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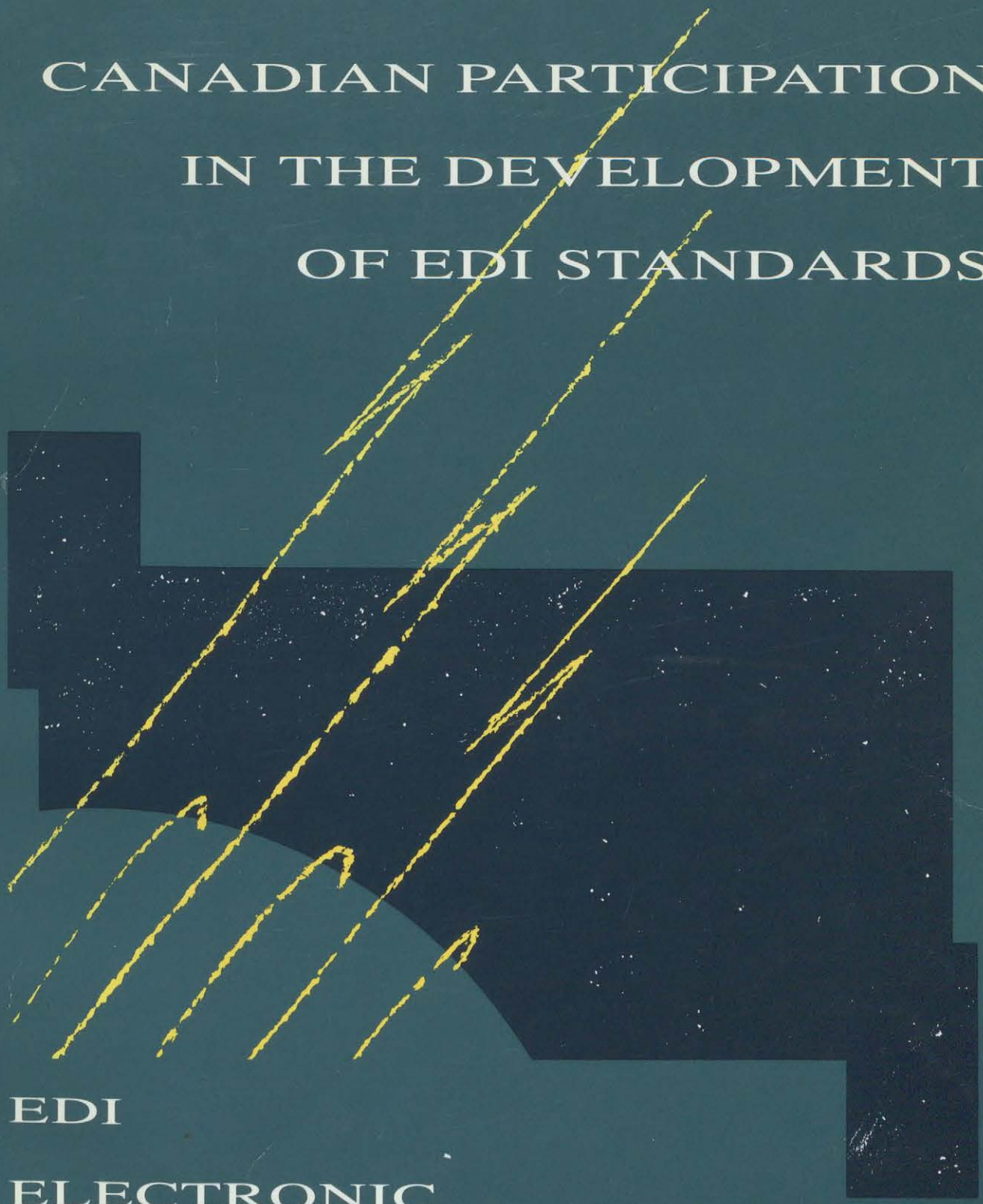
Canada

CANADIAN PARTICIPATION IN THE DEVELOPMENT OF EDI STANDARDS



EDI

ELECTRONIC
DATA
INTERCHANGE

Canada

CANADIAN PARTICIPATION IN THE DEVELOPMENT OF EDI STANDARDS

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F O R E W O R D

The Government of Canada, recognizing the importance of Electronic Data Interchange (EDI) technology to the transportation industry, is assisting in the development of port information systems in Canada and has set up an interdepartmental organization to co-ordinate government activities in this area. To facilitate this effort, in 1988 the federal Department of Communications, which is leading this initiative, established the National Office, Port Information Systems, using resources provided by several federal government departments, in particular the Department of Transport.

In addition to its primary objective of initiating a national Port Information System infrastructure for Canada, the National Office acts as scientific authority for government agencies assisting in the funding of local developments, and is the focal point for the co-ordination of private-sector activities with government departments. Furthermore, to assist users, the Office conducts cross-sectoral research on EDI issues, such as EDI standards, and publishes its findings. ***Port Information Systems Around the World*** by Satya Malhotra was its first publication and ***Canadian Participation in the Development of EDI Standards*** is its second.

Richard Simpson
Director General
Telematics and New Media
Department of Communications

T A B L E O F C O N T E N T S

L I S T O F F I G U R E S

I N T R O D U C T I O N

Electronic Data Interchange (EDI) standards are essential for communications between different computers, equipments and terminals. These standards are developed by independent non-government organizations on a voluntary basis. Canadian participation in domestic and international standards work is an integral part of the National Standards System. The Standards Council of Canada (SCC) represents Canada as the Canadian member body of the International Organization for Standardization (ISO). Through committees such as the Joint Technical Committee on Electronic Data Interchange, the SCC liaises with and participates in the work of other organizations, including the American National Standards Institute, the United Nations North American EDIFACT Board and the ISO. This report highlights some of the standards used in EDI communication, who assembles these, and the way they are processed in order to be acceptable standards at the domestic and international levels.

In preparing this report, the author has drawn freely on several published and unpublished sources, especially material issued by the standards bodies. Useful information was also obtained from conversations with EDI users. At the time of publication, the most current information available was used as resource material. In order to ensure accuracy and to revise the document, it would be appreciated if any errors or omissions could be identified and forwarded to the attention of the author.

The author is grateful to Mr. W. B. Dodd, Senior Program Manager, Canadian General Standards Board; Mr. R. Lang, Chairman, CGSB/CSA Joint Technical Committee on EDI; Nigel Wood, Technical Director, EDI Council of Canada; and Mr. A. Kwan of the Department of Communications, for reviewing this manuscript and suggesting improvements.

CHAPTER ONE

GENERAL

Standards affect our daily lives. In North America, for example, there is a standard voltage system that allows a radio, a television or other electrical appliances to operate in any part of Canada and the United States. This is not the case in various parts of Europe and elsewhere, where people encounter problems as a result of a non-standardized voltage system.

Standards are central to most of our economic activities. They promote competition in the international marketplace, increase efficiency in manufacturing and contribute to the country's economic growth. They also play an important role in Canada's $40-billion-a-year government purchasing market.

Standards for information and data technology are increasingly important to the functioning of our economic system. In Canada, various standards-writing bodies, such as the Canadian Standards Association, have written hundreds of standards. They also test, certify, and recommend standards which stipulate requirements for the performance and safety of products and services. For EDI, Canadians use standards developed by the American National Standards Institute, the Transportation Data Coordinating Committee (TDCC), specific industry groups such as grocery and warehousing, and the United Nations Economic Commission for Europe Working Party 4 (UN/ECE/WP.4). Where appropriate, the Canadian Standards Association (CSA) and the Canadian General Standards Board (CGSB) Joint Technical Committee on EDI (JTC/EDI) approves these for use in Canada and provides Canadian input to this process.

Electronic Data Interchange refers to the electronic preparation, communication, and processing of business transactions in a predefined structured format, using computers and telecommunications. This eliminates paper documentation, mailing, and manual processing of quotations, purchase orders, invoices, shipping documents, customs documents, etc. The potential improvements in quality and efficiency in data communications are significant and will be essential for the future competitiveness of virtually all commercial organizations.

C H A P T E R O N E

Electronic Data Interchange between different computers requires communication standards and message content standards. The former fixes the language between computers and the latter fixes the order in which information is transmitted for processing. There have been many communication and message content standards developed in the U.S.A. in recent years. Some of these are used widely among many companies throughout North America; others are still in their infancy. EDI standards also provide a syntax definition and set of rules that have made electronic communications possible between companies and computers in a common standardized form. EDI currently accommodates about 140 standard business transactions such as purchase order, invoice, shipment advice, price change, billing and tracing payment. According to recent estimates, the EDI community in North America now exceeds 8,000 users, with many more on the verge of implementing EDI.

The EDI community in North America, especially the U.S.A., has experienced increased activity recently in the standards-making area. The American National Standards Institute's Accredited Standards Committee on X12 (ANSI ASC X12), which is responsible for producing EDI generic standards, has not only increased its international profile through participation in the development of the United Nations Electronic Data Interchange for Administration, Commerce and Transport (UN/EDIFACT) standards, but has also increased its domestic activities. For example, TDCC, which used to develop and/or manage most of the industry-specific standards (rail, motor, UCS, etc.), has decided to transfer these standards to ANSI ASC X12 for the benefit of industry.

Electronic Data Interchange communication requires an electronic network: a range of integrated facilities to support user preparation, processing and exchange of standardized electronic messages. Such a network must permit user submission of electronic messages via computer at the convenience of the user, without restrictions being imposed. Some EDI networks are based on an intermediate facility that receives and distributes documents and provides interim storage pending collection or automatic forwarding. These intermediate facilities are variously described as Clearing House Systems, Electronic Messaging or Mail

Systems, Message Handling Services, Document Distribution Services, Third-Party Networks, or VANs, etc.

There are essentially three types of EDI systems: one-to-one, one-to-many, and the third-party network. The first two systems are relatively simple, while the third-party network is more complex. In Canada, there are currently several third-party vendors offering EDI services, including General Electric Information Services, Telecom Canada, Ordernet Services, IBM Canada, Unitel and TDSI.

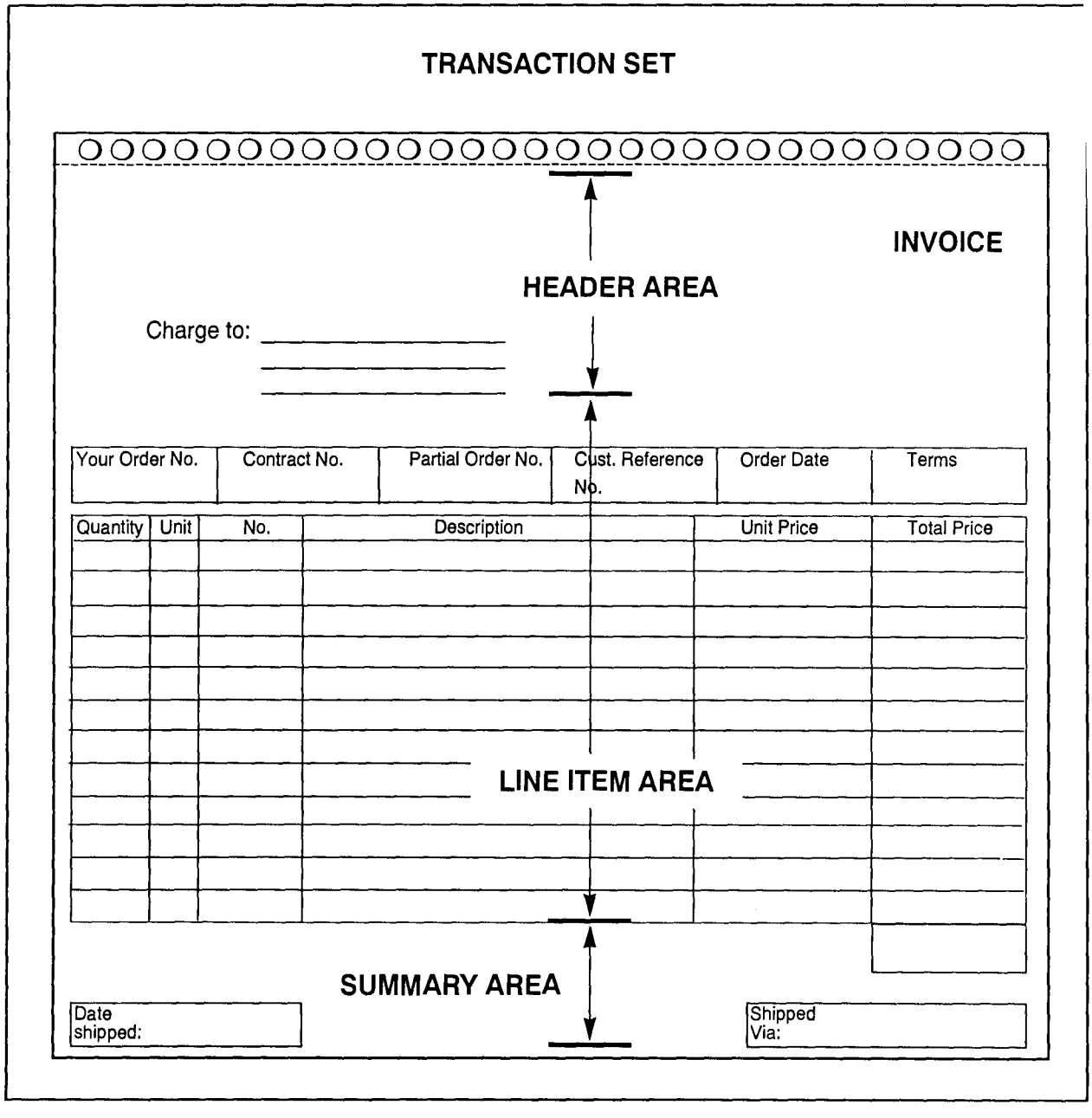
A public-access mailbox serving as the communication network, eliminates the need for a direct computer link between trading partners and allows senders and receivers to exchange messages according to schedules that suit their needs. With this approach, the information is put into the mailbox where it can be stored until it is retrieved by the receiver.

Electronic transmission of a single document (Invoice, Purchase Order, etc.) between one company's computer and another company's computer is accomplished by a transaction set (Figure 1). Within each transaction set or message set, there are three general areas that relate directly to the format of the printed document. These are the header area, which contains preliminary information that pertains to the entire document, such as date, company name and address; the transaction set line area, which contains the actual business transaction and information such as quantity and price; and the transaction set summary area, which contains control information and other data relating to the total transaction.

The network must be able to accommodate inter-industry and international standards for messaging and for document structure. Certain key protocols and standards are important in this respect. These are: X.25, which defines the interface between data terminal equipment and data circuit terminating equipment and facilitates volume data transfers; the X.400 series which is used for messaging standards; and UN/EDIFACT and ANSI ASC X12 which are used for document standards.

Although the status and use of these protocols and standards are uncertain, some are widely supported by industry and most, if not all, will be required. Some of the important standards are described in Appendix One.

FIGURE 1



Source: An Introduction to Electronic Data Interchange, ANSI ASC X12, July 1987

CHAPTER TWO

NATIONAL STANDARDS

The Standards Council of Canada (SCC), is the national coordinating agency for voluntary standardization in Canada (Appendix Two). The Council does not write standards; rather it oversees and brings together a National Standards System, through organizations accredited in standards-writing, certification and testing in Canada.

The National Standards System is based on the cooperation of accredited standards-writing organizations: the Canadian General Standards Board (CGSB), the Canadian Standards Association (CSA), the Underwriters' Laboratories of Canada, the Canadian Gas Association, and the Bureau de normalization du Quebec (Appendix Three). These organizations are recognized by the SCC for their competence in writing standards in certain areas. Once written, these standards may be submitted to the SCC for approval as National Standards of Canada. In approving these standards, the SCC ensures that they are relevant to national requirements, that applicable international standards have been considered, and that they have been prepared according to the consensus principle, i.e., with the substantial agreement of all concerned. Since 1983, about 800 National Standards of Canada have been approved by the SCC, roughly doubling the growth that occurred prior to 1983.

Within standards-making bodies, standards committees prepare one or more standards covering specific product areas. There is usually one committee for each product area. The committees are assembled and administered by one of the five accredited standards-writing organizations. These organizations provide the committees with meeting rooms, secretariat services and, if necessary, make arrangements for other services such as research and testing.

Committee members are familiar with the product area being standardized. For instance, a committee would generally include manufacturers, distributors and users as well as representatives of government bodies, research organizations and national associations.

C H A P T E R T W O

In late 1987, the SCC formed the Strategic Planning Committee on EDI to coordinate EDI standards development in Canada. The mandate of this committee was "to provide strategic direction and guidance for Canadian activities relating to EDI standards at both the national and international level". The Committee helped establish the CGSB/CSA Joint Technical Committee on EDI (JTC/EDI) which oversees development, maintenance and approval of EDI standards in Canada. The JTC/EDI is a voluntary standards-development group that directly feeds into the United Nations Electronic Data Interchange for Administration, Commerce and Transport (UN/EDIFACT) process.

The JTC/EDI was established to meet a need of the business community for coordinated participation in the development of National Standards of Canada for EDI consistent with International Standards. The JTC/EDI consists of volunteers from Canadian organizations representing users, producers and general interest groups, and operates according to the consensus process of the National Standards System.

The JTC/EDI is the Canadian Advisory Committee to ISO/TC154 (matters relating to EDI) under the auspices of the Standards Council of Canada. It provides Canadian technical advice to the United Nations Economic Commission for Europe Working Party 4 (ECE/WP.4) on Facilitation of International Trade Procedures through the Department of External Affairs, Canada.

The following are the scope and objectives of the JTC/EDI:

- Establish National Standards of Canada for EDI and ensure that they are available within Canada.
- Establish Canadian position on the development and maintenance of International Standards (e.g., UN/EDIFACT).
- Adopt UN/EDIFACT standards as National Standards of Canada.
- As the need arises, establish Canadian position on the development and maintenance of EDI standards (e.g., ANSI ASC X12), and endorse these standards for use in Canada through the National Standards System.
- Participate in the development of EDI standards through key international standardization activities such as:

a) United Nations Economic Commission for Europe Working Party 4 on Facilitation of International Trade Procedures;

b) Joint Rapporteur Team (UN/EDIFACT Boards) meetings;

c) North American EDIFACT Board Rapporteur Advisory and Support Team;

d) International Organization for Standardization Technical Committee (ISO/TC154), responsible for Documents and Data Elements in Administration, Commerce and Industry; and

e) ISO/IEC Joint Technical Committee 1 (EDI activities).

- As required, liaise with other Canadian committees involved with EDI such as:

  a) the Canadian Advisory Committee on ISO/TC68 (Banking and Financial Services);

  b) the Canadian Advisory Committee on ISO/TC46 (Documentation);

  c) Federal Government EDI Working Groups; and

  d) the EDI Council of Canada.

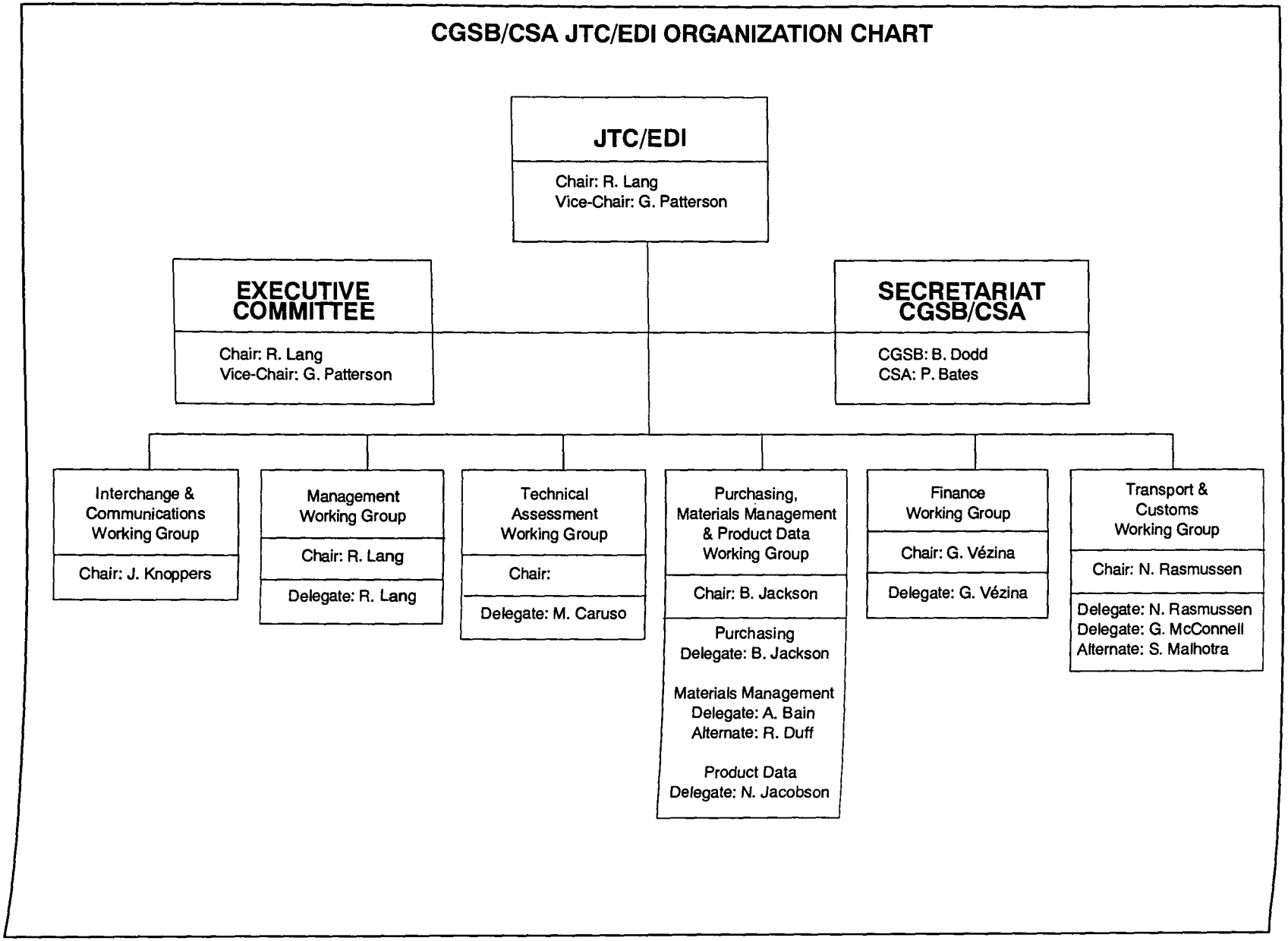
- As required, liaise with other national EDI standards-making bodies such as American National Standards Institute Accredited Standards Committee X12 (ANSI ASC X12):

  a) to ensure that Canada is represented in the development of international standards for EDI (e.g., UN/EDIFACT) and to adopt, publish and distribute those standards as National Standards of Canada;

  b) to endorse for use in Canada, those EDI standards, including X12, TDCC, WINS and UCS, which are in use in Canada and are currently meeting Canadian business requirements. This includes providing a facility for submitting standards maintenance and new transaction requests to ANSI ASC X12 and ensuring that these standards are available in Canada; and

  c) to facilitate the adoption by Canadian industry of international EDI standards, consistent with the needs of international trade.

FIGURE 2



Source: Joint Technical Committee on Electronic Data Interchange, Canada

The Chair and Vice-chair of the JTC/EDI, who must be voting members of JTC/EDI, are appointed by the CSA and CGSB for three-year terms. These appointments are ratified by a consensus of the JTC/EDI. The Chair and Vice-chair are eligible for reappointment.

The JTC/EDI includes several working groups, established as required. The current working groups (Figure 2) are:

a) Management — management of standards development and administration processes;

b) Transport and Customs — development of EDI standards for transport and customs transactions;

c) Purchasing, Materials Management and Product Data — development of EDI standards for purchasing, materials management, and product data transactions;

d) Finance — development of EDI standards for financial business transactions;

e) Technical Assessment — development of Syntax and Data Elements documents and providing advice on technical and general aspects of EDI standards; and

f) Interchange and Communication — liaison with groups addressing interchange and communications aspects of EDI.

The chairs of the working groups, who must be voting members of JTC/EDI, are appointed for two-year terms by the Executive Committee based on recommendations from the working groups. These appointments are ratified by a consensus of the JTC/EDI. The chairs are eligible for reappointment.

The JTC/EDI is administered by the CSA and CGSB through an Executive Committee with the Chair and Vice-chair. The Executive Committee consists of:

a) the JTC/EDI Chair;

b) the JTC/EDI Vice-chair;

c) the CSA and the CGSB;

d) the working group Chairs;

e) a representative from the Standards Council of Canada;

f) a representative from the Department of External Affairs, Canada;

g) the Canadian Rapporteur/Vice-Rapporteur to the North American EDIFACT Board; and

h) other representatives as agreed to by the Executive Committee

Close relations have developed between Canadian and American standards-writing organizations through participation in each other's work. Canadians participate regularly in most ANSI ASC X12 committees that develop EDI standards. There is also a North American EDIFACT Board with ANSI ASC X12 and CGSB/CSA JTC/EDI as members.

On February 20, 1990, the JTC/EDI endorsed for Canadian use the following standards developed and/or maintained by ANSI and TDCC:

1. ANSI-Developed Standards for Inter-Industry use

X12.1 Purchase Order
X12.2 Invoice
X12.3 Data Elements Directory
X12.5 Interchange Control Structure
X12.7 Request for Quotation
X12.8 Response to Request for Quotation
X12.9 Purchase Order Acknowledgement
X12.10 Ship Notice Manifest
X12.12 Receiving Advice
X12.13 Price/Sales/Catalog
X12.14 Planning Schedule
X12.15 Purchase Order Change Request
X12.16 Purchase Order/Change Order Request
X12.20 Functional Acknowledgement
X12.22 Data Segment Directory

2. TDCC-Developed Standards for Transportation Industry

a) Motor Transportation

204	Shipment Information
207	Shipment Information for Export Declaration
210	Freight Details and Invoice
211	Freight Details and Invoice Summary
213	Inquiry
214	Shipment Status Message
216	Repetitive Pattern Maintenance

b) Ocean Transportation

300	Reservation Booking Request
301	Confirmation
304	Shipment Information
309	Manifest
312	Arrival Notice
313	Inquiry
315	Status Details Reply
317	Delivery (Pick-up) Order
319	Cargo Terminal Information
321	Demurrage Guarantee
350	Customs Release Information
352	Carrier General Order Status

c) Rail Transportation

404	Shipment Information
410	Freight Details and Invoice
411	Freight Details and Invoice Summary
417	Waybill Interchange
418	Advance Interchange Consist

3. TDCC-Managed/Coordinated Standards

a) Uniform Communication Standards (UCS) for Grocery Industry

820	Payment Order/Remittance Advice
858	Bill of Lading
875	Purchase Order
876	Purchase Order Change
879	Price Change
880	Invoice
881	Credit/Debit Memo
889	Promotion Announcement
891	Promotion Announcement Change
924	Loss or Damage Claim — Automotive
926	Claim Status Report and Tracer
928	Automotive Inspection Detail

b) Warehouse Information Standards (WINS) for Warehousing Industry

940	Warehouse Shipping Order
941	Warehouse Inventory Status Report
944	Stock Transfer Receipt Advice
945	Warehouse Shipping Advice
980	Functional Group Total
994	Administrative Message
997	Functional Acknowledgement
998	Set Cancellation
999	Acceptance/Rejection Advice

Currently, JTC/EDI is examining other available EDI standards to endorse their use in Canada.

CHAPTER THREE

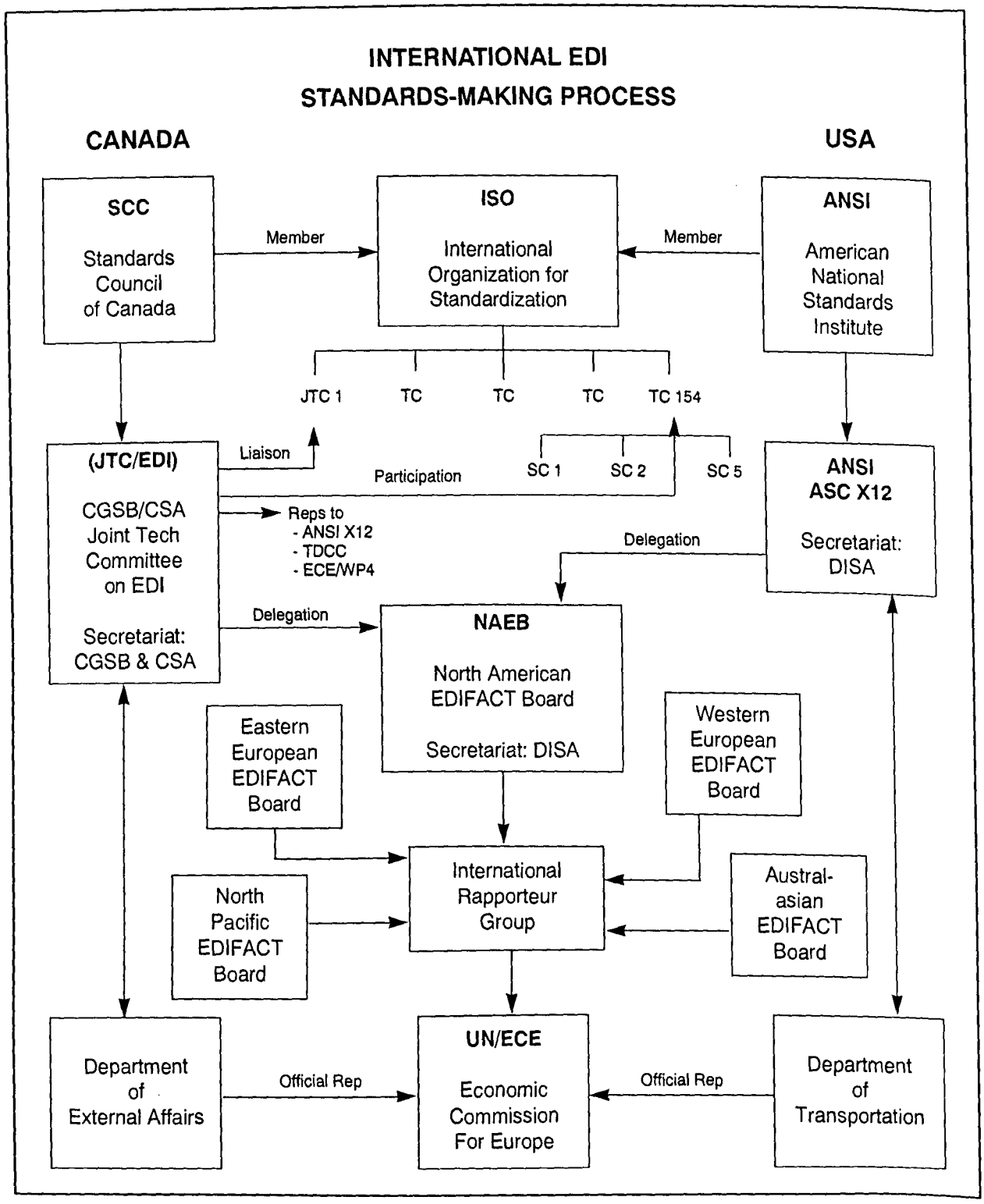
INTERNATIONAL STANDARDS

An International Standard results from an agreement between the member bodies of the International Organization for Standardization (ISO). The important first step toward an International Standard is the draft proposal, a document circulated for study within the relevant subcommittee of a Technical Committee that has been established, with an agreed-upon scope and work program, by a vote of all member bodies. After discussion and approval of working papers, the draft proposal is sent to the Central Secretariat for registration as a Draft International Standard (DIS); the DIS is then circulated to all member bodies for a vote. If 75 percent of the votes are in favour of the DIS, it is sent to ISO Council for acceptance as an International Standard. Normally the fundamental technical issues are resolved at the Technical Committee level.

The Technical Committees may, in turn, establish subcommittees and working groups to cover different aspects of the work. Each Technical Committee or subcommittee has a secretariat assigned to an ISO member body. For each working group, a convener is appointed by the parent committee. At the end of 1987, there were 154 technical committees, 648 subcommittees, 1,606 working groups and 26 ad hoc study groups. The objective of these committees and groups is to develop a unified, comprehensive package of international standards and supporting tools. Further details concerning the ISO and the International Electrotechnical Commission (IEC) are provided in Appendix Four.

The Standards Council of Canada (SCC), as the official Canadian member body of ISO, is the national body that interfaces with the standards bodies of other nations, e.g., ANSI of the U.S.A. In 1988-89, Canada held the secretariats and convenerships of 83 ISO Technical Committees, subcommittees and working groups, and the secretariats of 22 IEC Technical Committees, subcommittees and working groups. Furthermore, Canadians held chairs of 13 ISO committees and 7 IEC committees. A Canadian is the current President of ISO.

FIGURE 3



Source: Joint Technical Committee on Electronic Data Interchange, Canada

In 1987, the first Joint Technical Committee on Information Technology (JTC1) was established by ISO and IEC. This committee is responsible for standards in the field of information technology systems (including microprocessor systems) and equipment. Its responsibilities, however, do not include information technology for specific applications, e.g., banking. JTC1 responsibilities for microprocessor systems include, but are not limited to, microprocessor assemblies and related hardware and software for controlling the flow of signals at the terminals of the microprocessor assemblies.

The SCC has a committee structure that, in general, parallels the ISO's (Figure 3). Thus, there is a subcommittee or advisory committee for every ISO Technical Committee performing work of relevance to Canada. These committees are administered by various Canadian standards-writing organizations assigned by the International Standards Division of the SCC. A similar SCC committee structure parallels IEC committees, as necessary. Committee work is coordinated by two Canadian National Committees: one each for ISO and IEC. The National Committees appoint a chairperson who, in turn with a secretariat, organizes a subcommittee's or advisory committee's work, arranging meetings as necessary.

Most standards require periodic revision. Several factors typically combine to render a standard out of date, e.g., technological evolution, new methods and materials, new quality and safety requirements. To account for these factors, ISO has established the general rule that all ISO standards should be reviewed at intervals not exceeding five years. Occasionally, standards must be revised earlier than this. The CGSB and CSA have a similar rule for standards developed by their committees.

Canada is a member of the ISO Council and General Assembly through representation by the SCC. Canada also contributes to ISO technical work through the provision of and participation on secretariats for several Technical Committees, subcommittees and working groups.

The Canadian National Committee on ISO, acting on behalf of the SCC in work related to ISO, has Canadian Advisory Committees (which correspond to specific ISO

Committees) reporting to it, providing expertise and representation for Canadian interests related to specific Technical Committees.

In addition to these activities, there is the United Nations Electronic Data Interchange for Administration, Commerce and Transport (UN/EDIFACT) international EDI standard, being developed outside of ISO by UN/ECE. While the ISO has adopted the UN/EDIFACT syntax as an ISO standard, it is not certain whether the UN/EDIFACT message will become an ISO standard.

C H A P T E R F O U R

THE UNITED NATIONS SCENE

1. Introduction

The paperwork required for international trade and transportation adds, it is said, 10 percent to the cost of exports and 15 percent to the cost of transportation. Replacing paperwork with EDI could, it is estimated, yield annual savings worldwide of over $20 billion, with world trade approaching $2,000 billion a year.

EDI began as an idea to facilitate inter-business communications and document exchange in North America through the electronic processing of business documents. The transportation, retail, automotive and banking industries are just a few of the EDI pioneers who were instrumental in shaping today's EDI environment. Each of these groups began forming electronic document standards to meet their specific interchange needs. These standards became the accepted norm within each industry.

Just as EDI was founded and shaped in North America, similar activities were occurring elsewhere. In Europe, industry groups, such as chemical, automotive and transportation, were also developing EDI standards. Each of these groups developed its own set of standards to meet its business needs, and established forums to maintain and develop these standards.

As the industry-specific standards became accepted and used, the rest of the business world began to notice the advantages of electronic trading relationships. Soon many industries and businesses were implementing EDI. But, as EDI became more widely accepted and used, it became apparent that there was a need for a set of general EDI standards that could be used in inter-industry relationships. As a result, standards began to evolve from the specific industry set of transaction sets into general EDI document standards. The American National Standards Institute (Appendix Four) formed ANSI ASC X12 to address these industry-wide needs by developing generic standards based on the existing industry-specific standards. This evolution and need for migration of standards did not cease. Now, continental boundaries have been crossed through the

development of the UN/EDIFACT standard which is expected to fulfil the data exchange needs between North America and the rest of the world.

2. United Nations EDIFACT Rapporteurs

The Department of External Affairs heads the Canadian delegation to the Working Party 4 on Facilitation of International Trade Procedures (WP.4) of the Committee on the Development of Trade of the United Nations' Economic Commission for Europe (UN/ECE) (Figure 4). WP.4 encourages national procedures that facilitate trade within the United Nations system. Although originally concerned with paper documentation, WP.4 became a pioneer in promoting EDI for trade.

At its September 1985 meeting, WP.4 asked a Group of European Rapporteurs to consult with industry experts in the United States and Canada to see if a convergence could be achieved between European and American EDI standards.[1] Since such a convergence seemed possible after the initial meetings, the Group of European Rapporteurs was expanded in March 1986 to include the U.S. and Canadian representatives.

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[1] *In 1985, there were two different EDI standards available in the world. One was used in Europe - the United Nations Economic Commission for Europe Guidelines for Trade Data Interchange (UN/ECE/GTDI) and the other in North America - the American National Standards Institute Accredited Standards Committee X12 (ANSI ASC X12), and its subset the Transportation Data Coordinating Committee (TDCC).*

The new group of Rapporteurs recommended that WP.4 designate a standing Group of Rapporteurs, known as UNJEDI[2] (the United Nations Economic Commission for Europe Joint Electronic Data Interchange Coordinating Committee), to develop, register and maintain Universal Standard Electronic Messages. UNJEDI initially covered three global sectors: North America (Canada and the United States only), Western Europe and Eastern Europe. These were represented by three different Rapporteurs (Figures 5, 6 and 7). Recently, Rapporteurs for Australasia (Australia and New Zealand) and the North Pacific (Japan and Hong Kong) were also appointed.

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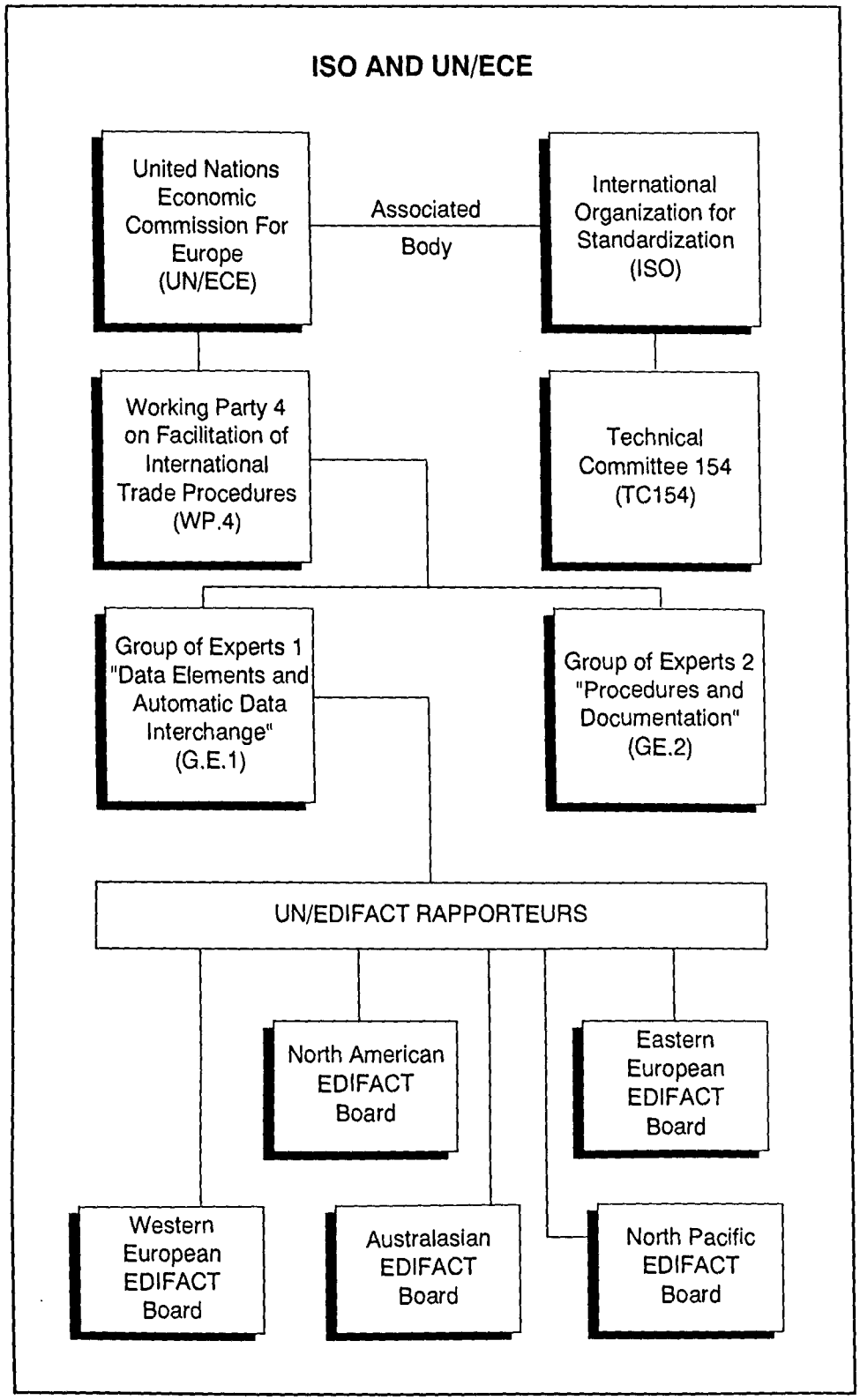
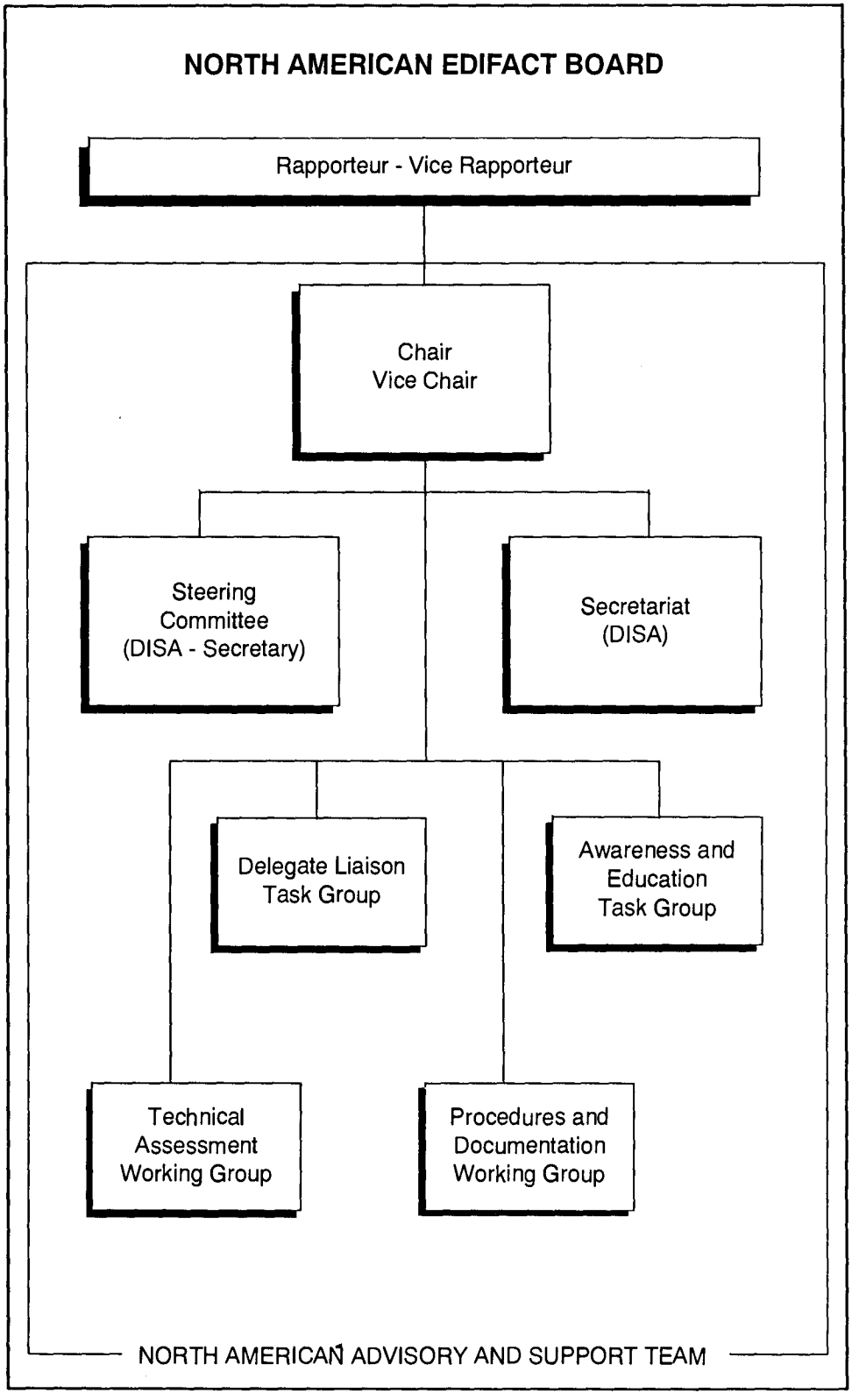
[2] *The UNJEDI no longer exists. Instead three Rapporteurs were named, one each for three different areas. WP.4 is relying on each Rapporteur to provide the coordinated expertise for the development of standard messages and maintenance of syntax and data elements.*

FIGURE 4



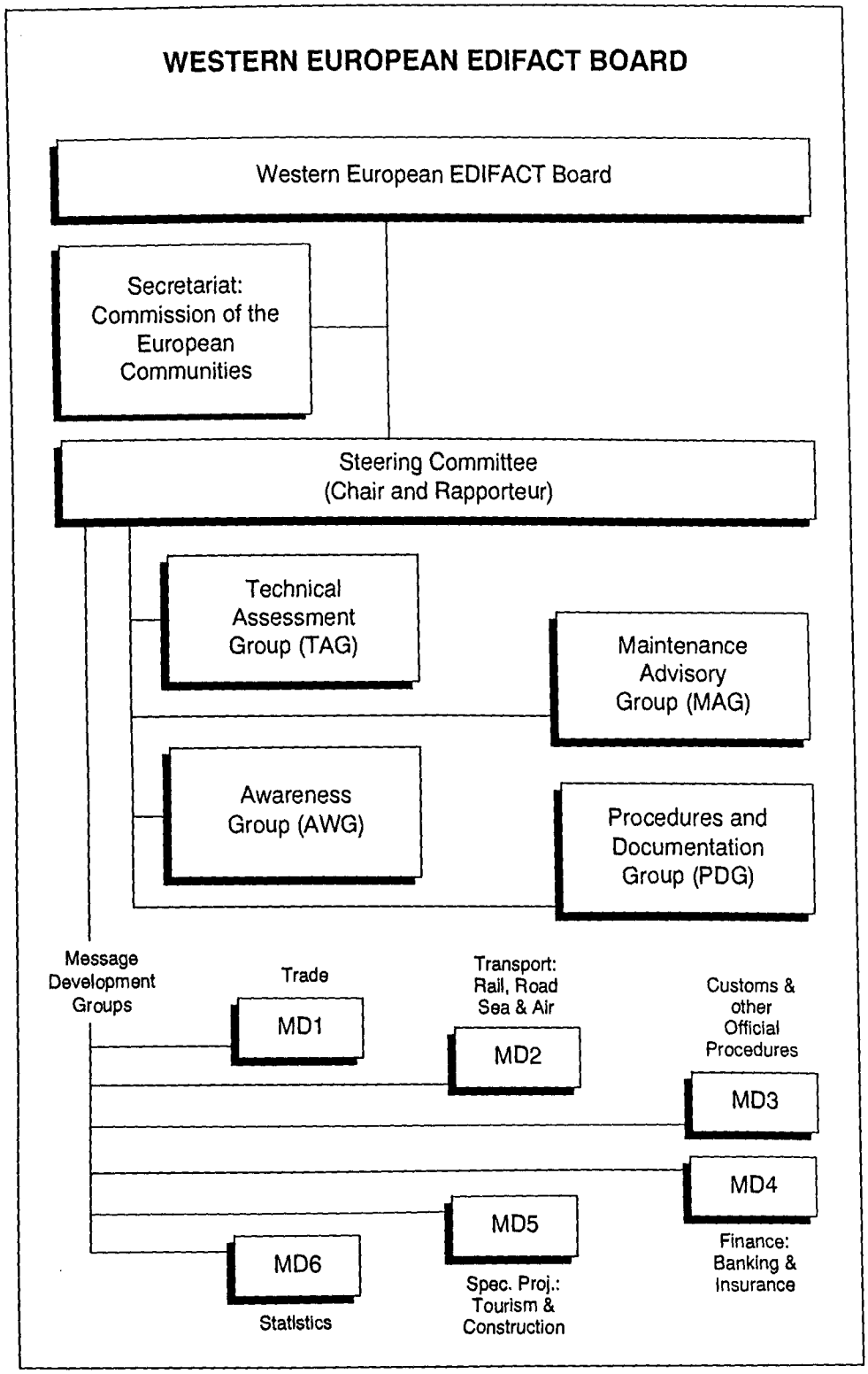
Source: Introduction to UN/EDIFACT with latest News and Events, Interim Update: April 1990

FIGURE 5



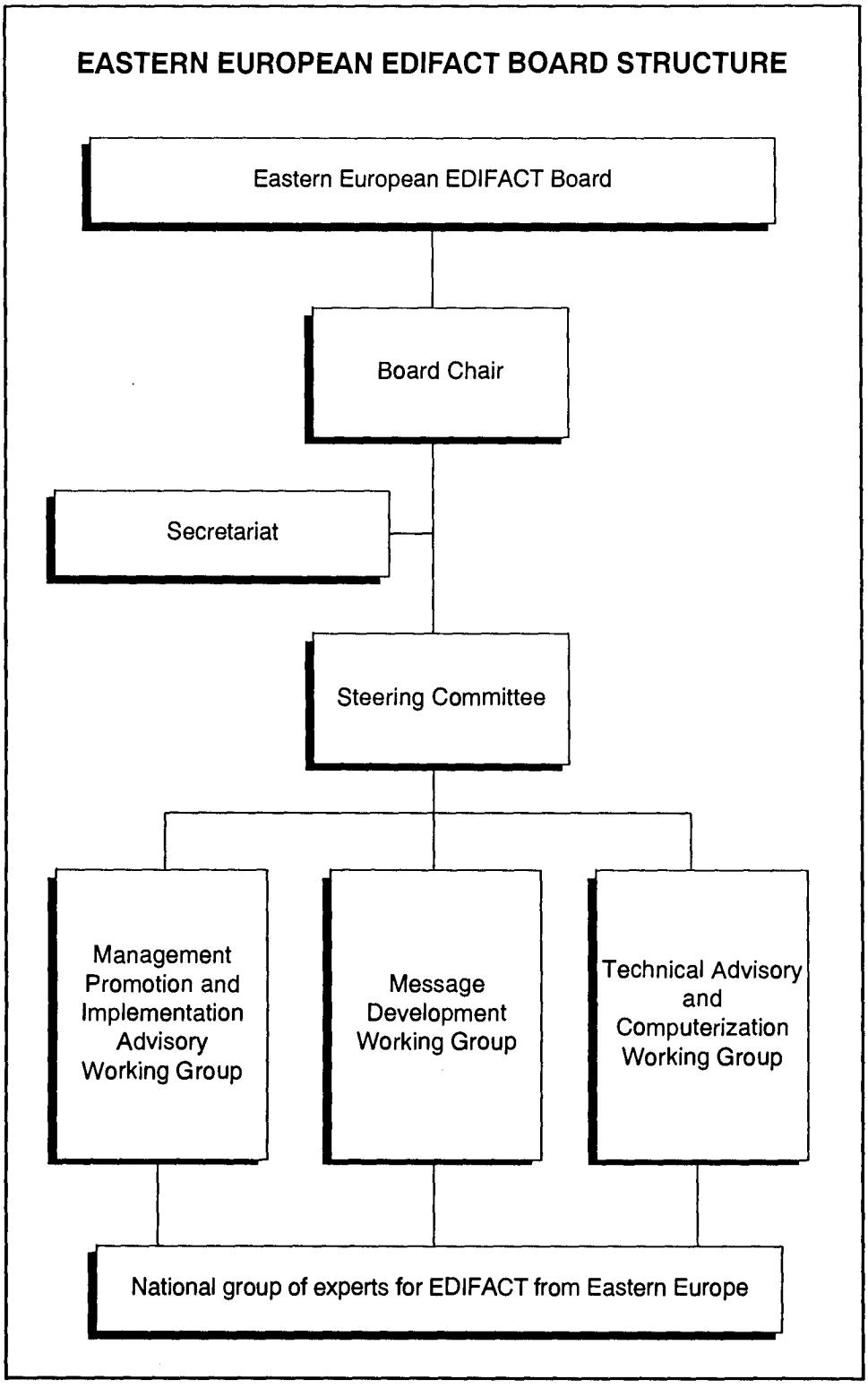
Source: Introduction to UN/EDIFACT with latest News and Events,
Interim Update: April 1990

FIGURE 6



Source: Introduction to UN/EDIFACT with latest News & Events, Interim Update: April 1990

FIGURE 7



Source: Introduction to UN/EDIFACT with latest News and Events,
Interim Update: September 1990

3. Components of EDI Standards

Electronic Data Interchange depends on three basic components: a *syntax* (equivalent to grammar); a *data elements directory* (equivalent to vocabulary); and a *common message*, which combines syntax and data elements into a structured business transaction set (message) similar in concept to a paper document. The development of different standards for syntax and data elements in North America and Europe has seriously constrained the international potential of EDI.

For EDI to succeed in the world, the UNJEDI recommended:

a) an agreed upon terminology;

b) a universal syntax [3];

c) a technique for improving the versatility of the UN Trade Data Elements Directory; and

d) the development, registration and maintenance of an integrated series of standard electronic messages.

4. Development of UN/EDIFACT Standard

Today, the world focus is on establishing a series of global EDI standards — UN/EDIFACT. The idea is to support the movement from older European and North

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[3] *Syntax is the order in which data is arranged in a computer system's software. For one computer system to receive information from another computer system, both must use software with an identical syntax.*

American standards to a common UN/EDIFACT standard capable of meeting the document and coding structures of specific groups of industries internationally. In the future, UN/EDIFACT is expected to be the international series of standards for EDI. This has been accepted by the United Nations Economic Commission for Europe, the International Organization for Standardization and the European Standardization Committee. There is no standard competing with UN/EDIFACT at present, and there appears to be universal agreement that this is the best direction for the world to take on EDI standards.

5. North American EDIFACT Board

The North American EDIFACT Board (NAEB) is the Rapporteur Advisory and Support Team (RT) for the North American Rapporteur to the United Nations Working Party 4, Group of Experts 1 (WP.4/GE1). The RT is composed of members who represent United States (ANSI ASC X12) and Canadian (JTC/EDI) EDI standards-making bodies. The NAEB promotes the development and use of the UN/EDIFACT standard in North America; it monitors and regulates the work of the support teams, and ensures that UN/EDIFACT developments are resourced and controlled.

On behalf of the ANSI ASC X12 and the JTC/EDI, the NAEB will:

a) coordinate EDI message development, maintenance and documentation;

b) provide technical advice and promote the UN/EDIFACT standard in North America;

c) ensure coordination and active cooperation with other Rapporteurs and their advisory and support teams following the agreed procedures and timetables, so that integrated development and implementation of the EDIFACT standard can be achieved; and

d) support and encourage North American International EDI User's Group projects, pilots and usage of emerging messages.

C H A P T E R F O U R

On behalf of the NAEB, the U.S. Data Interchange Standards Association (DISA) will:

a) ensure secretariat support for coordination of the working groups and liaison with other Rapporteur groups;

b) provide administration of the technical assessment, maintenance and change request procedures, including developing a database to maintain various messages, their segments, data elements, code sets and values; and

c) ensure NAEB activities are thoroughly understood by all North American traders and trade associations by providing technical and promotional support and media coverage.

Actual UN/EDIFACT message development, maintenance and technical assessment occur within the national standards-making bodies of North America, i.e., JTC/EDI and ANSI ASC X12. The NAEB, however, provides a forum for coordinating and consolidating these efforts from a North American viewpoint, and provides liaison opportunities for the national standards-making bodies.

Although delegates designated by ANSI ASC X12 and JTC/EDI offer official representation from the standards bodies, the RT is not limited to these members. Other members of the RT can come from private companies and organizations, user groups, and industry groups that have an interest in the development of international EDI standards. The RT procedures are integrated into ANSI ASC X12 and Standards Council of Canada internal procedures relative to UN/EDIFACT standards development. The integration of these procedures provides a single source of North American EDI standards development for national, regional and international standards.

The North American EDIFACT Board with Rapporteur and Vice Rapporteur has been established, with the Rapporteur and Vice Rapporteur elected by delegate members for two-year terms. The Rapporteur and Vice Rapporteur positions will alternate between the U.S.A. and Canada. As Canada currently has limited experience in this field, it has filled the position of the Vice Rapporteur. People chosen for these positions must be active Board

members for one year, have attended one prior WP.4 and Joint Rapporteur meeting, and be members of ANSI ASC X12 or JTC/EDI. They must also have a written commitment from their employers for 50 percent of their time to UN/EDIFACT work, have a generous travel budget, and have adequate administrative support from their employers.

The Message Development groups meet frequently to develop and maintain various UN/EDIFACT messages. In September 1988, the Invoice was completed and registered by the UN/ECE as a UNSM.[4] Recently the Purchase Order was registered as a UNSM. In September 1989, a draft International Forwarding and Transport Message Framework (IFTMFR) developed by the Joint Working Group on Transportation Messages, was submitted to the UN for Trial use. Manifest and Status messages are also being developed by this group. At the end of April 1990, there were 40 UN/EDIFACT messages in various stages of development (Appendix Six).

6. EDI Standards Used in North American Transportation

Within North America, particularly in the U.S., there are two standards in wide use in the transportation field: ANSI ASC X12, which is the generic EDI standard, and Transportation Data Coordinating Committee (TDCC) which is similar to ANSI ASC X12 but allows for industry-specific applications. For example, ANSI ASC X12 does not provide for the ocean bill of lading but TDCC does.

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[4] *A UNSM is a UN Standard Message for an EDIFACT series of EDI messages to be used between two trading partners.*

7. ANSI ASC X12 Migration to UN/EDIFACT

ANSI ASC X12 migration to UN/EDIFACT has to be gradual and well thought out. A long-term strategy of X12 migration to UN/EDIFACT foresees X12 being included as a subset. One of the key differences between UN/EDIFACT and X12 standards is that UN/EDIFACT features composite data elements, but a segment can be designed with or without composite data elements. This means that eventually a set of software that runs UN/EDIFACT will also be able to run X12. ANSI ASC X12 is expected to be fully aligned with UN/EDIFACT within four years.

8. U.S. and Canadian Government Support for UN/EDIFACT

Currently, a growing number of companies around the world recognize the use of UN/EDIFACT as an international EDI language, as it is proving to be increasingly useful to the business community throughout the world.

The U.S. and Canadian governments acknowledge that UN/EDIFACT must be supported and pursued. The U.S. Postal Service, for example, is using the UN-backed standards for overseas communications, and the U.S. Office of Management and Budget has put increasing pressure on government agencies to move toward international standards. Recently, U.S. Customs, with the support of others, developed two UN/EDIFACT messages, CUSDEC and CUSRES, which have been endorsed by the Customs Co-operation Council. These messages have now been referred to WP.4 for Trial use as UNSMs.

In Canada, the federal government supports the use of EDIFACT messages in the public and private sectors. Recently, Canada Customs followed the U.S. Customs lead in adopting UN/EDIFACT messages.

CHAPTER FIVE

CONCLUSIONS

Electronic Data Interchange greatly simplifies the communication of data between business partners. It eliminates the potential for human error in the transcription of a written document by taking the written document and entering it directly into a computer. It saves time, improves systems efficiency and accelerates communications.

But there is no way to properly conduct business with EDI without creating appropriate EDI standards. In Canada, the Canadian General Standards Board and Canadian Standards Association Joint Technical Committee on Electronic Data Interchange (JTC/EDI) is working with volunteer groups to develop Canada's national standards on electronic data interchange. This Committee, in liaison with the ANSI ASC X12, forms the North American EDIFACT Board (NAEB) which feeds directly into the United Nations Joint Rapporteurs' EDIFACT standards-making process.

Canadian standards-development functions generally fall into two main approaches:

a) The JTC/EDI approves standards developed by others and already in use in Canada for Canadian acceptance and use. This is how the U.S. X12, TDCC, UCS and WINS standards were assimilated into the Canadian standard fabric.

b) The JTC/EDI participates in EDI standards development in Canada, at NAEB, at Joint Rapporteur's meetings, etc. These meetings eventually lead to approval and adoption of UN/EDIFACT standard as Canada's national EDI standard.

Canada is also active in the development of EDI standards through various committees of the International Organization for Standardization, currently headed by a Canadian.

To conclude, Canada plays a significant role in the domestic and international development and maintenance of Electronic Data Interchange

standards through its participation in JTC/EDI, NAEB, ISO and through its involvement with the U.N.-sponsored Working Party 4 at the Economic Commission for Europe in Geneva.

APPENDIX ONE

STANDARDS AND PROTOCOLS

1. Open Systems Interconnection

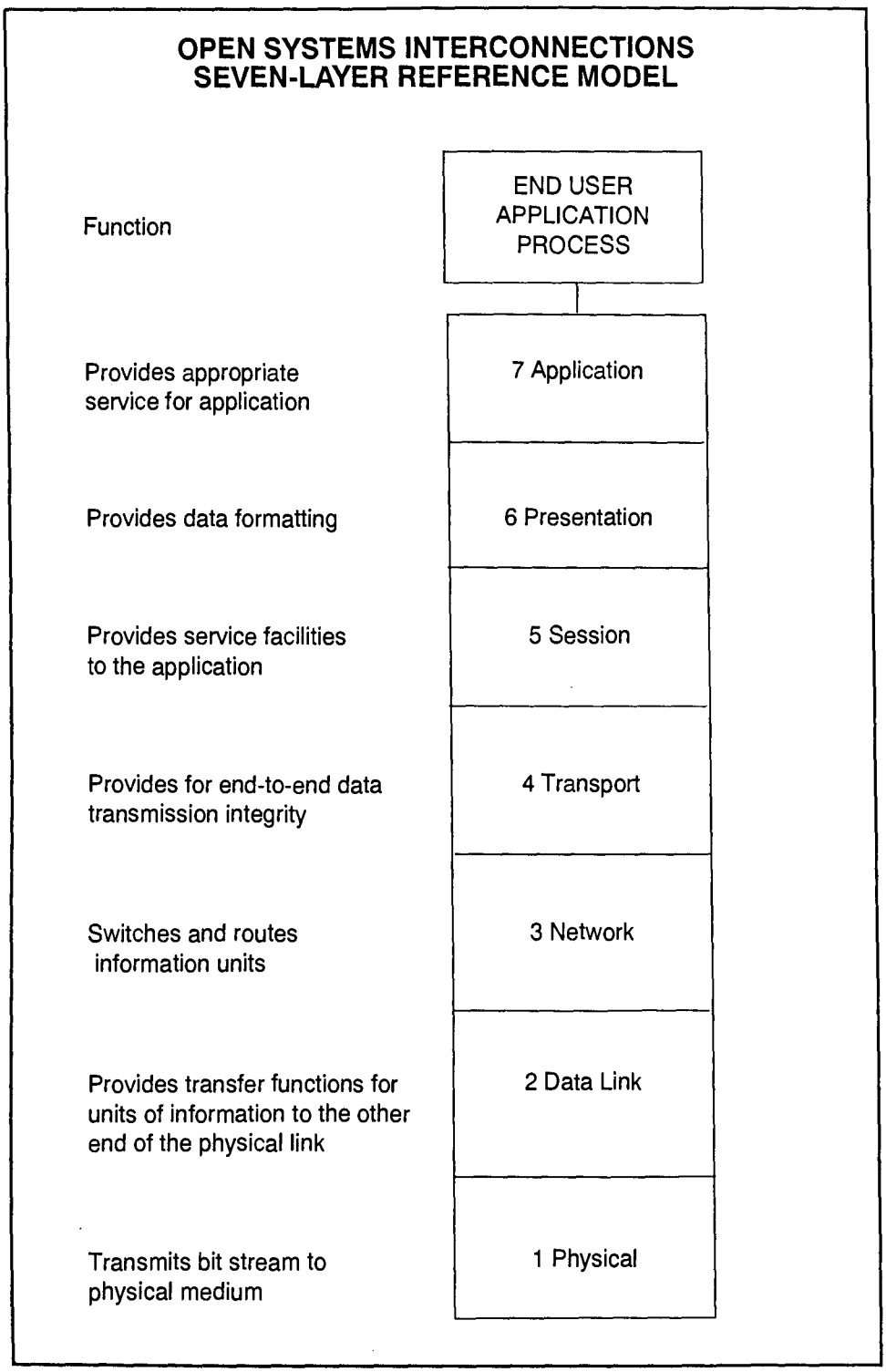
For several years, the International Organization for Standardization (ISO) has been developing a general set of rules to define how one computer system should talk to another. These rules are called Open Systems Interconnection (OSI) and they contain seven layers (Figure 8), each concerned with a specific aspect of the interconnection process. These layers range from specifying physical details of the interconnection (the lowest layer) to dealing with an application or task running on the interconnected systems (the highest layer).

In general, OSI refers to standards for the exchange of information among terminal devices, computers, people, networks, processes, etc., that are open to one another. The standards for OSI are now being developed nationally by committees of the Canadian Standards Association (CSA) through the National Standards System coordinated by the Standards Council of Canada, and internationally through ISO and CCITT (International Telegraph and Telephone Consultative Committee of the United Nations' International Telecommunications Union).

EDI and OSI can be compared to a railway system, where the railway tracks, signal systems and stations are the infrastructure or OSI, and the goods being carried on the train are the application or EDI.

A P P E N D I X O N E

FIGURE 8



Source: Department of Communications, Ottawa, Canada

2. X.25

The X.25 standard is a set of rules that defines the interface between data terminal equipment and data circuit terminating equipment. These rules cover physical connectivity (layer 1), link protocol (layer 2) and packet format (layer 3) in the OSI model. In 1976, CCITT approved X.25 as a result of an agreement between telephone companies in Canada, the U.S.A., France, the U.K., Japan and West Germany for its use as an international standard for an interface to public data networks.

X.25 is a data communication protocol that ensures data integrity while data is being transmitted to, from and within the network. This standard defines the interconnection of packet-switching networks and their associated computers or terminals. These types of networks make efficient use of the telecommunications networks by taking the data generated by a computer or a remote terminal and chopping it up into small identified packets and then looking for the most efficient way of sending this information to its destination. For example, these networks can make use of off-time surplus capacity. Usually, the packets take many different routes before arriving for assembly at the end point.

3. X.400

A few years ago, people who needed a worldwide communications capability made do with adequate, but antiquated, tools such as the telex. In today's high-tech environment of global competitiveness, however, the telex machine is too slow and unreliable, and it is useless for binary file transfers. In 1980, CCITT initiated formal work on a universal interconnection standard and in 1984, the first X.400 standard was published, for use in electronic message communications between separate computer systems.

X.400 defines the special rules for the transmission of a message which may include text, pictures and graphics, and allows information to be transmitted between computers, without specific manufacturer restrictions. Hardware incompatibilities are eliminated and

national boundaries disappear. IBM has now developed message-handling software conforming to the X.400 standard that allows direct connection between IBM's Distributed Office Support System (DISOSS) and any other manufacturer with X.400 software. X.400 and EDI intersect at the point at which an EDI document needs to be transmitted. X.400 has a message-handling focus and is designed to store and forward individual messages.

4. X.500

The establishment of any global interconnected network, requires a directory. The standard for establishing such a directory is X.500, which enables users to browse through user listings as though they were looking through a telephone book.

5. ANSI ASC X12

The ANSI ASC X12 standards consist of message transaction sets, transmission control standards and data element directories. These are generic standards for inter-industry business transactions and were developed on a sector-by-sector basis from industry-specific standards such as Transportation Data Coordinating Committee (TDCC). X12 standards now exist for the transportation industry, (ocean, air, trucking, etc.), the chemical industry (CID), the electrical industry (EDX), the warehousing industry (WINS), and the retail and grocery industry (UCS).

6. UN/TDED and UN/TDID

For several years, the Working Party 4 on Facilitation of International Trade Procedures of the UN Economic Commission for Europe (UN/ECE WP.4), in which Canada participates, has been working to simplify and standardize trade documentation in order to facilitate trade. To do this, WP.4 formed two groups, one working on Data Requirements and Documentation and the other on Automated Data Processing and

Coding, and their efforts resulted in an agreement on Guidelines for Trade Data Interchange (UN/GTDI) and a Trade Data Elements Dictionary (UN/TDED).

UN/TDED contains data element descriptions, classifications for types, lengths, etc., which are also being used by the International Maritime Organization (IMO) for the development of standardized documents for marine business transactions. UN/TDED has been adopted as International Standard ISO 7372. GTDI was published as part of a UN Trade Data Information Directory (UN/TDID). UN/TDED focuses on the representation of trade data elements, while UN/TDID sets the standard content of messages as documents.

APPENDIX TWO

THE STANDARDS COUNCIL OF CANADA

1. Introduction

The Standards Council of Canada (SCC) was established in 1970 by an Act of Parliament "to foster and promote voluntary standardization in Canada" as a means of advancing the national economy, benefitting the health, safety and welfare of the public, assisting and protecting consumers, facilitating domestic and international trade and furthering international cooperation in the field of standards". It is a Crown corporation and, in the main, is financed by Parliamentary appropriation. The SCC is independent in its policies and operations, reporting to Parliament through the Minister of Consumer and Corporate Affairs.

2. Organization

The SCC can have up to 57 members: 41 representing a national cross-section of private interests, 6 representing the Government of Canada, and 10 representing the provinces. The Department of Communications is represented on the Council by John Gilbert, who has been appointed for a three-year term that runs until June 27, 1991. The Council meets in plenary sessions twice yearly.

A nine-member Executive Committee, appointed by and from the SCC members, assumes responsibility for SCC affairs between Council meetings. It has five accredited standards-writing and certification organizations, 46 accredited testing organizations, three national committees, 200 technical committees, and 9,000 volunteers.

3. Operations

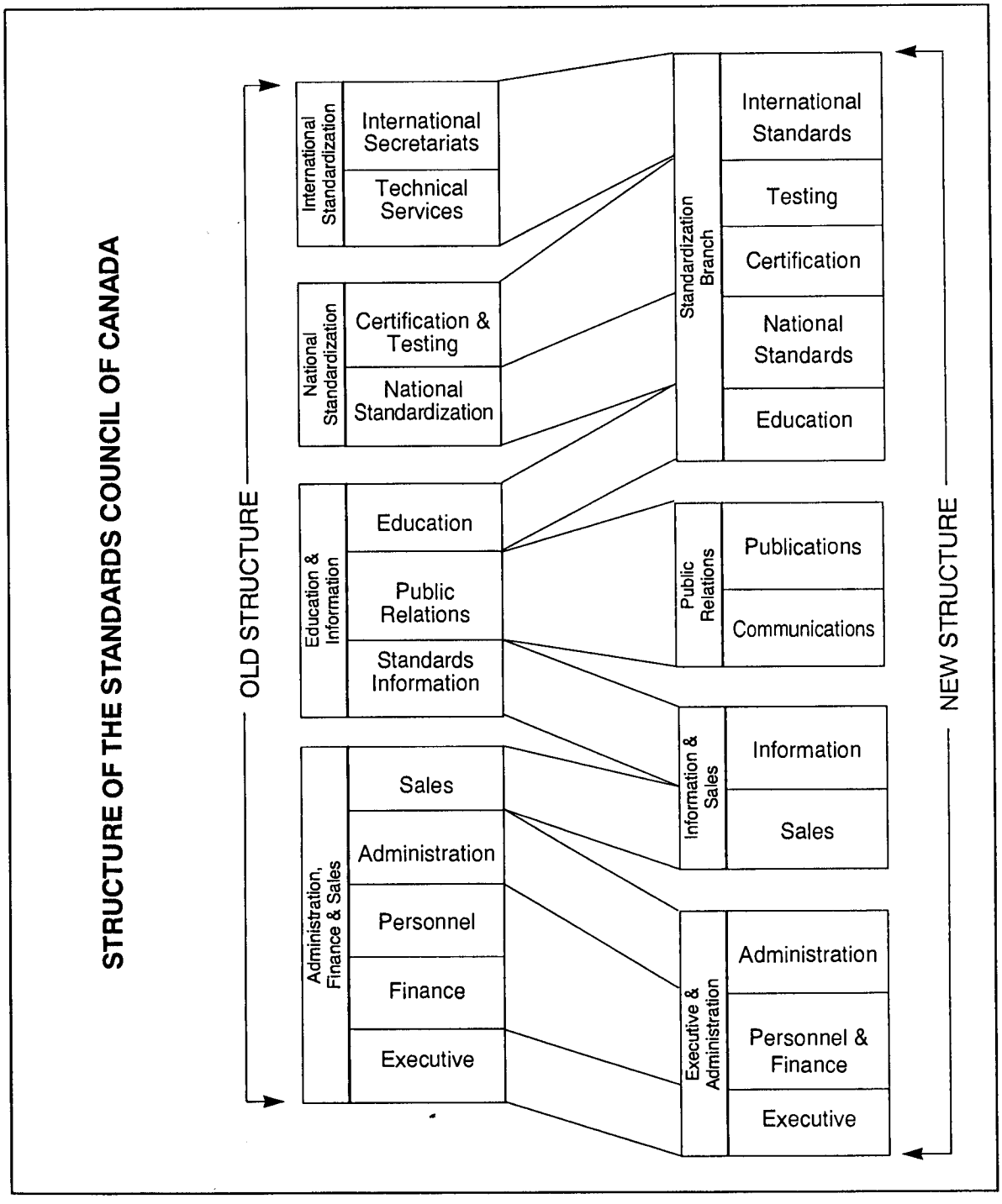
The SCC directs and provides administrative and financial support to Canada's participation in the International Organization for Standardization and the International Electrotechnical Commission.

A P P E N D I X T W O

While the sale of Canadian standards is the prerogative of the individual standards-writing organizations, the SCC is the sales agent in Canada for the publications issued by international organizations.

In 1986, the Executive Committee decided to consolidate the Standards Committee operations in Ottawa in order to integrate its national and international programs (Figure 9).

FIGURE 9



Source: 1987-1988 Annual Report, Standards Council of Canada

APPENDIX THREE

STANDARDS-WRITING ORGANIZATIONS IN CANADA

1. Introduction

There are five standards-writing organizations in Canada that are accredited by the Standards Council of Canada (SCC). These are:

a) the Canadian Standards Association;

b) the Canadian General Standards Board;

c) the Underwriters' Laboratories of Canada;

d) the Bureau de normalisation du Quebec; and

e) the Canadian Gas Association.

The work and organization of the first two associations, which are jointly associated with the EDI standards-making process, are described below.

2. The Canadian Standards Association

The Canadian Standards Association (CSA), chartered in 1919, was the first organization formed exclusively to develop industrial standards in Canada. The CSA is an independent, private-sector organization and Canada's largest standards-writing body. It provides an open forum for the federal, provincial and municipal governments, the public and business to voluntarily reach agreement through consensus on the criteria that best meet community interests in standards for materials, products, structures, communications and services in a wide variety of fields.

The CSA membership consists of doctors, engineers, lawyers, scientists, etc., and it is governed by a board of 25 directors, 16 of whom are elected by the voting membership and nine who are appointed by the elected directors.

There are about 1,000 standards committees with approximately 7,500 voluntary members who contribute time and knowledge to standards-writing committees. There are also 1,800 corporate sustaining members who contribute financially to the development and maintenance of Canadian National Standards through annual membership dues.

A P P E N D I X T H R E E

CSA standards stipulate the technical requirements for the safety and performance of products, processes and services. The CSA has published about 1,400 standards in nine major fields, covering materials, testing procedures and construction. Since the CSA is not part of government, it is up to government to cover CSA standards in its legislation. For example, each province and territory in Canada has passed legislation requiring that electrical household appliances meet CSA standards.

The CSA serves as one of the two secretariats for the Joint Technical Committee on Electronic Data Interchange (JTC/EDI) meetings on EDI.

3. The Canadian General Standards Board

The Canadian General Standards Board (CGSB) has evolved from an organization that develops purchasing specifications for federal government use into a national organization that serves the three levels of government, industry, labour and consumers.

In 1934, the National Research Council created the Canadian Government Purchasing Standards Committee. This Committee, composed of representatives from several federal government departments, was established to identify common needs and to develop common specifications for use in purchasing goods and services. In 1948, this committee was renamed the Canadian Government Specifications Board.

Prior to 1978, the Specifications Board's management consisted exclusively of federal government department or agency heads. In 1978, the Minister of Supply and Services enlarged the membership of the Board to include appointees nominated by provinces, municipalities, and industry, consumer and labour groups, as well as members-at-large. In 1980, to better reflect the broader scope of the organization, the Minister changed the name of the Board to the Canadian General Standards Board.

Today, the role of the CGSB is to develop standards and, where deemed necessary, to certify these for the benefit of the public and private sectors. The CGSB standardization services are used for a variety of purposes, including purchasing, consumer protection, health and safety, energy conservation, and international trade.

CGSB standards-development work is carried out by 350 standards committees consisting of representatives from the three levels of government, industry, consumer and labour interests, and technical, research and educational institutions. The committees approve standards by a consensus[5] process in which voting takes place by letter-ballot. About 1,500 standards and specifications are currently available for general use, including approximately 240 National Standards of Canada. All CGSB standards and services are offered in both official languages.

The CGSB serves as the secretariat for the JTC/EDI jointly with the CSA. Also, the CGSB, on behalf of the SCC, participates in the activities of several ISO committees.

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[5] *Consensus requires that the opinions of all interested parties (users, producers, etc.) be considered and that the final decision reflect the will of a substantial majority of those entitled to vote. A consensus is therefore less than unanimity, but more than a simple majority. Unimportant or non-persuasive objections are not allowed to block indefinitely the resolution of a proposal or promulgation of a standard. On the other hand, one or two important negative votes on a letter-ballot usually require the document to be reconsidered by the whole committee. Generally, in CGSB standards-development practice, a consensus is achieved when substantial agreement has been reached by concerned interests, according to the judgement of a duly appointed review authority. This review authority is the Standing Committee on Standards to the Minister's Advisory Council on CGSB.*

APPENDIX FOUR

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

1. History

International standardization began in the electrotechnical field with the establishment of the International Electrotechnical Commission (IEC) in 1906. Pioneering work in other fields was carried out by the International Federation of the National Standardizing Associations (ISA), established in 1926. The emphasis within the ISA was on mechanical engineering.

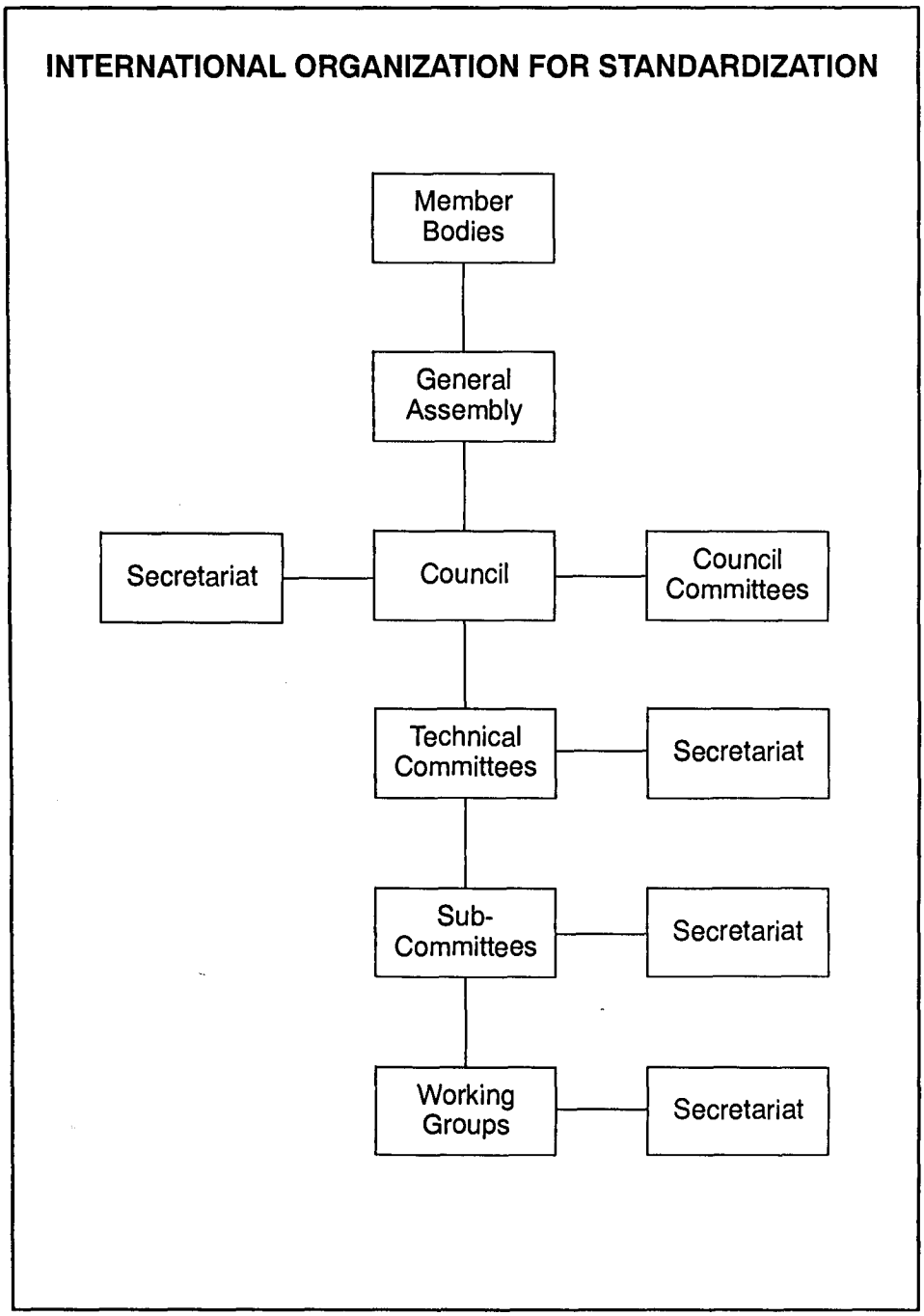
With the threat of the Second World War, several countries withdrew their membership and in 1942 the ISA officially ceased work. In 1944, the United Nations Standards Coordinating Committee, consisting of the national organizations of 18 allied countries, succeeded the ISA but this was essentially a temporary war-time organization.

Following a meeting in London in 1946, delegates from 25 countries decided to create a new International Organization for Standardization (ISO) "whose object shall be to facilitate the international co-ordination and unification of industrial standards". The ISO officially began to function on February 23, 1947. ISO's work covers standards in all fields except electrical and electronic engineering standards, which are the responsibility of the International Electrotechnical Commission (IEC).

2. Functions

The ISO serves as a specialized international agency for standardization. In 1990 it consisted of the national standards bodies of 91 countries. The work of the ISO is conducted by the General Assembly (meets once every three years), the ISO Council, and Technical Committees, with assistance from the Central Secretariat and Council Committees (Figure 10). The operations of the ISO are administered by the Council, consisting of the President, the Vice-President, the Treasurer and 18 of the elected member bodies. The ISO's objective is to promote the development of standards in the world, in order to facilitate the international

FIGURE 10



Source: ISO Memento 1989

exchange of goods and services, and to develop co-operation in intellectual, scientific, technological and economic activity. The results of ISO technical work are published as International Standards.

The ISO brings together the interests of producers, users (including consumers), governments and the scientific community, in the preparation of international standards. The work is carried out through some 2,500 technical bodies. Approximately 20,000 experts from all parts of the world participate each year in ISO technical work, which to date has resulted in the publication of about 7,438 International Standards.

3. Members

The ISO has two types of membership:

a) Member (Full)

The national body most representative of standards activity in a country is the member body of ISO. The Standards Council of Canada is the Canadian member body of the ISO.

Member bodies are entitled to participate and exercise full voting rights on ISO technical committees, are eligible for Council membership and have seats in the General Assembly. About 70 percent of the ISO member bodies are government institutions or organizations incorporated by public law. The remainder have close links with the public administration in their countries. At the end of January 1990 there were 73 member bodies.

b) Correspondent Member

A correspondent member is normally an organization in a developing country that does not yet have its own national standards body. Correspondent members do not take an active part in the technical work, but are entitled to be kept fully informed about the work of interest to them. They may attend the General Assembly as observers. Nearly all the present correspondent members are government institutions. As of January 1990 there were 14 correspondent members.

4. Technical Committees

The technical work of the ISO is carried out through Technical Committees (TC). The decision to establish a Technical Committee is made by the ISO Council and its scope is approved by the ISO Technical Board on behalf of Council. Within this scope, a Technical Committee determines its own work program.

Work in the field of information technology is carried out through a joint ISO/IEC Technical Committee on information technology (JTC1) established in 1987.

5. Liaison With International Organizations

Some 440 international organizations have liaison status with ISO, including all specialized UN agencies working in similar fields. The ISO has consultative status with the UN Economic and Social Council and equivalent status with nearly all other bodies and specialized agencies in the UN system.

International organizations may be granted liaison status with Technical Committees and their subcommittees. There are two categories of liaison status: A (effective contribution to the work) and B (wish to be kept informed only). Liaison A gives the right to submit papers, attend meetings and participate in discussions.

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

The ISO and IEC complement each other and together form a system for international standardization as a whole. The two groups have agreed that questions related to international standardization in the electrical and electronic engineering fields are the concern of IEC. Other fields are the responsibility of ISO. In matters concerning international standardization not related to a particular technology, ISO undertakes, in consultation with IEC, to safeguard any electrotechnical interests that may be involved. To ensure the necessary technical coordination, ISO and IEC have established a joint ISO/IEC Technical Programming Committee.

APPENDIX FIVE

AMERICAN NATIONAL STANDARDS INSTITUTE

1. Introduction

The American National Standards Institute (ANSI) is a privately funded, non-profit organization. It was established in 1918 by five U.S. professional/technical societies and three federal government agencies to coordinate the development of voluntary standards in the United States and to approve national standards. ANSI consists of about 900 companies, large and small, and some 200 trade, technical, professional, labour, and consumer organizations. Its income is mainly derived from membership and the sale of American National Standards.

2. Functions

ANSI serves the standardization needs of the U.S.A. in three ways:

a) Voluntary Development of National Standards

In cooperation with its federated membership and through its councils, boards, and committees, ANSI coordinates the efforts of hundreds of organizations in the United States that are developing standards. It helps identify what standards are required, arranges for a competent organization to develop them and establishes a timetable for their completion. If a competent organization does not exist in a particular area, ANSI organizes the required competence. It also provides procedures and management services to help standards-writing organizations make the best use of their capabilities.

b) National Consensus

ANSI provides and administers the only recognized system in the United States for establishing standards, no matter what their origin, as American National Standards. Its approval procedures ensure that all concerned national interests have an opportunity to participate in a standard's development or to comment on its provisions. It further ensures that the standard has achieved general recognition and acceptance for use. ANSI's requirements for due process, including the right to appeal at several levels of review, guarantee a high level of confidence and credibility in American National Standards.

c) International Representation

As the official U.S. member body, ANSI manages, coordinates, finances, and administratively supports effective participation in the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). It helps govern ISO through membership on its Council, Executive Committee and Planning Committee, and participates in the work of some 1,900 ISO Technical Committees and their subgroups. The U.S. National Committee of IEC, a fully integrated part of ANSI, is a member of IEC's governing bodies and all of the Commission's 600 Technical Committees and subcommittees.

3. The U.S. Government And ANSI

The U.S. government and ANSI have close ties. Representatives of government serve on ANSI councils, boards and committees, and an increasing number of ANSI-approved national standards are being adopted or referenced by government agencies. Local and state governments also adopt or reference ANSI standards for buildings, electrical installations, elevators, boilers, pressure vessels, etc.

4. ANSI And ISO

Almost a quarter of ANSI's annual budget of some $8 million is spent on administration of international standards activities and on dues to ISO and IEC. When ANSI agrees to provide the secretariat of a Technical Committee or a subgroup, it commits itself to international standardization in that field and the maintenance of strict neutrality; not permitting itself to be influenced by national considerations. A secretariat's duties include directing and advancing the standards-development work, considering and using technical contributions of committee members, national standards-developing organizations from other countries, and international organizations that have liaison status, and arranging and conducting international meetings.

ANSI holds the secretariat of about 280 ISO Technical Committees and sub-groups. Some of the key committees are Information Processing Systems, Banking, and Freight Containers. ANSI's staff administers many committee and subgroup secretariats in-house; responsibility for their effective operation remains with ANSI.

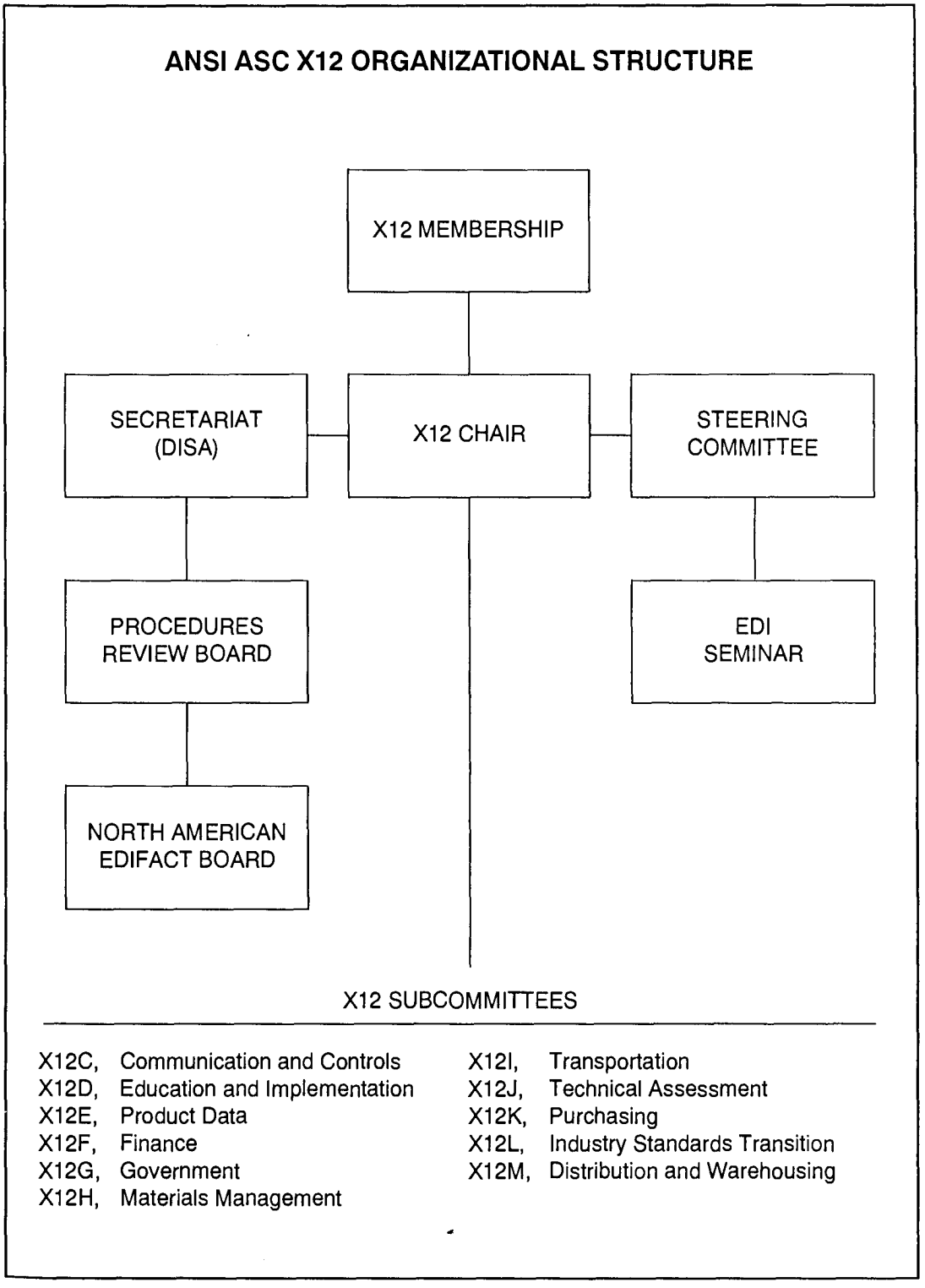
5. ANSI And Regional Groups

ANSI liaises with many of the international groups that develop standards, including the European Committee for Standardization and the European Committee for Electrotechnical Standardization. The primary objective of such liaison is the elimination of technical barriers to trade. As a step toward this goal, the two above-mentioned European organizations have arranged with ANSI to have their drafts listed for public review in an ANSI periodical — Standards Action. Through similar ANSI listings, U.S. exporters and other interest groups can comment on draft ISO and IEC standards and on government regulations proposed by signatories to the GATT Standards Code.

6. ANSI Accredited Standards Committee X12

The ANSI ASC X12 Committee, a subgroup of ANSI, was formed in 1979 to develop generic cross-industry EDI standards to facilitate computer-to-computer and data base-to-data base exchange of information. It is a voluntary standards-making body, operating under a one-person one-vote structure. There are slightly more than 200 members on the X12 committee, membership in which is based on corporate income and ranges from $250, for individuals or corporations making less than $500,000 a year, to a maximum of $2,500. The X12 committee supports several thousand standards and publishes twice-yearly updates of draft standards that are available for immediate implementation. Within the X12 committee there are subcommittees and project team task groups (Figure 11).

FIGURE 11



Source: Data Interchange Standards Association (DISA)
1800 Diagonal Road, Alexandria, VA, 22314, U.S.A.

APPENDIX SIX

UN/EDIFACT MESSAGES

When an agreement has been reached on a new EDIFACT message, the Rapporteurs recommend the message for formal approval as United Nations Standard Message (UNSM) — Status 2, Draft For Formal Trial — Status 1, or Draft Document — Status 0.

Status 2:	Functional Area
Purchase Order	Purchasing
Commercial Invoice	Finance

Status 1:	Functional Area
International Forwarding and Transportation Message Framework	Transportation
Acknowledgement/Rejection Advice	Syntax and Control
Customs Declaration	Government
Customs Response Message	Government
Quality Data Message	Product Data

Status 0:	Functional Area
Despatch Advice Message	Materials
Delivery Schedule	Materials
Just-in-Time	Materials
Purchase Order Response	Purchasing
Purchase Order Change Request	Purchasing
Quotes	Purchasing
Request for Quote	Purchasing
General Purpose Message	Product Data
Price Sales Catalog	Purchasing

A P P E N D I X S I X

Current Account Message	Finance
Reinsurance Account Message	Finance
Remittance Advice	Finance
Party Information	Government
Directory Set	Syntax and Control
Statement of Account	Finance
Documentary Credit Application	Finance
Extended Credit Advice	Finance
Extended Payment Order	Finance
Credit Advice	Finance
Debit Advice	Finance
Payment Order	Finance
Provisional Booking	Transportation
Firm Booking	Transportation
Booking Confirmation	Transportation
Shipping Instructions	Transportation
Contract Status (Air Waybill)	Transportation
Bill of Lading	Transportation
Arrival Notice	Transportation

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