River Information Services
Electronic Reporting International

ERI Guide Part III

**Message Implementation manual
Conventions, containing the
technical specifications of the
message standards**

**Version 2.0
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Table of content

The following annexes are attachments to the ERI Guide part III
Message Implementation Manual Conventions
 The Implementation manuals for:
1. (Dangerous) Goods Reporting (IFTDGN) ERINOT
2. e-Manifest / Customs Cargo Report (CUSCAR)
3. Passenger and crew-lists (PAXLST)
4. ERINOT response and receipt message (APERAK) ERIRSP
5. Berth Management Port Notification (BERMAN 2.0)

The following implementation manuals are proposed to be attached as annex or are presently under discussion
6. Ships stores declaration (INVRPT)
7. Waste disposal (WASDIS)
8. Voyage plan
9. Lock plan
10. Port and fairway dues collection

1. Introduction

This document defines the structure of the ERI messages in electronic reporting for inland navigation. In the annexed implementation manuals the exact use of the messages, data elements and codes is defined to ensure common understanding and usage of the messages. The messages are to be sent by on-board or on-shore applications to the competent authority. Where applicable also messages generated by a competent authority or trading partners and sent to on-board or on-shore applications are defined in this document.

For the purpose of notifying the passage of a vessel by a competent authority to another competent authority, similar message structures are to be used.

Both the UN/EDIFACT syntax and the XML possibilities are indicated in this Part III of the ERI Guide.
As presently is foreseen both EDI possibilities will be used in the foreseeable future. As can be determined from the chapter on XML, this technology is easy to implement but difficult to come to common accepted message implementation standards. UNCEFACT has defined under the ebXML initiative a number of standards but whether these standards will become de jure standards is still an open question
It has been reported that UN/EDIFACT is more difficult to implement but by far easier to maintain so it is advised as a good strategy to ensure that both possibilities are supported for the purpose of electronic reporting.

2. UN/EDIFACT message structure

UN/EDIFACT messages are composed of segments. The structure of a message is described in a branching diagram indicating the position and the mutual relationship of the segments and segment groups.

For each segment the data elements are defined which are to be used in a message. Some data elements are combined to form composite data elements.

The messages follow a fixed syntax (ISO 9735).

A segment and a data element within a segment either are mandatory or conditional. Mandatory segments and / or data elements contain important data for a receiving application and must be filled with sensible, (in other words valid) data. Conditional elements need not be present in a message.

Each message starts with two or three segments, the 'interchange header' (UNB) and the 'message header' (UNH). Where required also the "service string advice") UNA is used as a first segment to define which character sets are used in the message.   Each message finishes with the segments 'message trailer' (UNT) and 'interchange trailer' (UNZ). Thus each message is contained in one interchange, and an interchange contains only one single message.

2.1   Description of the segments and data elements

In the message descriptions the following indicators are used:

Column 1 contains the name in form of the acronym (TAG) of the segment group, represented by the hierarchy of segment names on higher levels. This indication is derived from the branching diagram.

Column 2 contains the name in form of the acronym (TAG) of the segment, the number of the composite data element and the number of the data element.

Column 3 indicates the level on which the segment is situated in the branching diagram.

Column 4 indicates whether the segment or data element is mandatory (M) or conditional (C).

Column 5 defines the format of the data element.

Column 6 gives the UN/EDIFACT name of the data element. The names of segments are written in bold upper cases, the names of composite data elements are written in normal upper cases and the names of data elements are written in normal lower cases.

Column 7 gives a description of the data elements (fields). If a fixed value is to be used, the value is indicated in quotes

2.2   Syntax

The full description of the data elements in the service segments is part of ISO 7372 Trade Data Elements Directory

2.2.1.   Character sets

For the characters in the sets below, the 7-bit codes in the basic code table in ISO 646 shall be used, unless the
Corresponding 8-bit codes in ISO 6937 and ISO 8859 or other bit codes are specifically agreed between the
Interchanging partners. Through the usage of the UNA segment Level A character set

Description	Code
Letters,	upper case A to Z
Numerals	0 to 9
Space character	
Full stop	.
Comma	,
Hyphen/minus sign	-
Opening parenthesis	(
Closing parenthesis)	)
Oblique stroke (slash)	/
Equals sign	=

Special Characters

Description	Code	Remarks
Apostrophe	'	Reserved for use as segment terminator
Plus Sign	+	Reserved for use as segment tag and data element separator
Colon	:	Reserved for use as component data element separator
Question mark	?	Reserved for use as release character ? immediately preceding one of the characters ' + : ? restores their normal meaning. For example, 10? + 10 = 20 means 10 + 10 = 20. Question mark is represented by ??.

The following characters are also part of the level A character set.

Description	Code
Exclamation mark	!
Quotation mark	"
Ampersand	&
Percentage sign	%
Asterisk	*
Semi-colon	;
Less-than sign	<
Greater-than sign	>

!

2.2.2.　　Structures
Interchange structure

The Service String Advice, UNA, and the service segments UNB to UNZ

shall appear in the order stated in an interchange. See 2.2.3

There may be several functional groups within an interchange.

A message consists of segments. The structures for segments and for data

elements therein are shown in 2.2.4 .

2.2.3.　　An interchange consists of:
Service String Advice UNA Conditional

- - - - - - - - - - Interchange Header UNB Mandatory

| - - - - - - Message Header UNH Mandatory

| | User Data Segments described in the Annex implementation manual

| - - - - - - Message Trailer UNT Mandatory

- - - - - - - - - - Interchange Trailer UNZ Mandatory

Order of segments and groups of segments within a message

Message structure diagrams and the order of the segments following the

processing rules can be found in the Message Implementation Guidelines

in the annex

2.2.4. Segment structure

Segment Tag …………………..Mandatory

Segment Code …………………Mandatory component data element

  Component D.E. separator……Conditional

    Nesting and repeating indication……. Conditional component data

    element(s)

Data element separator ………. Mandatory

Simple or composite data elements ……. Mandatory or Conditional as

specified in the relevant segments directory and implementation manual

Segment Terminator……………. Mandatory

2.2.5. Data element structure

Simple Data Element ………….. Mandatory or Conditional as specified in

the relevant implementation guideline

Composite Data Element in accordance with segments directory and as

specified in the implementation manual

Component data elements and Component data element separators

Mandatory (see restriction below)

Data element separator Mandatory (see restriction below)

There shall be no component data element separator after the last

component data element in a composite data

element and no data element separator after the last data element in a

segment.

2.2.6. Compressing

In data elements for which the Data Elements Directory specifies variable

length and there are no other restrictions, insignificant character positions

shall be suppressed. In the case of insignificant characters, leading zeroes

and trailing spaces shall be suppressed.

Note, however, that a single zero before a decimal sign is significant and

that a zero may be significant (e.g. to indicate a temperature) if so stated in

the data elements specification of the implementation guidelines.

When compressing messages, the rules below shall be followed.

2.2.6.1. Exclusion of segments

Conditional segments containing no data shall be omitted (including their segment tags).

2.2.6.2. Exclusion of data elements by omission

Data elements are identified by their sequential positions within the segment as stated in the Segment Directory. If a conditional data element is omitted and is followed by another data element, its position shall be indicated by retention of its data element separator.

Tag+DE+DE+++DE+DE+DE'

|_|_____ These two data elements are omitted

2.2.6.3. Exclusion of data elements by truncation

If one or more conditional data elements at the end of a segment are omitted, the segment may be truncated by the segment terminator, i.e. contiguous trailing data element separators are not required to be transmitted.

Tag+DE+DE+++DE' Using the example from 7.2, the last two data elements have been omitted and by ' |____ the segment has been truncated.

2.2.6.4. Exclusion of component data elements by omission

Component data elements are identified by their given sequential positions within a composite data element. If a conditional component data element is omitted and is followed by another component data element, its given position must be represented by its component data element separator.

Tag+DE+CE:CE+CE:::CE'

|_|____ Two component data elements omitted in the last composite data element.

2.2.6.5. Exclusion of component data elements by truncation

One or more conditional component data elements at the end of a composite data element may be excluded by truncation by the data element separator or, if at the end of a segment, by the segment terminator.

Tag+DE+CE+CE' The last component data element in the first composite data element |___|___ has been omitted and also three component data elements in the last composite data element. In both cases the composite data elements

have been truncated, indicated in the first case by the data element separator and in the second case by the segment terminator.

2.2.7. Representation of numeric data element values

2.2.7.1. Decimal sign

The ISO representation for a decimal sign is the comma (,) but a point on the line (.) is allowed. See ISO 31-0 : 1981. Both these characters are part of the Level A and B sets. When the Service String Advice, UNA, is used, its third character specifies the character used in the interchange. It is however strongly recommended to use as a default the , to represent a decimal sign under all circumstances. The decimal sign shall not be counted as a character of the value when computing the maximum field length of a data element. However, allowance has to be made for the character in transmission and reception. When a decimal sign is transmitted, there shall be at least one digit before and after the decimal sign. For values represented by integers only, neither a decimal sign nor decimal zeroes are used unless there is a need to indicate the degree of precision.

Preferred: 0,5 and 2 and 2,0 Not allowed: ,5 or .5 or 2, or 2.

2.2.7.2. Triad separator

Triad separators shall not be used in interchange.

Allowed: 2500000 Not allowed: 2,500,000 or 2.500.000 or 2 500 000

2.2.7.3. Sign

Numeric data element values shall be regarded as positive. Although conceptually a deduction is negative, it shall be represented by a positive value and such cases shall be indicated in the data elements directory. If a value is to be indicated as negative, it shall in transmission be immediately preceded by a minus sign, e.g. -112. The minus sign shall not be counted as a character of the value when computing the maximum field length of a data element. However, allowance has to be made for the character in transmission and reception.

Legend:

Ref. The numeric reference tag for the data element as stated in ISO 7372 UNTDED and, when preceded by S, reference for a composite data element used in service segments

Name Name of COMPOSITE DATA ELEMENT in capital letters

Name of DATA ELEMENT in capital letters

Name of Component data element in small letters

Repr. Data value representation:

a   alphabetic characters

n   numeric characters

an   alpha-numeric characters

a3   3 alphabetic characters, fixed length

n3   3 numeric characters, fixed length

an3   3 alpha-numeric characters, fixed length

a..3   up to 3 alphabetic characters

n..3   up to 3 numeric characters

an..3 up to 3 alpha-numeric characters

M   Mandatory element

C   Conditional element.

Note that a mandatory component data element in a conditional composite data element must appear when the composite data element is used.

Remarks: IA means interchange agreement between the interchanging partners.

If in the ERI specification tables a smaller number is used than the standard requires, than this is indicated within brackets. The remaining space in a data element is to be filled with space characters.

The usage indicators in these Message Implementation Guidelines are as follows:

UNSM Usage	**Usage**	**Indicator in this message guideline**
Mandatory (M)	Mandatory (M)	mandatory due to the standards(M)
Conditional (C)	Required (R)	always required (M)
Conditional (C)	Advised (A)	usage of e.g. a certain code set is strongly advised
Conditional (C)	Dependent (D)	usage of the entity depends upon well defined conditions.
Conditional (C)	Optional (O)	usage is at the need or discretion of the sender of the message
Conditional (C)	Not Used (X)	not to be used (n. a.)

Note In the implementation guidelines of a number of messages the usage indicators have been used explicitly to ensure a uniform use within ERI Throughout the document reference is made to indicators (M, R, A, D, O and X) which are shown adjacent to data items and which dictate for the message the agreed usage of the entities.

Set out below are the indicators and their respective uses:-

Status (S) Value	Description	Remark
M	Mandatory	Indicates that this item is mandatory in the standard message.
R	Required	Indicates that this entity must be sent in this implementation and use is here mandatory.
A	Advised	Indicates that a recognised international code-set i.e. UN, ISO or ERI code set is highly recommended for use in this implementation over any local codes.
D	Dependent	Indicates that the use of the entity depends upon a well-defined condition or set of conditions. These conditions must be clearly specified in the relevant implementation guideline.
O	Optional	Indicates that this entity is at the need or discretion of the sender of the message.
X		Not to be used in this message implementation (n. a.)

3. XML

XML stands for "eXtensible Markup Language". XML describes a simple, extensible syntax for documents. However, XML extends beyond the syntax and beyond documents. It is supported by its so-called 'companion standards' that enhance the core syntax - for example, the ability to query. They form a complete toolbox for publishing and application integration.
The World Wide Web Consortium1 (W3C) developed XML as a replacement of HTML to overcome the limitations of this markup language. SGML2 (ISO 8879) is a meta-language to define specialised vocabularies. HTML3 was one of these specialised vocabularies. XML is a simplification of SGML but XML importantly retains its meta-language aspect.
XML extensibility allows a complete toolbox of supporting standards rather than making it just a syntax. XML extensibility also makes it is an enabling standard; it does not specify a standard structure but a mechanism to define such structures. In other words, there is no such a thing as a "standard XML invoice" but there are mechanisms to create documents such as invoices, catalogues, or tax declarations and standards driven tools to be able to process them.

Internet technology such as XML will facilitate the exchange of structured documents over the Internet but it is of the utmost importance that the lay out and contents of these documents remain clear and in line with the UN ECE, IMO FAL and WCO recommendations on data content. XML offers possibilities for the exchange of data from computer application to computer application or to persons. XML offers more capabilities than its sister HTML but data standards must still be agreed and used for the Schema's and the DTD (document type definitions) including the required tags to make it into the easy tool that can be used consistently throughout the transport chain by for instance shippers, ships, terminals, ports and by SME's involved in inland shipping.
In September 1999 UN/CEFACT launched an international initiative to develop an open XML based framework, enabling the global use of electronic business information, in a consistent, interoperable, and secure manner, in application to application, application to person and person to application environments.
The initiative, which was subsequently named ebXML, was undertaken in conjunction with the Organization for the Advancement of Structured Information Standards. (OASIS) The project's first phase was completed on time in May 2001, following an open international standardisation process, involving both a series of global meetings and the review of very many virtual contributions.
Following the first phase of the project, the specifications have been finalised by each organisation, working in a coordinated manner, taking responsibility for particular specifications and following their development and approval processes.

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1 W3C : World Wide Web Consortium : www.w3.org/

2 SGML : Standardized Generalized Markup Language : www2.echo.lu/oii/en/docstand.html#SGML

3 HTML : Hypertext Markup Language : www2.echo.lu/oii/en/docstand.html#HTML

The framework consists of a set of technical specifications: Part 1, the Technical Architecture, explains the purpose of each of the parts and how they relate to one another.
Currently, the normative specifications that comprise the ebXML framework are:

Part 1. Technical Architecture (TA) V1.04
Part 2. Business Process Specification Schema (BPSS) V1.01
Part 3. Registry Information Model (RIM) V2.0 *
Part 4. Registry services specification (RS) V2.0 *
Part 5. ebXML requirements (REQ) V1.06
Part 6. Collaboration Protocol Profile and Agreement specification (CPPA) V2.0 *
Part 7. Message Service Specification (MS) V2.0 *
Part 8. Core Component Technical Specification (CCTS), Version 2.01.

The Core Component Technical Specification (CCTS) is at an advanced stage of development, following the UN/CEFACT's Open Development Process within the. A draft text for a UN/CEFACT Recommendation on the use of ebXML within governments, commerce and industry is under development.

Short Summary
XML is a universal language for data on the Web that makes it possible for developers to deliver content from a wide variety of applications to the desktop.
XML promises to standardize the way information is searched for, exchanged, adaptively presented, and personalized.
A simple document example:

```
<?XML version="1.0"?>
<message>
<greeting>Hello, World!</greeting>
<farewell>Goodbye, World!</farewell>
</message>
```

Some points of interest of XML:

XML is a close relative of SGML and HTML

- XML is designed to be easy to use and maintain;
- XML is known for its flexibility and adherence to user defined structure;
- XML documents are easy to create;
- Straight forward usable over the Internet;
- Good document structure is very important to the successful utilization;
- XML technical standards are through ebXML becoming available;
- XML can be created using a text editor.

However

- It is not meant to be human readable;
- Application to Application;
- For Business to Business and Business to government XML offers many features;
- XML documents can be easily read through commoditized products.

But

- XML will not eliminate the need for mapping;
- The number of XML based Schema's / DTDs is proliferating;
- XML and EDI are both not tied to old transport protocols;
- Advantages of XML;
- When the Schema's or DTD's are defined XML is easy to use by anybody having a PC which is considered to be an advantage to the SME's It can be converted easily into any language as the contents are structured. The software tools to handle XML such as browsers are readily available. However the need for standards is still a challenge as otherwise the flexibility will lead to many different documents and different textual information. This easy use of XML may lead to a multitude of mappings because anybody can send anything what will result in the fact that undefined contents will lead to constant manual intervention. The use of text in stead of codes will lead to ambiguous information as textual content will need to be translated.

Presently work is done on contents of the XML messages by defining Models using (UMM) Unified Modelling Methodology to come to a Library with core components.

See also the annexed message implementation manuals for XML definitions of messages where these are available.

4. Standard Messages

4.1   ERINOT version 1.2 (Annex I)

The ERI notification message (ERINOT 1.2) must be used for the reporting of voyage related information, and the dangerous and non dangerous cargo carried on board of vessels sailing on inland waterways. The user manual of the ERINOT 1.2 does include all accepted changes requested for this message. The ERINOT message is a specific use of the UN/EDIFACT 'International Forwarding and Transport Dangerous Goods Notification (IFTDGN)' message such as has been developed within the PROTECT organisation. The ERINOT message is based on EDIFACT directory 98.B and Protect implementation version 1.0. Where reporting is mandatory and if technically feasible, an ERI notification message is to be composed and sent to the competent authority for each inland waterway transport. However vessels are invited to report electronically to the competent authorities whenever possible.

For the data and codes contained in the message applications based on this message standard use has been made of the UN Directory D98B.

The notification message based on this standard message can be depicted as follows:

"ERI (Electronic Reporting International) Notification Message" with the following types:

- transport notification from vessel to authority (identifier "VES"), from ship to shore;
- transport notification from carrier to authority (identifier "CAR"), from shore to shore;
- passage notification (identifier "PAS"), from authority to authority.

The following message functions show what sort of message can be expected:

- new message (identifier "9");

- modification of message (identifier "5");

- cancellation of message (identifier "1").

4.2   ERIMAN 1.0 **(Annex II)**

The manifest should be regarded as an inventory of the cargo on board of the respective ship.

Some functions of a manifest are:

1. Customs manifest,
2. Rhine Manifest,

3. General freight manifest,
4. Special goods manifest.

But use of a manifest can also be made to indicate that there is waste on board and the necessary permits for the transport thereof. The message that is to be used for the exchange of data for the various purposes is the CUSCAR in addition to the already used messages e.g. the ERINOT message. The Customs Cargo Report message is the message that is used for the declaration of cargo on board of a vessel. It is maintained by the World Customs Organisation and the ERI user guide has been discussed and corrected in accordance with the requirements of representatives of this organisation.

4.3   Passenger and crew-lists(Annex III)

This message may be exchanged between Captain/Skipper or Carrier (such as inland waterway operators) and Customs, Immigration, Police, ISPS Terminals or any designated authorities.
The message can also be used to transfer passenger / crew data from a Customs, Immigration or other designated authority in the country of departure to the appropriate authorities in the country of arrival of the means of transport.
The transfer of data may occur prior to arrival of the vessel at the place where controls may take place. This is to permit the designated authority at the place of destination to screen this data and take timely decisions related to the clearance of passengers and crew e.g. pre-arrival clearance.
The availability of passenger and crew information is especially important whenever search and rescue operations need to be carried out. So for calamity abatement purposes the availability of passenger and crew lists is crucial.

4.4   Aperak General response and receipt message

4.4.1.   The ERI RESPONSE ERIRSP (Annex IV)
The response message is generated by for instance a RIS centre. This ERIRSP message is derived from this UN/EDIFACT APERAK message. The response messages on the respective functions (new, modification or cancellation) of the ERI notification message ERINOT all have the same structure. The response on a modification or a cancellation contains information whether or not the modification or cancellation has been processed by the receiving system.

4.4.2. The MANIFEST RESPONSE ,
The CUSRES is generated where required as a response message on the CUSCAR or manifest information for the reporting of failures,

modification or cancellation this CUSRES is derived from the UN/EDIFACT APERAK message

4.5   BERMAN version 2.0 **(Annex V)**

The Berth Management message combines the pre-arrival notification respectively general declaration combined into one single notification which is based on the EDIFACT message BERMAN from the UN/EDIFACT D04B directory the implementation manual and guidelines are based on the guidelines as given by the Protect group of ports.

The BERMAN II message is sent by the vessel before arriving at or departing from a berth or a port giving particulars about the time of arrival, the services required and any particulars necessary to ensure prompt handling of procedures and facilitating controls.

The message incorporates the (legal) requirements regarding the notification of a ship to a port. It supports one request for the ship - be it for entering the port, berthing on arrival of the ship, leaving the berth on departure of the ship or shifting of berths for the ship within the port or for only transiting through the port area. The arrival and transit notification contains all details regarding the movement of the ship from outside the port area to the first berth in the port area or in case of transit traffic to the point where the vessel is leaving. Required additional services to be arranged for arrival at a berth may be specified.

The ETA at the entry point and where required leaving point and previous place of call of the ship are required information elements.