Overview of EDI

The following is a reprint of the noted section(s) of the "REPORT OF THE NEW YORK EDI COLLABORATIVE - - Electronic Data Interchange (EDI) Proceeding **- -** New York Public Service Commission Case 98-M-0667" filed on June 30, 1999.

1.2 Overview of EDI

1.2.1 What Is EDI?

Electronic Data Interchange (EDI) is a standard for "the electronic exchange of information between entities using standard, machine-processable, structured data formats. Electronic exchange involves communication by means of an electronic equivalent of paper documents, such as by telecommunications or by the physical delivery of such magnetic media as tapes and disks. 'Machine-processable' means that a computer is able to read and process the data transmitted without human intervention. [A] structured data format is a commonly accepted set of rules for the organization and transmission of data.[1]

1.2.2 What Does A Company Have To Do To Position Themselves To Use EDI?

It is paramount to understand that EDI is only a set of standards for the exchange of data.   The vast majority of the effort required to implement EDI within any organization is the reworking of the existing computer applications (i.e., Customer Information Systems) of an organization to interface with the EDI world. Any organization that is not currently utilizing EDI would be required to perform the following activities:

Identify the Business Requirements
- Review all of the proposed electronic documents required to meet the process needs.
- Identify the specific data each document requires.
- Determine the required turn around times for all documents.

Determine Compatibility with Existing Computer Applications
- Review the organization's existing computer applications to determine if, where, and in what format (electronic, paper, etc.) the required data exists.
- Review the organization's existing computer applications to determine when the data is modified or processed to determine how the timing corresponds with the turn around times from the business processes.

Design, Modify, and Test Existing Computer Applications To Prepare For EDI
- Determine how to get all required data into an electronic format.
- Modify existing processes or design new processes where required to ensure the data is available and will be processed to meet turn around requirements.
- Test all added and modified processes (programming changes) to ensure they function as designed and the overall system integrity is maintained.

Implement, Integrate, and Test EDI Technology with the Existing Computer Applications Within the Organization
- Contract EDI services from an EDI service provider or bring the actual EDI technology in-house.
- Run simulations (tests) to take transactions through the EDI technology to ensure that it is functioning properly.

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[1] Introduction To EDI, Richard Bort & Gerald Bielfeldt, Warren, Gorham, & Lamont, New York, NY, 1998, page A1-2.

- Run simulations (tests) through both the EDI technology and the modified computer applications (CIS) to ensure they function as designed and the overall system integrity is maintained.

<u>Prepare Reusable Tests to Ensure External Partners Requesting EDI Partnerships are Ready</u>
- Develop a standard set of tests to be conducted between the two parties to ensure compatibility and correctness.[2]

1.2.3 How Electronic Data Interchange (EDI) Works

Electronic Data Interchange (EDI) is the preparation, delivery, and basic validation of electronic documents carried out in a specific predetermined format between two business entities (referred to in the EDI world as trading partners). These documents can then be used as inputs to traditional computer applications to initiate processing of whatever function needs to be performed (e.g., enrolling a customer with an ESCO/Marketer).

Over the past few decades a series of standard transaction formats have been developed and maintained by organizations within the US and international communities to handle non-industry specific generic categories of electronic information exchange. The American National Standards Institute (ANSI) establishes the rules and procedures under which American National Standards are made, ensuring consensus among interested parties. In 1979 ANSI chartered a committee to develop uniform standards for the electronic interchange of business transactions. This particular Accredited Standards Committee (ASC) was named X12, and is referred to ASC X12. The Data Interchange Standards Association (DISA) was founded in 1986 to act as the secretariat to ASC X12. DISA was charged to provide administrative services and support for ASC X12. The members of ASC X12 with DISA's support, function as the focal point for all activity in the EDI standard-setting process.

The electronic exchange occurs in basic units called messages, or transaction sets (the ASC X12 notation for the transaction sets is "TSnnn"), which typically relate to standard business documents (i.e., a customer enrollment, TSTS814, or monthly invoice, TS810). Each transaction set has an extensive set of data elements required for that business document, with specified formats and sequences for each data element. The various data elements are built up into segments, or logically related groups of data, such as customer address (which would be made up of data elements for street, city, state, zip code, and country). All of the related segments for a transaction are then grouped together, and are preceded by a transaction header and followed by a transaction trailer record. If a transmission contains more than one transaction (for example, multiple customer invoices sent to one ESCO/Marketer) each set of grouped transaction sets would be preceded by another type of record, referred to as a functional group header, and would be followed by a functional group trailer.

There are six basic steps involved in any EDI exchange. These steps are displayed in Figure 1 and explained in more detail below.

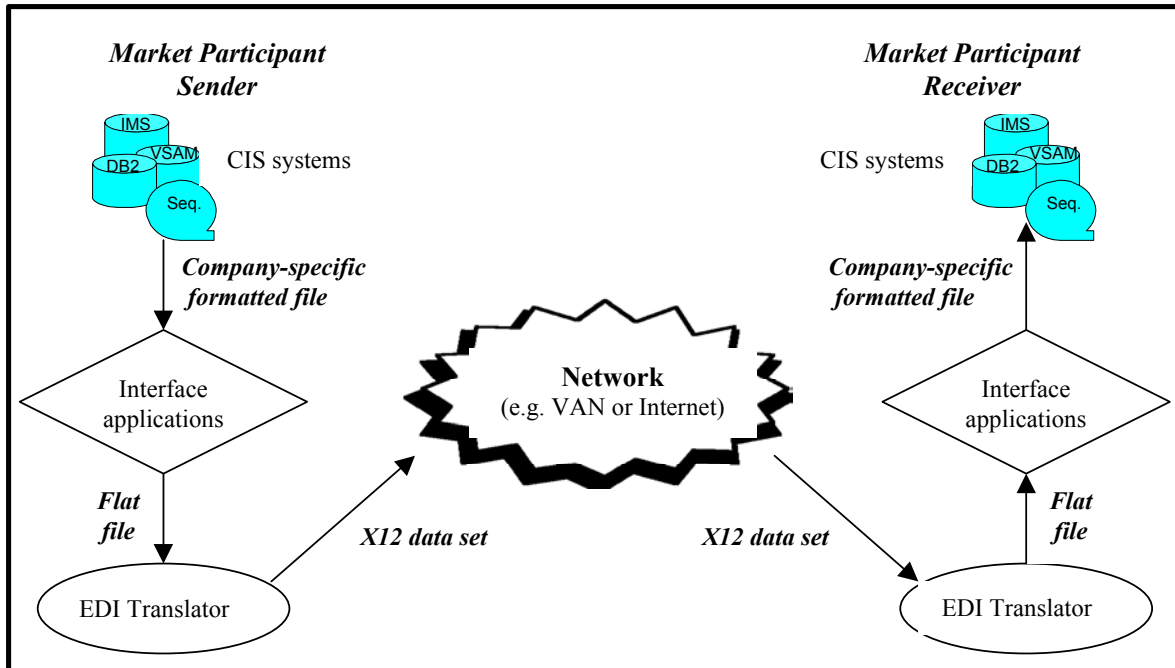[2] This may be done by an outside certification entity.

Figure 1

1. <u>Preparation of the Electronic Documents</u>: The first step in any sequence of Electronic Data Interchange is the collection and organization of the required data from a trading partner's internal computer applications. In terms of retail choice in New York, this would correspond to gathering up the data from the ESCO/Marketer or Utility's internal computer systems, filling out individual electronic documents, and typically, creating a flat file formatted for input into the EDI translator.

2. <u>Outbound Translation of the Documents</u>: The next step is to translate this electronic file into a standard format. The resulting data file will contain a series of structured transactions. The EDI translation software will produce a separate file for each trading partner.   For example, the file of twenty customer enrollments would be "mapped" into twenty TS814 transactions and wrapped by the appropriate EDI headers and trailers. Mapping is the term used in EDI to denote the actual reformatting of the electronic documents into the very structured standard EDI formats.

3. <u>Transport of the documents</u>: Once the documents have been transformed into the appropriate EDI format, the data must be moved from the initiating trading partner to the receiving trading partner. There are three ways to electronically accomplish this. They are:

   - Direct connection between the trading partners (typically leased telephone lines);
   - Value added networks (VANs); and
   - Public networks (the Internet).

   The technology under all three options is best envisioned as an electronic mail box which accepts and holds all incoming data (the actual technologies are either e-mail based or file transfer-based). Most VANs have agreements between themselves to exchange data, enabling trading partners who are utilizing different VANs to exchange data.   In our example, the ESCO/Marketer's computer system would automatically connect to:

(a) their VAN, transmit the EDI formatted file, after which the VAN would transmit the EDI formatted file to the mailbox of the appropriate trading partner;

OR

(b) the Internet, and transmit the EDI formatted file to the appropriate trading partner.

4. Inbound Translation of the Documents: The targeted trading partner retrieves the files from their electronic mailboxes at their convenience, and reverses the process that the sending trading partner went through, using their EDI translation software to "de-map" the file from the standard EDI format into the specific format required by their internal computer applications. In our example, the EDI structured file (containing the twenty TS814 enrollments) would be translated into a sequential file.

5. Acknowledgment of receipt of the documents: Immediately following the previous step (the file has been processed by the translation software) an electronic document acknowledging receipt of the file is sent back to the originator.   In the EDI world this is called a functional acknowledgment (TS997). In our example, a TS997 would be sent from the Utility to the ESCO/Marketer. While this acknowledgment does not guarantee the successful processing of the data within the receiving company's system, it is important to give the sending party feedback on whether or not the data has successfully reached the intended target and is in the standard EDI format. An analogy to this would be sending a letter via US mail "certified", the sender gets a signed receipt back ensuring delivery.

6. Processing Electronic Documents: The receiving trading party will take the sequential file and process it through their internal computer applications. In our example, each enrollment would be validated and processed against the Utility's CIS to verify eligibility and initiate the appropriate activities (i.e., accept the enrollment, flag the customer as pending for switch in supplier, etc.). Following this, the receiving party will complete steps 1 through 6 to send a response to the originating party, if required.

The examples referenced above pertain to using EDI for retail choice in the energy industry, however the process would be the same in any other business scenario in any industry utilizing EDI.