An introduction to postal EDI exchanges

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Foreword

Postal services form part of the daily life of people all over the world. The Universal Postal Union (UPU) is the specialised agency of the United Nations that regulates the universal postal service. The postal services of its 192 member countries form the largest physical distribution network in the world. More than 5 million postal employees working in over 660 000 post offices all over the world handle an annual total of 434 billion letter-post items in the domestic service and 5,5 billion in the international service. More than 6 billion parcels are sent by post annually. Keeping pace with the changing communications market, postal operators are increasingly using new communication and information technologies to move beyond what is traditionally regarded as their core postal business. They are meeting higher customer expectations with an expanded range of products and value-added services.

Standards are important prerequisites for effective postal operations and for interconnecting the global network. The UPU's Standards Board develops and maintains a growing number of standards to improve the exchange of postal-related information between postal operators and promotes the compatibility of UPU and international postal initiatives. It works closely with postal handling organisations, customers, suppliers and other partners, including various international organisations. The Standards Board ensures that coherent standards are developed in areas such as electronic data interchange (EDI), mail encoding, postal forms and meters.

UPU standards are drafted in accordance with the rules set out in Part V of the "General information on UPU standards" and are published by the UPU International Bureau in accordance with Part VII of that publication.

An introduction to postal EDI exchanges

1   Introduction

This document provides general information about postal EDI exchanges. It begins with basic details and progresses into more sophisticated concepts. It also describes common practices in EDI exchanges.

This document has been written for newcomers to postal EDI. These include technical providers who may not be familiar with the postal world, as well as anybody involved in the implementation, monitoring or maintenance of postal EDI exchanges.

This document assumes some knowledge of postal processes. Readers without any postal background whatsoever would benefit by first learning the basics of the international mail process and learning the meaning of terms like mail item, receptacle, despatch, consignment, and so on.

2   What is EDI?

EDI stands for Electronic Data Interchange. It is a generic acronym that covers the electronic exchange of data, usually between different parties.

Many industries exchange data through EDI networks. They use standards like EDIFACT (see next section). For example, EDI networks routinely link car manufacturers with subcontractors and enable all parties to communicate and exchange data efficiently. Each car manufacturer exchanges data with many subcontractors and each subcontractor may work for several car manufacturers; the EDI network facilitates exchanges by providing a single communication channel for all parties.

Technically, an EDI transmission can be seen as a tagged delimited message set. The purpose of a tag is to inform how to handle the following data.

In the postal world, the term 'EDI exchanges' is used to refer to the electronic exchange of messages based on UPU EDI messaging standards. Most postal EDI messages exchanged today are based on EDIFACT .

3   What is EDIFACT?

EDIFACT (UN/EDIFACT) stands for (the United Nations rules for) Electronic Data Interchange for Administration, Commerce and Transport. Established as a standard by the United Nations in the late 1970s[1], it later became an ISO standard (ISO 9735) [3].

EDIFACT is a text-based standard for formatting data intended to be exchanged electronically. EDIFACT is thus a format for EDI exchanges.

EDIFACT defines a basic grammar. An EDIFACT message is made up of **segments**. Each segment is made up of **data elements**. A data element may in turn have several **components**.

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[1] UN/EDIFACT contains a set of internationally agreed standards, directories, and guidelines for the electronic interchange of structured data, between independent computerized information systems.

A listing of the special characters corresponding to this grammar is given below:

Type of character	Special characters	Example
Segment tag	A predefined 3-letter code as the first data element of the segment (the list of allowed codes is also part of the EDIFACT standard)	UNB
Separator between segments	'	FTX+AAQ++CN::139' FTX+INS++N::139'
Separator between data elements	+	RFF+ACU:20'
Separator between components of a data element	:	GID++1:BG'

An example of a complete EDIFACT segment illustrating the various separators is given below:

```
UNB+UNOC:3+5012345678901:14+4598765432198:14+000316:1402+INV73529++INVOIC'
```

EDIFACT also defines many message types defining different business aspects. Each message type has a message name and is defined by rules about what the content of the message may be, how data is organized, how many instances of each data element can be filled, which data elements are mandatory, which data elements are optional, and so on.

A basic principle of EDIFACT is the concept of envelope and messages in a transmission:

- an EDIFACT **transmission** is a complete set of data elements packaged and transmitted together. A transmission comprises one interchange and one set of messages;

- the **envelope**, called **the interchange,** is the outer layer of an EDIFACT transmission. The envelope defines who the sender is and who the recipient is. Technically, this is covered by a start segment (segment tag UNB) and an end segment (segment tag UNZ);.

- the inner layer of an EDIFACT message is a set of **messages**. Every element of this message set conforms to one of the EDIFACT message types or a message standard based on the EDIFACT message types. Technically, this is covered by a start segment (UNH) and an end segment (UNT).

A typical EDIFACT transmission looks like this (indentation has been added to show structure):
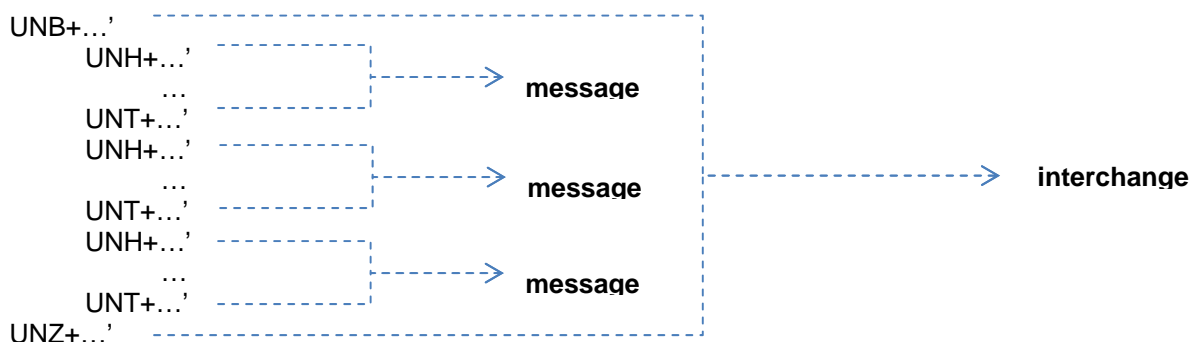
Example of a complete EDIFACT interchange, containing several messages (carriage returns and indentation have been added to improve readability):

```
UNB+UNOA:1+FR103:UP+IT102:DL+120301:0900+INTREF886'
     UNH+MESREF1159+RESDES:1:912:UP'
          BGM++ITMXPAFRCYMADCN20106'
          GID++1'
          PCI+++CW:ITMXPAFRCYMADCN20106001001455'
          FTX+AAQ++CN::139'  FTX+INS++N::139'
```

```
            FTX+RET++N::139'
            MEA+WT+AAB+KGM:145.5'
            RFF+ACU:20'
            DTM+7:1203010838:201'
            GID++1'
            PCI+++CW:ITMXPAFRCYMADCN20106002101775'
            FTX+AAQ++CN::139'
            FTX+INS++N::139'
            FTX+RET++N::139'
            MEA+WT+AAB+KGM:177.5'
            RFF+ACU:20'
            DTM+7:1203010837:201'
    UNT+19+MESREF1159'
    UNH+MESREF1160+RESDES:1:912:UP'
            BGM++ITMXPAFRCYMACCN20067'
            GID++1'
            PCI+++CW:ITMXPAFRCYMACCN20067001101273'
            FTX+AAQ++CN::139'
            FTX+INS++N::139'
            FTX+RET++N::139'
            MEA+WT+AAB+KGM:127.3'
            RFF+ACU:20'
            DTM+7:1203010837:201'
    UNT+11+MESREF1160'
    UNH+MESREF1161+RESDES:1:912:UP'
            BGM++ITMXPAFRSLMAACR20060'
            GID++1:BG'
            PCI+++CW:ITMXPAFRSLMAACR20060001100016'
            FTX+AAQ++CR::139'
            FTX+INS++N::139'
            RFF+ACU:20'
            DTM+7:1203010705:201'
    UNT+9+MESREF1161'
UNZ+3+INTREF886'
```

NOTE   Clearly, persons seeking to design new EDIFACT-based EDI messages must thoroughly understand EDIFACT. However, persons seeking only to understand or implement an existing postal EDI message in an IT solution can get by with more basic knowledge. For the latter category the EDI message definition explained in the concerned UPU standards document is usually enough.

4   What is XML?

XML [4] stands for Extended Markup Language. It is a structured representation of information, with each information element tagged. Tags are descriptive. PostalAddress, EventTime, Identifier, DespatchDate, are all examples of data descriptors that serve as tags.

XML is a W3C (World Wide Web Consortium) [5] standard and is very widely used in internet-related applications. A key feature of XML is its flexibility.

XML *schemas* define rules concerning the structure and allowed contents of XML documents.

5   Format of postal EDI messages: EDIFACT, XML or both?

EDIFACT was developed well before XML came into existence. Postal EDI exchanges, which also started well before XML was developed, were initially always in EDIFACT format.

Industry has two choices today. Should exchanges be EDIFACT-based or XML-based? Some industries are switching to XML, while others prefer to stay with EDIFACT. Some have a mixture of both.

Each approach has advantages:

−   EDIFACT is compact, robust, and widespread;

−   XML is flexible, easy to implement, and can handle any alphabet or language (the technical feature allowing this is called Unicode, which is a coding mechanism extensive enough to cover all existing alphabets).

Concerning the flexibility on alphabet and languages, it must be noted that although EDIFACT is not as flexible as XML, it still provides a level of flexibility. It must also be noted that the XML flexibility can be restricted if required. In fact, handling any alphabet or language may not always be seen as an advantage in EDI exchanges: it is important that the alphabet and language used by the party sending a message are understood by the party receiving it.

With the same contents, the size of an XML message can be up to five times bigger than the equivalent EDIFACT representation. As communication costs are usually based on message size, this is strongly in favour of EDIFACT; but solutions are being elaborated for the compression of XML messages.

A few recent postal EDI standards are defined in XML, or in both EDIFACT and XML.

XML exchanges are only beginning. The postal industry will need to acquire more experience with XML before deciding which format is best in the long term.

Some parties exchanging EDI messages use IT solutions called 'EDI translators'. Translators help interface systems by seamlessly converting formats between EDIFACT and other system-specific formats and storage architectures. An EDI translator is thus a tool that seamlessly converts data between formats. Using such a tool simplifies the implementation of EDI messaging, especially in the case of EDIFACT. An EDI translator normally includes all EDIFACT rules and grammar. When configuring such a tool to handle a postal EDI message based on EDIFACT, it is important to inform the tool about the EDIFACT message and version on which the postal EDI message is based. This information is provided in UPU Messaging Standards. For example, document M41 [7], describing the EDI message PREDES version 2.1, indicates that this message is a subset of the EDIFACT IFCSUM D06A standard message (this is mentioned in Chapter 6.1 'Branching diagram' of the M41 document).

6   Postal EDI messages: a short history

Electronic data exchanges were first developed and used to track individual EMS items. The message used for this purpose was called EMSEVT [7], standing for EMS EVenTs.

Most postal EDI messages based on EDIFACT are derived from a standard EDIFACT message type. However, EDIFACT rules or parent EDIFACT message structure are not strictly followed in some cases. In these cases, the postal industry found it advantageous to deviate slightly from some rule. EMSEVT, for example, deviates from EDIFACT rules – it is not based on any classical EDIFACT standard, and uses non-standard segment tags. This deviation was made because doing so yielded some advantages.

The first generation of postal EDI messages was developed in EDIFACT format in the 1990s. The main messages of this generation include:

−   EMSEVT [7][16]: initially defined for EMS, it was subsequently used also for parcels and registered, insured and express letters;

−   PREDES [7][12]: a message from a despatch sender (origin operator) to pre-advise the destination operator about the despatch being sent;

- RESDES [9]: response from the destination operator to a PREDES message;

- PRECON [6]/RESCON [11]: same purpose as PREDES/RESDES, but at the consignment level;

- CARDIT/RESDIT [12]: CARDIT is a message sent by a postal operator to a carrier (airline) to pre-advise mail and indicate on what transport (flight) the carrier should put the mail; RESDIT is the reply from the carrier (airline) indicating what has been done with the mail (several events, covering several steps of the process).

Some small adjustments to these messages were made over the years, with new versions established as needed. For example, the initial PREDES version was called PREDES V1.1. It was later superseded by PREDES V2.0.

This first generation of messages was relatively simple. Each message had a well-defined scope.

The second generation of postal EDI messages like EVTRPT [14] and ITMATT [15] was developed in the 2000s. These messages were also in EDIFACT format, at least initially. The initial driver for this second generation was the requirement of some postal operators to use license plates as identifiers for mail items.

License plates are identifiers guaranteed to be unique. However, unlike other postal identifiers, they do not provide any information about the item. This characteristic, combined with the relatively long length of license plate identifiers, made it necessary to review messages using license plates. The second generation of messages also had a different approach to EDI exchanges. Instead of having a limited and pre-defined scope, the new messages were as open as possible so that they could meet both current and future needs.

The use of license plates by postal operators remains limited. The relative complexity of these new messages did not encourage their widespread adoption. Some second-generation messages were withdrawn for these reasons. Others, however, remain and are actively exchanged.

Current situation

First and second generation messages continue to coexist. EDIFACT remains the main format, although XML is beginning to be used.

The complexity of messages being developed today falls between the relative simplicity of first generation messages and the relative complexity of second generation messages. With more options and possibilities, today's messages are more complex than those of the first generation. However, they are less complex than second generation messages based on the "open approach" philosophy of the 2000s.

Current developments in postal EDI standards have the following trends and consequences:

- there are now more exchanges across industries (airlines, customs authorities);

- as the volume of operations-related EDI messages increases, postal operations are becoming increasingly paperless. While paper-based operations continue to coexist with EDI-based operations, the volume of the former is steadily decreasing. It is expected that the use of paper will eventually disappear altogether.

- messages to enable automated accounting (between postal operators, with airlines) are being developed.

NOTE   *Links to documents giving more details about the standards referred to above are given at the end of this document.*

7   What are EDI messages used for today?

EDI messages today are used mainly for:

- **Mail piece tracking**. The first postal EDI exchanges were used to track mail items. Mail tracking remains a reason for EDI exchanges. Many postal operators now provide web-based tracking services to their customers. Typically, a person sending a mail item such as an EMS letter or an ordinary parcel can use the item identifier to track this item on the web. Senders can thus determine whether their items have arrived in the destination country and whether they have been delivered. As an item crosses various checkpoints in the destination country, information is sent back to the postal operator of origin via EDI messages exchanged between the concerned postal operators.

- **Quality checks**. EDI messages provide useful information about service quality. Anomalies can be identified and analysed, and corrective action taken. Trends can be discerned, service objectives can be defined, and quality of service measured.
- **Planning**. Pre-advice messages can help the destination operator know when to expect and plan how to process incoming mail.

An increasing number of postal products now rely on EDI message data for making cost calculations, for determining remuneration, and for establishing tariffs. A good example of such use of EDI-based data is the EMS Pay-for-performance plan, where remuneration due is determined from EDI exchanges.

8   Who defines postal EDI standards?

The UPU has put in place a structure for creating and maintaining standards. This structure covers both EDI messaging standards as well as technical standards.

NOTE   Technical standards are also very important for the postal industry. They deal with subjects like the construction of mail object identifiers, the type of barcode to be used on mail objects, the size of labels, the rules for coding international mail processing centres, and other similar questions.

The Standards Board (SB) is the decision-making group. Its members are representatives from designated postal operators. These representatives have wide-ranging knowledge of postal matters.

The SB usually meets four times a year. There are usually between 15 and 40 participants at its meetings.

The SB defines the standardization process. Detailed technical work is delegated to subgroups defined by the SB. The subgroup most closely associated with EDI standards is the DCG–EXG (Data and Code Definition Group – Electronic Exchange Group). Subgroups, too, are also made up of representatives from designated operators; these representatives are usually more specialized in the area of activity of the subgroup.

Other entities may also participate in EDI standardization work. These include:

- the International Bureau (IB) of the UPU, which provides secretariat and expertise;
- the International Postal Corporation (IPC), representing its member postal operators and providing expertise;
- the Postal Technology Centre (PTC) of the UPU, which is an IT solution provider to many postal operators, providing expertise;
- product user groups, representing users of standards for a particular product, such as EMS;
- related standards bodies, such as CEN (European Committee for Standardisation);
- other stakeholders such as manufacturers and solution providers involved in the postal business.

In addition, when standards involve other industries such as airlines or customs authorities, these are usually fully involved in the standardization process via contact committees and ad-hoc groups. The International Bureau also interacts with other standardization bodies such as ISO (International Standards Organization) and CEN (Comité Européen de Normalisation – European Committee for Standardization).

Any party can bring ideas to the SB or its subgroups. If the group decides that an idea should be explored, it creates a work item for it. Work is then assigned to the relevant subgroup. The subgroup then explores the idea and later presents its results. Many individuals may collaborate to develop a new standard. Developing a new standard requires detailed work, ranging from preparing documents and commenting on proposals, to proposing alternatives. Every standard must be fully tested before it is granted the status of an official UPU standard.

More information on UPU standards and the standardization process can be found in the *General information on UPU standards* [1] published on the UPU website.

9   How are EDI standards implemented in an IT solution?

In any IT system EDI messaging is an import/export interface or set of interfaces. It can be schematized as follows:
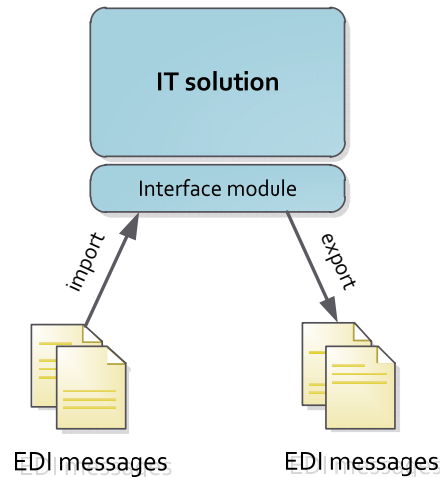

Figure 1 – Import/Export interface schema

Whenever a new EDI message must be handled, the interface must be adapted to handle the new message.

Another aspect is the communication of EDI messages. Once an EDI interchange has been generated by an IT solution, it must be sent to the EDI partner. Similarly, a message must be received from an EDI partner before it can be imported into the receiver's IT system

This communication is bilateral in some cases. Any bilateral exchange is based on a technical agreement between the two concerned parties. This is typically the case for EDI exchanges with local customs authorities: in such cases, the agreement may consist of creating a shared FTP folder accessible securely via the internet. Other solutions are also possible.

Most EDI exchanges between postal partners are executed through EDI networks. Each party seeking to effect EDI exchanges must thus belong to an EDI network and also follow the operating rules of this network.

10   What is an EDI network?

An EDI network is a communication channel and facilitator. An EDI network can be compared to an e-mail provider. Once an e-mail provider has been chosen and configured, e-mails can be exchanged with anybody having a valid email address. Although using different technologies, EDI networks function in a similar manner. Parties wishing to exchange EDI messages with postal partners must belong to an EDI network and have suitable tools to send and receive EDI messages on this network.

Two postal networks coexist today. These are:

–   **GXS**: this is a large multi-purpose network owned by the company GXS Worldwide Inc. The GXS network is used in many areas, including postal EDI exchanges (postal exchanges represent only a fraction of the traffic on this network). Historically, it was the first network used for postal EDI exchanges. IPC monitors postal EDI exchanges across this network. IPC also acts as a network provider to some extent.

–   **POST*Net**: this network belongs to the PTC of the UPU. Initially put in place in the 1990s to assist low-volume postal operators with EDI exchanges, this network is for postal use only. Only designated operators and their partners may use this network.

The two networks are interconnected. A postal operator exchanging EDI on one network can thus reach another postal operator exchanging EDI on the other network.

The interconnection is completely transparent for EDI users. Users do not even need to know on what network each EDI partner is. Any message sent to a partner will be available within minutes to this partner irrespective of the network used by either party.

Charges for both EDI networks are based on message volumes. Network providers also provide additional value-added services such as access to a central data warehouse providing information on EDI exchanges. Examples of such services are CAPE and STORM (IPC) or QCS (PTC).

11   What is an EDI address?

In any postal EDI message, the interchange (header section) contains information identifying the sender and the receiver of the message. These are the origin and destination EDI addresses.

EXAMPLE   `UNB+UNOA:1+GB101:UP+CZ101:DL+120315:0650+INTREF112'`

In this example, the EDI address of the sender is "GB101" and the EDI address of the recipient is "CZ101". This depiction is based on the EDIFACT standard.

The destination EDI address contained in the interchange header is used by EDI networks to determine the intended recipient of the message.

The definition of postal EDI addresses and their associated usage respect some rules. Several patterns of EDI address names have been defined and are used for separating flows of messages:

EDI addresses belonging to postal operators:

Address pattern	Usage description
<xx>001	item level exchanges for EMS (EMSEVT)
<xx>330	item level exchanges for UPU parcels (EMSEVT)
<xx>301	item level exchanges for EPG (European Parcels Group) parcels (EMSEVT)
<xx>350	item level exchanges for registered letters (EMSEVT)
<xx>10<n>	non item-level exchanges (PREDES/RESDES, PRECON/RESCON, CARDIT/RESDIT)
<xx>501	item level exchanges of attributes (ITMATT)

<xx> is an ISO 3166 alpha 2-character country code
<n> is a numeric digit

EXAMPLE   *AU001, BW330, CN350, SE101, SG103, GB501.*

EDI addresses belonging to airlines:

Address pattern	Usage description
<yyy>11	Receipt of CARDIT, generation of RESDIT

<yyy> is the 3-character ICAO[2] airline code.

EXAMPLE   *CPA11 (Cathay Pacific airline).*

---

[2] ICAO – the International Civilian Airlines Organization that maintains unique airline codes.

A postal operator may use more than one EDI address of the form <xx>10<n> for internal reasons. Typically, a postal operator having totally separate sub-entities and/or facilities for handling each mail class may use separate EDI addresses having the form xx10n. Example: SG101 (EMS), SG102 (letters) and SG103 (parcels).

NOTE 1   It is advisable to avoid (or at least limit) this practice as much as possible. Such practices complicate exchanges for partners and often cause problems in EDI exchanges.

NOTE 2   Using more than one EDI address for each item-level pattern is not permitted, except under bilateral agreement. Multiple EDI addresses must conform to pattern <xx>10<n>.

12   How to navigate through a UPU EDI messaging standard document

This chapter identifies the key sections common to all EDI message documents corresponding to messages based on EDIFACT, their meaning, and the reason for their presence.

All document samples provided hereafter refer to M41 [7][8] (message PREDES V2.1). However, the principles explained are also applicable to other EDIFACT-based messages.

12.1   Table of contents

Figure 2 depicts the table of contents of M41:

Figure 2 – Table of contents example

The document is organized in a logical manner. It first provides business-level information in chapter 5 (what goes into a PREDES V2.1, what data elements are provided, what is the logic between the data elements). It then goes into the technical representation of the information in the EDIFACT format (chapter 6).

12.2 Data structure

Chapter 5.2.1 'Data structure' is useful for understanding how data is organized logically. The technical representation derives from this section, which is key to fully understanding the message.

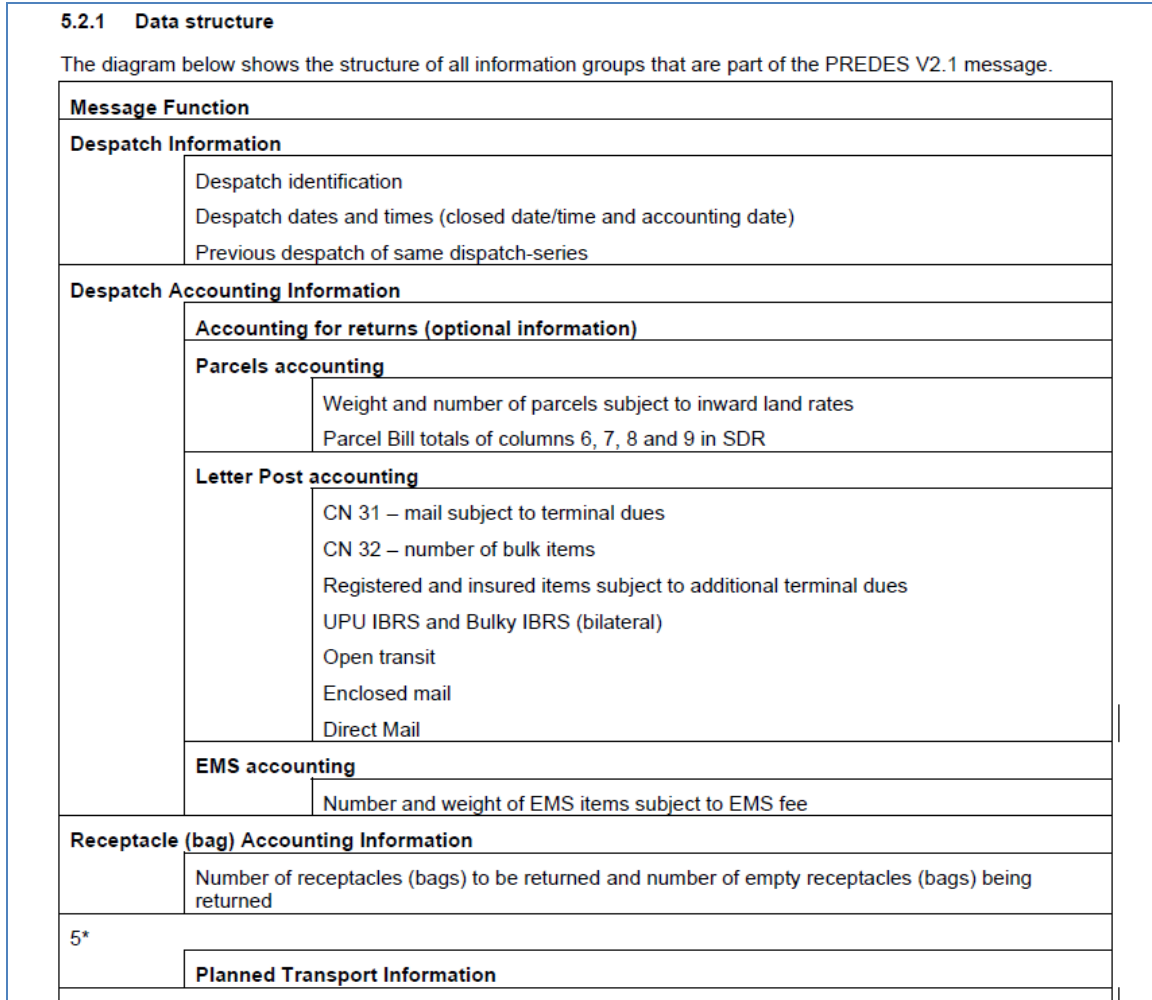Figure 3 is an extract of 5.2.1 for M41:

Figure 3 – Data structure example

The hierarchical depiction indicates the different data groups and their contents. Note that for the last group "Planned Transport Information", the 5* in the margin indicates that the group can be repeated up to five times.

12.3 Business data elements

Chapter 5.2.2 "Business data elements" provides details on each data element within each group.

	DESPATCH INFORMATION (mandatory information)					
Level	M/C	Data flow element name	LDM attribute name	Format	Example	Description
1	M	despatch-ID	DESPATCH.ID	an20	CAYTOAKENBO AAUN80123 (EXAMPLE 1 Toronto CAYTOA to Nairobi KENBOA, category A, sub-class UN; despatch 0123 of 2008)	The ID of the despatch. – 6-character origin IMPC code – 6-character destination IMPC code – 1-character mail category – 2-character despatch-level mail sub-class – 1-character despatch-year – 4-character despatch-number Refer to UPU Standard S8
1	M	despatch-closed-date-time	DESPATCH.CLOSED-DATE-TIME	Date/time	0801152346 (EXAMPLE 2 2008.01.15 23:46)	The local date and time that the despatch was finalised.
1	M	despatch-accounting-date	DESPATCH.ACCOUNTING-DATE	Date	080116 (EXAMPLE 3 2008.01.16)	The date used for postal accounting. This date is identical to the despatch date on the CN 31/CN 32 Letter Bill or the CP 87 Parcel Bill.

Figure 4 – Business data element example

The header part 'DESPATCH INFORMATION (mandatory information)' in the extract provided above is important. It references the data structure of the previous section and also indicates whether or not this data group is mandatory.

The following are explanations for each column of the table:

Column	Explanation
Level	Refers directly to the data structure shown in the previous section. Level 1 is the top level. The 3 data elements shown above have level 1 because the group 'DESPATCH INFORMATION' is at level 1.
M/C	Stands for Mandatory / Conditional. Conditional is the EDIFACT way of stating that a data element is not mandatory. If a data element based on a business rule is mandatory in some situations, then it will appear as C (conditional) here, with an indication and a reference to another section defining the rule.
Data flow element name	The name of the data element, used everywhere in the standards document. This name may be long but is unambiguous.
LDM attribute name	LDM stands for the Logical Data Model, maintained in a separate standards document called M84. The LDM guarantees that all data elements defined in the various EDI messages are integrated and organized. Typically, the same data element may appear in more than one message. The LDM shows this and guarantees that the various definitions in separate messages are consistent. In some cases, a data element may not have any corresponding LDM attribute name. In that case, this column contains "DERIVED", indicating that the data element does not need to be considered a global element in the LDM but can instead be derived from other data elements of the LDM (typically, this element is calculated from other elements).

Column	Explanation
Format	a: alphabetic
	n: numeric
	an: alphanumeric
	an6 means that the data element is alphanumeric with exactly 6 characters. An..6 means that the data element is alphanumeric with <u>up to</u> 6 characters.
	The format may also be given character by character. For example, format nnn.nnn: 3 digits, dot, 3 decimals.
	The format can also be 'Date', 'Date/time', etc. The exact representation format of dates and times will be defined in the next chapter dealing with the EDIFACT representation of data elements.
Example	Provides an example (sometimes more than one example); may also include explanations concerning this example
Description	The description of the data element

12.4   Branching diagram

The branching diagram introduces a key EDIFACT concept – the representation of data.
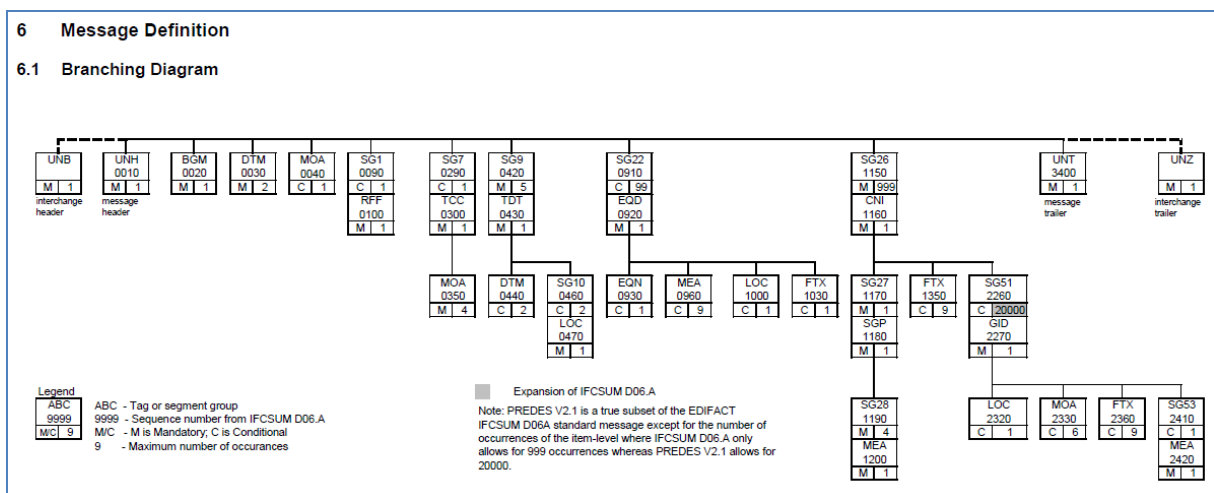

Figure 5 – Branching diagram example

This branching diagram may initially look intimidating. However, it rapidly begins to make sense. These diagrams are very helpful for understanding the EDIFACT structure of a message.

Some elements of this branching diagram are already familiar. In the top left corner, for example, we see a box for UNB. In the top right corner, we see a box for UNZ. We already know that an interchange starts with UNB and ends with UNZ (see Chapter 3 What is EDIFACT?). The branching diagram above gives us the same information. It also tells us that both UNB and UNZ are mandatory ('M' in the bottom left corner of each box) and that it appears only once ('1' in the bottom right corner of each box).

Moving on, we see similar information for UNH and UNT. These delimit a message within the interchange (see Chapter 3 What is EDIFACT?). The branching diagram above also tells us that UNH corresponds to sequence number '0010' from IFCSUM D06.A and that UNT corresponds to sequence number '3400' from IFCSUM D06.A. This information is proof that the message is properly derived from a valid EDIFACT standard message (IFCSUM D06.A in this case).

The other boxes in the diagram provide similar structure information for the contents of the message. In particular, it shows groups of segments that in turn contain several segments, and indicates the order, mandatory/conditional aspect and the maximum number of occurrences for each segment.

It may be noted that this diagram does not deal with data content. This subject is covered by the correspondence table explained in the next section of this document:

12.5   EDIFACT segments table

The EDIFACT segments table lists the business data elements, together with a reference to the EDIFACT segment in which the data element can be found. It should be considered a reference table. It is not necessary to read this table to understand a message.

6.3   EDIFACT segments table

Business data elements, together with a reference to the EDIFACT segment in which each data element can be found in the message, are in the following tables, with the first in order of name and the 2nd in order of segment.

By name

DATA FLOW ELEMENT NAME	Segment Group/Tag	Segment Tag	Data Element No
Carrier	SG09	TDT	0430
conveyance-reference	SG09	TDT	0430
country-group-ID	SG22	LOC	1000
country-group-statistical-period	SG22	FTX	1030
country-group-weight-normal-mail	SG22	MEA	0960
country-group-weight-RV-mail	SG22	MEA	0960
dangerous-goods-class	SG51	FTX	2360
despatch-accounting-date		DTM	0030
despatch-closed-date-time		DTM	0030
despatch-document-indicator	SG26	FTX	1350
despatch-ID		BGM	0020

Figure 6 – EDIFACT segments table example

12.6   EDIFACT message specification

The EDIFACT message specification, on the other hand, must be read in order to understand or implement a message. The specification provides one table per EDIFACT segment – see example below:

MEA	MEASUREMENTS	M				
6311	MEASUREMENT PURPOSE CODE QUALIFIER	M	an..3		WT	Weight
C502	MEASUREMENT DETAILS					
6313	Measurement attribute code	M	an..3		AAD	Total gross weight
C174	VALUE/RANGE	M				
6411	Measure unit code	M	an..3		KGM	
6314	Measure (total-weight-parcels-subject-to-inward-land-rates)	M	n..18	n..6		Format: nnnnn.n If, in the parcel despatch, there are no parcels subject-to-inward-land-rates, the value is 0. If the computed value is negative, as may occur due to rounding or weigh-scale calibration issues, then the value is zero. Refer to 5.2.2 Business data elements

EXAMPLE 24 (232.4 kg):   MEA+WT+AAD+KGM:232.4'

Figure 7 – EDIFACT message specification example

The specification provides details about the composition of each EDIFACT segment. It also provides the data elements and their exact position within each segment.

The first column shows the different EDIFACT data elements and components. A separating line is shown between each EDIFACT data element. The second column provides the EDIFACT data element name (uppercase), or data element component name (lowercase). These two columns provide key information: remember the separators `+` and `:` mentioned in Chapter 3 What is EDIFACT?. `+` is the separator between EDIFACT data elements and `:` is the separator between EDIFACT components within a data element.

A complete segment example is provided for the MEA segment shown above. The details are as follows:

− Segment example: `MEA+WT+AAD+KGM:232.4'`

− After `MEA`, there is `+`. This is always the case: the segment tag is an EDIFACT data element in itself

− then `WT` followed by `+`. This is because WT represents a data element, with no components

− then `AAD` followed by `+`. This is because AAD represents a data element with a single component

− Finally, `KGM:232.4`. KGM is the first component of EDIFACT data element 'VALUE/RANGE' and the weight itself is the second component of this data element. They are thus separated by a column (:)

NOTE 1   It is not unusual to have several `+` or `:` one after the other when some data elements or components are left empty (not used) in a segment.

EXAMPLE   `FTX+ABN++P::139'`

NOTE 2   EDIFACT allows removing all data element and component separators if they are at the end of a segment (this happens when the segment ends with conditional elements and they are not filled).

The line below is valid:

`UNB+UNOA:2+AU101:UP+CA101:DL+080420:1509+INTREF4327+++++'`

Alternatively, this line may be represented as follows:

`UNB+UNOA:2+AU101:UP+CA101:DL+080420:1509+INTREF4327'`

The annexes of a UPU messaging standard document usually provide some complete message examples and may include some explanations on their construction and business meaning.

12.7   Conclusion

Some of the complexity of EDI messaging documents stems from the EDIFACT layer, with its own rules and constraints, on which the document is based.

It is believed that postal EDI documents provide complete information from a business and technical perspective. The information given in these documents is intended to be enough to understand and implement the message it describes.

13   How can EDI exchanges be started and monitored?

The first step to begin EDI exchanges is to decide which EDI messages to exchange.

The next step is to select an EDI network for the exchange.

The list of EDI address patterns (see Chapter 11 What is an EDI address?) shows that a postal operator typically exchanges EDI messages through more than one EDI address.

– *AU001: EMSEVT for EMS*

– *AU330: EMSEVT for parcels*

– *AU350: EMSEVT for letters*

– *AU101: PREDES/RESDES, PRECON/ESCON*

– *AU501: ITMATT*

Almost all designated postal operators are EDI-enabled today. But this does not mean that each postal operator can exchange all EDI messages with all partners. For example, some postal operators exchange EMSEVT for EMS (pattern <xx>001), but not for letters (pattern <xx>350).

It is thus crucial to have a listing of the EDI addresses and capabilities of partners. UPU code list 160/160a provides this information. (More information about UPU code lists see 14, What are code lists?) The IT system generating EDI should have this list in its database and should include a mechanism for maintaining this list.

The IT solution should also permit EDI exchanges by partner, by EDI address and by message type.

For example, a given postal operator may want to restrict the exchange of EMSEVT for letters to only some of its partners. Such a need can arise can arise because of cost, marketing or product policy reasons.

There may be additional restrictions applying to exchanges. It is always important to contact one's EDI network provider before starting new exchanges.

In summary:

– implementing the generation and import of postal EDI messages in an IT solution is not enough to make exchanges work;

– it is also necessary to handle the list of own and partner EDI addresses in this IT solution;

– since this list evolves over time, a mechanism must be put in place to keep it up to date;

– the IT solution must also provide a way of activating the generation of EDI messages, by type of message and by partner EDI address;

– even with all the above mechanisms in place, it is important to monitor EDI exchanges. This will permit the resolution of any issue with EDI generation/receipt that may arise. It will also permit the expansion of EDI exchanges when necessary.

14   **What are code lists?**

Most documents describing postal EDI standards refer to UPU code lists.

The set of possible values in a data element of an EDI message may be limited to some pre-defined values. If these values can change over time without requiring a change to the EDI message using these contents, then the possible values are listed in a UPU code list instead of being listed in the document describing the message. Otherwise, a revision of the standard would be required every time the allowed values are changed.

EXAMPLE   Here is a segment definition in PREDES V2.1:

SGP	SPLIT GOODS PLACEMENT	M			
C237	EQUIPMENT IDENTIFICATION	M			
8260	Equipment identifier (receptacle-type)	M	an..17	a2	Receptacle type See M84 and code list 121 for the allowed values
					EXAMPLE 65 (bag): SGP+BG'
					EXAMPLE 66 (letter tray): SGP+PU'

Figure 8 – Example of a code list

The receptacle-type only allows values defined in code list 121, as indicated by the text in the last column.

All UPU code lists are available on the UPU website at: www.upu.int/en/activities/standards/code-lists.html

NOTE   Many code lists refer to EDI messages, but not all.

Information e-mails about UPU code list changes can be subscribed to via the UPU website.

15   Where can more information be found?

Extensive information on UPU standards is available on the standards section of the UPU website at: www.upu.int/en/activities/standards/about-standards.html

Documents available online (http://www.upu.int/en/activities/standards/standards-documents.html) include:

− Catalogue of UPU standards;

− General information on UPU standards;

− UPU standards glossary;

− Standards status report; and

− Standards Board and working group meeting documents available at: http://www.upu.int/en/activities/standards/meeting-documents.html

The main source of information is the publication *UPU EDI Messaging Standards*. This publication provides up-to-date documents for each EDI Messaging Standard. Subscription forms for this publication can be found online at: www.upu.int/en/activities/standards/upu-edi-messaging-standards.html

A brochure *EDI Providing end-to-end airmail visibility* was published jointly by the UPU, IPC and IATA in 2010 to promote EDI exchanges between postal operators and airlines. This brochure provides a concise graphical summary of EDI exchanges between postal operators and between postal operators and airlines. It is accessible from the UPU website at www.upu.int/en/activities/transport/upu-iata-cooperation.html

Bibliography

This bibliography provides full reference and sourcing information for all standards and other reference sources which are quoted in the above text. For references which mention specific version numbers or dates, subsequent amendments to, or revisions of, any of these publications might not be relevant. However, users of this document are encouraged to investigate the existence and applicability of more recent editions. For references without date or version number, the latest edition of the document referred to applies. It is stressed that only referenced documents are listed here.

NOTE   The UPU EDI Messaging Standards listed below are available by subscription from the UPU International Bureau:
P.O. Box 312, 3000 BERNE 15, SWITZERLAND;
Tel: +41 31 350 3111; Fax: +41 31 350 3110; www.upu.int

[1]   General information on UPU standards, freely accessible on URL www.upu.int

[2]   UN/EDIFACT main page available at www.unece.org; Introducing UN/EDIFACT available at:
www.unece.org/trade/untdid/welcome.html

[3]   ISO 9735: Electronic data interchange for administration, commerce and transport (EDIFACT) – Application level syntax rules [multi-part standard]

[4]   Extensible Markup Language (XML) – W3C, information including information on XML schemas available at: www.w3.org/XML

[5]   World Wide Web Consortium (W3C) main page available at: http://www.w3.org/

[6]   UPU standards glossary, freely accessible on URL www.upu.int

[7]   M17: EMSEVT Message specification, Version 1.0

[8]   M41: PREDES Message specification, Version 2.1

[9]   M13: RESDES Message specification, Version 1.1

[10]   M10: PRECON Message specification, Version 1.1

[11]   M12: RESCON Message specification, Version 1.1

[12]   M39: CARDIT/RESDIT – Data flow version V2

[13]   M14: PREDES Message specification, Version 2.0

[14]   M37: Postal processing events and event reporting

[15]   M33: Postal item attributes and the communication of item information

[16]   M40: EMSEVT Message specification, Version 3.0