDI and thereby improve competitiveness.

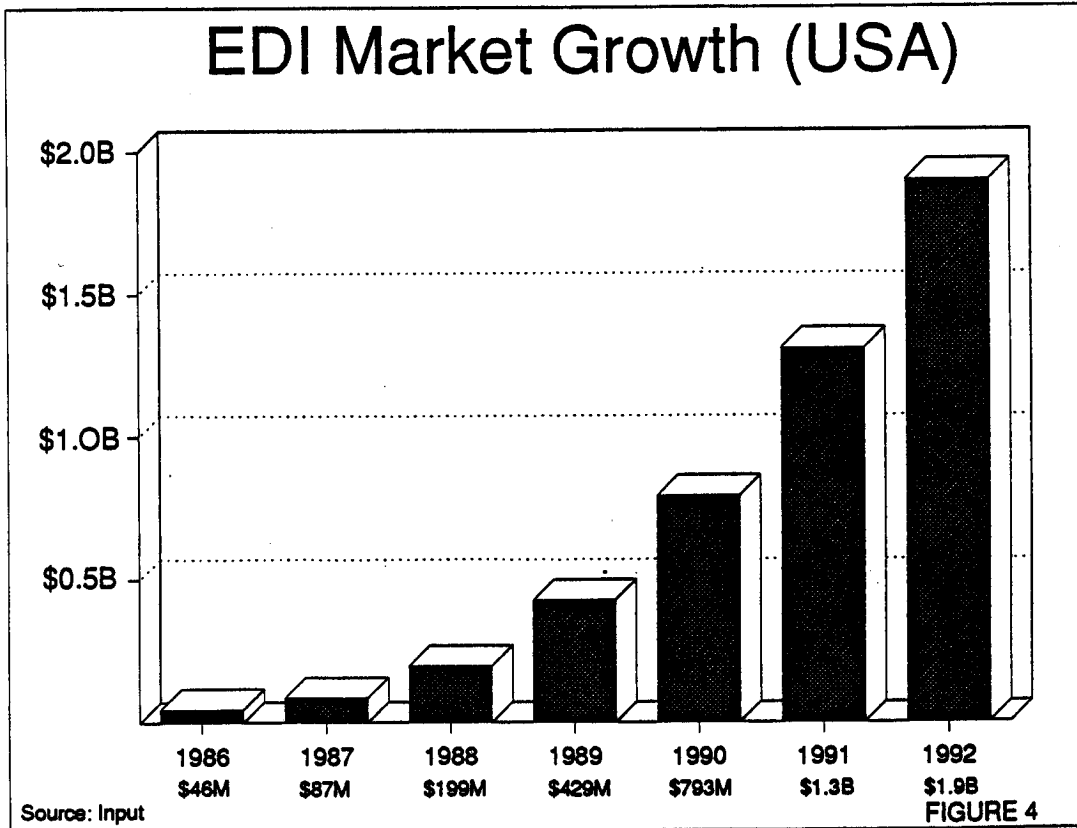
## IMPACT OF EDI

The growing interest in EDI in Canada is demonstrated by the rapidly rising number of seminars, conferences, courses, published material on the subject, as well as the increasing number of EDI users and consultants.

There are approximately 500 major corporations in Canada using EDI; in the United States the figure is closer to 7000. Some projections predict as many as 250 000 U.S. companies will be using EDI by 1995. More conservative estimates forecast 10 500 U.S. companies using EDI by 1991 (see figure 3). EDI is not confined to North America, companies in Europe, Australia and Korea are also heavily involved.



Market research consultants are predicting that EDI revenues (network and processing services, software and professional services) in the U.S., presently estimated at \$200 million, will grow at an average annual rate of 88% until 1992 (see figure 4). Current Canadian EDI revenues exceed \$1 million. Canada Systems Group (CSG), anticipates these revenues will increase to \$32 million by 1992.



Some of the expected surge in growth is expected from among other things, the transition from pilot programs to full scale integration that will be take place on the part of large corporations.

Several companies will be forced to join the EDI bandwagon or risk losing business. A few large firms (e.g. Provigo and General Motor) have already announced that the ability to communicate through EDI will be a necessary requirement to be one of their regular suppliers.

Canadian industry generally trails the U.S. in the implementation of EDI. With the advent of free trade, Canadian companies will have to catch up quickly if they wish to compete in the export and domestic markets.

A study last year by Input projected the U.S. market for EDI translation software for micro-computers to grow from \$4.6 million in 1987 to over \$102 million by 1992. The market in the mini and main frame environments are expected to grow from 0.3 million to

\$69 million and from \$3 million to \$57 million respectively over the same period. The market for third party networks will be the most significant segment with growth projected from \$33 million to \$410 million by 1992.

## **PENETRATION OF EDI IN CANADA**

The use of EDI in most Canadian industries is still in the embryonic stages. The following is a summary of the activities that are underway in selected industries.

**Automotive:** The "just-in-time philosophy" was a driving force behind the big three's extensive use of EDI with their suppliers. While only 164 of GM Canada's 1323 suppliers are currently using EDI, they account for 73% of the dollar value of parts coming into the plants.

**Banking:** The banking industry has its own proprietary form of EDI with EFT. Most banks have expressed interest in introducing general EDI services to their customers. Currently, the purchase orders, invoice data, etc. are transferred through business information networks. Electronic payments for those same transactions are handled by the bank's financial networks. It is yet unclear when and to what extent the banks will add EDI capabilities to their network or work in partnership with independent EDI network providers. Current legislation limits banks from offering computer services.

**Chemicals/Drugs:** Pharmaceutical producers were early users of EDI in Canada. Chemical companies are using EDI domestically, in their trading with U.S. firms and have initiated a pilot study with Australia.

**Grocery:** The grocery industry was among the first users of EDI. Provigo Inc. has been a major driving force behind the implementation of EDI in the Canadian grocery industry. Provigo has recently announced that all their suppliers will have to have EDI capability in the near future. EDI is now being used by many food retailers including The Oshawa Group, Loeb, Steinberg and Federated Co-operatives.

**Insurance:** The Centre for Study of Insurance Operations has set up a pilot project that will help determine the feasibility of creating a standard for the industry.

**Mass Retailing:** Canadian Tire has over 120 suppliers linked through EDI. Sears is projecting to use EDI to communicate with 50 of its suppliers by the end of 1989. The Bay and Zellers are presently using EDI for freight transactions.

**Resources:** Forestry giant MacMillan Bloedel is undertaking a pilot study with five of its major suppliers.

**Steel:** Stelco Steel is an early user and leading supporter of EDI. As a major supplier to the automotive industry. Algoma Steel also uses EDI.

**Textile/Apparel:** The sector's two key associations (i.e. Canadian Textile Institute and Canadian Apparel Manufacturers Institute) have joined forces with the Retail Council of Canada to form the Canadian Manufacturers Retailer Council (CANMARC). This centre, which is funded through ISTC's Technology Outreach Program, disseminates information on new business methods including EDI.

A recent survey of 2700 service industry companies, co-sponsored by Information Technologies Branch, found that wholesale and retail apparel products companies were low user of EDI. Only 8% of wholesalers and 10% of retailers reported using EDI against an service industry average of 19%.

**Transportation:** Two major port information systems are currently being developed: CANSIF in Vancouver and INFOPORT in Montreal. The railways are using EDI to provide shippers with weights and waybill information. The trucking industry's main activities in EDI are with the companies in the automotive sector.

**Warehousing:** More than a dozen public warehouse companies are now involved with EDI, offering a value-added service to their clients.

The EDI Council of Canada (EDICC) is the key user group and promoter of EDI in Canada. The Council, formed in late 1984 by eight trade associations, now has over 600 members. As part of its mandate the Council:

- acts as both the clearing house and facilitator of EDI development;
- promotes the use of common standards, enhances and maintains the standards;
- acts as a policy body for the use and development of EDI standards; and
- assists in the implementation and use of the standard.

The Council has organized a great many seminars, education programs, user meetings. Much of the educational activities of the Council are sub-contracted to U.S. consultants. The EDICC is hosting an international user conference in Vancouver in August 1989.



## BARRIERS TO EDI

Based on a EDI Research Inc. survey, EDI is being used by 15 percent of Canadian firms and another 18 percent are considering implementation within two years. Similar results were obtained in ISTC's service industries survey in which 19% of firms are using EDI, and 16% are planning to use this mode of operation within three years.

The respondents to the EDI Inc. survey perceived the cost of establishing an EDI trading relationship - most significantly software development and training costs - as the greatest barrier to the increased use of EDI. This was followed by lack of awareness of EDI benefits, difficulties with customer acceptance, lack of software/hardware. The list also included the lack of standard formats and the limited use and knowledge of computers by other trading partners.

While the cost of establishing an electronic trading relationship between firms was perceived a major barrier by the survey respondents, this may be a false perception. The cost of implementing a basic EDI system can be as low \$1 500 (plus a microcomputer). If small companies are forced by a important client to use EDI, as is happening to GM and Provigo suppliers, the costs are usually manageable. However, costs can become very significant for companies with large investments in in-house computer systems, who may incur significant costs in integrating EDI with their other business applications.

At present, most industries have their own dedicated EDI standards. Several industry sectors could benefit from being able to communicate with each other in the EDI mode but have no common syntax or standard. A single, universally accepted standard would make it more practical and cost effective for cross-industry exchanges of information. The American National Standards Institute's X12 standard is slowly emerging as the cross industry standard. An international standard, EDIFACT, is also being developed. However, based on the slow adoption of X12 and the delays in developing the new international standard, it will be some time before a universally accepted standard emerges. The lack of acceptable standards could be a serious problem for smaller companies if each of their suppliers/clients are using a different EDI standard.

Changing old habits is difficult, abandoning paper to electronic transmission is to relinquish a custom with a 1 000 years of history. Current trade laws were established based on centuries old trading practices. The automation of the trading process forces companies to review their procedures and legal agreements. The signature, the key component of the transaction, is being replaced by a series of electronic commands. This will require companies wishing to trade via EDI to enter into new types of legal agreements. To date, many trading partners have ignored the hazy legal implications of EDI. They have been helped in this by auditors and lawyers who, in general, are not well informed on the subject. Some companies have signed agreements detailing the liabilities of each partner and waiving the written signature requirements before doing business electronically. However, some lawyers believe that current Canadian and U.S. laws, if put to the test, will not consider electronic signatures as legally binding. Law makers may have to amend the laws to account for this new way of conducting business. The elimination of paper

documentation also means that electronic archiving becomes very important. Companies will be allocating considerable efforts to ensure data integrity, system reliability and adequate audit trails.

The current business culture is established on confidentiality of corporate information and a reluctance to co-operate with other firms, especially competitors. The successful national implementation of EDI requires co-operation on an industry wide basis, on standardization, network interconnection and legal implications.

## CANADIAN SUPPLIERS

There are approximately twenty principal suppliers of EDI translation software in Canada. Most of the software packages sold were developed in the U.S.. Very few Canadian companies have developed their own software. Completely integrated EDI solutions are not readily available off-the-shelf. Current software application packages that include an EDI translation capability as a integral part of the package are practically non-existent. Those that have been developed are usually very limited in capability and are industry-specific. Commitment from major software vendors to incorporating EDI functionality into future releases of their products is slow in coming.

Canada has about a half dozen EDI network providers. These include General Electric, Ordernet (Sterling Software), Telecom Canada and IBM.

## STANDARDS

Most of the standards now being used in Canada are based on standards developed by American industry. In North America there are currently about 15 important standards in use. These key standards include: RAIL, MOTOR, OCEAN and AIR in the transportation industry; Uniform Code Standard (UCS) in retail and grocery industry; Warehouse Information Network Standards (WINS) in the warehousing industry; and X12 the generic standard developed by the American National Standards Institute (ANSI). ANSI X12 is being used in the electrical (EDX) and chemical (CIDX) industries and is gaining modest acceptance in many other industries.

In Canada, the Canadian Standards Association (CSA) and the Canadian General Standards Board (CGSB) have joined forces under the auspices of the Standard Council of Canada (SCC) and formed a joint technical committee. This committee is mandated to study and co-ordinate the development of EDI standards in Canada. Committee membership comprises over 75 individuals from both industry and government (ISTC is an associate non-voting member). The work of the committee is shared by a number of working groups primarily based on the various types of transactions (e.g. goods, finance and transportation). The joint committee also serves as the Canadian Advisory Committee to the International Standards Organisation (ISO).

# EDI STANDARDS GROUPS

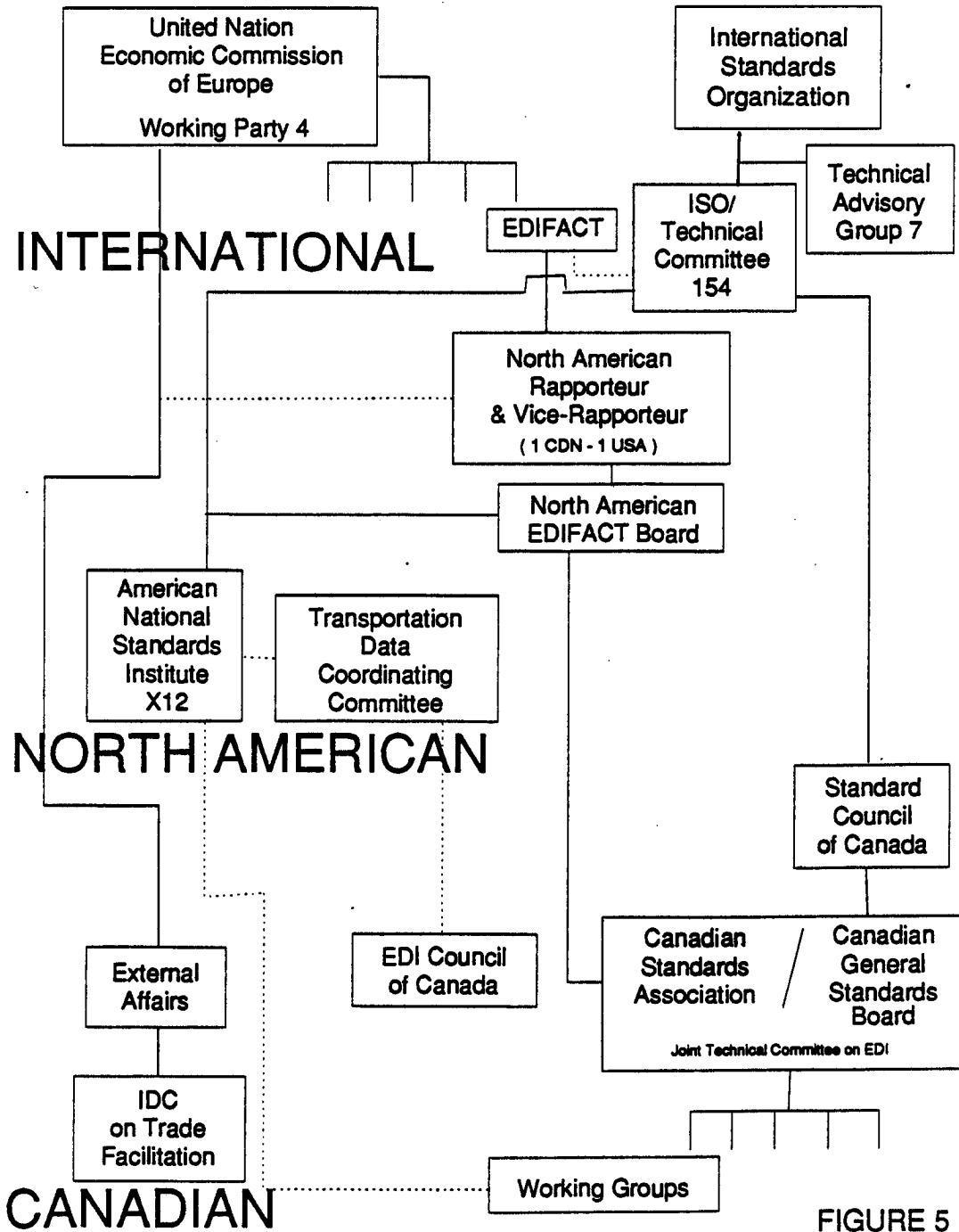


FIGURE 5

On the international front, recognizing that a comprehensive and uniform global standard was required, the United Nations has formed a Joint EDI Committee to create an international standard. The new standard is known as EDIFACT (EDI for Administration, Commerce and Transport) and is being developed with representation from North America, Western Europe, the Eastern Block and the Pacific Rim. Canada will be contributing input to this process through the participation of members on the North American EDIFACT Board presently being established.

As noted earlier, there is a limited but growing trend in industry to migrate to the ANSI X12 standards. This will be accelerated with the phasing out of the several Transportation Data Coordinating Committee (TDCC) standards. A number of analysts predict a reluctance to migrate to EDIFACT. The fact that an international standard has been slow in developing and that only a few transactions are ready and approved for use, will severely impede the adoption of EDI on an international scale.

Budget cuts to the Canadian standards organizations (CGSB/CSA) have limited the ability of these groups to provide the funding required for EDI standards activities. They have turned to the private sector and other government departments for assistance in supporting their EDI endeavours. (Figure 5 provides an overview of the EDI standards groups that are working in Canada and internationally.)

## **GOVERNMENT USE OF EDI**

The Federal Government, given the enormous amount of paper it generates, is a most likely candidate for the use of EDI. Its adoption of EDI could provide the impetus required to allow many Canadian businesses to justify their adoption of this technology.

Supply and Services Canada (SSC), because of its involvement with both the procurement of goods and the transfer of funds, is probably the department which could reap the most benefits from the implementation of EDI. At present, however, the Department has undertaken only limited activities in this area. Given its volume of purchasing, it could be highly influential in the setting of standards and in convincing companies to adopt EDI. SSC has instituted the use of EFT for the payment of employee's pay. However, employees using this service are placed at a disadvantage since their monies are deposited two days later relative to those receiving paper cheques.

Revenue Canada, Customs and Excise is presently the leading government user of EDI with its CADEX Entry and Amendments System. The system allows importers and exporters to eliminate much of the paperwork required by Customs and Excise procedures. Since the system was developed when no standards for such transactions were available, it is proprietary. However, the Department has stated that it intends to migrate to EDIFACT standards when these become available.

Communications Canada (DOC) has been established as the National Office, Ports Information Systems. The Department serves as the focal point for federal government-

activity in the development of port information systems in which EDI is designed to eliminate most of the paperwork involved in the process of shipping goods in export markets.

DOC is currently involved in three port information projects: CANSIF in Vancouver (with the Western Economic Diversification), INFOPORT in Montréal (with the Federal Economic Development Coordinator) and a pilot for small integrated application in Halifax (with the Atlantic Canada Opportunities Agency). DOC is responsible for providing scientific authority, secretarial support, guidance to the Users Group and for coordinating the Federal Government efforts in port information systems. From this base, the DOC is making an effort to become the coordinating body for all governmental use and support of EDI.

Treasury Board has established three working groups on EDI: a standards group, a users group, and a finance group. These groups, made up of participants from various departments, make recommendations to an interdepartmental committee of Assistant Deputy Ministers.

ISTC presently has three representatives on the user group (Information Technologies, Service Industries and Information Management). This group is also attempting to become a focal point for the implementation of EDI by the Government. In addition to its information sharing role the user group has established the following goals:

- Raise the level of awareness and understanding of the uses and benefits of EDI.
- To recommend policies for the government's use of EDI.
- To develop plans and guidelines to assist individual departments in their EDI implementation efforts.
- To identify EDI issues and opportunities.

External Affairs is contributing to EDI through its coordination of and funding of international trade facilitation and standards activities.

Other departments exploring EDI include Public Works, Office of the Controller General, Transport Canada, Statistics Canada, Agriculture Canada, National Archives of Canada and National Defence. It can be expected that departments that purchase a great deal will be exercising pressure on SSC to adopt EDI, especially if it can be demonstrated that administration fees charged by SSC could be substantially reduced by EDI procedures.

## **APPENDIX**

### **Partial List of Software Suppliers**

American Business Computer  
CAN/AM Tech Inc.  
CPA Data Systems  
Crowntech Inc.  
Durham Customs  
EDS of Canada  
GE Information Services  
IBM Canada  
Integral Consulting Inc.  
Jedron Software Inc.  
Lakestone  
Louis A. Wright and Associates  
Management Horizons Data Systems  
Management Science America (Canada)  
Maves Corp.  
Somapro Ltd  
Sterling Software  
Supply Tech Inc.  
Telecom Canada  
Ultimate Canada Inc.  
Synerlogic  
Gervan

