

**DEPARTMENT OF THE AIR FORCE**

**OFFICE OF THE**

**DEPUTY ASSISTANT SECRETARY  
(CONTRACTING)**

**ELECTRONIC COMMERCE (EC)  
ELECTRONIC DATA INTERCHANGE (EDI)**

**AF EC/EDI DESK TOP GUIDE**

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SAF/AQCI  
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## **PREFACE**

This AF EC/EDI Desk Top Guide provides vendors, herein referred to as trading partners, AF Contracting, AF Small Business, AF Public Affairs offices, and AF Senior Wing leadership with a broad overview of Electronic Commerce (EC) through Electronic Data Interchange (EDI) in AF contracting.

This desk top guide presents a broad overview of EC/EDI concepts and terminology. This overview also includes the AF implementation plan and presents some common questions presented by our AF trading partners and suggested answers to these questions. The reader must recognize that the Department of Defense (DoD) and AF EC/EDI policies, procedures, and practices are still evolving.

This guide is issued to assist the understanding of AF EDI in contracting and the communication among AF contracting activities, trading partners, and members of the AF "Wing Team."

This guide is to be used as a starting point. Major Commands (MAJCOMs) and contracting activities may supplement this guide with local training materials.

The guide is accessible on the SAF/AQC homepage at:

<http://www.hq.af.mil/SAFAQ/contracting/aqchp.html>

This EC/EDI guide is not meant to be all inclusive. It will be reviewed and updated on a quarterly basis by SAF/AQCI. In order for our review to be meaningful request all MAJCOMs forward their consolidated comments via the home page not later than 10 Jan 96, for incorporation into next version of the guide. Please send your comments to Ms. Consuelo Reyes-Salas, e-mail [consuelo@aqpo.hq.af.mil](mailto:consuelo@aqpo.hq.af.mil) or Mrs. Mary Lou Alderman, e-mail [alderman@aqpo.hq.af.mil](mailto:alderman@aqpo.hq.af.mil).

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## ***CHAPTER I***

### **INTRODUCTION TO EC/EDI**

#### **DEFINITIONS: EC/EDI**

Electronic Commerce (EC) is "Doing Business Electronically." EC is defined as the conduct of administration, finance, logistics, procurement, and transportation between the Government and industry using an integrated, automated information environment to exchange business transactions. EC is the placing of all communications of trade into an electronic network. EC can encompass a wide variety of data transfer technologies.

EC technologies include items such as Electronic Data Interchange (EDI) translation software, E-mail, computer and network software, Electronic Funds Transfer (EFT) software, Electronic Information Services such as credit (e.g., TRW, Equifax), marketing (e.g., IR, Nielsen), products/price (e.g., OAG, Sabre), and networks (e.g., Compuserve, Internet). EC's most frequently sought capabilities are E-mail, product catalogs, binary data transfer, integrated messaging, and EDI.

EDI is a subset of Electronic Commerce (EC). EDI is rapid electronic communication that facilitates the exchange and processing of high volumes of business document information. EDI typically implies a sequence of messages between two parties; for example, buyer and seller, either of whom may serve as originator or recipient. Messages from the buyer to seller could include, for example, the data necessary for a request for quotation (RFQ) or purchase order. Messages from seller to buyer could similarly include data for response to an RFQ or purchase order acknowledgment. EDI enables information exchange between government and trading partner computer applications, using data that is formatted in a consistent and predictable structure, i.e., public, national and international standards.

Implementation of EDI requires the use of a family of interrelated standards. The family must include standards for types of messages (called "transaction sets"), data elements, and short sequences of data elements called data segments. A message or transaction set standard defines the sequence of data segments that constitute that message or transaction set. The standardization of message formats, and of data segments and elements within the messages, makes possible the assembling, disassembling, and processing of the messages by computer. The exchange of EDI information occurs using data in a standard format between organizations using American National Standards Institute (ANSI) Accredited Standard Committee (ASC) X12 Standards (ANSI X12 Standards).

#### **STANDARDS**

Accredited Standards Committee (ASC) X12 is the American National Standards Institute (ANSI) committee chartered to develop standards for EDI. Standards are the technical documentation approved by the ASC X12 Committee for transaction sets, segments, and data elements. Although ANSI X12 is the American standard, X12 is not the only EDI standard. Another standard is the international standard, EDIFACT (United Nations/EDI for Administration, Commerce, and Transport).

The standards address:

- What documents can be sent electronically.
- What information must be/can be included in each document.
- What sequence must the information follow.
- What form of information such as numeric, identification codes, etc., is acceptable.
- What is the meaning of specific pieces of information.

The primary objectives of standards are:

- To promote the achievement of the benefits of EDI: reduced paperwork, fewer transcription errors, faster response time for procurement and customer needs, reduced inventory requirements, and more timely payments to trading partners.
- To ease the interchange of data via EDI by use of standards for data formats and transmission envelopes; and to minimize EDI implementation cost by preventing duplication of effort.

Business and government information activities will use current ANSI X12 and EDIFACT standards. Business information encompasses the entire range of information associated with commercial, financial, industrial transactions, and logistics functions.

The Department of Defense (DoD) and the AF present a "single face to industry" by ensuring that the ANSI X12 and EDIFACT standards are communicated consistently to industry through the use of Implementation Conventions (IC).

### **IMPLEMENTATION CONVENTIONS (ICs)**

Implementation Conventions (ICs) are the common practices and/or interpretations of the use of ANSI X12 standards. Conventions define what is included in a specific implementation of an ANSI X12 standard. Implementation Conventions enable each EDI procurement transaction to define the mandatory and optional data, and the arrangement of such data that will be exchanged through AF EDI transaction sets.

The current AF EDI implementation convention for procurement transactions between trading partners and the five AF Air Logistics Centers (ALCs) contracting activities is ANSI X12 Version 2, Release 3 (known as 2003). The five ALCs are Ogden, Oklahoma City, San Antonio, Warner Robins, and Sacramento. The current AF implementation convention for procurement transactions between AF operational contracting activities and trading partners is ANSI X12 Version 3 Release 1 (known as 3010). An operational contracting activity is an activity located at an AF base, e.g., Hill AFB, Patrick AFB, etc.

The AF implementation conventions may not be identical to another service's (e.g., Army, Navy, etc.) or agency's (e.g., Defense Logistics Agency) implementation conventions. As the DoD and Federal Government EC/EDI implementation conventions evolve to a single standard implementation convention, these differences will disappear.

## *CHAPTER II*

### *GETTING STARTED IN EDI*

#### *POTENTIAL EDI COST*

Potential EDI start-up costs may include the purchase of hardware (computer), software including programming modifications, Value-Added Network (VAN) activation fee, and consultant fees. Additionally, potential support cost may include monthly VAN fees, technical support (training, seminars, educational tools) and computer system maintenance. The extent of a trading partner's costs depends on computer awareness, existing capabilities, and future plans for expanding business through EDI.

Trading partners should review the ANSI X12 standards and analyze their company's internal computer systems, carefully consider the resources that are available, and analyze their future business needs. They should also analyze the company's interfacing systems, communications capability, computer operations/applications, and operating systems software. The following are some questions that should be considered, discussed internally, and reviewed based on individual business need, before deciding on the degree of EDI participation:

- What type of documents will be transmitted.
- What ANSI X12 standard will be used.
- Should the company develop its own communications network/software or select a third-party network.
- What internal resources are available.
- What business volume can be expected.
- What stock classes, commodities or products are available and anticipated to be included in the near future.

When evaluating EDI start-up and participation costs, the trading partner has the option to acquire the necessary communication and other EDI services from one of the DoD certified VANs.

## COMMUNICATIONS, VALUE-ADDED NETWORKS AND EDI SERVICES,

EDI capability is provided by computer communications hardware and software. It requires the establishment of a communication line between the trading partners' computers and is most often facilitated by a Value-Added Network (VAN). Air Force contracting activities transmit EDI solicitations through the DoD EDI architecture to the various VANs. The VANs capture the solicitations and provide them to their subscribers. The VANs also collect the trading partner generated data, for transmission back to the contracting activity, again via the DoD architecture.

A VAN provides many services to subscribers. These services include communications, technical expertise, and equipment necessary to communicate electronically. The basic functions of any VAN include receiving, storing and forwarding of EDI transmissions.

A VAN establishes an electronic mailbox for each trading partner. The VAN receives electronic transaction sets and sorts them by receiver, then stores them in the trading partner's mailbox until they are called for or sent to the trading partner.

VANs can provide several additional services that can specifically assist small businesses. These services include:

*Translation services* -- The VAN may provide translation services that are compliance tested by the DoD. To illustrate, procurement information (e.g., RFQ) is sent in an ANSI X12 transaction set to a VAN, which sends it to the trading partner in a format usable by his computer.

*Media conversion services* -- Since not all trading partners will have the initial capability to receive electronic transmissions, the VANs have the capability to forward the transmission to the trading partner in some other media form such as letters, faxes, e-mail, etc.

*Authentication services* -- Authentication assures that the document contents are as originally transmitted.

Trading partners need to determine what added features are available from the VAN. VANs should include *bulletin board services, translation capability, and media conversion possibilities to include E-mail, telnet, etc.* Each of these areas of inquiry is extremely important when deciding on a particular VAN with which to do business. Trading partners should deal only with a VAN that has been certified by DoD.

Here are some helpful hints:

- Determine how the VAN will present transaction data.
- Obtain a list of *recommendations and references* from other businesses using the VAN's services.

- Check on the *compliance system* used to verify the integrity of the data.
- Inquire as to what *backup and recovery services* the VAN provides. This includes procedures for catastrophic events or disasters. Determine who is liable for any lost transmission data.
- Ensure a complete understanding of the kinds of *reports and billing data* to be received. This should include the number of transmissions, the minutes of connection time, the number of log-ons, failed log-ons, and any other pertinent information.
- Inquire about the use of *broadcasting*. If broadcasting is used, what are the procedures, for example, for sending a transmission to multiple AF contracting activities simultaneously? What criteria will be applied?

Some issues that have been identified when using VANs include:

- VAN service is always subject to *interruption*. This can cause the loss of some important transaction traffic. For example, an RFQ may not reach a trading partner or an electronic bid might be late in reaching an AF contracting officer. Although it is impossible to eliminate the possibility of interrupted service, some VANs do provide backup or archival and retrieval service, which should capture most of the EDI data that might be lost.
- Processing delays are another concern. These can be serious if data is urgently required. The trading partner should be extremely interested in understanding the processing time required to receive, sort, and store EDI transmissions.

### EDUCATION

Education is a key ingredient for any successful EC/EDI implementation. Education must be done early in the implementation process.

EDI educational opportunities are sponsored by many sources. Some of these sources are: the Federal Government's "Productivity Enhancement Program," the Automotive Industry Action Group, the National Industrial Transportation League Association, the American Trucking Association, the Electronic Data Interchange Association (EDIA), ANSI X12 Data Interchange Standards Association, and some VANs.

There is a myriad of periodical literature discussing Electronic Commerce. Both technical journals and the popular press have discussed EC at all levels of expertise.

For other than formal EDI education courses, refer to the local library, Internet access, etc., for EDI information.

### ***FEDERAL ELECTRONIC COMMERCE ACQUISITION INSTRUCTIONS (FECAI)***

The Federal Electronic Commerce Acquisition Instructions provides the necessary instructions to contractors on how to do business electronically with the Federal Government. The Internet address is being provided to access the latest version of the FECAI.

Internet address: [http://www.acq.osd.mil/ec/fecai\\_02.html](http://www.acq.osd.mil/ec/fecai_02.html)

### **VENDOR REGISTRATION**

Trading partners interested in registering in order to conduct electronic commerce with DoD should call the DoD Electronic Commerce Information Center at 1-800-EDI-3414. That office will provide prospective EDI trading partners with all information necessary to complete the centralized registration process.

In order for a contractor to conduct electronic commerce with the Federal Government in the future, the contractor must provide registration information to the Central Contractor Registration.

### *Chapter III*

## ***AF APPROACH***

Initially AF EDI electronic commerce will focus on competitive purchases of commodities with a total expected cost of \$100,000 or less per action, and the following characteristics: high volume, firm fixed price, having no required technical data, and with easily recognizable and understandable item descriptions. The individual AF contracting activities will have the flexibility to select the appropriate Federal Stock Classes and commodity groups for EDI procurements. The Federal Acquisition Streamlining Act of 1994 established the Simplified Acquisition Procedures for small purchases with a threshold of \$100,000, and Federal Acquisition Computer Network (FACNET) certification requirements.

### **AIR FORCE PHASED IMPLEMENTATION**

The AF will implement EDI at over 80 contracting activities (see page 14) and increase the number of EDI transaction sets (see page 15) by December 1995. AF EDI implementation is being accomplished in three phases from September 1994 through December 1995.

Phase I, Sep 94-Feb 95, involved developmental testing of initial EDI capability, AF EDI software and communications network from AF contracting activities through the DoD communication network consisting of the AF gateways, the NEPs at Columbus, OH and Ogden, UT, and participating VANs.

This initial EDI capability was limited to the electronic exchange of information essential to establishing a basic buyer-seller relationship. This information was transmitted using ANSI X12 transaction set formats and included use of ANSI X12 840 Request for Quotation; ANSI X12 843 Response to Request for Quotation; ANSI X12 850 Purchase Order; ANSI X12 836 Contract Award, and ANSI X12 997 Functional Acknowledgment.

Phase II, Mar - Aug 95, expanded the basic buyer-seller EDI capability to additional contracting activities.

Phase III, Oct - Dec 95, will provide EDI capability to additional operational contracting activities. Phase III plans include introduction of further EDI transaction sets such as ANSI X12 824 Application Advice, ANSI X12 864 Text Message, ANSI X12 832 Price/Sales Catalog; ANSI X12 860 Purchase Order Change Request-Buyer Initiated; and ANSI X12 865 Purchase Order Change Acknowledgment/Request-Seller Initiated.

## AIR FORCE TRANSACTION FLOW THROUGH THE DOD NETWORK

An EDI transaction, such as an ANSI X12 840 transaction set for an RFQ, originates from either a Menu Assisted Data Entry System (MADES)/Automated Contracting Preparation System (ACPS) on a Data General system at the 5 AF Air Logistics Centers (ALCs), or MADES II/Base Contracting Automated System (BCAS) on a WANG system at operational contracting sites. In either case, the ANSI X12 transaction set is transmitted from an AF contracting activity to an AF gateway at either Ogden, UT or Maxwell AFB, Gunter Annex, AL. From the gateway, the transaction set goes to a DoD Network Entry Point (NEP). The primary NEP is at Columbus, OH; the secondary is at Ogden, UT. The transaction set then passes to the VANs and is distributed to the trading partners. The reverse process occurs from the trading partners to the MADES/MADES II site for trading partner originated transactions sets, such as a ANSI X12 843 Response to Request for Quotation.

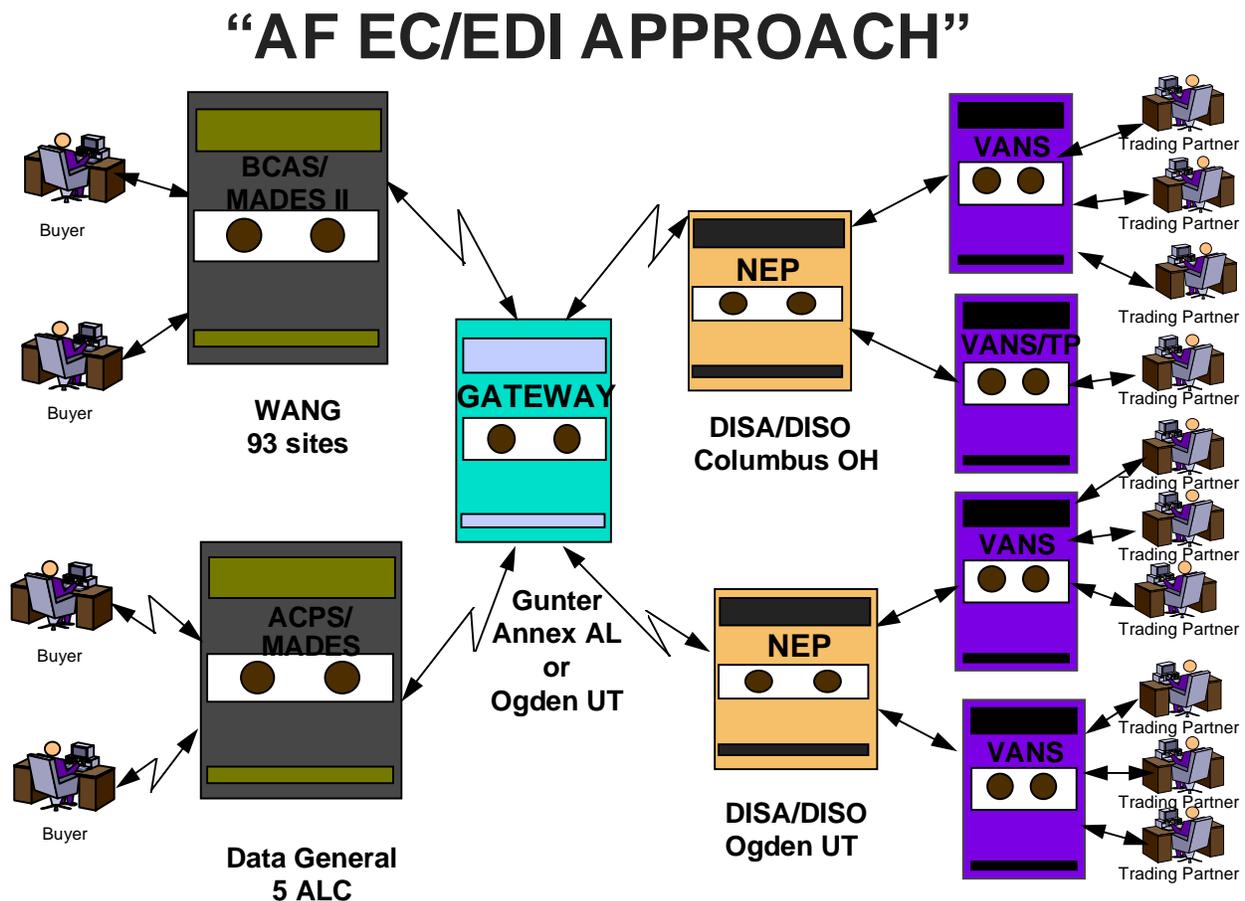


Figure A



***AF ANSI X12 TRANSACTION SET PHASED IMPLEMENTATION SCHEDULE***

**PHASE I Sep 94- Feb 95**

**836** - Contract Award

**840** - Request for Quote (RFQ)

**843** - Response to RFQ

**850** - Purchase Order (PO)

**997** - Functional Acknowledgment

**PHASE II Mar 95- Aug 95**

**PHASE III Oct 95- Dec 95**

**824** - Application Advice

**832** - Price/Sales Catalog

**838** - Trading Partner Profile

**855** - PO Acknowledgment

**860** - PO Change Request-Buyer Initiated

**864** - Text Message

**865** - PO Change Acknowledgment/Request-Seller Initiated

## **CHAPTER IV**

### **INDUSTRY QUESTIONS AND AF ANSWERS**

The following industry questions and concerns on EC/EDI are based on the AF EC/EDI Commerce Business Daily (CBD) announcement. These questions and concerns are not all inclusive. We **encourage** all to add to this list.

**1. Q. What translation software is the Air Force using?**

A. Translation will be done at the application.

**2. Q. What platform are you using?**

A. Wang and Data General at operational and ALC contracting sites, respectively; HP 9000 at the Gateway; 3B2 at the NEP.

**3. Q. What are the transaction sets you plan to implement?**

A. See "AF Time-Phased ANSI X12 Transaction Sets," page 15, this guide.

**4. Q. What version of ANSI X12 are you using?**

A. See page 7, this guide.

**5. Q. Is there a formal Department of Defense (DoD) standard for EDI translation software? If so, is this the software referred to in the CBD article as "AF EDI" software?**

A. No; there is no formal DoD standard for EDI translation software. The CBD announcement refers to AF EDI application software.

**6. Q. Are you using any of the test results that have been obtained in the DoD relative to EDI, such as Navy Implementations, or industry tests?**

A. Yes; AF uses test results after coordination through the Defense Information Systems Agency (DISA).

**7. Q. What are your plans for telecommunications?**

A. AF will use the DoD network as shown on page 13, figure A of this guide. The DoD network is the AF EC/EDI approach. It relies on the AF buyers' transactions all flowing through an AF

gateway to one or more network entry points (NEPs) to the multiple value-added networks (VANs) before transmission to the trading partners.

**8. Q. When we respond to an RFQ, does the AF procurement process, in their evaluation of our response to the quotation, consider the preferences that we are entitled to under Public Law 95-507 (regarding Small and Small Disadvantaged Business set asides), and/or 99-661 (regarding subcontract goals for small business)?**

A. AF complies with all Public Laws.

**9. Q. If the AF does consider the preferences, then how is this fact disseminated electronically back to us?**

A. The Air Force ANSI X12 840 (RFQ) will contain the Small-Business Set-Aside provisions in accordance with existing FAR language. After the award, i.e., ANSI X12 850 PO has been transmitted, the subsequent public notice of award is through the ANSI X12 836 Contract Award.

**10. Q. What does DoD "certified" VAN mean?**

A. In order to become a certified VAN, the VAN must sign a licensing agreement with the Federal Government, be financially certified and complete a series of communication tests through the DoD. Contact the DoD EDI Information Center at 1-800-EDI-3414 for a list of certified VANs.

***SUMMARY***

EDI is an emerging technology of the 21st century and is now being practiced successfully at a number of AF contracting activities. Its continued success depends on a strong partnership between AF contracting activities and AF trading partners. Continued EDI success is equally dependent on a strong, well-informed "Wing Team."

Please use the information in this guide to augment MAJCOM and contracting activity training on EDI. The information included herein is not all inclusive.

## **GLOSSARY**

### **ANSI**

American National Standards Institute

### **APPLICATION ACKNOWLEDGMENT**

A transaction set whose purpose is to return a response to a transaction set that has been received and processed in an application program. The Purchase Order Acknowledgment (ANSI X12 855) is an example of an application acknowledgment. It is used to respond to the Purchase Order (ANSI X12 850) presenting such things as whether the receiver can fulfill the order and if can be done on time.

### **APPLICATION ADVICE (ANSI X12 824)**

A transaction set that documents errors in the content of any transaction set beyond the normal syntax checks.

### **ASC**

Accredited Standards Committee

### **ASC X12**

The Accredited Standards Committee X 12 is comprised of Government and industry members who create EDI draft standards for submission to ANSI for subsequent approval and dissemination.

### **AUTHENTICATION**

A mechanism which allows the receiver of an electronic transmission to verify the sender and the integrity of the content of the transmission through the use of an electronic key or algorithm which is shared by the trading partners. This is sometimes referred to as an electronic signature.

### **COMPLIANCE CHECK**

A checking process that is used to ensure that a transmission complies with ANSI X12 syntax rules.

**EC**

Electronic Commerce

**EDI**

Electronic Data Interchange

**EDIFACT -- UNITED NATIONS ELECTRONIC DATA INTERCHANGE FOR ADMINISTRATION, COMMERCE, AND TRANSPORT**

This is an international standard for EDI for administration, commerce, and transport.

**EDI TRANSLATION**

The conversion of application data to and from the ANSI X12 standard format.

**EDI TRANSLATOR**

The computer software used to perform the conversion of application data to and from the ANSI X12 standard.

**E-MAIL**

Electronic Mail

**ELECTRONIC MAILBOX**

The place where an EDI transmission is stored for pickup or delivery within a third-party services provider's system. Trading partners can also maintain mailboxes within their own domains.

**ENCRYPTION**

A process of transforming clear text (data in original form) into cipher text (encryption output of a cryptographic algorithm) for security or privacy (ANSI X12 815 Service Message).

**FACNET**

Federal Acquisition Network

**FAR**

Federal Acquisition Regulation

## **FUNCTIONAL ACKNOWLEDGMENT**

A transaction set (ANSI X12 997) transmitted by the receiver of an EDI transmission to the sender, indicating receipt and syntactical acceptability of data transmitted according to the ANSI X12 standards. The functional acknowledgment allows the receiving party to report back to the sending party problems encountered by the syntax analyzer as the data are interpreted. It is not intended to serve as an acknowledgment of data content.

## **INDUSTRY CONVENTIONS**

This defines how the ANSI X12 standards are used by the specific industry.

## **PC**

Personal Computer.

## **RFQ**

Request for Quotation.

## **SECURITY**

A process of system screening that denies access to unauthorized users and protects data from unauthorized users.

## **SYNTAX**

The grammar or rules which define the structure of the EDI standards.

## **TRADING PARTNER**

The sending and/or receiving party involved in the exchange of EDI transaction.

## **TRANSACTION SET**

The transaction set unambiguously defines, in the standard syntax, information of business or strategic significance. It consists of a transaction set header segment, one or more data segments in specified order, and a transaction set trailer segment.

## **TRANSLATION**

The act of accepting documents in other than standard format and translating them to the standard.

**VAN**

Value-Added Network. These are usually third-party service for fee organizations.

**VAS**

Value-Added Service The certified services provided by VAN organizations.