

EPIC



EDI Core Standards

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About this book:

This book contains information about EDI standards.

Who this book is for:

The book is intended for readers who wish to know more about EDI standards.

What you need to use this book:

There are no prerequisites to this publication.

Related Publications:

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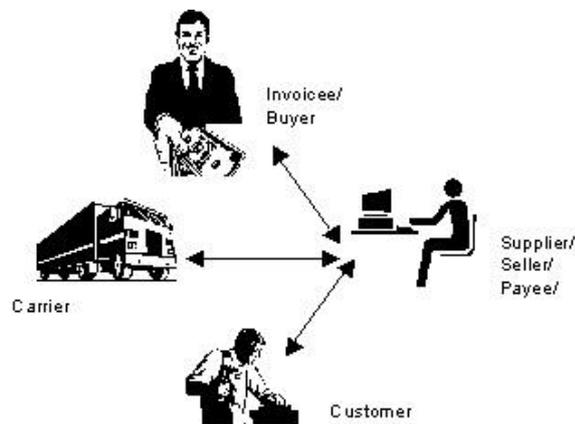
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1 A beginner's guide to EDI

1.1 What is EDI?

EDI stands for Electronic Data Interchange. EDI is the exchange of structured data in electronic form direct from one computer system to another. The data is transferred electronically between two parties, usually a **supplier** and a **customer**.

*The two parties are known as **trading partners**. The most common trading partner relationship is that of supplier and customer. Sometimes there may be a different relationship, such as that of **seller** and **buyer**, **payee** and **invoicee**, or supplier and **carrier**. Each trading partner may play different roles during the business process, as illustrated in the diagram below, or each role may be played by a different partner.*



The data transferred between the trading partners is business data, such as orders, despatch advices and invoices, in the form of standardised documents. They have to be standardised so that they can be deciphered by the computer system that receives them.

1.2 Advantages of EDI

One of the aims of EDI is to reduce the time taken for documents to be transferred between trading partners, and, where possible, to remove the need for the keying in of data to their computer systems.

In order to conduct business, the customer and the supplier are involved in a two-way communication that includes some or all of the following actions:

- The customer requests a price list from the supplier.
- The supplier sends the customer a price list.
- The customer and supplier agree a contract for the supply and purchase of products/services.
- The customer sends an estimated order (forecast) to the supplier.

- The customer sends a definite order to the supplier.
- The supplier sends an order acknowledgement to the customer.
- The supplier sends an advance shipping notification to the customer.
- The supplier ships the order together with an advice note.
- The customer receives the goods.
- The customer sends the supplier confirmation of delivery.
- The supplier invoices the customer for the order.
- The customer, upon receipt of the supplier's invoice, checks that the goods delivered match the goods being invoiced, and then pays the supplier.
- The customer sends the supplier a remittance advice note.

Before EDI, these business activities would have been formalised by the use of paper documents, such as a Purchase Order or an Invoice. These documents were used to state requirements, make agreements and provide other kinds of business information. Since they were paper-based they had to be posted or faxed. Posting involved extra delay, which meant that the data could be out of date by the time it was received. Both posting and faxing meant that data contained in the documents had to be typed into the computer system when it was received.

With EDI, the time taken to transfer information electronically between trading partners is minimal. In many cases, partners can communicate with each other directly, so that data transfer is practically instantaneous. Even when communication is via a third party the information is usually available within minutes.

Another advantage of EDI is that data received electronically can be integrated into existing computer systems without the need for time-consuming and error-prone manual data entry.

1.3 What is EDI for?

EDI makes it quick and easy for trading partners to send each other information relating to their everyday business transactions such as ordering, shipping and invoicing.

It not only speeds up these transactions but increasingly, as more companies integrate their internal business systems, results in fewer errors because less data has to be processed manually.

1.4 What does an EDI document contain?

For both paper documents and EDI documents, there is always a minimum amount of data required. Without this minimum, the document does not fulfil its purpose. For example, an order should state which products are required, what quantity of each product is needed, when they should be delivered and to which address they should be sent. If the delivery address is not given, we would end up with the situation where the goods have been produced and packaged up, but left lying around because we don't know where to send them!

The data contained in the electronic documents is essentially the same as that which used to appear on the paper documents. Let's take a look at the information that might appear in each type of document....

1.4.1 The Order

We would expect an order to provide the following details:

- the name and address of the customer who is ordering the goods
- the products/services that are required
- the required quantity of each product
- the date(s) on which or by which the products/services must be supplied
- the place(s) to which the products/services must be delivered

1.4.2 The Despatch Advice

We would expect a despatch advice to provide the following details:

- the name and address of the supplier
- the products/services that are being supplied
- the quantity of each product that is being supplied

1.4.3 The Invoice

We would expect an invoice to provide the following details:

- the name and address of the supplier and the customer
- the products/services for which payment is requested
- the cost of each product/service and/or the total cost of all products/services included on the invoice
- the date on which or by which payment is requested
- VAT details
- the name and address of the party to whom payment should be made

The details shown above for each type of document are only a minimum, required to make the document meaningful. Other details can easily be included in EDI documents, where space on a sheet of paper is not a factor to be taken into account.

1.5 EDI Standards

1.5.1 Why do we need standards?

EDI documents are intended to be sent, received and interpreted by computers. For the interpretation to be successful, the data must be in a format that both computers can understand. Use of standards minimises the difficulties and expenses that would result if each trading partner were to impose its own formats on every partner with which it does business.

1.5.2 Who writes the standards?

A number of EDI standards bodies exist, whose purpose is to develop and maintain sets of EDI messages (in EDI terminology, an EDI document is usually referred to as a message). The standards bodies we shall refer to in this document are EDIFACT, ODETTE, EAN (and its members), VDA and ANSI. Each of these bodies has developed its own set of EDI messages.

1.5.2.1 EDIFACT

EDIFACT (Electronic Data Interchange for Administration, Commerce and Transport) is the body which develops the United Nations rules for EDI. EDIFACT usually publishes a new set of EDI messages each year, incorporating any new messages and amendments to existing messages, and calls each of its yearly publications a Dictionary. Each dictionary is named according to the year of its publication, whether it is a draft version (D) or the definitive standard (S), and whether it is published in the first (A) or second (B) half of the year. So, for example, the dictionary named D96A is a draft standard published in the first half of 1996.

Quite often, only the draft version of a dictionary is issued, but EDIFACT standards are so robust that they are as good as a standard version and, indeed, are used as such by many companies.

1.5.2.2 ODETTE

ODETTE (Organisation for Data Exchange by Tele-Transmission in Europe) is an organisation formed by and for the automotive industry. Originally it developed its own distinct set of messages but now only develops **subsets** of those EDIFACT messages used by the automotive industry.

A subset is a smaller version of a full EDI standard, usually developed for a specific business sector.

1.5.2.3 EAN

EAN stands for European Article Numbering. The EAN association is an international standards body with members in individual countries. The members may develop their own EDI standards for use within their own country. The Tradacoms standard for the UK retail trade was developed in this way.

1.5.2.4 VDA

VDA stands for Verband der Automobilindustrie (i.e. association of the automobile industry). The VDA is a standards body set up by the German automotive industry that has developed its own set of EDI messages for use in that industry. The VDA messages are not strictly EDI, because they do not have all the usual characteristics of EDI messages, but they are accepted as EDI messages by the UK automotive supply industry.

1.5.2.5 ANSI X12

ANSI stands for American National Standards Institute. ANSI X12 is an American standard, whose EDI messages are called Transaction Sets. This standard is rarely used in the UK.

1.5.2.6 Company standards

Although the standards bodies above provide comprehensive standards that can be used by any company of the sector they were written for, it is often the case that individual companies adopt these standards but issue their own "Message Implementation Guidelines". These Guidelines usually state explicitly what information is to be contained within messages exchanged between the individual company and its trading partners. The result of this may be, for example, that a supplier who trades with two different automotive manufacturers may be required to send the same message type to both manufacturers, but that the contents of those messages will differ according to which manufacturer they are intended for.

1.5.3 Why are there so many standards?

In the very early days of EDI, groups of partners would simply agree among themselves what data to send and how to position it in the file, but this soon became impractical as EDI grew in popularity.

At this point, groups of users with a common interest got together to develop the first standards. Such groups tended to be those from a common business background, such as the automotive or retail industry, and the standards they developed were intended for use specifically by their own industry. This stage saw the emergence of such standards bodies as ODETTE and ANA, which developed standards for the UK automotive and retail sectors respectively. At the same time, similar bodies were being established in other countries, such as VDA for the automotive industry in Germany.

Other standards bodies, such as EDIFACT, have developed standards that can be used by any industry.

1.5.4 What is an EDI message?

An EDI message provides a means of transferring data electronically from one partner to another. Each EDI standard defines many different types of message. Each message is used for a different purpose e.g. the EDIFACT DELFOR message is used to place an order with a supplier, the EDIFACT DESADV message is used to inform a customer of a despatch that is on its way to him. Similar messages will exist under other standards.

Although each message has a descriptive name, such as Delivery Forecast or Despatch Advice, they each also have a shorter name such as DELFOR for Delivery Forecast and DESADV for Despatch Advice. Usually this is an abbreviation of their descriptive name, as in the examples given, but some

standards, such as VDA and ANSI X12, use numbers for their naming convention.

1.5.5 How do I read an EDI message?

An EDI message is, essentially, a computer file containing structured data. Usually it will contain characters which separate one piece of data from the next, but never any explanations of what the data represents. The standards explain fully what data may be transmitted in each document, and how the data is to be laid out in the file. If the standards are adhered to, then all partners using the same standards can decipher the data.

First of all, the recipient should know beforehand which EDI messages he can expect to receive from his trading partners. This information is usually provided during initial trading agreements between the customer and supplier. It is usually the customer who dictates which standard is to be used, which messages from that standard will be exchanged, and what data is to be transmitted in those messages.

Secondly, there is information within an EDI message that indicates which EDI standard was used to create it. Armed with the knowledge of which standard is being used and which message from that standard has been received, it is possible to use the message standard to read the message.

Fortunately, as a user of DARWIN you do not need to know how to decipher the contents of an EDI message, as all the hard work is done behind the scenes by the software itself. But for those people who are interested, there follows a brief description of what makes up an EDI message.

1.5.6 EDI message example

Each message is made up of a number of "segments", and each "segment" is made up of a number of "elements" and, sometimes, "composite elements". Let's take a look at these different components of a message.

Below is a sample Odette standard DELINS (Delivery Instruction) EDI message. Some of the data has been coloured as it is referred to in one of the sections below.

```

UNB+UNDA:1+OD:X1000+OD:X94000016+020823:0200+2742'
UNH+000070+DELINS:3'
MID+P9508-0+950823:0200'
SDT+69079010:.....69079010++++ZA'
BDT+57566311:.....57566311'
CSG+57566311:.....57566311+57566311'
ARD+1977219::WIND O/W LIFTER ASSY LH FRO:R+:PCE+8670804++0000012919+R:ENG CH NO'
PDI+P199508C+950820:0200'
SAD+1++03++3'
DST+950823+11143:10949:194++3380+12919'
PDN+2368:000822+80:80+000822'
PDN+2367:990822+72:72+990822'
SID+2+H:1:12919:12620:P199508A'
SID+3+M:6:12919:13020:P199507A'
DEL+991222::991223+100::1:11143:11337'
DEL+991228::000104+600::1:11793:11987'
DEL+000104:000111+300::1:12163:12357'
ADI+P199508D+950823:0200'
ARD+1977220::WIND O/W LIFTER ASSY RH FRO:R+:PCE+8650100++0000012550+R:ENG CH NO'
PDI+P199508B+950820:0200'
SAD+1++03++3'
FTX+REPL BY C/L ?T?. SAMPLES DUE KW29'
DST+950823+10850:10904:54++3264+12550'
PDN+2365:000821+93:93+000821'
PDN+2361:990816+320:320+990816'
SID+2+::12550:12550:P199508B'
SID+3+::12550:12850:P199507A'
DEL+000828::000904+300::1:11240:11186'
DEL+000904:000911+500::1:11770:11716'
DEL+000911::000918+200::1:12030:11978'
ADI+P199508C+950823:0200'
UNT+58+000070'
UNZ+1+LOCAL'

```

Figure 1- sample DELINS data

Normally, any EDI message would consist of a long unbroken stream of data, but for illustration purposes the message above is shown with each "segment" on a new line.

As you can see, the data in this message looks pretty meaningless, so let's break it down to show how it can be deciphered.

1.5.6.1 Separators

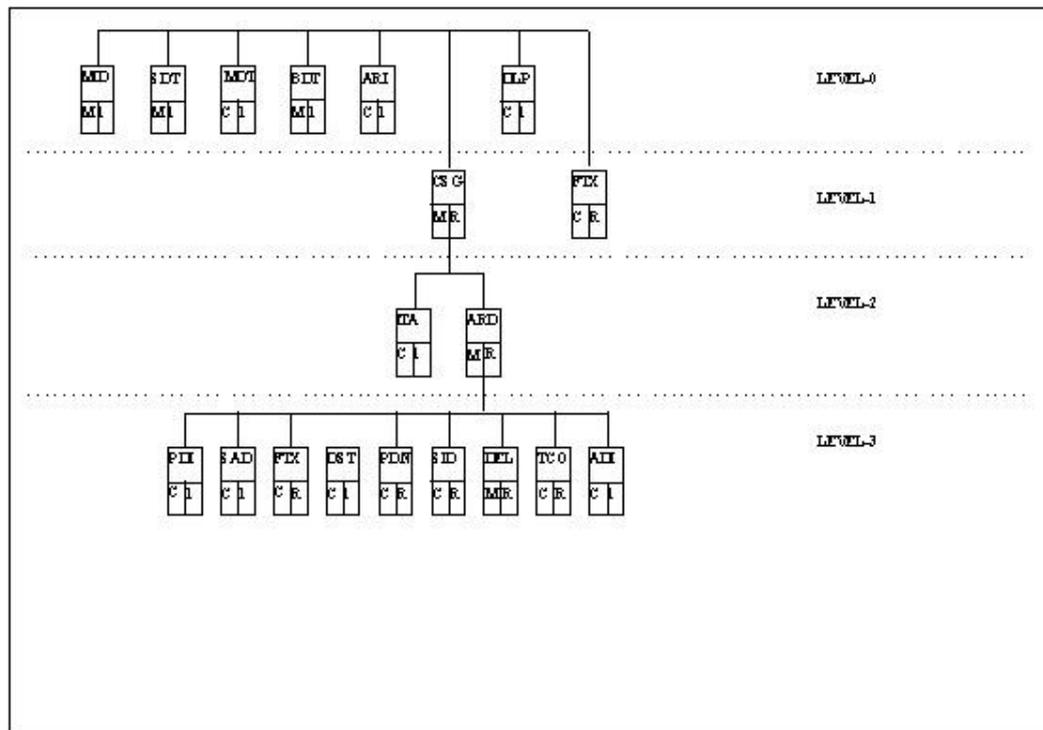
Each segment in this message is separated from the next by a ' character (single quote). In the illustration, this separator character appears at the end of each line.

The + signs and : characters are used throughout this message to separate one piece of data from the next within a segment.

1.5.6.2 Segments

Segments are used as a way to break up the information within an EDI message and to give the information some structure. Below is an illustration of the hierarchical structure of the Odette DELINS message. Each of the hanging rectangles represents one of the segments in the message.

1.5.6.3 Message hierarchy



This diagram shows each of the segments that can make up a DELINS message, from the MID segment at the beginning to the FTX segment at the end.

You will note that the segments UNB, UNH, UNT and UNZ from the beginning and end of the sample DELINS message are not present in the hierarchy diagram. This is because they are "service segments", which must occur with all message types, and so are not normally included in a message hierarchy diagram.

A segment that is above another segment in the hierarchy is known as a parent segment. A segment that is below another segment in the hierarchy is known as a child segment

The name of a segment usually gives an indication of its contents, so MID means Message Information Details, SDT means Seller Details and ARD means Article Details for example.

Standards other than Odette will use different names for their segments and will structure their messages differently, but the principles are the same for any standard.

One exception is the VDA standard, which is described in a separate section of its own.

Some of these segments are mandatory i.e. they must be used in order to create a valid DELINS message. This is indicated by the letter 'M' in the bottom left-

hand corner of the segment. A letter 'C' (meaning conditional) in this position indicates that the segment may be left out of the message.

Some of the segments may only be used once *in their hierarchical position* in a DELINS message (indicated by the number '1' in the bottom right-hand corner of the segment); others may be used several times, indicated by the letter 'R' (for repeatable) in the bottom right-hand corner of the segment.

Any repeatable segment that has other segments below it in the hierarchy may not be repeated until the mandatory segments below it have been used.

Any non-repeatable segment can be used again in the message, but only once its parent has been used again. So, in the sample message above, the DST segment can be used once after each ARD segment.

The segments must only be used in the order shown in the hierarchy, but, as stated above, conditional segments may be omitted.

If you look at the diagram showing the sample DELINS data above, you can see that the ARD segment occurs twice, but each occurrence has to be followed by (at least) the mandatory segments below it in the hierarchy.

On the other hand, you can see that the DEL segment is repeated several times in succession. This is permitted because it is a repeatable segment and has no child segments.

The hierarchy is basically describing the following situation:

The segments on the top row of the hierarchy are only allowed to occur once per message. These segments include Seller Details (SDT) and Buyer Details (BDT), so only one Buyer and one Seller are permitted in any one DELINS message.

The MID, SDT and BDT must be present in the message.

They must be followed by a CSG segment, which gives details of the Consignee (the company to which goods are to be sent).

The CSG segment must be followed by an ARD segment, which gives details of an article that is being ordered by the Buyer.

The ARD segment must be followed by at least one DEL segment, which gives details of the quantity of the article to be delivered and the date on which they are to be delivered. The ARD segment may optionally be followed by any of the other segments at the same level as the DEL segment, provided they are used in the same order as shown in the hierarchy diagram, with segments on the left appearing before those to the right.

After the DEL segment (and optionally the TCO and ADI segments), another ARD segment or CSG segment may be used.

The data within each segment has a logical connection. For example, one segment might contain the name and address details of a trading partner, while another might contain details relating to a product. Depending on the standard in use, data within a single segment may be meaningful on its own or may need other segments to give it meaning.

The first segment in the sample message is the UNB segment.

```
UNB+UNOA:1+ODX1000+ODX94000016+020823:0200+2742'
```

Knowing that the + signs and : characters are data dividers, you can now see that this segment contains eight distinct pieces of data.

The first segment of an EDI message always contains addressing information (in this case ODX1000 is the coded address of the sender of the message and ODX94000016 is the coded address of the intended recipient of the message).

The first segment also contains the date and time at which the message was created (in this case 020823:0200 represents 2.00am on 23rd August 2002), and a unique message identification number (in this case 2742). This allows for traceability if any queries arise in relation to specific messages.

In this particular message, the second segment (UNH) provides the key to the standard that was used to create this message.

```
UNH+000070+DELINS:3'
```

This gives us a message reference number (000070) and tells us that the message type is DELINS and that the DELINS version (equivalent to issue number) is 3.

If we were to take another example of a UNH segment, such as the one that follows, we can see a little extra information.

```
UNH+1+INVRPT:D:97A:UN'
```

The last data element in this segment (UN) tells us that the standard that was used is from the UN EDIFACT dictionary. The particular standard is the draft standard published in the first half of 1997 (D:97A) and the particular message from this standard is INVRPT. If we were to check the standard, we would find that INVRPT is the name of the Inventory Report message.

1.5.6.4 Elements

Each + sign indicates the start of a new element, either a simple or composite element.

Each : character indicates the start of a sub-element of a composite element.

A simple element is the smallest meaningful part of an EDI message.

A composite element is a set of two or more simple elements that have been grouped together because they have a logical connection. Examples might be a

date and time, or several lines of an address. These simple elements are then termed sub-elements of the composite element.

The first data element in each segment is the name of the segment. In this case the first data element of the first segment is UNB.

```
UNB+UNOA:1+O09321234567+O09329876543+980430:2215+2742'
```

This segment contains the following elements:

UNB - Simple element

UNOA:1 - Composite element

O09321234567 - Simple element

O09329876543 – Simple element

020823:0200 - Composite element (date and time)

2742 - Simple element

There is little point in going through the remainder of this message in detail. It is enough to know that each message contains segments that must appear in a specific sequence and that each segment contains specific data in a specific sequence.

This can be illustrated by the following segment:

```
LIN+++090502782:IN'
```

The standards state the sequence in which data must appear in the segment. However, it is usually the case that not all data in a segment has to be provided. Where data is not provided, the segment must still show the correct position of the data that is provided. This is achieved by using the element dividers to show that data is missing. So, in the example above, there are two missing elements (shown by the extra two + signs) before the actual data.

In an EDIFACT message, the data is usually given meaning by a code. For example, the following segment contains only one item of business data – the string of characters 090502782.

```
LIN+++090502782:IN'
```

The segment name LIN indicates that this segment contains Line Item information. The code IN at the end indicates that 090502782 is the Buyer's Item Number.

Nobody could possibly know what information in a segment represents unless they have access to the standards used to create the message, but the good news is that you do not need to know, as DARWIN will take care of this.

1.5.7 VDA Standard

The VDA standard differs from all the other EDI standards we have talked about. Instead of using special characters to divide each segment from the next and each data element from the next, a VDA message consists of fixed length records within which each item of data is allowed to take up a specific number of characters. If any item of data is omitted, its absence must be shown by a space the same length as the omitted item of data.

Another difference is the naming convention of the messages and their records. Each VDA message has a number instead of a short name, so it has messages such as the 4913 and 4905. Since each VDA record contains a variety of data it cannot easily be given a meaningful name such as QTY. Instead, another naming system using numbers is used. For example, within the 4913 message the records are called 711, 712, 713 etc.

Although these differences exist between the VDA standard and other standards, their messages are still treated as proper EDI messages.