DESCRIPTION

OF THE

EUDIN MESSAGING SERVICE INTERFACE

FOR THE EXCHANGE OF

TRANSBOUNDARY MOVEMENTS OF WASTE

RELATED DATA

D R A F T

The EUDIN Messaging System Interface is currently a draft.

The EUDIN Messaging System Interface is fully **based on the Transboundary Movements of Waste (TMW) UN/CEFACT standards**, Core Components Library and XML Schema.

This interface **description** is **specific to** the **European Union** as it contains references to Regulation (EC) No 1013/2006 on shipments of waste.
The **interface** itself is designed to support **worldwide** electronic data interchange.

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1 INTRODUCTION

1.1 Background

With **transboundary movements of waste** there is the risk of adverse effects to human health and the environment. **International treaties and regulations** for the control of waste movements have been established to minimize such risks.

Said regulations lay down **control procedures** for the main parties involved: The parties exporting and importing waste, the facilities for waste recovery or disposal, and the competent authorities of dispatch, of destination and transit.

The procedures include:

1. **Authorization**: Certain transboundary movements of waste require consent from competent authorities;
2. **Announcement**: The actual start of a transboundary movement of waste has to be announced to the competent authorities several work days in advance;
3. **Reporting**: The receipt of waste and the completion of waste recovery or disposal have to be reported to the competent authorities within a narrow time frame after the actual receipt / completion.

A more comprehensive summary of the domain background is provided in Annex B (p.121 ff).

For countries facing a large number of transboundary movements of waste the control procedures result in a huge amount of structurally similar data to be exchanged between parties involved. They also result in a large number of such information exchanges. Therefore the control procedures are a prototypical example where compared to the currently predominant fax communication vast improvements can be achieved using **electronic data interchange**: The **administration** can become **more efficient**, and as a result **environmental control** can become **more effective**.

Many of the parties involved in the exchange of waste movement related data, both competent authorities and businesses, are to date using software solutions for the administration of waste movement data. A large number of different software solutions is in use.

For the **EUDIN** initiative (see page 9), one of the key requirements to an electronic data interchange solution is the ability of parties to continue working with the software solutions that are already in use. Noone shall be required to abandon an already-in-use software solution , nor shall anyone be required to work with different new software applications in parallel to the existing ones. This means that EUDIN's focus is on establishing **interoperability**: On providing means and solutions for the electronic interchange of waste movement related data across software applications.

1.2 Document content & purpose

The following are important **technical results of EUDIN** initiative's (see page 9) work:

1. **Standardized XML data formats** for the business documents relating to transboundary movements of waste (TMW);
2. A **specification of a web service interface for a messaging system** used for the dissemination and retrieval of transboundary movements of waste related documents. This web service interface is based on the standardized XML data formats;
3. An **actual implementation of a messaging system** for the dissemination and retrieval of transboundary movements of waste related documents. This implemented EUDIN Messaging Service exposes the aforementioned specified web service interface.

This document contains a detailed description of the aforementioned technical results.

The main purpose of this document is to provide all the information required to use these technical results from EUDIN in IT software solutions.

The following are the main use cases under consideration for this document:

1. Implementation of an interface for the exchange of TMW related data with the EUDIN Messaging Service;
2. Implementation of serialization (output) and deserialization (input) functions for TMW related data in any of the standardized XML data formats, for other purposes than data exchange with the EUDIN Messaging Service.

1.3 Target audience

The main audience for this document is **IT personel** (coders and analysts) involved in the creation of IT software solutions which for some of the technical results from EUDIN are intended to be used. Typical use cases are listed in the previous section.

The document may also be useful to waste management **domain experts** to find out which structured data can be exchanged electronically, and how and with which constraints this is possible.

For **legal experts** this document may provide insight on the implications and prerequisites of replacing paper based solutions by IT solutions in the domain of transboundary movements of waste.

1.4 Related documents

1.4.1 Legal regulations

The following legal regulations lay down control procedures for transboundary movements of waste. As such they are a basis for the technical specifications and solutions:

1. The ***Basel Convention*** *on* ***the Control of Transboundary Movements of Hazardous Wastes and Their Disposal*** is an international treaty that came into force in 1992 and as of 2009 is signed by over 170 parties worldwide;
2. The *Organisation of Economic Co-Operation and Development* (***OECD***) ***Decision*** C(2001)107/FINAL ***concerning the Control of Transboundary Movements of Wastes destined for Recovery Operations*** can be seen as an externsion of the Basel Convention to waste destined for recovery operations for the OECD area;
3. The ***European Union Regulation*** *(EC) No 1013/2006* ***on shipments of waste*** incorporates the Basel Convention and the OECD Decision C(2001)107/FINAL into Community legislation and specifies further details on the supervision and control of transboundary movements of waste.

1.4.2 Standards

As outlined in Section 1.1, the EUDIN initiative's initial focus is on establishing **interoperability**, on providing means and solutions by which software applications can interoperate, i.e., can electronically interchange waste movement related data.

In particular, there are the following goals:

1. The EUDIN initiative intends to devise and provide technical specifications and solutions, which can henceforth be used to implement electronic data interchange capability for waste movement related data into software applications;
2. The aforementioned technical specifications and solutions have to follow an "ease of implementation" paradigm, which is explained in greater detail under Requirement 19 on page 103. The technical specifications and solutions shall not only make it possible to implement electronic data interchange capability, independent of circumstances such as programming language, implementation framework or operating system. The specifications and solutions shall be such that electronic data interchange capability can be implemented with relative ease: The implementation shall not require rare skills. And it shall require relatively few man-hours.

Standards are crucial to interoperability in the aforementioned sense, as they foster ease of implementation: On the one hand standards are well-known and well-documented. It does not require rare skills to apply standards. On the other hand, for standards there are typically resources available making it possible to apply the standard with relatively few man-hours. Such resources include prototype implementations and software development tools, ranging even to native support of a standard in implementation frameworks.

Taking into account this role of standards, the EUDIN initiative has conducted the following:

1. Available standards and their suitability for the electronic interchange of waste movement related data have been thoroughly analysed. The results are provided in Annex A.4 (p.113).
2. There is a large number of standards, such as XML, XML Schema, SOAP, WSDL, Genericode, UN/CEFACT CCTS and UN/CEFACT CCL, that have actually been applied. The list of analysed standards provided in Annex A.4 includes information about whether or not the standards have been applied to the results devised by EUDIN and why so.
3. Where useful, the EUDIN initiative has initiated and accompanied the standardization of the technical specifications it has devised: The electronic representation of waste movement related documents such as notification, movement announcement and certificate of waste receipt have been standardized with UN/CEFACT, the *United Nations Centre for Trade Facilitation and Electronic Business*. There are several international treaties covered by UN/CEFACT standards, such as the International Plant Protection Convention (IPPC) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The Basel Convention is now covered due to EUDIN's standardization initiative.

1.4.3 References

Legal Regulations:

[1] *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, http://www.basel.int;*

[2] *Organisation for Economic Co-operation and Development Decision of the Council C(2001)107/FINAL concerning the Control of Transboundary Movements of Wastes destined for Recovery Operations, as amended by C(2004)20; http://www.oecd.org;*

[3] *Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste; http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32006R1013*

[4] *Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market (eIDAS); http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014R0910*

Main Technical Standards:

[5] *Advanced Message Queuing Protocol (AMQP), OASIS Standard 29 October 2012, https://www.oasis-open.org/standards#amqpv1.0;*

[6] *Code List Representation (Genericode), OASIS Committee Specification 28 December 2007, http://docs.oasis-open.org/codelist/genericode/doc/oasis-code-list-representation-genericode.html;*

[7] *Extensible Markup Language (XML), W3C Recommendation 26 November 2008; http://www.w3.org/standards/techs/xml;*

[8] *Extensible Stylesheet Languages (XSL), W3C Recommendation 5 December 2006; http://www.w3.org/standards/techs/xsl;*

[9] *ISO/IEC 10646:2003, Information technology – Universal Multiple-Octet Coded Character Set (UCS);*

[10] *ISO/IEC 19757-3:2006 Information technology – Document Schema Definition Languages (DSDL) – Part 3: Rule-based validation – Schematron;*

[11] *ISO/TS 15000-5:2005, Electronic Business Extensible Markup Language (ebXML) – Part 5: ebXML Core Components Technical Specification, Version 2.01 (ebCCTS);*

[12] *SOAP, W3C Recommendation 27 April 2007, http://www.w3.org/standards/techs/soap;*

[13] *Web Services Description Language (WSD), W3C Recommendation 26 June 2007; http://www.w3.org/standards/techs/wsdl;*

[14] *XML Schema (XSD), W3C Recommendation 5 April 2012, http://www.w3.org/standards/techs/xmlschema;*

[15] *XML Signature, W3C Recommendation 11 April 2013, http://www.w3.org/standards/techs/xmlsig;*

[16] *XSL Transformations (XSLT), W3C Recommendation 14 December 2012, http://www.w3.org/standards/techs/xslt;*

[17] *UN/CEFACT Core Components Library (CCL) 13A, http://www.unece.org/cefact/codesfortrade/unccl/ccl_index.html*

[18] *UN/CEFACT XML Schemas 13A, http://www.unece.org/cefact/xml_schemas/index;*

Further technical standards taken into consideration and evaluated:

[19] *AS4 Profile of ebMS 3.0, OASIS Standard 23 January 2013, https://www.oasis-open.org/standards#as4profilev1.0;*

[20] *ebXML Messaging Services (ebMS), OASIS Standard 1 October 2007,https://www.oasis-open.org/standards#ebxmlmsgv3;*

[21] *MIME-Based Secure Peer-to-Peer Business Data Interchange Using HTTP, Applicability Statement 2 (AS2), The Internet Engineering Task Force (IETF)Request For Comments (RFC) 4130, http://www.ietf.org/rfc/rfc4130.txt;*

[22] *Security Assertion Markup Language (SAML), OASIS Standard 15 March 2005, https://www.oasis-open.org/standards#samlv2.0;*

[23] *Universal Description and Discovery Integration (UDDI), OASIS Standard 19 July 2002, https://www.oasis-open.org/standards#uddiv2;*

[24] *Web Services Addressing, W3C Recommendation 9 May 2006; http://www.w3.org/standards/techs/wsaddr;*

[25] *Web Services Atomic Transaction (WS-AtomicTransaction), OASIS Standard 2 February 2009, https://www.oasis-open.org/standards#wstx-wsatv1.2;*

[26] *Web Services Business Activity (WS-BusinessActivity), OASIS Standard 2 February 2009, https://www.oasis-open.org/standards#wstx-wsbav1.2;*

[27] *Web Services Business Process Execution Language, OASIS Standard 11 April 2007, https://www.oasis-open.org/standards#wsbpelv2.0;*

[28] *Web Services Context (WS-Context), OASIS Standard 2 April 2007, https://www.oasis-open.org/standards#wscontextv1.0;*

[29] *Web Services Coordination (WS-Coordination), OASIS Standard 2 February 2009, https://www.oasis-open.org/standards#wstx-wscoorv1.2;*

[30] *Web Services Dynamic Discovery (WS-Discovery), OASIS Standard 1 July 2009, https://www.oasis-open.org/standards#ws-discoveryv1.1;*

[31] *Web Services Federation Language, OASIS Standard 22 May 2009, https://www.oasis-open.org/standards#wsfedv1.2;*

[32] *Web Services Human Task (WS-Human Task), OASIS Committee Specification 17 August 2010, http://docs.oasis-open.org/bpel4people/ws-humantask-1.1-spec-cs-01.html;*

[33] *Web Service Interoperability (WS-I), OASIS Profiles, Sample Applications and Testing Tools, 9 November 2010, http://ws-i.org/;*

[34] *Web Services Make Connection (WS-MakeConnection), OASIS Standard 2 February 2009, https://www.oasis-open.org/standards#wsmcv1.1;*

[35] *Web Services Notification (WSN), Oasis Standard 1 October 2006, https://www.oasis-open.org/standards#wsnv1.3;*

[36] *Web Services Policy, W3C Recommendation 4 September 2007, http://www.w3.org/standards/techs/wspolicy;*

[37] *Web Services Reliable Messaging (WS-ReliableMessaging), OASIS Standard 2 February 2009,https://www.oasis-open.org/standards#wsrx-rmv1.2;*

[38] *Web Services Resource Access - Web Services Enumeration (WS-Enumeration), Web Services Eventing (WS-Eventing), Web Services Fragment (WS-Fragment), Web Services Metadata Exchange (WS-MetadataExchange), Web Services Transfer (WS-Transfer), Web Services Event Descriptions (WS-EventDescriptions), Web Services SOAP Assertions (WS-SOAPAssertions), W3C Recommendations 13 December 2012, http://www.w3.org/standards/techs/resaccess;*

[39] *Web Services Resource Framework (WSRF), OASIS Standard 1 April 2006, https://www.oasis-open.org/standards#wsrfv1.2;*

[40] *Web Services Secure Conversation (WS-SecureConversation), OASIS Standard 2 February 2009, https://www.oasis-open.org/standards#wstx-wsbav1.2;*

[41] *Web Services Security (WS-Security), OASIS Standard 1 February 2006, https://www.oasis-open.org/standards#wssv1.1;*

[42] *Web Services Security Policy (WS-SecurityPolicy), OASIS Standard 25 April 2012, https://www.oasis-open.org/standards#wssecpolv1.3;*

[43] *Web Services Trust (WS-Trust), OASIS Standard 25 April 2012, https://www.oasis-open.org/standards#wstrustv1.4;*

[44] *XML Advanced Electronic Signatures (xAdES), ETSI Standard 2010-12;*

[45] *XML Canonicalization, W3C Recommendation 2 May 2008, http://www.w3.org/standards/techs/xmlc14n;*

[46] XML Encryption, W3C Recommendation 11 April 2013, http://www.w3.org/standards/techs/xmlenc;

[47] XML Key Management Specification (XKMS), W3C Recommendation 28 June 2005; http://www.w3.org/standards/techs/xkms;

[48] XML Signature, W3C Recommendation 11 April 2013, http://www.w3.org/standards/techs/xmlsig;

Other documents:

[49] Business Requirements Specification (BRS) for Transboundary Movements of Waste (TMW) 1.0; published by UN/CEFACT; http://www.unece.org/cefact;

Projects:

[50] EU Secure Identity Across Borders Linked STORK 2.0,https://www.eid-stork2.eu;

[51] EU Trust Services and e-ID, Digital Agenda for Europe, http://ec.europa.eu/digital-agenda/en/trust-services-and-eid;

1.5 Organisational environment

1.5.1 EUDIN

The ***EUDIN (European Data Interchange for Waste Notification Systems)*** initiative is the cooperation of (currently) Austria, Belgium, Germany, Luxembourg, the Netherlands and Switzerland to establish electronic data exchange for waste movement control procedures.

It was EUDIN's initiative to establish an international standard for the electronic exchange of waste movement related data. EUDIN works with UN/CEFACT for international standardization.

1.5.2 Nordic TFS

Nordic TFS is a project of (currently) Denmark, Finland, Norway and Sweden working on an IT solution for exchanging waste movement related data electronically. TFS is an acronym for "Transfrontier Shipments of Waste".

Nordic TFS and EUDIN and its technical solutions have initially evolved independent of each other. In 2012 cooperation between EUDIN and Nordic TFS has been started. Nordic TFS and EUDIN intend to interconnect their respective IT solutions.

1.5.3 Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management

The ministry is the competent authority for transboundary movements of waste from, to, or through Austria.

The ministry is also Austria's point of contact to the EUDIN initiative. Within the EUDIN initiative, Austria has taken the lead for international standardization, developing technical specifications, as well as implementing and running the central EUDIN messaging system component ("Messaging Service").

1.5.4 Environment Agency Austria

Umweltbundesamt (Environment Agency Austria) is Austria's environmental protection agency. The agency works with the Ministry to analyze, implement and operate several e-Government solutions for environmental data, including waste movement related data.

The Environment Agency also takes over responsibilities from the Ministry for several EUDIN IT tasks.

1.5.5 UN/CEFACT

UN/CEFACT is the United Nations Centre for Trade Facilitation and Electronic Business. It is one of the most relevant bodies with respect to standardization with the goal of electronic data exchange interoperability.

The EUDIN initiative decided to initiate the specification of international standards for the electronic interchange of waste movement related data. This goal has been achieved by working with UN/CEFACT for several years.

1.5.6 Hazardous Waste Task Force

The *Hazardous Waste Task Force* (*HWTF*) is part of the *North American Commission for Environmental Cooperation* (*CEC*).

The Hazardous Waste Task Force is one of several parties who were stakeholders in the UN/CEFACT standardization process for waste movement related data exchanges.

1.6 Document structure

The document is structured as follows:

It starts with an **introduction** in **Chapter** 1. The introduction describes contents and purpose of the document, its audience, the organizational environment and related documents.

The **interface change log** can be found in **Chapter 2**. It describes what has changed in the interface specification of the EUDIN Messaging Service compared to previous published versions.

Chapter 3 (pages 12ff.) contains **general provisions** related to the **XML data formats** for TMW related **business documents**. In particular, the components of the data format specification are listed.

A detailed description of the data elements in the **XML data formats for** TMW related **business documents** is provided in **Chapter 4** (pages 14ff.).

In **Chapter 5** (p.63) follows a description of the EUDIN Messaging Service web service interface. The XML data formats described in the previous chapter are used in the EUDIN Messaging Service interface.

Chapter 6 (p.91) contains web service endpoint information for the service implemented and operated by EUDIN.

A list of provisions for software implementing the web service interface, i.e., for clients to the web service, is provided in **Chapter 7** (p.91ff).

There follow two Annexes. The Annexes contain information that may be useful, but are not required for implementing web service client capability.

Annex A (p.97ff) provides background information and rationale explaining the motivation in the design of the EUDIN Messaging Service web service. This background information contains requirements taken into account, standards evaluated and applied and provides explanations and reasons for the system to be designed the way it is designed.

Readers not familiar with the **domain of waste movements** and the **control procedures** as by the **Basel Convention** are advised to read an introduction in **Annex B** (pages 121ff.) prior to reading the interface description content.

1.7 Document history

This document contains the description of one specific interface version, namely v0.17 (2017-11-07).

There may be new revisions of the interface description document for the same interface version, such as for providing more illustrative examples, more precise definitions, or in order to correct grammatical or orthographical mistakes. Only such changes are recorded in the following document history, whereas changes to the interface itself are recorded separately and listed in Chapter 2 (p.12).

The document history does not date back to previous versions of the interface. It only lists officially published document revisions.

Revision	Date	Description of changes
Rev01	2017-07-10	Draft description document.

1.8 Contact

Comprehensive information about EUDIN, including news and updates, is provided on the EUDIN website, http://www.eudin.org.

Enquiries about EUDIN should be directed to edm-helpdesk@umweltbundesamt.at.

The points of contact are provided by the following organizations:

Environment Agency Austria (Umweltbundesamt)
Spittelauer Lände 5
Vienna, 1090
Austria
http://www.umweltbundesamt.at

Federal Ministry of Agriculture, Forestry, Environment and Water Management
Stubenbastei 5
Vienna, 1010
Austria
http://www.bmlfuw.gv.at/

2 Interface Change Log

The following change log describes what has changed in a published version of the EUDIN Messaging Service interface compared to the respective previous published version, without consideration of draft versions.

Version	Date	Description of changes
v0.11	2013-09-23	Draft interface specification.
v0.14	2017-07-10	Draft interface specification. Added cancellation (ShareDocumentCancellation operation on page 73) and signalling status information back from the receiving end to the sending end (ShareRetrieverStatus operation on page 85, see also transaction ID description on page 66).

3 Business Document XML Format General Provisions

3.1 Preface

The goal of the EUDIN initiative is the realization of solutions for the electronic exchange of transboundary movements of waste related business documents and business data instances.

Defining formats for the electronic representation of said business documents and business information instances is crucial to this goal.

There is an important requirement taken into account in the definition of said data formats: The data is expected to be machine processable to a certain degree. For instance, data is expected to be provided in a way such that operations like the following can be implemented in software with relative ease and accuracy:

- Searching and filtering data instances according to dynamic criteria, such as by notifier, type of waste or country of destination.
- Aggregation functions, like calculating sums, arithmetic means, minima and maxima of amounts of waste.

This is achieved via structured data formats. Structured data formats use separately identifiable data elements.

A data format can be seen as a set of rules on how to represent instances of information as sequences of bytes. Seen from the other way around, a data format is also used to tell apart sequences of bytes which may be valid representations of a certain type of document from those that aren't.

This Chapter contains a general account of how the data formats are defined. It also describes how software solutions have to deal with the generation and processing of data instances in order to be compliant with the specifications.

3.2 The role of XML Schema Definitions (XSDs) in TMW data formats

This is the definition of XML Schema from the W3C specification:

> *XML Schemas express shared vocabularies and allow machines to carry out rules made by people. They provide a means for defining the structure, content and semantics of XML documents.*

XML Schema can be seen as a standardized language for expressing rules of what data instances need to look like. By providing XML Schema, several tasks, such as the validation of data instances (checking if a data instance complies with the rules of a certain data format) and the parsing of data (deserialization, reading and processing a sequence of bytes) can be accomplished or supported by existing software solutions.

XML Schema Definitions **are** however only **used** in the definition of TMW data formats: They are only **a part** of the data format specification.

There are complentary parts of the data format specification that are of equal importance to the XML Schema Definitions.

There are several reasons for not solely using XML Schema Definitions for the specification of TMW data formats, including the following:

1. XML Schema is a formalized language and as such has its limitations. There are rules that are important but cannot be expressed via XML Schema.
2. It is very common for XSD files to be used with code generation tools. For any publication of a new version of an XSD there's the potential need for software developers to regenerate, adapt, compile and distribute their software. This is something to be avoided as much as possible. Therefore only such rules that are expected to remain unchanged will typically be expressed in XML Schema, whereas different solutions will be used for more dynamic rules.
3. A data instance is either valid or invalid with respect to an XML Schema Definition. In other words: Every rule expressed in an XML Schema Definition is a "MUST rule". There is no way of expressing "SHOULD rules".

3.3 Composition of the data format specifications

The TMW data format specification is composed of the following:

1. One or more XML Schema Definitions (XSD files)
2. The xsd files may be complemented by annotated XSD files, which except for added annotations defining the semantic content expected in data elements are identical to the unannotated XSD files.

Annotated XSD files may be especially useful for coders and testers, avoiding the need of looking up definitions in a separate description document.

3. A description of the document structure defined by the XSD files and the semantic content expected in each data element. This description is provided in Chapter 4 (p.14 ff).
4. A **data requirements document**. This document contains additional rules for the data format. Compliance with rules defined in the data requirements document may be mandatory for some rules, and only recommended but not mandatory for other rules.
5. The XML format description and the data requirements may contain references to codelists. Codelists are published separately, including in machine processable formats.

4 BUSINESS DOCUMENT XML DATA FORMAT STRUCTURE

4.1 Preface

This chapter contains a specification of the business document data formats, including detailed descriptions of the contents expected in the various data elements (definition of semantics).

These data formats for transboundary movements of waste related business documents have been standardized at UN/CEFACT. As usual with CCTS-based standardization, the standard exists in two forms, (1) a syntax independent form and (2) XML Schema. The syntax-independent form is known as the UN/CEFACT Core Component Library.

In order to ensure transparency about how this description relates to the UN/CEFACT standards, data elements are presented with their so-called UN-ID. The UN-ID is an 8-digit identifier with "UN" prefix, such as UN03000316. With these IDs the corresponding items in both the relevant UN/CEFACT publications, Core Component Library and XML Schema, can be uniquely identified.

4.2 Types of Business Documents

The interface specification covers the following types of messages. The content listed for each message is for illustrational purposes and may not be complete. Complete content specifications are provided in section 4.5 (p.19).

1. **Certificate Of Waste Receipt** (p.19)
   Purpose: Confirmation of the receipt of waste by a recovery or disposal facility, or by the consignee;
   Content: Receiver; received waste; intended recovery or disposal operation;
   Expected occurrence: One per individual shipment of waste.
2. **Certificate Of Waste Recovery Disposal** (p.19)
   Purpose: Certification of the completion of an interim or non-interim recovery or disposal operation;
   Content: Recovery or disposal operation; recovery or disposal facility;
   Expected occurrence: One per individual shipment of waste and recovery or disposal facility (multiple recovery or disposal facilities may be involved in the recovery or disposal of an individual shipment of waste).
3. **Confirmation Of Message Receipt** (p.20)
   Purpose: Acknowledgement of the receipt of a message;
   Content: Identification of the received message; reception status;
   Expected occurrence: One per transmitted message.
4. **Movement Announcement** (p.20)
   Purpose: Prior information regarding the actual start of a waste shipment;
   Content: Actual quantity of waste; actual date of shipment; carriers; notifier, consignee;

Expected occurrence: One per individual shipment of waste. Note: As is generally the case with announcements, there is a business requirement for Movement Announcements to be revocable.

5. **Notification Acknowledgdement** (p.20)
   Purpose: Acknowledgement of the receipt of a properly completed notification;
   Content: Notification number; date of receipt; date of acknowledgement; acknowledging authority;
   Expected occurrence: One per notification and competent authority.

6. **Notification Decision** (p.21)
   Purpose: Decsision as regards one or more notified shipments;
   Content: Decision date; indication of consent or objection; conditions; validity period of the consent;
   Expected occurrence: One per notification and competent authority.

7. **Notification Submission** (p.21)
   Purpose: Submission of a notification of one or more intended shipments of waste;
   Content: Type and total quantity of waste intended to be shipped; period of time for shipments; countries of despatch, transit and destination; notifier, carrier, consignee; recovery or disposal facilities; recovery or disposal operations;
   Expected occurrence: At most one per notifier, country of despatch, country of destination, period of time and type of waste.

8. **Request For Further Notification Information** (p.21)
   Purpose: Request for further notification information and documentation by the competent authorities;
   Content: Reference to the notification; further information request text;
   Expected occurrence: Zero to many for each notification and competent authority.

9. **Transport Statement** (p.22)
   Purpose: Transmission of issues with respect to a shipment of waste;
   Content: Reference to shipment; type, severity and description of the issue;
   Expected occurrence: Zero to many for each individual shipment and sending party.

4.3 Domain Term Index

In the definition of the message content semantics this specification uses the terminology of the European Union Regulation (EC) No 1013/2006 on shipments of waste [3], which in some cases is different from the terminology used in the Basel Convention and the OECD Decision C(2001)107/FINAL. The terminology with terms such as *export*, *import*, *transit*, *shipment* and *competent authority* is used without further explanation.

This section lists domain specific terms and where to find data related to that term in the message structures. More domain background information can be found in 121.

Term	Data structure elements related to the term
Carrier	*CarrierParty* in *SingleTransportMovement* (p.45)
Consignee	*ImporterParty* in *WasteImport* (p.26)
Export	*WasteExport* in *MovementAnnouncement* (p.23), *WasteExport* in *NotificationSubmission* (p.24)
Financial Guarantee	*FinancialGuarantee* in *NotificationSubmission* (p.24)
Import	*WasteImport* in *MovementAnnouncement* (p.23), *WasteImport* in *NotificationSubmission* (p.24)
Interim Recovery or Disposal	*InterimWasteRecoveryDisposal* in *MovementAnnouncement* (p.23), *InterimWasteRecoveryDisposal* in *NotificationSubmission* (p.24), *SubsequentInterimWasteRecoveryDisposal* in *MovementAnnouncement* (p.23), *SubsequentInterimWasteRecoveryDisposal* in *NotificationSubmission*

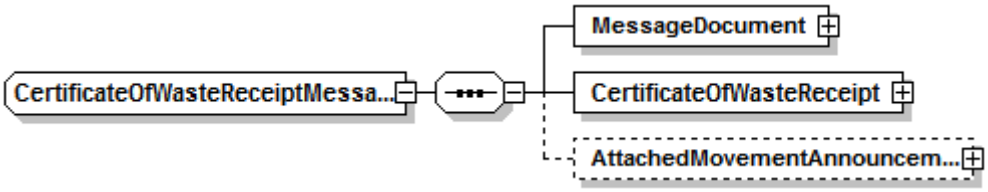
	(p.24)
Mode of Transport	*TransportModeCode* in *SingleTransportMovement* (p.45)
Non Interim Recovery or Disposal	*NonInterimWasteRecoveryDisposal* in *MovementAnnouncement* (p.23), *NonInterimWasteRecoveryDisposal* in *NotificationSubmission* (p.24)
Notifier	*ExporterParty* in *WasteExport* (p.26)
Point of Entry (into a Country)	*StartLocation* in *CountrySectionRoute* (p.33)
Point of Exit (from a Country)	*EndLocation* in *CountrySectionRoute* (p.33)
Producer	*ProducerParty* in *WasteProduction* (p.26)
Recovery or Disposal Facility	*RecoveryDisposalParty* in *CertificateOfWasteRecoveryDisposal* (p.23), *TreatmentParty* in *WasteRecoveryDisposal* (p.26)
Serial Number (of a Shipment)	*SequenceNumeric* in *AnnouncedWasteTransportMovement* (p.29), *SequenceNumeric* in *ReferencedWasteTransportMovement* (p.43)
Special Handling Requirements	*SpecialHandlingInstructions* in *AnnouncedWasteMaterial* (p.28), *SpecialHandlingRequirementIndicator* in *AnnouncedWasteMaterial* (p.28)
Type of Waste	*TypeCode* in *AnnouncedWasteMaterial* (p.28), *TypeCode* in *NotifiedWasteMaterial* (p.37)
Waste	*AnnouncedWasteMaterial* in *MovementAnnouncement* (p.23), *NotifiedWasteMaterial* in *NotificationSubmission* (p.24), *ReceivedWasteMaterial* in *CertificateOfWasteReceipt* (p.22)

4.4 Component Index

4.5 Component Specification

Messages

CertificateOfWasteReceiptMessage

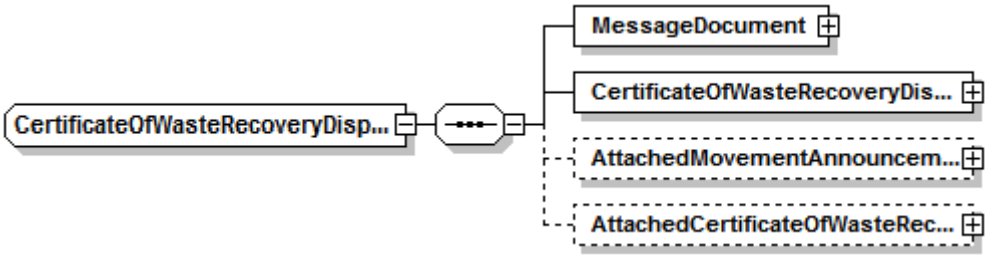


Confirmation of the receipt of waste by a recovery or disposal facility, or by the consignee, pursuant to Articles 15 and 16 of the Regulation (EC) No 1013/2006.

Elements

Name	Type	Definition
MessageDocument	1 .. 1 *MessageDocument* (p.36)	General message information: Sender, receiver, etc.
CertificateOfWasteReceipt	1 .. 1 *CertificateOfWasteReceipt* (p.22)	Details on the receipt of waste.
AttachedMovementAnnouncement	0 .. 1 *MovementAnnouncement* (p.23)	Details on the actual start of the received shipment of waste, as provided by the notifier. Note: It is due to technical reasons (automatic faxes via Message Broker) that this information might need to be resent or sent back. Message receivers shall ignore this data.

CertificateOfWasteRecoveryDisposalMessage



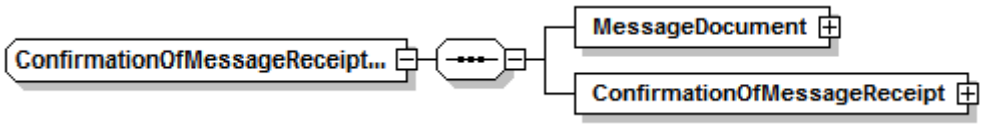
Certification of the completion of an interim or non-interim recovery or disposal operation, pursuant to Article 15 (d) and (e) and Article 16 of the Regulation (EC) No 1013/2006.

Elements

Name	Type	Definition
MessageDocument	1 .. 1 *WasteRecoveryDisposalMessageDocument* (p.49)	General message information: Sender, receiver, etc.
CertificateOfWasteRecovery	1 .. 1	Details on the interim or non-interim recovery or disposal of

Disposal	*CertificateOfWasteRecoveryDisposal* (p.23)	waste.
AttachedMovementAnnouncement	0 .. 1 *MovementAnnouncement* (p.23)	Details on the actual start of the original shipment of waste, as provided by the notifier. Note: It might be necessary to attach the movement announcement data to the certificate of waste recovery disposal message for certain limited dissemination systems and compatibility with out-dated ways of dissemination such as fax. The recipient of a certificate of waste recovery disposal message should however ignore the attached movement announcement data.
AttachedCertificateOfWasteReceipt	0 .. 1 *CertificateOfWasteReceipt* (p.22)	Details on the receipt of waste, as provided by the consignee. Note: It is due to technical reasons (automatic faxes via Message Broker) that this information might need to be resent or sent back. Message receivers shall ignore this data.

ConfirmationOfMessageReceiptMessage

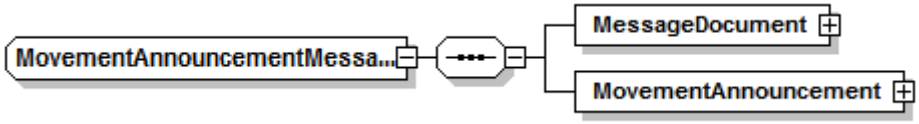


Acknowledgement of the receipt of a message.

Elements

Name	Type	Definition
MessageDocument	1 .. 1 *IdentifiedMessageDocument* (p.34)	General message information: Message identification.
ConfirmationOfMessageReceipt	1 .. 1 *ConfirmationOfMessageReceipt* (p.23)	Details on the acknowledgement of a message receipt.

MovementAnnouncementMessage

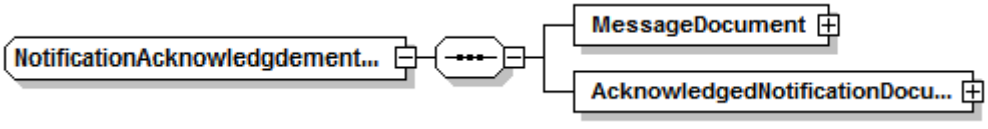


Prior information regarding the actual start of a shipment, pursuant to Article 16 of the Regulation (EC) No 1013/2006.

Elements

Name	Type	Definition
MessageDocument	1 .. 1 *MessageDocument* (p.36)	General message information: Sender, receiver, etc.
MovementAnnouncement	1 .. 1 *MovementAnnouncement* (p.23)	Details on the actual start of the waste shipment.

NotificationAcknowledgdementMessage

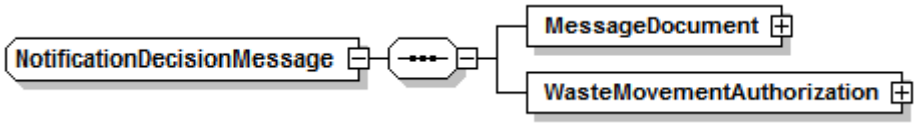


Acknowledgement of the receipt of a properly completed notification, pursuant to Article 8 (2) of the Regulation (EC) No 1013/2006.

Elements

Name	Type	Definition
MessageDocument	1 .. 1 *MessageDocument* (p.36)	General message information: Sender, receiver, etc.
AcknowledgedNotificationDocument	1 .. 1 *AcknowledgedNotificationDocument* (p.28)	Details on the acknowledgement of the receipt of a properly completed notification.

NotificationDecisionMessage

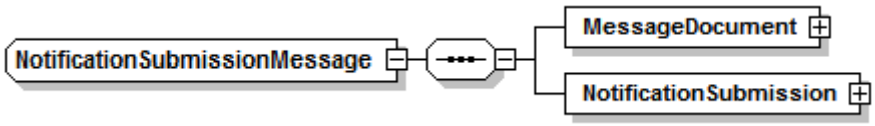


Decsision as regards one or more notified shipments, pursuant to Article 9 of the Regulation (EC) No 1013/2006.

Elements

Name	Type	Definition
MessageDocument	1 .. 1 *MessageDocument* (p.36)	General message information: Sender, receiver, etc.
WasteMovementAuthorization	1 .. 1 *WasteMovementAuthorization* (p.48)	Details on a decsision as regards one or more notified shipments: consent, consent with conditions or objections.

NotificationSubmissionMessage

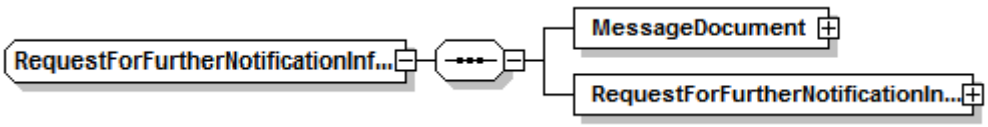


Submission of a notification of one or more intended shipments of waste, pursuant to Article 4 of the Regulation (EC) No 1013/2006.

Elements

Name	Type	Definition
MessageDocument	1 .. 1 *MessageDocument* (p.36)	General message information: Sender, receiver, etc.
NotificationSubmission	1 .. 1 *NotificationSubmission* (p.24)	Details on the intended shipments of waste that are submitted within the notification.

RequestForFurtherNotificationInformationMessage



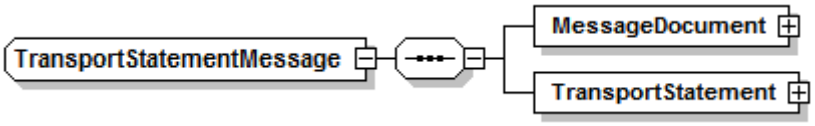
Request for information and documentation by the competent authorities, pursuant to Article 8 (1) of the Regulation (EC) No 1013/2006.

Elements

Name	Type	Definition
MessageDocument	1 .. 1 *MessageDocument*	General message information: Sender, receiver, etc.

	(p.36)	
RequestForFurtherNotificationInformation	1 .. 1 *RequestForFurtherNotificationInformation* (p.25)	Details on the request for information and documentation: Identification of the notification to which the request relates, and the request expressed as text.

TransportStatementMessage



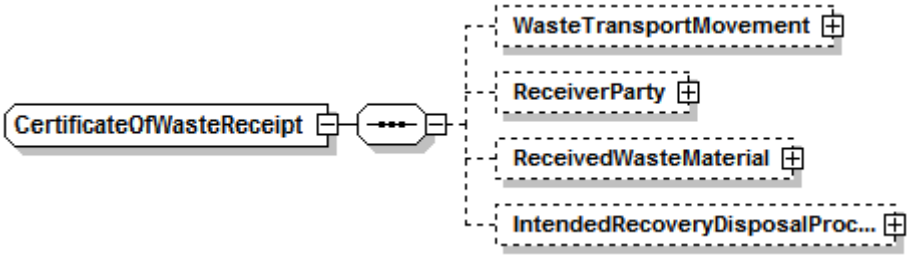
Transmission of issues with respect to a shipment of waste.

Elements

Name	Type	Definition
MessageDocument	1 .. 1 *MessageDocument* (p.36)	General message information: Sender, receiver, etc.
TransportStatement	1 .. 1 *TransportStatement* (p.25)	Details on issues with regard to a shipment of waste.

Message Assembly

CertificateOfWasteReceipt



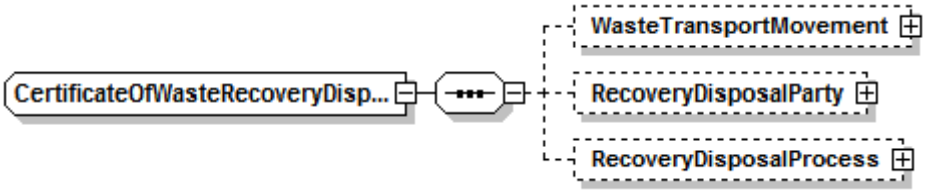
Details on the receipt of waste: Receiving party (recovery or disposal facility, or consignee), received quantity of waste, etc.

Elements

Name	Type	Definition
WasteTransportMovement	0 .. 1 *ReferencedWasteTransportMovement* (p.43)	Identification of the received shipment of waste: Notification number and serial shipment number.
ReceiverParty	0 .. 1 *Party* (p.40)	The party confirming the receipt of waste.
ReceivedWasteMaterial	0 .. 1 *ReceivedWasteMaterial* (p.42)	Details on received waste: Date of reception, accepted fraction, rejected fraction.
IntendedRecoveryDisposalProcess	0 .. 1 *NotifiedWasteRecoveryDisposalProcess* (p.38)	The recovery or disposal operation intended for the received and accepted waste.

CertificateOfWasteReceipt is used within: CertificateOfWasteReceiptMessage (p.19), CertificateOfWasteRecoveryDisposalMessage (p.19)

CertificateOfWasteRecoveryDisposal



Details on the interim or non-interim recovery or disposal of waste: recovery or disposal process, recovery or disposal facility, etc.

Elements

Name	Type	Definition
WasteTransportMovement	0 .. 1 *ReferencedWasteTransportMovement* (p.43)	Identification of the shipment of waste whose recovery or disposal is confirmed: Notification number and serial shipment number.
RecoveryDisposalParty	0 .. 1 *Party* (p.40)	The recovery or disposal facility confirming the recovery or disposal of waste.
RecoveryDisposalProcess	0 .. 1 *CompletedWasteRecoveryDisposalProcess* (p.31)	Details on the completed recovery or disposal operation: Type of operation and date.

CertificateOfWasteRecoveryDisposal is used within: CertificateOfWasteRecoveryDisposalMessage (p.19)

ConfirmationOfMessageReceipt

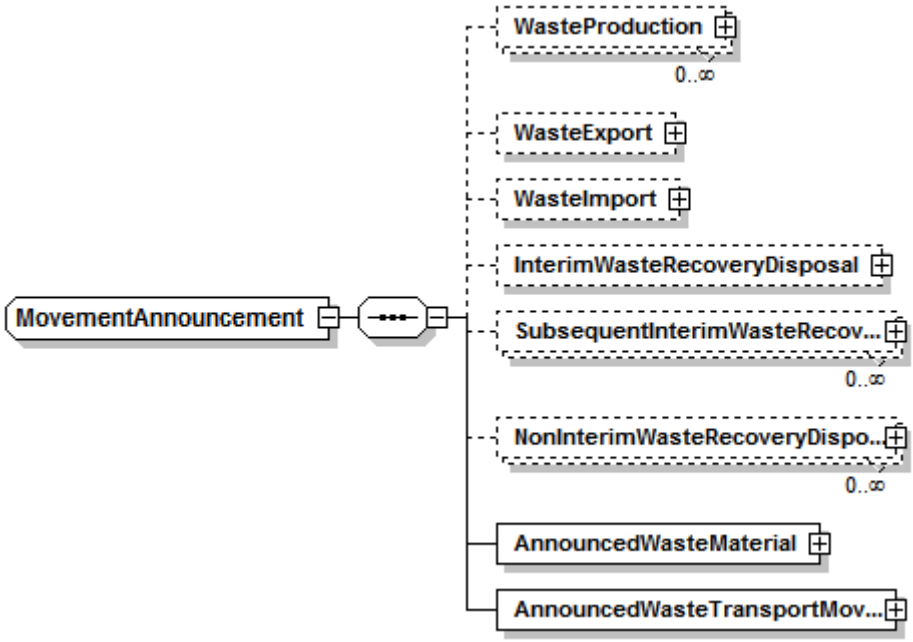
Acknowledgement of the receipt of a message including information on whether the message has been accepted or rejected.

Elements

Name	Type	Definition
AcknowledgedMessageDocument	1 .. 1 *AcknowledgedMessageDocument* (p.27)	Details on the received message: Identification, reception status, etc.

ConfirmationOfMessageReceipt is used within: ConfirmationOfMessageReceiptMessage (p.20)

MovementAnnouncement



Details on the actual start of a shipment: Actual quantity of waste, actual date of shipment, carriers, etc.

Elements

Name	Type	Definition
WasteProduction	0 .. * *WasteProduction* (p.26)	Details on the waste generation/production: Waste generator, site of waste generation, etc.
WasteExport	0 .. 1 *WasteExport* (p.26)	Details on the waste export: Exporter (notifier).
WasteImport	0 .. 1 *WasteImport* (p.26)	Details on the waste import: Importer (consignee).
InterimWasteRecoveryDisposal	0 .. 1 *WasteRecoveryDisposal* (p.26)	Details on the first interim recovery or disposal of the shipped waste: Recovery or disposal facility, recovery or disposal site, recovery or disposal operations. Note: If the shipped waste is directly taken over into non-interim recovery or disposal, without any interim recovery or disposal, then this entry has to be omitted.
SubsequentInterimWasteRecoveryDisposal	0 .. * *WasteRecoveryDisposal* (p.26)	Details on subsequent recovery or disposal of the shipped waste: Recovery or disposal facility, recovery or disposal site, recovery or disposal operations.
NonInterimWasteRecoveryDisposal	0 .. * *WasteRecoveryDisposal* (p.26)	Details on the non-interim recovery or disposal of the shipped waste: Recovery or disposal facility, recovery or disposal site, recovery or disposal operations.
AnnouncedWasteMaterial	1 .. 1 *AnnouncedWasteMaterial* (p.28)	Details on the shipped waste: Waste classification, waste quantity, physical characteristics, etc.
AnnouncedWasteTransportMovement	1 .. 1 *AnnouncedWasteTransportMovement* (p.29)	Details on the shipment of waste: Carriers, date of movement, routes, etc.

MovementAnnouncement is used within: CertificateOfWasteReceiptMessage (p.19), CertificateOfWasteRecoveryDisposalMessage (p.19), MovementAnnouncementMessage (p.20)

NotificationSubmission

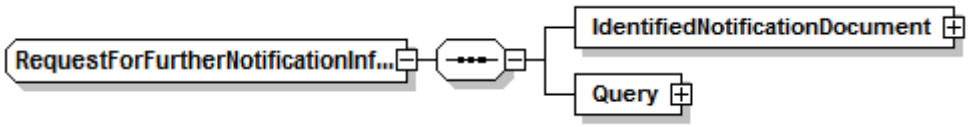
Details on the submission of a notification or general notification: Intended period of time for the shipments, intended total quantity of waste, intended total number of waste shipments, etc.

Elements

Name	Type	Definition
WasteProduction	0 .. * *WasteProduction* (p.26)	Details on the waste generation/production: Waste generator, site of waste generation, etc.
WasteExport	1 .. 1 *WasteExport* (p.26)	Details on the waste export: Exporter (notifier).
WasteImport	0 .. 1 *WasteImport* (p.26)	Details on the waste import: Importer (consignee).
InterimWasteRecoveryDisposal	0 .. 1 *WasteRecoveryDisposal* (p.26)	Details on the first interim recovery or disposal of the shipped waste: Recovery or disposal facility, recovery or disposal site, recovery or disposal operations. Note: If the shipped waste is directly taken over into non-interim recovery or disposal, without any interim recovery or disposal, then this entry has to be omitted.
SubsequentInterimWasteRecoveryDisposal	0 .. * *WasteRecoveryDisposal* (p.26)	Details on subsequent recovery or disposal of the shipped waste: Recovery or disposal facility, recovery or disposal site, recovery or disposal operations.
NonInterimWasteRecoveryDisposal	0 .. * *WasteRecoveryDisposal* (p.26)	Details on the non-interim recovery or disposal of the shipped waste: Recovery or disposal facility, recovery or disposal site, recovery or disposal operations.
NotifiedWasteMaterial	1 .. 1 *NotifiedWasteMaterial* (p.37)	Details on the waste intended to be shipped: Waste classification, waste quantity, physical characteristics, etc.
IntendedWasteTransportMovement	1 .. 1 *NotifiedWasteTransportMovement* (p.39)	Details on the shipments of waste: Carriers, routes, period of time for shipments, etc.
FinancialGuarantee	0 .. * *FinancialGuarantee* (p.33)	Details on financial guarantees or equivalent insurance for the intended shipments of waste.

NotificationSubmission is used within: NotificationSubmissionMessage (p.21)

RequestForFurtherNotificationInformation



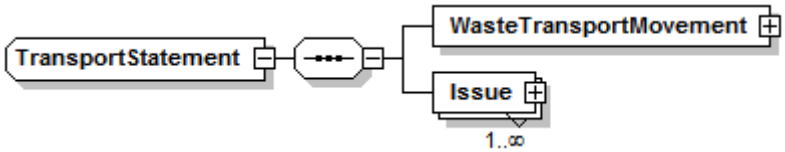
A request for further information and documentation to a notified movement of waste.

Elements

Name	Type	Definition
IdentifiedNotificationDocument	1 .. 1 *IdentifiedNotificationDocument* (p.34)	Identification of the notification to which the request relates.
Query	1 .. 1 *InformationQuery* (p.35)	Details on the request for information and documentation: The request expressed as text.

RequestForFurtherNotificationInformation is used within: RequestForFurtherNotificationInformationMessage (p.21)

TransportStatement



Details on issues with respect to a shipment of waste: Description, severity, identification of the affected shipment, etc.

Elements

Name	Type	Definition
WasteTransportMovement	1 .. 1	An identification of the shipment of waste to which the

	ReferencedWasteTransportMovement (p.43)	transmitted issues relate.
Issue	1 .. * *Issue* (p.35)	Details on the issues relating to a shipment of waste.

TransportStatement is used within: TransportStatementMessage (p.22)

WasteExport

Details on the export of waste: Exporter (notifier).

Elements

Name	Type	Definition
ExporterParty	1 .. 1 *Party* (p.40)	The party exporting the waste (notifier).

WasteExport is used within: MovementAnnouncement (p.23), NotificationSubmission (p.24)

WasteImport

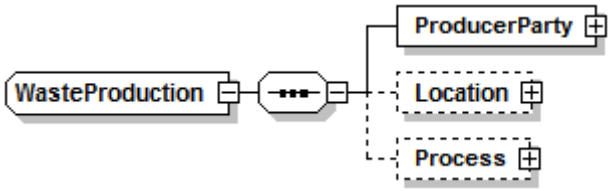
Details on the import of waste: Importer (consignee).

Elements

Name	Type	Definition
ImporterParty	1 .. 1 *Party* (p.40)	The party importing the waste (consignee).

WasteImport is used within: MovementAnnouncement (p.23), NotificationSubmission (p.24)

WasteProduction



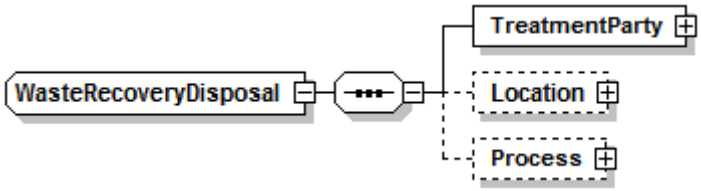
Details on the generation of waste: Waste generator, waste generation site, waste generation process.

Elements

Name	Type	Definition
ProducerParty	1 .. 1 *Party* (p.40)	The waste producer (generator) party.
Location	0 .. 1 *Location* (p.35)	The waste generation site.
Process	0 .. 1 *WasteOriginProcess* (p.49)	Processes of waste generation.

WasteProduction is used within: MovementAnnouncement (p.23), NotificationSubmission (p.24)

WasteRecoveryDisposal



Details on the recovery or disposal of waste: Recovery or disposal facility, recovery or disposal site, recovery or disposal operation.

Elements

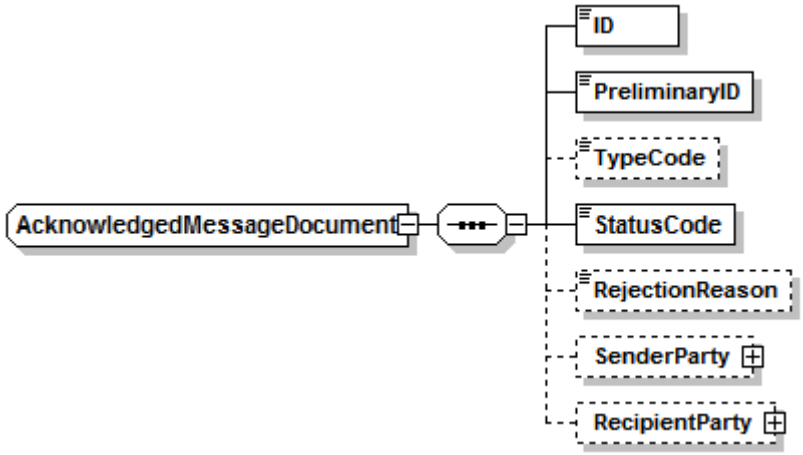
Name	Type	Definition
TreatmentParty	1 .. 1 *Party* (p.40)	The recovery or disposal party (facility).
Location	0 .. 1 *Location* (p.35)	The recovery or disposal site.
Process	0 .. 1 *WasteRecoveryDisposalProcess* (p.50)	Recovery or disposal operations.

WasteRecoveryDisposal is used within: MovementAnnouncement (p.23), NotificationSubmission (p.24)

Business Information Entities

AcknowledgedMessageDocument

UN03000316



Details on a transmitted message: Identification, message type, reception status, sender, receiver, etc.

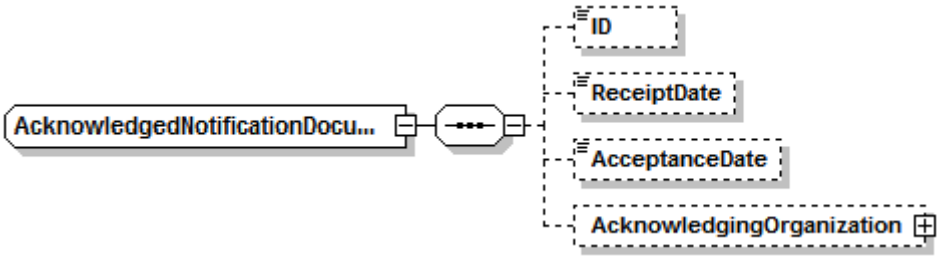
Elements

Name	Type	Definition
ID UN03000317	1 .. 1 *MessageIdentifier* (p.57)	The message identification, as assigned by the message broker.
PreliminaryID UN03000318	1 .. 1 *PreliminaryIdentifier* (p.59)	The preliminary message identification, assigned by the sender. Note: The confirmation of message receipt returned by the message broker contains the final message identification, automatically assigned by the message broker.
TypeCode UN03000319	0 .. 1 *MessageTypeCode* (p.57)	The type of the acknowledged message.
StatusCode UN03000320	1 .. 1 *ReceptionStatusCode* (p.60)	The reception status of the message, such as accepted or rejected.
RejectionReason UN03000321	0 .. 1 *DescriptionText* (p.54)	Reasons for the rejection of the message.
SenderParty UN03000322	0 .. 1 *BusinessTransactionParty* (p.30)	The sender of the acknowledged message.
RecipientParty UN03000323	0 .. 1 *BusinessTransactionParty* (p.30)	The recipient of the acknowledged message.

AcknowledgedMessageDocument is used within: ConfirmationOfMessageReceipt (p.23)

AcknowledgedNotificationDocument

UN03000204



Details on the receipt of a properly completed notification: Notification number, date of receipt, date of acknowledgement, acknowledging authority.

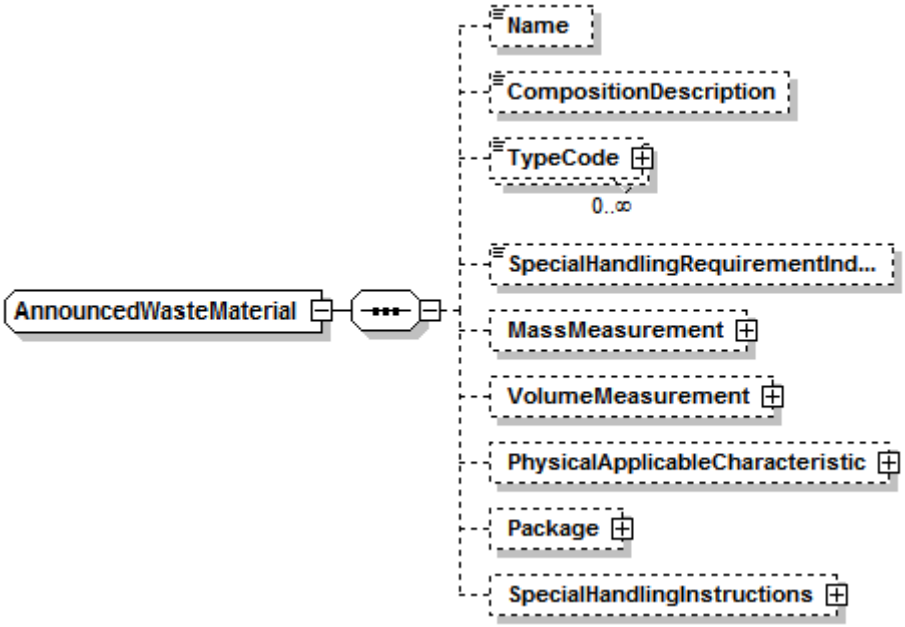
Elements

Name	Type	Definition
ID UN03000205	0 .. 1 *NotificationIdentifier* (p.58)	The number of the notification being acknowledged as properly completed.
ReceiptDate UN03000206	0 .. 1 *Date* (p.53)	The date of receipt for the notification being acknowledged as properly completed.
AcceptanceDate UN03000207	0 .. 1 *Date* (p.53)	The date of the acknowledgement of the notification as properly completed.
AcknowledgingOrganization UN03000208	0 .. 1 *Organization* (p.40)	The auhority acknowledging the notification as properly completed.

AcknowledgedNotificationDocument is used within: NotificationAcknowledgdementMessage (p.20)

AnnouncedWasteMaterial

UN03000209



Details on waste, which is about to be actually shipped: Actual quantity, waste classification, physical characteristics, etc.

Elements

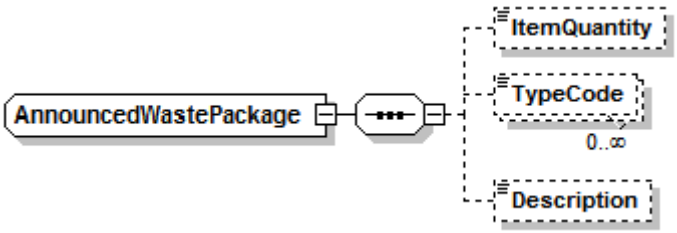
Name	Type	Definition
Name UN03000210	0 .. 1 *LongNameText* (p.57)	The waste designation.
CompositionDescription UN03000211	0 .. 1 *DescriptionText* (p.54)	A description of the waste composition.
TypeCode UN03000212	0 .. * *WasteMaterialTypeC*	The waste classifications.

	ode (p.62)	
SpecialHandlingRequirementIndicator UN03000213	0 .. 1 *Indicator* (p.55)	The indication of whether or not special handling is required.
MassMeasurement UN03000214	0 .. 1 *MassMeasurement* (p.35)	The actual waste mass.
VolumeMeasurement UN03000215	0 .. 1 *VolumeMeasurement* (p.48)	The actual waste volume.
PhysicalApplicableCharacteristic UN03000216	0 .. 1 *PhysicalCharacteristic* (p.42)	Physical characteristics of the waste.
Package UN03000217	0 .. 1 *AnnouncedWastePackage* (p.29)	Waste packaging.
SpecialHandlingInstructions UN03000218	0 .. 1 *SpecialHandlingInstructions* (p.46)	Special handling requirements for the waste.

AnnouncedWasteMaterial is used within: MovementAnnouncement (p.23)

AnnouncedWastePackage

UN01005137



Details on packages announced to be used for waste to be shipped: Number of packages, type of packaging and description.

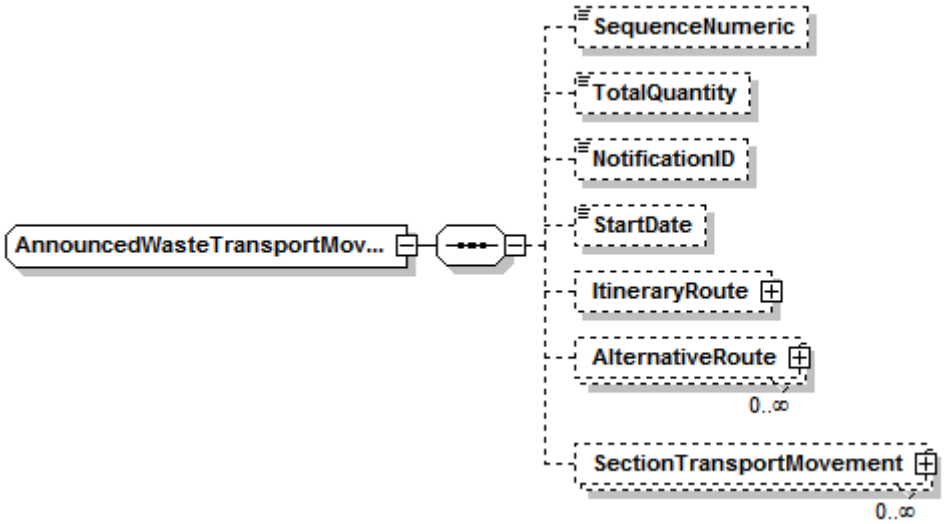
Elements

Name	Type	Definition
ItemQuantity UN01005138	0 .. 1 *Quantity* (p.60)	The number of packages.
TypeCode UN01005139	0 .. * *PackagingTypeCode* (p.58)	The type of packaging.
Description UN01005140	0 .. 1 *DescriptionText* (p.54)	A description of the packaging. Note: A packaging description will be provided in cases where it is not possible to assign one of the packaging types from the codelist, such as drum, box, bag, or where such an assignment requires further description.

AnnouncedWastePackage is used within: AnnouncedWasteMaterial (p.28)

AnnouncedWasteTransportMovement

UN03000219



Details on a shipment of waste, which is about to actually start: Transport route, the actual date of shipment, carriers, etc.

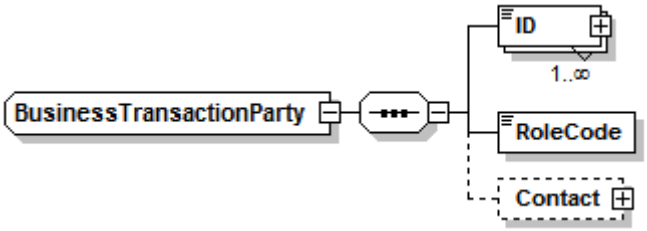
Elements

Name	Type	Definition
SequenceNumeric UN03000220	0 .. 1 *ShortNumeric* (p.61)	The serial number for this shipment, in the series of shipments covered by one notification.
TotalQuantity UN03000221	0 .. 1 *Quantity* (p.60)	The total number of shipments covered by the same notification.
NotificationID UN03000222	0 .. 1 *NotificationIdentifier* (p.58)	The notification identifier, such as a notification number.
StartDate UN03000223	0 .. 1 *Date* (p.53)	The date of the actual start of the shipment.
ItineraryRoute UN03000224	0 .. 1 *Route* (p.44)	The route for this shipment.
AlternativeRoute UN03000225	0 .. * *Route* (p.44)	Alternative shipment routes.
SectionTransportMovement UN03000226	0 .. * *SingleTransportMovement* (p.45)	Details on single transports: Carrier, mode of transport, etc.

AnnouncedWasteTransportMovement is used within: MovementAnnouncement (p.23)

BusinessTransactionParty

UN03000227



Details on a message sender or receiver: Identification, role, contact, etc.

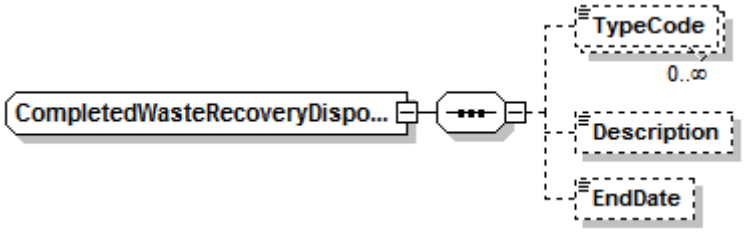
Elements

Name	Type	Definition
ID UN03000228	1 .. * *PartyIdentifier* (p.58)	Identifications of the party.
RoleCode UN03000229	1 .. 1 *PartyRoleCode* (p.59)	The role of the party.
Contact UN03000230	0 .. 1 *Contact* (p.31)	Contact details for the party, such as telephone number, fax number contact persons, etc.

BusinessTransactionParty is used within: AcknowledgedMessageDocument (p.27), MessageDocument (p.36), WasteRecoveryDisposalMessageDocument (p.49)

CompletedWasteRecoveryDisposalProcess

UN01005141



Details on a completed waste recovery or disposal operation: Type of operation, description, date of completion, etc.

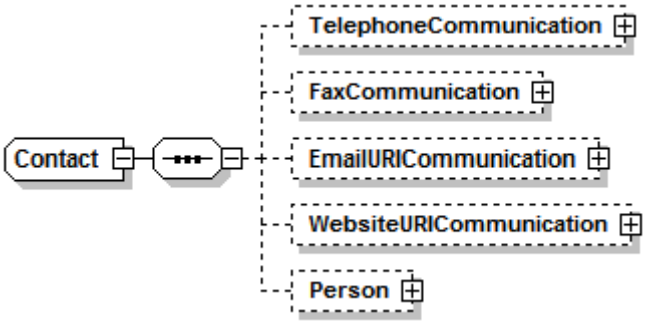
Elements

Name	Type	Definition
TypeCode UN01005142	0 .. * *WasteRecoveryDisposalTypeCode* (p.62)	The type of waste recovery or disposal operation.
Description UN01005143	0 .. 1 *ExtensiveDescriptionText* (p.54)	A description of the waste recovery or disposal operation. Note: A waste recovery or disposal operation description will be provided in cases where it is not possible to assign one of the types from the codelist or where such an assignment requires further description.
EndDate UN01005144	0 .. 1 *Date* (p.53)	The date of completion of the recovery or disposal operation.

CompletedWasteRecoveryDisposalProcess is used within: CertificateOfWasteRecoveryDisposal (p.23)

Contact

UN03000243



Details on a contact: Telephone number, fax number, e-mail address, website address, and contact person.

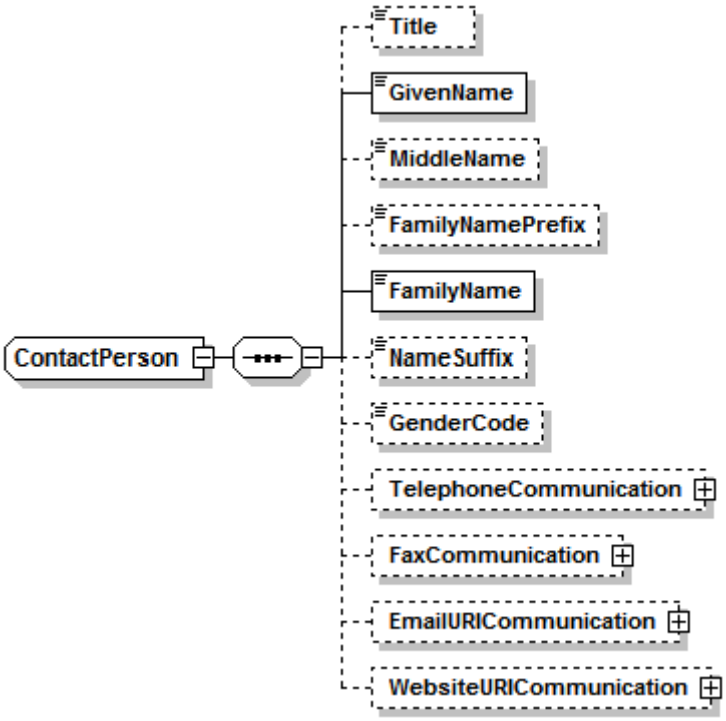
Elements

Name	Type	Definition
TelephoneCommunication UN03000244	0 .. 1 *TelecommunicationCommunication* (p.47)	A telephone number for the contact.
FaxCommunication UN03000245	0 .. 1 *TelecommunicationCommunication* (p.47)	A fax number for the contact.
EmailURICommunication UN03000246	0 .. 1 *EmailCommunication* (p.33)	An e-mail address for the contact.
WebsiteURICommunication UN03000247	0 .. 1 *WebsiteCommunication* (p.50)	A website address for the contact.
Person UN03000248	0 .. 1 *ContactPerson* (p.32)	A contact person.

Contact is used within: BusinessTransactionParty (p.30), Organization (p.40), Party (p.40)

ContactPerson

UN01005145



Details on a contact person: Name, telephone number, fax number, e-mail address, website address, etc.

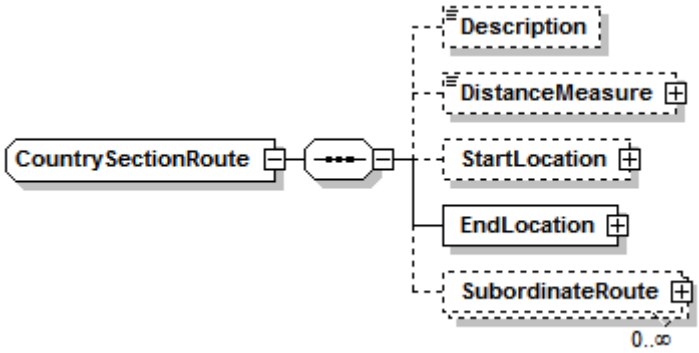
Elements

Name	Type	Definition
Title UN01005146	0 .. 1 *PersonTitleText* (p.59)	A title associated with the person, such as “Dr.”.
GivenName UN01005147	1 .. 1 *GivenNameText* (p.55)	The given name of the person.
MiddleName UN01005148	0 .. 1 *MiddleNameText* (p.58)	The middle name of the person.
FamilyNamePrefix UN01005149	0 .. 1 *FamilyNamePrefixText* (p.55)	A family name prefix for the person, such as “van”.
FamilyName UN01005150	1 .. 1 *FamilyNameText* (p.55)	The family name of the person.
NameSuffix UN01005151	0 .. 1 *NameSuffixText* (p.58)	A name suffix for the person, such as “Jr.”.
GenderCode UN01005152	0 .. 1 *GenderCode* (p.55)	The gender of the person, such as male or female.
TelephoneCommunication UN01005153	0 .. 1 *TelecommunicationCommunication* (p.47)	A telephone number for the person.
FaxCommunication UN01005154	0 .. 1 *TelecommunicationCommunication* (p.47)	A fax (facsimile) number for the person.
EmailURICommunication UN01005155	0 .. 1 *EmailCommunication* (p.33)	An e-mail address of the person.
WebsiteURICommunication UN01005156	0 .. 1 *WebsiteCommunication* (p.50)	A website address for the person.

ContactPerson is used within: Contact (p.31)

CountrySectionRoute

UN01005157



Details on a route section within a country: Description, length, point of entry, point of exit, and subsections.

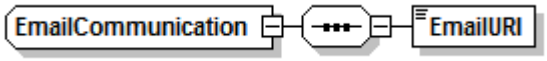
Elements

Name	Type	Definition
Description UN01005158	0 .. 1 *DescriptionText* (p.54)	A description of the route.
DistanceMeasure UN01005159	0 .. 1 *DistanceLengthMeasure* (p.54)	The route distance.
StartLocation UN01005160	0 .. 1 *WaypointLocation* (p.50)	The route departure location within a country. This is either the departure location of a complete route, or the route point of entry into the respective country.
EndLocation UN01005161	1 .. 1 *WaypointLocation* (p.50)	The route destination location within a country. This is either the destination location of the complete route, or the route point of exit from the respective country.
SubordinateRoute UN01005162	0 .. * *SectionRoute* (p.45)	Subsections of this country route section.

CountrySectionRoute is used within: Route (p.44)

EmailCommunication

UN01002838



An email address.

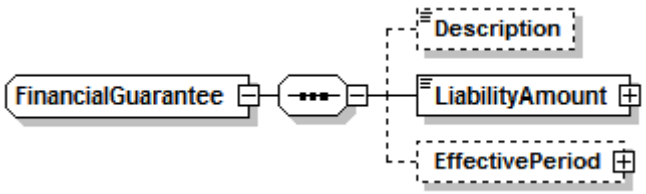
Elements

Name	Type	Definition
EmailURI UN01002839	1 .. 1 *EmailURIIdentifier* (p.54)	The email address.

EmailCommunication is used within: Contact (p.31), ContactPerson (p.32)

FinancialGuarantee

UN01005163



Details on a financial guarantee: Liability amount, description, etc.

Elements

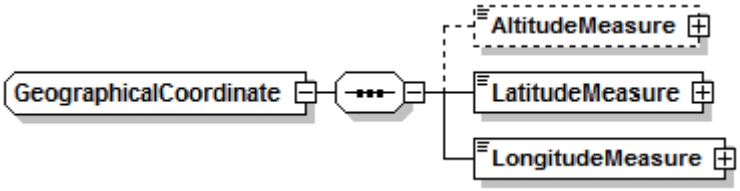
Name	Type	Definition
Description	0 .. 1	A description of the financial guarantee.

UN01005164	*LongDescriptionText* (p.56)	
LiabilityAmount UN01005165	1 .. 1 *Amount* (p.51)	The liablity amount.
EffectivePeriod UN01005166	0 .. 1 *Period* (p.41)	The period of time when this financial gurantee is in effect.

FinancialGuarantee is used within: NotificationSubmission (p.24)

GeographicalCoordinate

UN01005167



A geographical coordinate (longitude, latitude, and possibly altitude).

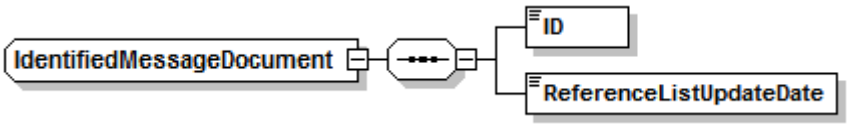
Elements

Name	Type	Definition
AltitudeMeasure UN01005168	0 .. 1 *LengthMeasure* (p.56)	The height above the reference height.
LatitudeMeasure UN01005169	1 .. 1 *AngleMeasure* (p.51)	The angular distance north or south of the equator.
LongitudeMeasure UN01005170	1 .. 1 *AngleMeasure* (p.51)	The angular distance east or west from the prime meridian.

GeographicalCoordinate is used within: WaypointLocation (p.50)

IdentifiedMessageDocument

UN01005171



The identification of a message.

Elements

Name	Type	Definition
ID UN01005172	1 .. 1 *MessageIdentifier* (p.57)	The identification of the message.
ReferenceListUpdateDate	1 .. 1 *Date* (p.53)	A date that defines the version and recentness of the lists whose entries are referenced from within the document, such as waste lists. The most recent lists for the specified date are being used for referencing.

IdentifiedMessageDocument is used within: ConfirmationOfMessageReceiptMessage (p.20)

IdentifiedNotificationDocument

UN01005171

An identified notification.

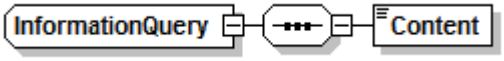
Elements

Name	Type	Definition
ID UN01005172	1 .. 1 *NotificationIdentifier* (p.58)	The notification number.

IdentifiedNotificationDocument is used within: RequestForFurtherNotificationInformation (p.25)

InformationQuery

UN01005176



Details on a request for information and documentation: The request expressed as text.

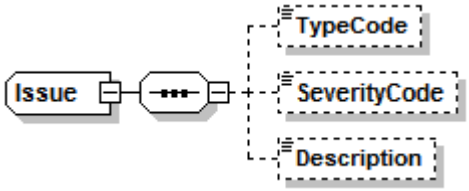
Elements

Name	Type	Definition
Content UN01005177	1 .. 1 *LongDescriptionText* (p.56)	The request for information and documentation.

InformationQuery is used within: RequestForFurtherNotificationInformation (p.25)

Issue

UN01005182



Details on an issue: Type of issue, severity, description, etc.

Elements

Name	Type	Definition
TypeCode UN01005183	0 .. 1 *IssueTypeCode* (p.56)	The type of issue.
SeverityCode UN01005184	0 .. 1 *IssueSeverityCode* (p.56)	The issue severity.
Description UN01005185	0 .. 1 *LongDescriptionText* (p.56)	A description of the issue.

Issue is used within: TransportStatement (p.25)

Location

UN03000261

Details on a location: Location description.

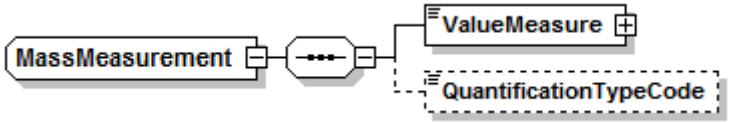
Elements

Name	Type	Definition
Description UN03000262	1 .. 1 *LongDescriptionText* (p.56)	A description of the location.

Location is used within: WasteProduction (p.26), WasteRecoveryDisposal (p.26)

MassMeasurement

UN01005186



Details on a mass: Numeric value and unit of measurement, plus type of quantification, such as measured, calculated, or estimated.

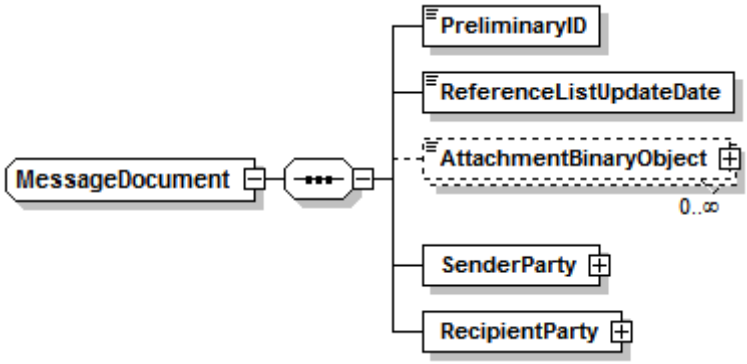
Elements

Name	Type	Definition
ValueMeasure UN01005187	1 .. 1 *MassMeasure* (p.57)	The mass measure: Numeric value and unit of measurement.
QuantificationTypeCode UN01005188	0 .. 1 *QuantificationTypeCode* (p.60)	The type of quantification, such as measured, calculated, or estimated.

MassMeasurement is used within: AnnouncedWasteMaterial (p.28), NotifiedWasteMaterial (p.37), ReceivedWasteMaterial (p.42)

MessageDocument

UN03000330



Details on a message: Identification, sender, receiver, etc.

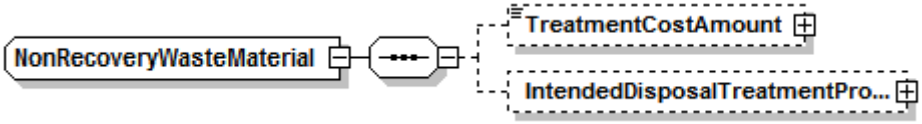
Elements

Name	Type	Definition
PreliminaryID UN03000331	1 .. 1 *PreliminaryIdentifier* (p.59)	The preliminary message identification, assigned by the sender. Note: The confirmation of message receipt returned by the message broker contains the final message identification, automatically assigned by the message broker.
ReferenceListUpdateDate	1 .. 1 *Date* (p.53)	A date that defines the version and recentness of the lists whose entries are referenced from within the document, such as waste lists. The most recent lists for the specified date are being used for referencing.
AttachmentBinaryObject UN03000332	0 .. * *BinaryObject* (p.51)	Binary attachments to the message.
SenderParty UN03000333	1 .. 1 *BusinessTransactionParty* (p.30)	The message sender.
RecipientParty UN03000334	1 .. 1 *BusinessTransactionParty* (p.30)	The message recipient.

MessageDocument is used within:CertificateOfWasteReceiptMessage (p.19), MovementAnnouncementMessage (p.20), NotificationAcknowledgdementMessage (p.20), NotificationDecisionMessage (p.21), NotificationSubmissionMessage (p.21), RequestForFurtherNotificationInformationMessage (p.21), TransportStatementMessage (p.22)

NonRecoveryWasteMaterial

UN01005189



Details on the fraction of waste remaining after the recovery of the recoverable fraction of waste.

Elements

Name	Type	Definition
TreatmentCostAmount UN01005190	0 .. 1 *Amount* (p.51)	The estimated cost of the waste disposal.
IntendedDisposalTreatmentProcess UN01005191	0 .. 1 *WasteRecoveryDisposalProcess* (p.50)	The disposal method intended for the non-recoverable fraction of waste.

NonRecoveryWasteMaterial is used within: NotifiedWasteMaterial (p.37)

NotifiedWasteMaterial

UN03000263

Details on waste intended to be shipped: Intended quantity, waste classification, physical characteristics, etc.

Elements

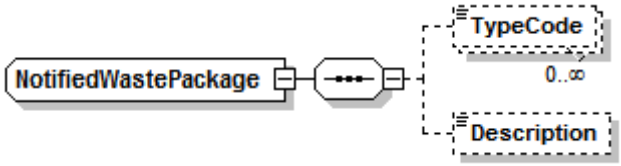
Name	Type	Definition
Name UN03000264	0 .. 1 *LongNameText* (p.57)	The waste designation.
CompositionDescription UN03000265	0 .. 1 *DescriptionText* (p.54)	A description of the waste composition.
TypeCode UN03000266	0 .. * *WasteMaterialTypeCode* (p.62)	The waste classifications.
SpecialHandlingRequirementIndicator UN03000267	0 .. 1 *Indicator* (p.55)	The indication of whether or not special handling is required.

EstimatedMinimumMassMeasure UN03000268	0 .. 1 *MassMeasure* (p.57)	The estimated minimum mass of waste to be shipped.
EstimatedMaximumMassMeasure UN03000269	0 .. 1 *MassMeasure* (p.57)	The estimated maximum mass of waste to be shipped.
EstimatedMinimumVolumeMeasure UN03000270	0 .. 1 *VolumeMeasure* (p.62)	The estimated minimum volume of waste to be shipped.
EstimatedMaximumVolumeMeasure UN03000271	0 .. 1 *VolumeMeasure* (p.62)	The estimated maximum volume of waste to be shipped.
MassMeasurement UN03000272	0 .. 1 *MassMeasurement* (p.35)	The total mass of waste intended to be shipped.
VolumeMeasurement UN03000273	0 .. 1 *VolumeMeasurement* (p.48)	The total volume of waste intended to be shipped.
PhysicalApplicableCharacteristic UN03000274	0 .. 1 *PhysicalCharacteristic* (p.42)	Physical characteristics of the waste.
Package UN03000275	0 .. 1 *NotifiedWastePackage* (p.38)	Waste packaging.
SpecialHandlingInstructions UN03000276	0 .. 1 *SpecialHandlingInstructions* (p.46)	Special handling requirements for the waste.
RecoveryFractionMaterial UN03000277	0 .. 1 *RecoveryWasteMaterial* (p.43)	The fraction of waste destined for recovery.
NonRecoveryFractionMaterial UN03000278	0 .. 1 *NonRecoveryWasteMaterial* (p.36)	The fraction of waste not destined for recovery.

NotifiedWasteMaterial is used within: NotificationSubmission (p.24)

NotifiedWastePackage

UN03000249



Details on packages intended to be used for waste to be shipped: Type of packaging and description.

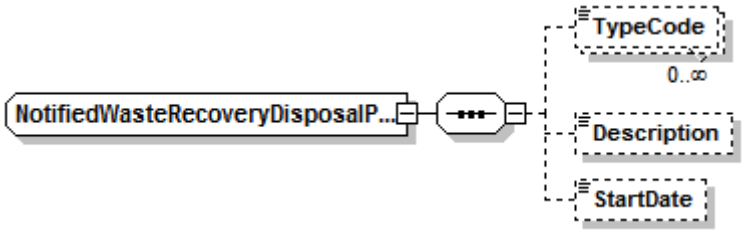
Elements

Name	Type	Definition
TypeCode UN03000250	0 .. * *PackagingTypeCode* (p.58)	The type of packaging.
Description UN03000251	0 .. 1 *DescriptionText* (p.54)	A description of the packaging. Note: A packaging description will be provided in cases where it is not possible to assign one of the packaging types from the codelist, such as drum, box, bag, or where such an assignment requires further description.

NotifiedWastePackage is used within: NotifiedWasteMaterial (p.37)

NotifiedWasteRecoveryDisposalProcess

UN01005178



Details on a planned waste recovery or disposal operation: Type of operation, description and planned date of recovery or disposal.

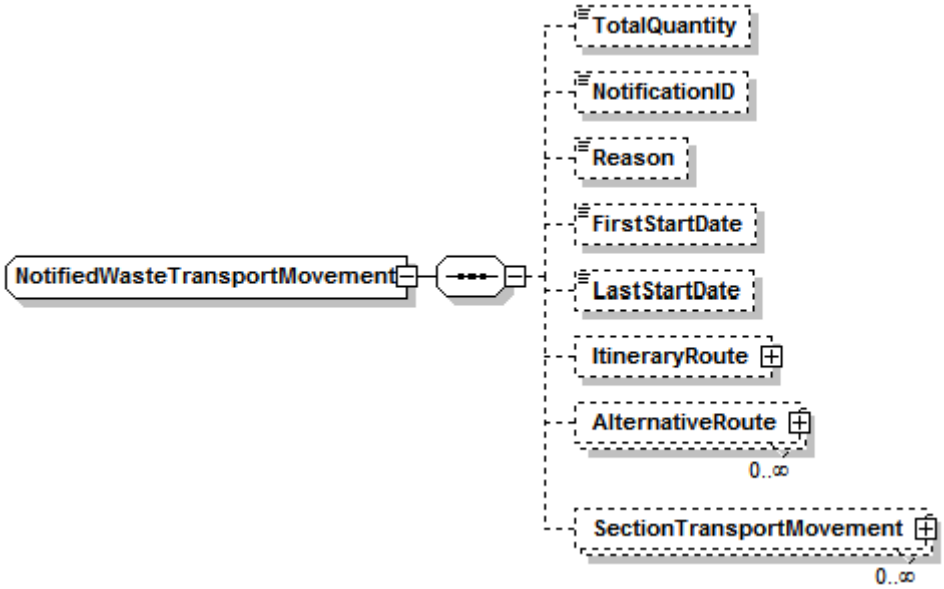
Elements

Name	Type	Definition
TypeCode UN01005179	0 .. * *WasteRecoveryDisposalTypeCode* (p.62)	The type of waste recovery or disposal operation.
Description UN01005180	0 .. 1 *ExtensiveDescriptionText* (p.54)	A description of the waste recovery or disposal operation. Note: A waste recovery or disposal operation description will be provided in cases where it is not possible to assign one of the types from the codelist or where such an assignment requires further description.
StartDate UN01005181	0 .. 1 *Date* (p.53)	The intended approximate date of recovery or disposal.

NotifiedWasteRecoveryDisposalProcess is used within: CertificateOfWasteReceipt (p.22)

NotifiedWasteTransportMovement

UN03000252



Details on one or more notified waste shipments: Intended total number of shipments, period of time for shipments, etc.

Elements

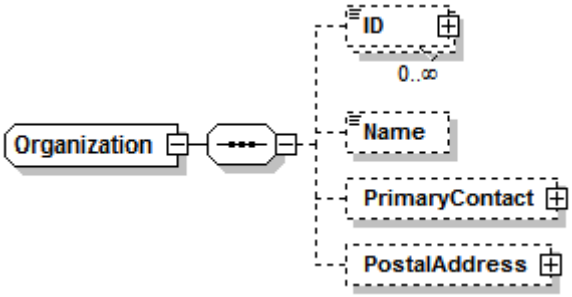
Name	Type	Definition
TotalQuantity UN03000253	0 .. 1 *Quantity* (p.60)	The intended total number of shipments.
NotificationID UN03000254	0 .. 1 *NotificationIdentifier* (p.58)	The notification identifier, such as a notification number.
Reason UN03000255	0 .. 1 *LongDescriptionText* (p.56)	Reasons for the intended shipment of waste.
FirstStartDate UN03000256	0 .. 1 *Date* (p.53)	The first shipment departure date.
LastStartDate	0 .. 1	The last shipment departure date.

UN03000257	*Date* (p.53)	
ItineraryRoute UN03000258	0 .. 1 *Route* (p.44)	Intended carriage route.
AlternativeRoute UN03000259	0 .. * *Route* (p.44)	Alternative carriage routes.
SectionTransportMovement UN03000260	0 .. * *SingleTransportMovement* (p.45)	Carriers intended for the shipments.

NotifiedWasteTransportMovement is used within: NotificationSubmission (p.24)

Organization

UN03000279



Details on an organization, such as a company or a government agency: Organization name, contact, address, etc.

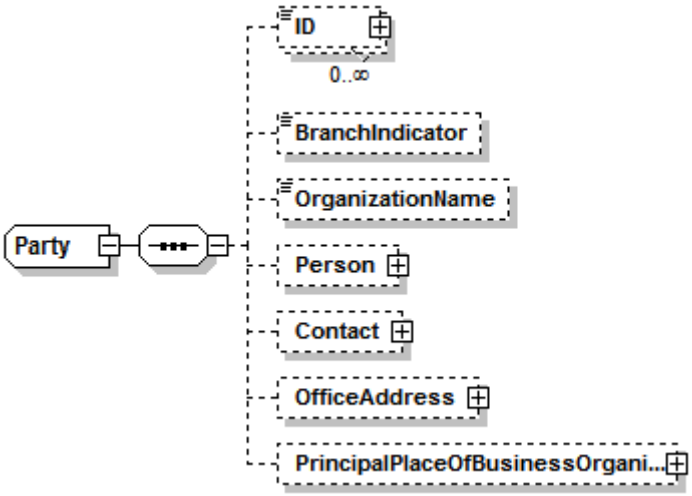
Elements

Name	Type	Definition
ID UN03000280	0 .. * *PartyIdentifier* (p.58)	Identifications of the organization.
Name UN03000281	0 .. 1 *LongNameText* (p.57)	The name of the organization.
PrimaryContact UN03000282	0 .. 1 *Contact* (p.31)	A contact for this organization.
PostalAddress UN03000283	0 .. 1 *StructuredAddress* (p.46)	The adress of the organization. For a company this is the head office address.

Organization is used within: AcknowledgedNotificationDocument (p.28), Party (p.40), Route (p.44), WasteMovementAuthorization (p.48)

Party

UN03000284



Details on a party, such as name, address and contact information. A party is an individual or a group.

Elements

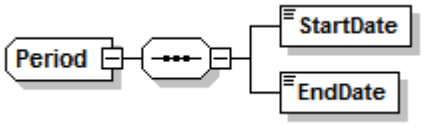
Name	Type	Definition

ID UN03000285	0 .. * *PartyIdentifier* (p.58)	Identifications of the party.
BranchIndicator UN03000286	0 .. 1 *Indicator* (p.55)	The indication of whether or not the party is a branch of a company.
OrganizationName UN03000287	0 .. 1 *LongNameText* (p.57)	The name of the organization.
Person UN03000288	0 .. 1 *Person* (p.41)	Person details for parties that are a person.
Contact UN03000289	0 .. 1 *Contact* (p.31)	Contact details for the party, such as telephone number, fax number contact persons, etc.
OfficeAddress UN03000290	0 .. 1 *StructuredAddress* (p.46)	The office address of the party, such as a company head office address, a company branch office address, or a persons office address.
PrincipalPlaceOfBusinessOrganization UN03000291	0 .. 1 *Organization* (p.40)	The principal place of business of the company to which this party belongs. Note: Separate company information is to be provided only in cases where the specified party is a branch of a company, and therefore the party's name or address may differ from the company name and head office address.

Party is used within: CertificateOfWasteReceipt (p.22), CertificateOfWasteRecoveryDisposal (p.23), WasteExport (p.26), WasteImport (p.26), WasteProduction (p.26), WasteRecoveryDisposal (p.26), SingleTransportMovement (p.45)

Period

UN03000292



Details on a period of time: Start date and end date.

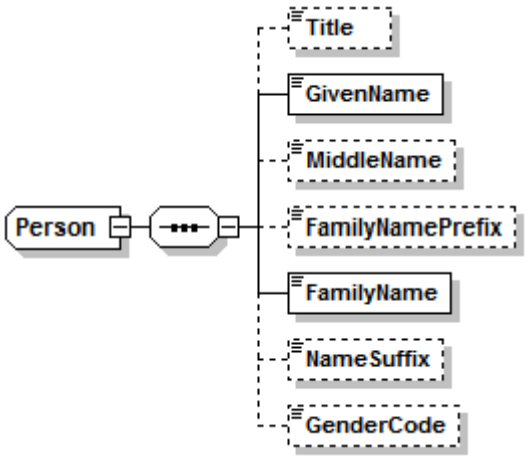
Elements

Name	Type	Definition
StartDate UN03000293	1 .. 1 *Date* (p.53)	The start date of the period of time (first day in the period of time).
EndDate UN03000294	1 .. 1 *Date* (p.53)	The end date of the period of time (last day in the period of time).

Period is used within: FinancialGuarantee (p.33), WasteMovementAuthorization (p.48)

Person

UN03000295



Details on a person: name and gender.

Elements

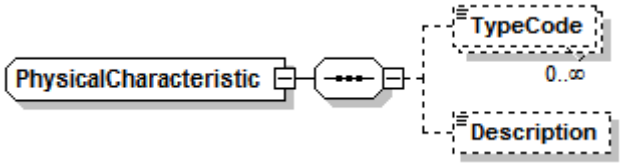
Name	Type	Definition
Title UN03000296	0 .. 1 *PersonTitleText*	A title associated with the person, such as “Dr.”.

	(p.59)	
GivenName UN03000297	1 .. 1 *GivenNameText* (p.55)	The given name of the person.
MiddleName UN03000298	0 .. 1 *MiddleNameText* (p.58)	The middle name of the person.
FamilyNamePrefix UN03000299	0 .. 1 *FamilyNamePrefixText* (p.55)	A family name prefix for the person, such as “van”.
FamilyName UN03000300	1 .. 1 *FamilyNameText* (p.55)	The family name of the person.
NameSuffix UN03000301	0 .. 1 *NameSuffixText* (p.58)	A name suffix for the person, such as “Jr.”.
GenderCode UN03000302	0 .. 1 *GenderCode* (p.55)	The gender of the person, such as male or female.

Person is used within: Party (p.40)

PhysicalCharacteristic

UN01005192



Details on physical characteristics, such as type and description.

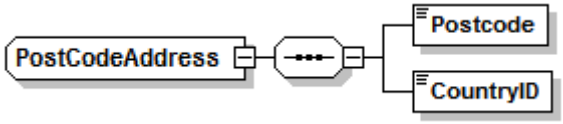
Elements

Name	Type	Definition
TypeCode UN01005193	0 .. * *ConsistencyCode* (p.53)	A classification of the physical characteristics, such as powdery.
Description UN01005194	0 .. 1 *DescriptionText* (p.54)	A description of the physical characteristics. Note: A physical characteristic description will be provided in cases where it is not possible to assign one of the types from the codelist, such as solid, liquid, sludgy, or where such an assignment requires further description.

PhysicalCharacteristic is used within: AnnouncedWasteMaterial (p.28), NotifiedWasteMaterial (p.37)

PostCodeAddress

UN01005195



A location specified via country identification and postcode.

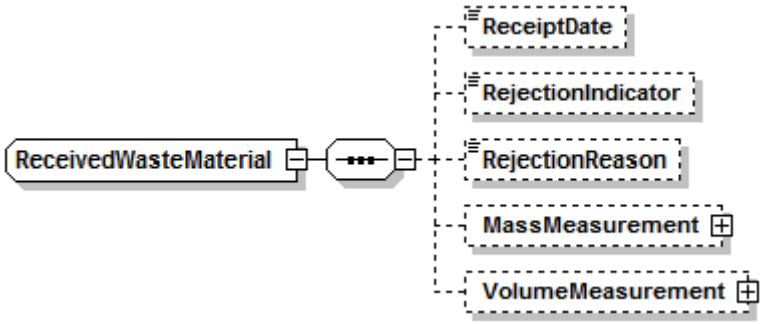
Elements

Name	Type	Definition
Postcode UN01005196	1 .. 1 *PostcodeCode* (p.59)	The postcode.
CountryID UN01005197	1 .. 1 *CountryIdentifier* (p.53)	The identification of the country.

PostCodeAddress is used within: WaypointLocation (p.50)

ReceivedWasteMaterial

UN01005198



Details on received waste: Date of receipt, indication of whether or not the waste got rejected, along with a rejection reason if applicable, mass and volume of the received waste.

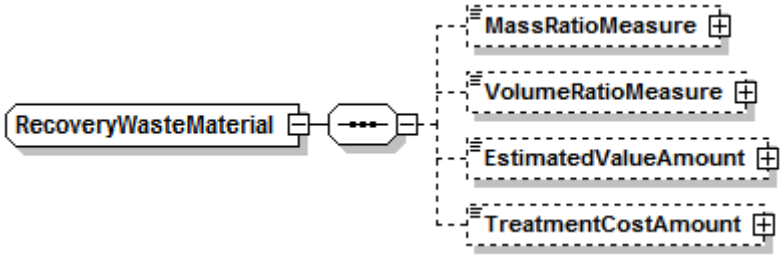
Elements

Name	Type	Definition
ReceiptDate UN01005199	0 .. 1 *Date* (p.53)	The date of the reception of the waste.
RejectionIndicator UN01005200	0 .. 1 *Indicator* (p.55)	The indication of whether or not the received shipment of waste is rejected by the consignee.
RejectionReason UN01005201	0 .. 1 *LongDescriptionText* (p.56)	The reason for the rejection of the received waste (if applicable).
MassMeasurement UN01005202	0 .. 1 *MassMeasurement* (p.35)	The mass of the received waste.
VolumeMeasurement UN01005203	0 .. 1 *VolumeMeasurement* (p.48)	The volume of the received waste.

ReceivedWasteMaterial is used within: CertificateOfWasteReceipt (p.22)

RecoveryWasteMaterial

UN01005204



Details on the fraction of waste destined for recovery: Estimated value and fraction of the total amount of shipped waste.

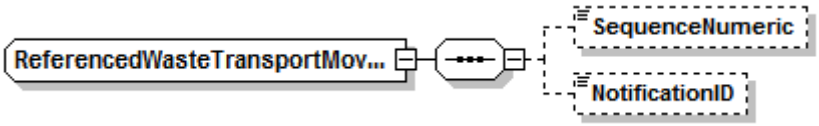
Elements

Name	Type	Definition
MassRatioMeasure UN01005205	0 .. 1 *MassRatioMeasure* (p.57)	The measure of the mass of waste destined for recovery expressed as ratio in relation to the total mass of waste.
VolumeRatioMeasure UN01005206	0 .. 1 *VolumeRatioMeasure* (p.62)	The measure of the volume of waste destined for recovery expressed as ratio in relation to the total volume of waste.
EstimatedValueAmount UN01005207	0 .. 1 *Amount* (p.51)	The estimated value of the fraction of waste destined for recovery.
TreatmentCostAmount UN01005208	0 .. 1 *Amount* (p.51)	The estimated cost of the waste recovery.

RecoveryWasteMaterial is used within: NotifiedWasteMaterial (p.37)

ReferencedWasteTransportMovement

UN01005173



Identification of a shipment of waste via notification identification and serial shipment number.

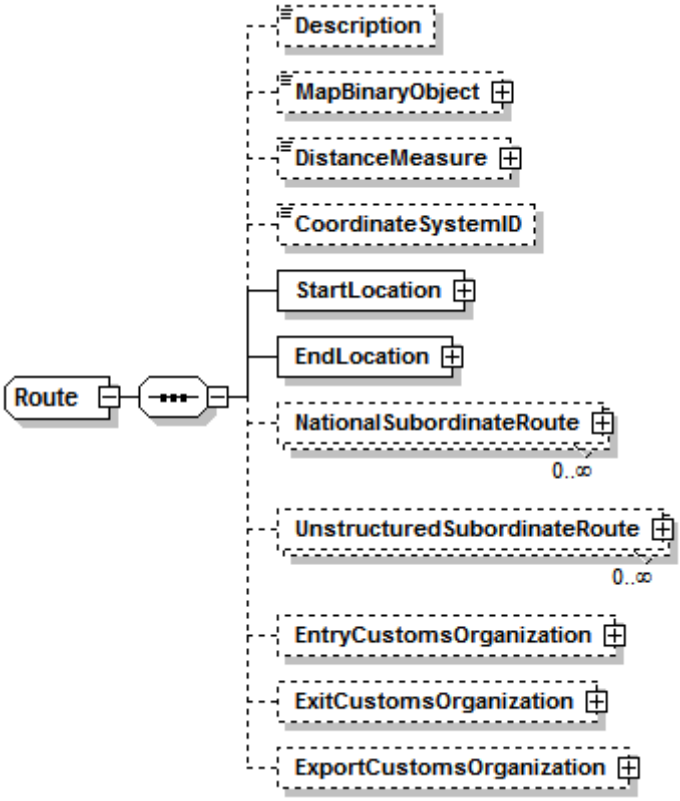
Elements

Name	Type	Definition
SequenceNumeric UN01005174	0 .. 1 *ShortNumeric* (p.61)	The serial number of the shipment of waste within the series of shipments notified together.
NotificationID UN01005175	0 .. 1 *NotificationIdentifier* (p.58)	The notification identifier, such as a notification number.

ReferencedWasteTransportMovement is used within: CertificateOfWasteReceipt (p.22), CertificateOfWasteRecoveryDisposal (p.23), TransportStatement (p.25)

Route

UN03000231



Details on a route: Description, length, departure location, destination location, route sections, and customs organizations.
The route sections can be specified as subsections of national sections, or where that's not possible without national partition.

Elements

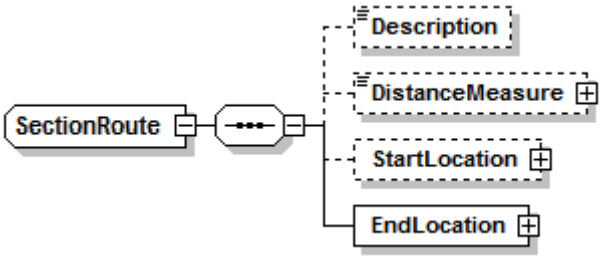
Name	Type	Definition
Description UN03000232	0 .. 1 *DescriptionText* (p.54)	A description of the route.
MapBinaryObject UN03000233	0 .. 1 *RouteBinaryObject* (p.61)	The route representation in GPX format (GPS Exchange Format).
DistanceMeasure UN03000234	0 .. 1 *DistanceLengthMeasure* (p.54)	The route distance.
CoordinateSystemID	0 .. 1	The coordinate system used for the representation of points

UN03000235	*CoordinateSystemIdentifier* (p.53)	on the route.
StartLocation UN03000236	1 .. 1 *WaypointLocation* (p.50)	The starting location of this route.
EndLocation UN03000237	1 .. 1 *WaypointLocation* (p.50)	The ending location of this route.
NationalSubordinateRoute UN03000238	0 .. * *CountrySectionRoute* (p.33)	National subsections of the route, detailing entry and exit locations for the country and the route within the country.
UnstructuredSubordinateRoute UN03000239	0 .. * *SectionRoute* (p.45)	Subsections of the route, without partition into country sections.
EntryCustomsOrganization UN03000240	0 .. 1 *Organization* (p.40)	The customs office of entry into the Community for this route.
ExitCustomsOrganization UN03000241	0 .. 1 *Organization* (p.40)	The customs office of exit from the Community for this route.
ExportCustomsOrganization UN03000242	0 .. 1 *Organization* (p.40)	The customs office of export from the Community for this route.

Route is used within: AnnouncedWasteTransportMovement (p.29), NotifiedWasteTransportMovement (p.39)

SectionRoute

UN01005209



Details on a route section: Description, length, departure point and destination point.

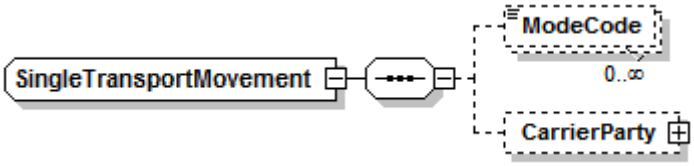
Elements

Name	Type	Definition
Description UN01005210	0 .. 1 *DescriptionText* (p.54)	A description of the route.
DistanceMeasure UN01005211	0 .. 1 *DistanceLengthMeasure* (p.54)	The route distance.
StartLocation UN01005212	0 .. 1 *WaypointLocation* (p.50)	The starting location of this route.
EndLocation UN01005213	1 .. 1 *WaypointLocation* (p.50)	The ending location of this route.

SectionRoute is used within: CountrySectionRoute (p.33), Route (p.44)

SingleTransportMovement

UN03000311



Details on a single transport of waste: Carrier, mode of transport, etc.

Elements

Name	Type	Definition
ModeCode UN03000312	0 .. * *TransportModeCode* (p.61)	The mode of transport, such as road or rail.
CarrierParty UN03000313	0 .. 1 *Party* (p.40)	The carrier.

SingleTransportMovement is used within: AnnouncedWasteTransportMovement (p.29), NotifiedWasteTransportMovement (p.39)

SpecialHandlingInstructions

UN03000314

Special handling instructions.

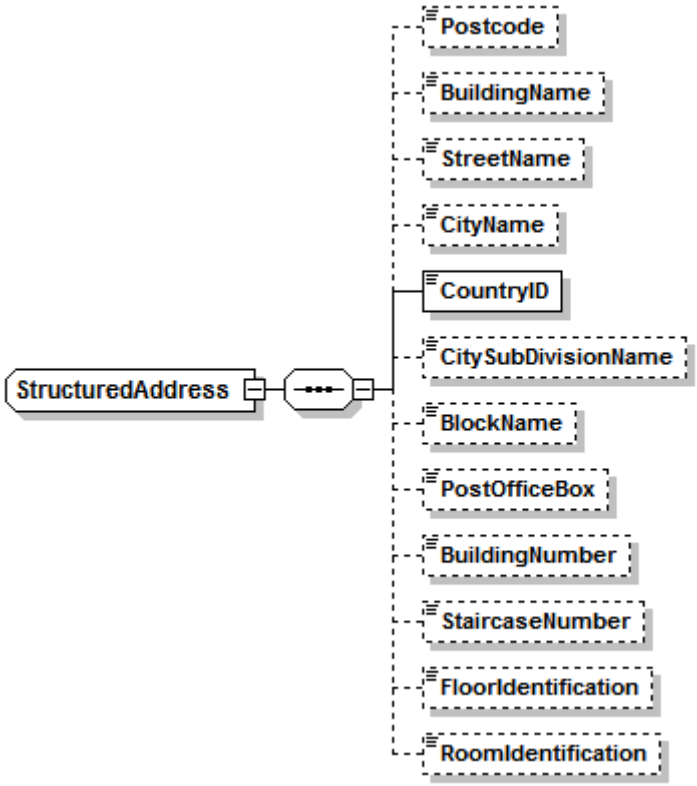
Elements

Name	Type	Definition
Handling UN03000315	1 .. 1 *LongDescriptionText* (p.56)	The special handling instructions.

SpecialHandlingInstructions is used within: AnnouncedWasteMaterial (p.28), NotifiedWasteMaterial (p.37)

StructuredAddress

UN01000895



Details on an address, such as city name, street name, and building number.

Elements

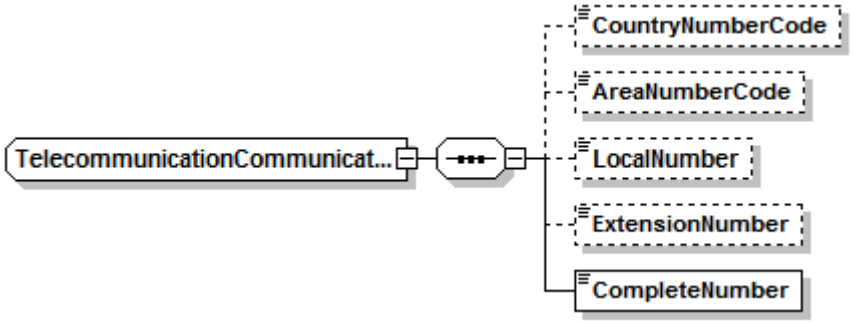
Name	Type	Definition
Postcode UN01000897	0 .. 1 *PostcodeCode* (p.59)	The postcode.
BuildingName UN01000898	0 .. 1 *BuildingNameText* (p.52)	The building name.
StreetName UN01000899	0 .. 1 *StreetNameText*	The street name.

	(p.61)	
CityName UN01000900	0 .. 1 *CityNameText* (p.52)	The city name (name of a city, town, or village).
CountryID UN01000901	1 .. 1 *CountryIdentifier* (p.53)	The identification of the country.
CitySubDivisionName UN01000902	0 .. 1 *CitySubDivisionNameText* (p.52)	The name of the sub-division of a city, for example a district or borough.
BlockName UN01001233	0 .. 1 *BlockNameText* (p.52)	The block name. Note: A block is an area surrounded by streets and usually containing several buildings.
PostOfficeBox UN01002826	0 .. 1 *PostOfficeBoxText* (p.59)	The post office box.
BuildingNumber UN01005133	0 .. 1 *BuildingNumberText* (p.52)	The building number.
StaircaseNumber UN01005134	0 .. 1 *StaircaseNumberText* (p.61)	The staircase number.
FloorIdentification UN01005135	0 .. 1 *FloorIdentificationText* (p.55)	The floor number or floor identification.
RoomIdentification UN01005136	0 .. 1 *RoomIdentificationText* (p.60)	The room number (identification of a room, suite, office, apartment, etc.).

StructuredAddress is used within: Organization (p.40), Party (p.40)

TelecommunicationCommunication

UN01002043



Details on a telecommunication number: The complete number, plus optionally separately country number, area number, local number and extension number.

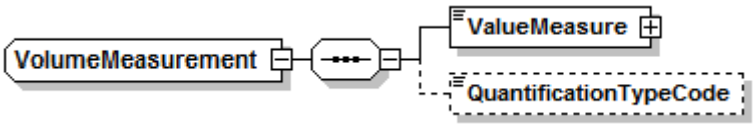
Elements

Name	Type	Definition
CountryNumberCode UN01002046	0 .. 1 *CountryNumberCode* (p.53)	The country number, such as 44, 1, 353, etc.
AreaNumberCode UN01002048	0 .. 1 *AreaNumberCode* (p.51)	The area number, such as 1 for Vienna (Austria).
LocalNumber UN01002044	0 .. 1 *LocalNumberText* (p.56)	The local number. The local number of the telecommunication number does not include country number, area number and extension number.
ExtensionNumber UN01002047	0 .. 1 *ExtensionNumberText* (p.54)	The extension number.
CompleteNumber UN01002045	1 .. 1 *CompleteNumberText* (p.53)	The complete telecommunication number.

TelecommunicationCommunication is used within: Contact (p.31), ContactPerson (p.32)

VolumeMeasurement

UN01005214



Details on a volume: Numeric value and unit of measurement, plus type of quantification, such as measured, calculated, or estimated.

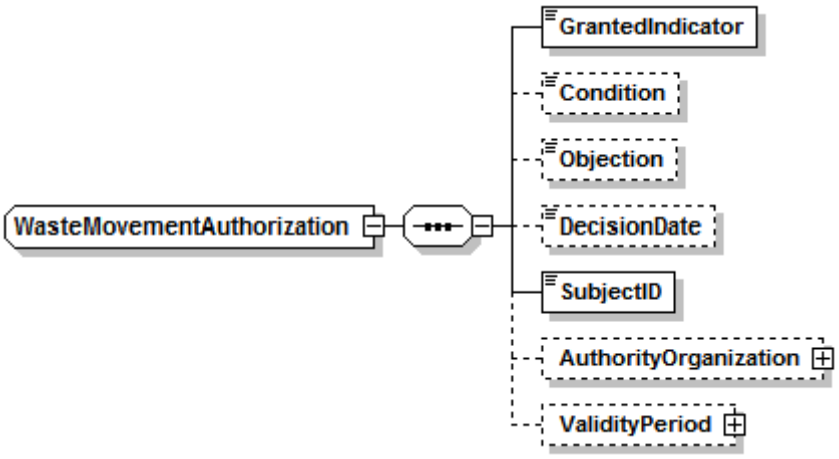
Elements

Name	Type	Definition
ValueMeasure UN01005215	1 .. 1 *VolumeMeasure* (p.62)	The volume measure: Numeric value and unit of measurement.
QuantificationTypeCode UN01005216	0 .. 1 *QuantificationTypeCode* (p.60)	The type of quantification, such as measured, calculated, or estimated.

VolumeMeasurement is used within: AnnouncedWasteMaterial (p.28), NotifiedWasteMaterial (p.37), ReceivedWasteMaterial (p.42)

WasteMovementAuthorization

UN03000303



Details on consent, consent with conditions, or objections to one or more transboundary shipments of waste: Consent indications, conditions, objections, date of decision, etc.

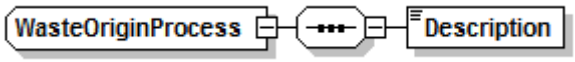
Elements

Name	Type	Definition
GrantedIndicator UN03000304	1 .. 1 *Indicator* (p.55)	The indication of whether or not the consent has been granted.
Condition UN03000305	0 .. 1 *LongDescriptionText* (p.56)	Conditions imposed on the shipments of waste.
Objection UN03000306	0 .. 1 *LongDescriptionText* (p.56)	Objections to the shipments of waste.
DecisionDate UN03000307	0 .. 1 *Date* (p.53)	The date of decision about granting or denying the consent to shipments of waste.
SubjectID UN03000308	1 .. 1 *NotificationIdentifier* (p.58)	The identification of the notification to which this decision about granting or denying consent to shipments of waste relates.
AuthorityOrganization UN03000309	0 .. 1 *Organization* (p.40)	The authority granting or denying consent to shipments of waste.
ValidityPeriod UN03000310	0 .. 1 *Period* (p.41)	The period of time within which the consent to shipments of waste is valid.

WasteMovementAuthorization is used within: NotificationDecisionMessage (p.21)

WasteOriginProcess

UN01005217



Details on a physical process out of which waste originates: Description of the physical process.

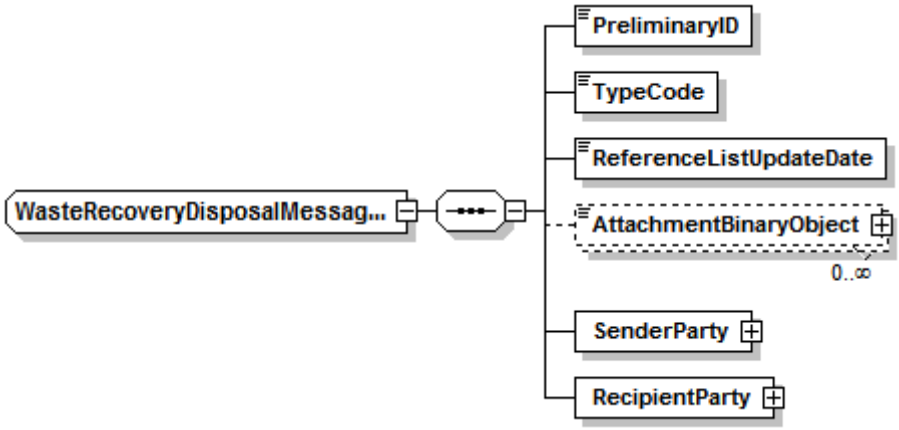
Elements

Name	Type	Definition
Description UN01005218	1 .. 1 *ExtensiveDescription Text* (p.54)	The description of the waste origin process.

WasteOriginProcess is used within: WasteProduction (p.26)

WasteRecoveryDisposalMessageDocument

UN03000324



Details on a recovery or disposal related message: Identification, type of message, sender, receiver, etc.

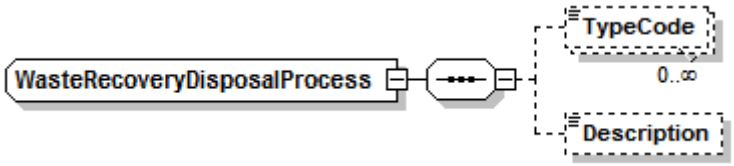
Elements

Name	Type	Definition
PreliminaryID UN03000325	1 .. 1 *PreliminaryIdentifier* (p.59)	The preliminary message identification, assigned by the sender. Note: The confirmation of message receipt returned by the message broker contains the final message identification, automatically assigned by the message broker.
TypeCode UN03000326	1 .. 1 *RecoveryDisposalMessageTypeCode* (p.60)	The type of recovery disposal message.
ReferenceListUpdateDate	1 .. 1 *Date* (p.53)	A date that defines the version and recentness of the lists whose entries are referenced from within the document, such as waste lists. The most recent lists for the specified date are being used for referencing.
AttachmentBinaryObject UN03000327	0 .. * *BinaryObject* (p.51)	Binary attachments to the message.
SenderParty UN03000328	1 .. 1 *BusinessTransactionParty* (p.30)	The message sender.
RecipientParty UN03000329	1 .. 1 *BusinessTransactionParty* (p.30)	The message recipient.

WasteRecoveryDisposalMessageDocument is used within: CertificateOfWasteRecoveryDisposalMessage (p.19)

WasteRecoveryDisposalProcess

UN01005219



Details on a waste recovery or disposal operation: Type of operation and description.

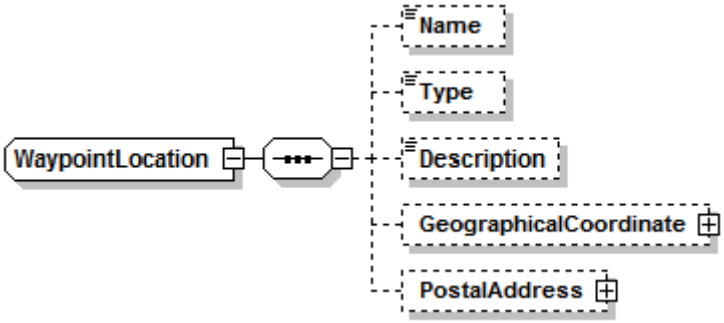
Elements

Name	Type	Definition
TypeCode UN01005220	0 .. * *WasteRecoveryDisposalTypeCode* (p.62)	The type of waste recovery or disposal operation.
Description UN01005221	0 .. 1 *ExtensiveDescriptionText* (p.54)	A description of the waste recovery or disposal operation. Note: A waste recovery or disposal operation description will be provided in cases where it is not possible to assign one of the types from the codelist or where such an assignment requires further description.

WasteRecoveryDisposalProcess is used within: WasteRecoveryDisposal (p.26), NonRecoveryWasteMaterial (p.36)

WaypointLocation

UN01005222



Details on a waypoint (point on a route): Name, description, geographical coordinate and address.

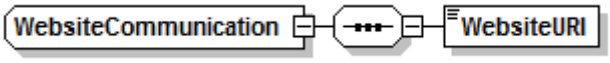
Elements

Name	Type	Definition
Name UN01005223	0 .. 1 *NameText* (p.58)	The name of the waypoint, such as the city name.
Type UN01005224	0 .. 1 *DescriptionText* (p.54)	The type of waypoint expressed as text, such as “Bridge”.
Description UN01005225	0 .. 1 *DescriptionText* (p.54)	A waypoint description.
GeographicalCoordinate UN01005226	0 .. 1 *GeographicalCoordinate* (p.34)	The geographical coordinate of the waypoint.
PostalAddress UN01005227	0 .. 1 *PostCodeAddress* (p.42)	The waypoint address (country and postcode).

WaypointLocation is used within: CountrySectionRoute (p.33), Route (p.44), SectionRoute (p.45)

WebsiteCommunication

UN01005228



A website address.

Elements

Name	Type	Definition
WebsiteURI UN01005229	1 .. 1 *WebsiteURIIdentifier* (p.63)	The website address.

WebsiteCommunication is used within: Contact (p.31), ContactPerson (p.32)

Data Types

Amount

A monetary amount.

Elements

Name	Type	Definition
Amount	1 .. 1 *decimal(25,2)*	The numeric value of the monetary amount.
currencyID	1 .. 1 *string(64)*	The ISO 4217 character code identifying the currency used to express this monetary amount, such as “EUR” for Euro.

Amount is used within: FinancialGuarantee (p.33), NonRecoveryWasteMaterial (p.36), RecoveryWasteMaterial (p.43)

AngleMeasure

A plane angle measure.

Elements

Name	Type	Definition
Measure	1 .. 1 *decimal(11,8)*	The numeric value of the plane angle measure.
unitCode	1 .. 1 *string(64)*	Der UN/ECE Recommendation 20 code identifying the unit of measurement for this plane angle measure, such as “DD” for degree.

AngleMeasure is used within: GeographicalCoordinate (p.34)

AreaNumberCode

An area number of a telecommunication number.

Elements

Name	Type	Definition
Code	1 .. 1 *string(8)*	The area number of the telecommunication number, such as 1 for Vienna (Austria).

AreaNumberCode is used within: TelecommunicationCommunication (p.47)

BinaryObject

A binary object in textual representation.

Elements

Name	Type	Definition
BinaryObject	1 .. 1 *base64Binary(16777216)*	The textual representation of the binary object, ie, of the byte-sequence.
format	0 .. 1 *string(256)*	A description of the format of the binary object.
mimeCode	1 .. 1 *string(64)*	A Multipurpose Internet Mail Extension (MIME) Content-Type code providing information about the content and format of the binary object, such as “image/png” for images in “Portable Network Graphics” (PNG) format.
encodingCode	1 .. 1 *string(64)*	A Multipurpose Internet Mail Extension (MIME) Content Transfer Encoding code providing information about the type

		of textual representation of the binary object. This has to be set to “base64” for the so-called Base64-encoding.
filename	1 .. 1 *string(256)*	The filename for the binary object.

BinaryObject is used within: MessageDocument (p.36), WasteRecoveryDisposalMessageDocument (p.49)

BlockNameText

A block name of an address.

Elements

Name	Type	Definition
Text	1 .. 1 *string(32)*	The block name.

BlockNameText is used within: StructuredAddress (p.46)

BuildingNameText

A name of a building.

Elements

Name	Type	Definition
Text	1 .. 1 *string(50)*	The name of the building.

BuildingNameText is used within: StructuredAddress (p.46)

BuildingNumberText

A number of a building.

Elements

Name	Type	Definition
Text	1 .. 1 *string(15)*	The building number.

BuildingNumberText is used within: StructuredAddress (p.46)

CityNameText

The name of a city, town, or village.

Elements

Name	Type	Definition
Text	1 .. 1 *string(45)*	The name of the city, town, or village.

CityNameText is used within: StructuredAddress (p.46)

CitySubDivisionNameText

A name of a sub-division of a city.

Elements

Name	Type	Definition
Text	1 .. 1 *string(35)*	The name of the city sub-division, such as a borough or district.

CitySubDivisionNameText is used within: StructuredAddress (p.46)

CompleteNumberText

A complete telecommunication number.

Elements

Name	Type	Definition
Text	1 .. 1 *string(48)*	The complete telecommunication number, such as “+44 (0)20 7379 6344”.

CompleteNumberText is used within: TelecommunicationCommunication (p.47)

ConsistencyCode

A physical characteristic (consistency) of waste.

Elements

Name	Type	Definition
Code	1 .. 1 *string(64)*	The code specifying the physical characteristic (consistency), such as solid or sludgy, via identification of an entry in codelist 6172 “Physical Characteristics”.

ConsistencyCode is used within: PhysicalCharacteristic (p.42)

CoordinateSystemIdentifier

An identification of a coordinate system.

Elements

Name	Type	Definition
Identifier	1 .. 1 *string(64)*	The code specifying the coordinate system via identification of an entry in codelist 2735 “Coordinate systems”.

CoordinateSystemIdentifier is used within: Route (p.44)

CountryIdentifier

An identification of a country.

Elements

Name	Type	Definition
Identifier	1 .. 1 *string(64)*	The 3-digit ISO 3166-1 code specifying the country via identification of an entry in codelist 3862 “Countries”, such as “040” for Austria.

CountryIdentifier is used within: PostCodeAddress (p.42), StructuredAddress (p.46)

CountryNumberCode

A country number of a telecommunication number.

Elements

Name	Type	Definition
Code	1 .. 1 *string(8)*	The country number of the telecommunication number, such as 44, 1, 353, etc.

CountryNumberCode is used within: TelecommunicationCommunication (p.47)

Date

A date (year, month, and day).

Elements

Name	Type	Definition
DateTime	1 .. 1 *date*	The date (year, month, and day).

Date is used within: AcknowledgedNotificationDocument (p.28), AnnouncedWasteTransportMovement (p.29), CompletedWasteRecoveryDisposalProcess (p.31), IdentifiedMessageDocument (p.34), MessageDocument (p.36),

NotifiedWasteRecoveryDisposalProcess (p.38), NotifiedWasteTransportMovement (p.39), Period (p.41), ReceivedWasteMaterial (p.42), WasteMovementAuthorization (p.48), WasteRecoveryDisposalMessageDocument (p.49)

DescriptionText

A description.

Elements

Name	Type	Definition
Text	1 .. 1 *string(256)*	The description text.

DescriptionText is used within: AcknowledgedMessageDocument (p.27), AnnouncedWasteMaterial (p.28), AnnouncedWastePackage (p.29), CountrySectionRoute (p.33), NotifiedWasteMaterial (p.37), NotifiedWastePackage (p.38), PhysicalCharacteristic (p.42), Route (p.44), SectionRoute (p.45), WaypointLocation (p.50)

DistanceLengthMeasure

A distance measure, ie, the measure of the length of a route between 2 defined points.

Elements

Name	Type	Definition
Measure	1 .. 1 *decimal(25,5)*	The numeric value of the length measure.
unitCode	1 .. 1 *string(64)*	The UN/ECE Recommendation 20 code identifying the measurement unit for this length (distance) measurement. This has to be “KMT” for kilometres.

DistanceLengthMeasure is used within: CountrySectionRoute (p.33), Route (p.44), SectionRoute (p.45)

EmailURIIdentifier

An e-mail address.

Elements

Name	Type	Definition
Identifier	1 .. 1 *string(50)*	The e-mail address, such as “jsmith@example.com”. Note: E-mail addresses have to be specified without “mailto:”-prefix.

EmailURIIdentifier is used within: EmailCommunication (p.33)

ExtensionNumberText

An extension number of a telecommunication number.

Elements

Name	Type	Definition
Text	1 .. 1 *string(8)*	The extension number of the telecommunication number.

ExtensionNumberText is used within: TelecommunicationCommunication (p.47)

ExtensiveDescriptionText

A description that can be extensive.

Elements

Name	Type	Definition
Text	1 .. 1 *string(65535)*	The description text.

ExtensiveDescriptionText is used within: CompletedWasteRecoveryDisposalProcess (p.31), NotifiedWasteRecoveryDisposalProcess (p.38), WasteOriginProcess (p.49), WasteRecoveryDisposalProcess (p.50)

FamilyNamePrefixText

A family name prefix.

Elements

Name	Type	Definition
Text	1 .. 1 *string(20)*	The family name prefix, such as “van”.

FamilyNamePrefixText is used within: ContactPerson (p.32), Person (p.41)

FamilyNameText

A family name.

Elements

Name	Type	Definition
Text	1 .. 1 *string(40)*	The family name.

FamilyNameText is used within: ContactPerson (p.32), Person (p.41)

FloorIdentificationText

An identification of a floor within a building.

Elements

Name	Type	Definition
Text	1 .. 1 *string(7)*	The floor number or other floor identification.

FloorIdentificationText is used within: StructuredAddress (p.46)

GenderCode

A gender.

Elements

Name	Type	Definition
Code	1 .. 1 *string(64)*	The ISO 5218 code specifying the gender via identification of an entry in codelist 4287 “Genders”, such as “2” for female.

GenderCode is used within: ContactPerson (p.32), Person (p.41)

GivenNameText

A given name of a person.

Elements

Name	Type	Definition
Text	1 .. 1 *string(40)*	The given name.

GivenNameText is used within: ContactPerson (p.32), Person (p.41)

Indicator

An indicator (boolean value indicating as to whether or not a specified attribute applies).

Elements

Name	Type	Definition
Indicator	1 .. 1 *boolean*	The boolean value indicating as to whether or not a specified attribute applies: “true” (or “1”) means that the attribute applies, whereas “false” (or “0”) means that the attribute does not apply.

Indicator is used within: AnnouncedWasteMaterial (p.28), NotifiedWasteMaterial (p.37), Party (p.40), ReceivedWasteMaterial (p.42), WasteMovementAuthorization (p.48)

IssueSeverityCode

A severity of an issue.

Elements

Name	Type	Definition
Code	1 .. 1 *string(64)*	The code specifying the severity of the issue via identification of an entry in codelist 1460 “Priority levels”.

IssueSeverityCode is used within: Issue (p.35)

IssueTypeCode

A type of issue.

Elements

Name	Type	Definition
Code	1 .. 1 *string(64)*	The code identifying the type of issue.

IssueTypeCode is used within: Issue (p.35)

LengthMeasure

A length measure.

Elements

Name	Type	Definition
Measure	1 .. 1 *decimal(25,5)*	The numeric value of the length measure.
unitCode	1 .. 1 *string(64)*	The UN/ECE Recommendation 20 code identifying the measurement unit for this length measurement. This has to be “MTR” for metres.

LengthMeasure is used within: GeographicalCoordinate (p.34)

LocalNumberText

A local number of a telecommunication number.

Elements

Name	Type	Definition
Text	1 .. 1 *string(16)*	The local number of the telecommunication number.

LocalNumberText is used within: TelecommunicationCommunication (p.47)

LongDescriptionText

A description that can be longer.

Elements

Name	Type	Definition
Text	1 .. 1 *string(1024)*	The description text.

LongDescriptionText is used within:FinancialGuarantee (p.33), InformationQuery (p.35), Issue (p.35), Location (p.35), NotifiedWasteTransportMovement (p.39), ReceivedWasteMaterial (p.42), SpecialHandlingInstructions (p.46), WasteMovementAuthorization (p.48)

LongNameText

A name that can be longer.

Elements

Name	Type	Definition
Text	1 .. 1 *string(120)*	The name.

LongNameText is used within: AnnouncedWasteMaterial (p.28), NotifiedWasteMaterial (p.37), Organization (p.40), Party (p.40)

MassMeasure

A mass measure.

Elements

Name	Type	Definition
Measure	1 .. 1 *decimal(25,5)*	The numeric value of the mass measure.
unitCode	1 .. 1 *string(64)*	The UN/ECE Recommendation 20 code identifying the measurement unit for this mass measurement, such as “KGM” for kilograms.

MassMeasure is used within: MassMeasurement (p.35), NotifiedWasteMaterial (p.37)

MassRatioMeasure

A mass ratio measure is a measure of the proportion of one mass in relation to another mass, such as the proportion of the mass of waste destined for recovery in relation to the total mass of waste in a waste movement.

Elements

Name	Type	Definition
Measure	1 .. 1 *decimal(8,5)*	The numeric value of the mass ratio measure.
unitCode	1 .. 1 *string(64)*	The UN/ECE Recommendation 20 code identifying the measurement unit for this mass ratio measure. This has to be set to “P1” for percent.

MassRatioMeasure is used within: RecoveryWasteMaterial (p.43)

MessageIdentifier

An identification of a message.

Elements

Name	Type	Definition
Identifier	1 .. 1 *string(64)*	The message identifier. This is the identifier that has been automatically assigned to the message by the message broker.

MessageIdentifier is used within: AcknowledgedMessageDocument (p.27),IdentifiedMessageDocument (p.34)

MessageTypeCode

A type of message.

Elements

Name	Type	Definition
Code	1 .. 1 *string(64)*	The code specifying the type of message via identification of an entry in codelist 7909 “Types of information transmissions related to transboundary movements of waste”.

MessageTypeCode is used within: AcknowledgedMessageDocument (p.27)

MiddleNameText

A middle name of a person.

Elements

Name	Type	Definition
Text	1 .. 1 *string(40)*	The middle name of the person.

MiddleNameText is used within: ContactPerson (p.32), Person (p.41)

NameSuffixText

A name suffix of a person.

Elements

Name	Type	Definition
Text	1 .. 1 *string(20)*	The name suffix of the person, such as “Jr.”.

NameSuffixText is used within: ContactPerson (p.32), Person (p.41)

NameText

A name.

Elements

Name	Type	Definition
Text	1 .. 1 *string(50)*	The name.

NameText is used within: WaypointLocation (p.50)

NotificationIdentifier

A notification number.

Elements

Name	Type	Definition
Identifier	1 .. 1 *string(64)*	The notification number.

NotificationIdentifier is used within: AcknowledgedNotificationDocument (p.28), AnnouncedWasteTransportMovement (p.29), IdentifiedNotificationDocument (p.34), NotifiedWasteTransportMovement (p.39), ReferencedWasteTransportMovement (p.43), WasteMovementAuthorization (p.48)

PackagingTypeCode

A type of packaging.

Elements

Name	Type	Definition
Code	1 .. 1 *string(64)*	The code specifying the type of packaging via identification of an entry in codelist 1885 “Packaging Types”.

PackagingTypeCode is used within: AnnouncedWastePackage (p.29), NotifiedWastePackage (p.38)

PartyIdentifier

An identification of a party.

Elements

Name	Type	Definition
Identifier	1 .. 1 *string(64)*	The code identifying the party.
identificationSchemeID	1 .. 1 *string(64)*	The code specifying the party identification scheme. This can be either a reference to an entry of codelist 9609 “Party

		identification schemes", or, in case another national identification scheme is used, the ISO 3166-1 3-digit code referencing an entry of list 3862 "Countries".

PartyIdentifier is used within: BusinessTransactionParty (p.30), Organization (p.40), Party (p.40)

PartyRoleCode

The role of a party, such as notifier, consignee, non-interim recovery or disposal facility, etc.

Elements

Name	Type	Definition
Code	1 .. 1 *string(64)*	The code specifying the role of a party via identification of an entry in codelist 4897 "Types of parties related to transboundary movements of waste".

PartyRoleCode is used within: BusinessTransactionParty (p.30)

PersonTitleText

A title of a person.

Elements

Name	Type	Definition
Text	1 .. 1 *string(20)*	The title of the person, such as "Dr.".

PersonTitleText is used within: ContactPerson (p.32), Person (p.41)

PostOfficeBoxText

A post office box number.

Elements

Name	Type	Definition
Text	1 .. 1 *string(30)*	The post office box number.

PostOfficeBoxText is used within: StructuredAddress (p.46)

PostcodeCode

A post code.

Elements

Name	Type	Definition
Code	1 .. 1 *string(10)*	The post code.

PostcodeCode is used within: PostCodeAddress (p.42), StructuredAddress (p.46)

PreliminaryIdentifier

A preliminary identification of a message.

Elements

Name	Type	Definition
Identifier	1 .. 1 *string(64)*	The preliminary message identifier.

PreliminaryIdentifier is used within: AcknowledgedMessageDocument (p.27), MessageDocument (p.36), WasteRecoveryDisposalMessageDocument (p.49)

QuantificationTypeCode

A type of quantification.

Elements

Name	Type	Definition
Code	1 .. 1 *string(64)*	The code specifying the quantification type, such as measured, calculated or estimated, via identification of an entry in codelist 7299 “Quantification types”.

QuantificationTypeCode is used within: MassMeasurement (p.35), VolumeMeasurement (p.48)

Quantity

A counted number.

Elements

Name	Type	Definition
Quantity	1 .. 1 *decimal(25,0)*	The quantity.

Quantity is used within: AnnouncedWastePackage (p.29), AnnouncedWasteTransportMovement (p.29), NotifiedWasteTransportMovement (p.39)

ReceptionStatusCode

A message reception status.

Elements

Name	Type	Definition
Code	1 .. 1 *string(64)*	The code specifying the reception status, such as accepted or rejected, via identification of an entry in codelist 7022 “Message reception status”.

ReceptionStatusCode is used within: AcknowledgedMessageDocument (p.27)

RecoveryDisposalMessageTypeCode

A type of certificate of waste recovery disposal message.

Elements

Name	Type	Definition
Code	1 .. 1 *string(64)*	The code specifying the type of certificate of waste recovery disposal message via identification of an entry in codelist 3197 “Types of information transmissions related to the recovery or disposal of waste moved transboundary”: Certificate of the completion of an interim recovery or disposal, certificate of the completion of a non-interim recovery or disposal, or certificate of the completion of a succession of recovery or disposal operations (interim and all subsequent recovery or disposal operations). Note: In cases where there are no subsequent recovery or disposal operations, the appropriate message type is the certificate of the completion of a non-interim recovery or disposal operation.

RecoveryDisposalMessageTypeCode is used within: WasteRecoveryDisposalMessageDocument (p.49)

RoomIdentificationText

An identification of a room, such as by door number.

Elements

Name	Type	Definition
Text	1 .. 1 *string(7)*	The room identification (identification of a suite, office, appartment, etc.), such as the door number.

RoomIdentificationText is used within: StructuredAddress (p.46)

RouteBinaryObject

A route in GPX format (GPS Exchange Format).

Elements

Name	Type	Definition
BinaryObject	1 .. 1 *base64Binary(16777216)*	The route in GPX format (GPS Exchange Format), base64-encoded.
format	0 .. 1 *string(256)*	A description of the format of the binary object.
mimeCode	1 .. 1 *string(64)*	A Multipurpose Internet Mail Extension (MIME) Content-Type code providing information about the content and format of the binary object. This must be “text/xml” for the route data in GPX format.
encodingCode	1 .. 1 *string(64)*	A Multipurpose Internet Mail Extension (MIME) Content Transfer Encoding code providing information about the type of textual representation of the binary object. This has to be set to “base64” for the so-called Base64-encoding.
filename	1 .. 1 *string(256)*	The filename of the GPX file.

RouteBinaryObject is used within: Route (p.44)

ShortNumeric

An integer number out of a small range of values.

Elements

Name	Type	Definition
Numeric	1 .. 1 *decimal(8)*	The integer number.

ShortNumeric is used within: AnnouncedWasteTransportMovement (p.29), ReferencedWasteTransportMovement (p.43)

StaircaseNumberText

A number of a staircase.

Elements

Name	Type	Definition
Text	1 .. 1 *string(7)*	The number of the staircase.

StaircaseNumberText is used within: StructuredAddress (p.46)

StreetNameText

A name of a street.

Elements

Name	Type	Definition
Text	1 .. 1 *string(46)*	The name of the street.

StreetNameText is used within: StructuredAddress (p.46)

TransportModeCode

A mode of transport, such as rail or road.

Elements

Name	Type	Definition
Code	1 .. 1 *string(64)*	The code specifying the mode of transport, such as rail or road, via identification of an entry in codelist 8149 “Modes of

		transport according to the EU Regulation on Shipments of Waste and to UN/ECE Recommendation 19".

TransportModeCode is used within: SingleTransportMovement (p.45)

VolumeMeasure

A volume measure.

Elements

Name	Type	Definition
Measure	1 .. 1 *decimal(25,5)*	The numeric value of the volume measure.
unitCode	1 .. 1 *string(64)*	The UN/ECE Recommendation 20 code identifying the measurement unit for this volume measurement, such as "MTQ" for cubic metres.

VolumeMeasure is used within: NotifiedWasteMaterial (p.37), VolumeMeasurement (p.48)

VolumeRatioMeasure

A volume ratio measure is a measure of the proportion of one volume in relation to another volume, such as the proportion of the volume of waste destined for recovery in relation to the total volume of waste in a waste movement.

Elements

Name	Type	Definition
Measure	1 .. 1 *decimal(8,5)*	The numeric value of the volume ratio measure.
unitCode	1 .. 1 *string(64)*	The UN/ECE Recommendation 20 code identifying the measurement unit for this volume ratio measure. This has to be set to "P1" for percent.

VolumeRatioMeasure is used within: RecoveryWasteMaterial (p.43)

WasteMaterialTypeCode

A type of waste.

Elements

Name	Type	Definition
Code	1 .. 1 *string(64)*	The code identifying the type of waste, such as "A1160" for "Waste lead-acid batteries, whole or crushed" according to the "Amber listed wastes" classification of Annex IV of the Regulation (EC) No 1013/2006.
codeListID	1 .. 1 *string(64)*	The code specifying the list of waste types, such as the "Amber listed wastes" of Annex IV of the Regulation (EC) No 1013/2006, via identification of an entry in codelist 1922 "Waste classifications related to transboundary movements of waste".

WasteMaterialTypeCode is used within: AnnouncedWasteMaterial (p.28), NotifiedWasteMaterial (p.37)

WasteRecoveryDisposalTypeCode

A type of waste recovery or disposal.

Elements

Name	Type	Definition
Code	1 .. 1 *string(64)*	The code identifying the waste recovery or disposal operation, such as "R6" für "Regeneration of acids or bases", via identification of an entry in codelist 8149 "Modes of transport according to the EU Regulation on Shipments of Waste and to UN/ECE Recommendation 19".

WasteRecoveryDisposalTypeCode is used within: CompletedWasteRecoveryDisposalProcess (p.31), NotifiedWasteRecoveryDisposalProcess (p.38), WasteRecoveryDisposalProcess (p.50)

WebsiteURIIdentifier

A website address.

Elements

Name	Type	Definition
Identifier	1 .. 1 *string(50)*	The website address, such as “europa.eu”. The website address is to be specified without “http://”-prefix.

WebsiteURIIdentifier is used within: WebsiteCommunication (p.50)

XML SCHEMA DATATYPES

The following is a list of XML Schema datatypes used in the specification of the messages:

Name	Description
boolean	A boolean value (True/False-value). A boolean value indicates, as to whether or not a specified attribute, such as the hazardousness of waste, applies in a specific instance. The following values are possible for boolean: '0', '1', 'false', 'true'. '0' and 'false' are equivalent and represent the fact that an attribute does not apply; '1' and 'true' are equivalent and represent the fact that an attribute does apply.
date	A date (year, month, and day). Dates must be specified in YYYY-MM-DD format, such as in ‘2009-08-27’. XML Schema defines further timezone information to be optionally specified for dates. Timezones are expressed in UTC (Coordinated Universal Time, sometimes also called Greenwich Mean Time). For example, the 29th of September in 2011 in Central European Time (CET) would be expressed as ‘2011-09-29+01:00’.
decimal	A decimal number. A decimal number is expressed as sequence of the digits 0 to 9, with an optional leading sign ("+","-"), and an optional fractional part separated with a period (".”). The following are examples for decimal number representations: '15', '2755.27', '-743','-1211.9734'. decimal(*t*,*f*) is used throughout this document to represent decimal numbers with a maximum total number of digits *t*, and a maximum total number of fractional digits *f* (XML Schema "*totalDigits*" und "*fractionDigits*"-facets).
string	A character string. string(*n*) is used throughout this document to represent strings with a maximum total number of characters *n* (XML Schema "*maxLength*"-facet).

5 MESSAGING SERVICE WEB SERVICE INTERFACE SPECIFICATION

5.1 Preface

One of the main goals behind EUDIN is making the electronic interchange of waste movement related documents as simple and easily achievable as possible to all interested parties (see also Requirement 19 on p.103). In particular, there shall be no requirement for parties participating in the electronic interchange to operate servers or services.

In order to achieve this goal, EUDIN defines a “Messaging Service Interface”, and operates a central Messaging Service web service implementing this interface. This Messaging Service has a simple “post box” functionality. In order to share a waste movement related document, a party puts that document into the post box, complete with information identifying the recipients. Another party taking a look into its post box will then find a shared document, which it can subsequently retrieve from the post box.

The EUDIN Messaging Service is a modular part of EUDIN. The implementation of EUDIN compliant electronic data interchange does not require the use of the EUDIN Messaging Service web service. The

standardized data formats for waste movement related documents can be used in any kind of interface or infrastructure. The EUDIN Messaging Service is meant to offer a very straightforward and easily achievable way of implementing electronic data interchange capability into existing software. Any two or more parties can agree on using different ways of electronically interchanging waste movement related data, either as an alternative to using the EUDIN Messaging Service or in addition to it.

5.2 General provisions

5.2.1 Authentication

The EUDIN Messaging Service uses HTTP Basic Authentication. The data is sent over HTTPS. An HTTP Authorization Header with a Base64 encoded username:password combination has to be contained in each request to the web service.

Usernames and passwords are handed out by the operator of the EUDIN Messaging Service upon registration of a new participant. A username/password combination can be associated to the following:

1. A **party** participating in the electronic data interchange, such as Sweden's Competent Authority of Transit;
2. A **system (IT system)** participating in the electronic data interchange, such as EDM (eGovernment and waste shipments IT solution used in AT), VeVA Online (waste shipments eGovernment IT solution used in CH), Nordic TFS (waste shipments IT solution used in Sweden, Denmark and other Scandinivian countries).

For IT systems, the interrelationship (m:n relationship) between IT systems and parties is administrated by the EUDIN Messaging Service operator and thus "known" to the Messaging Service: The EUDIN Messaging Service "knows" which IT system is authorized to "represent" (interact for) which parties.

So-called "forward sharing" operations (document sharing, document correction sharing, document cancellation) are always associated with a party (as an initiator of the operation). "Backward sharing" operations are not necessarily associated with a party (as an initiator of the operation). "Backward sharing", signalling back information on the processing of received "forward sharing" updates may be generated automatically by the receiving IT system without any involvement of a receiving party, and thus without any association to such a party as an initiator of the backward sharing operation.

5.2.1.1 Generic Setting

In a generic setting, both *IT systems* and *parties* participating in data exchange via the EUDIN Messaging Service are registered with the Messaging Service, including the interrelationship (m:n relationship) between IT systems and parties.

In this setting, credentials/secrets (passwords) are typically assigned to IT systems only, but not to parties (parties may however also be assigned credentials if needed). Username and password assigned to the IT system are used as a client ID and secret, with which the EUDIN Messaging Service identifies and authenticates the IT system. State of the art means of protecting client ID and client secret from unauthorized access have to be applied at the IT system. For example, the client secret should not be contained in software distributed to end user devices, it should only reside server-side.

As of now, the "secret" assigned to the IT system is used as password "as is" in HTTP Basic Authentication. In coming versions of the webservice, for improved security, this may be replaced with a HMAC (Hash Based Message Authentication Code) mechanism.

In this generic setting, sender and recipient parties of the data interchange are identified within the payload via the IDs assigned at registration, such as AT-001 for the Austrian Competent Authority, and CH-001 for the Swiss Competent Authority. The EUDIN Messaging Service does not authenticate these parties. Instead, making sure that the party that is named to be the sender actually is the sender is to be taken care of by the IT system participating in the data exchange via the EUDIN Messaging Service. This will typically be achieved with a user administration and authentication mechanism at place in this IT

system. In a very basic scenario, where for example a Competent Authority works with a simple Access database, this can also be achieved via organisational measures to ensure thant only persons authorised to work with the database have access to it.

5.2.1.2 Simplified Setting

The simplified setting can be used when a specific IT system supporting data interchange via the EUDIN Messaging Service is in use by one EUDIN participant party only. In this case the registration of the IT system can be omitted. Username and password will be assigned to the party. The IT system uses the party credentials to prove authenticity towards the EUDIN Messaging Service.

When party authentication is used, for “forward sharing” the EUDIN Messaging Service validates if the authenticated user matches the party specified as sender in the DocumentSendingEvent-structure (the operation will fault if there is a mismatch).

Even in this simple scenario it is however recommended to use the generic pattern, i.e., registration of the IT system and usage of credentials assigned to the IT system.

5.2.1.3 Reasoning and Outlook

EUDIN is used for cross-border data interchange, inside the EU and across EU borders. Identity providers, user administration and authentication mechanisms are already in place in the participating countries, especially EU member states. It is a goal for EUDIN to make use of the existing authentication infrastructure as much as possible, and to avoid the introduction of parallel structures. In addition, a balance is sought between providing a good level of the security on the one hand, and keeping the burdens for taking part in EUDIN EDI as low as possible.

With EU eIDAS regulation [4], means of authenticating (sender and recipient) parties from EU countries at EUDIN Messaging Service level are expected to become available, and are likely to be integrated into coming versions.

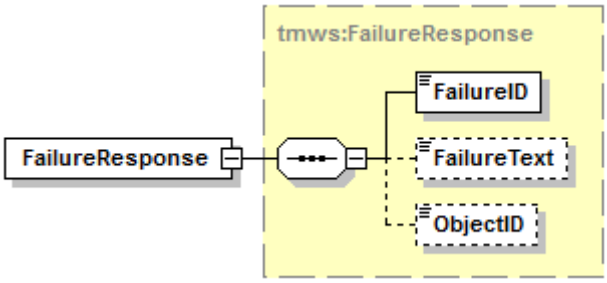
5.2.2 Failure Response

There can be circumstances which prevent the Web Service from processing a request in the defined manner. For example, the request itself may be malformed, or the requestor may be lacking the authorization to access specific data or to invoke the specific operation.

In such cases, called exceptions, the Web Service operates as follows:

- The Messaging Service completely abandons the request, i.e., the request is not even partially processed (“atomic operation”);
- The operation does not return its response as it would usually do. Instead, a SOAP fault will be returned.

The structure of the data returned when a fault occurs is the same for all web service operations.



Name	Type	Definition
FailureID	0 .. 1 StrictReferenceIdentifier	A classification of the type of failure, via a code referencing an entry of codelist 5156 “error categories”.
FailureText	0 .. 1 LongDescriptionText	A description of the failure.

ObjectID	0 .. 1 ReferenceIdentifier	A reference to an object related to the failure.

SOAP faults occur only on exceptions and are in all events caused by software. There may be SOAP faults that only occur as a result to specific user behaviour. It is important to note that even in this case the problem is mainly caused by the software. It is the software developers' task to implement the software in a way which does not make it possible that users can cause software to operate in a technically undesirable manner. Detailed provisions for the handling of errors are listed in section 7.4 (p.95).

5.2.3 Transaction IDs

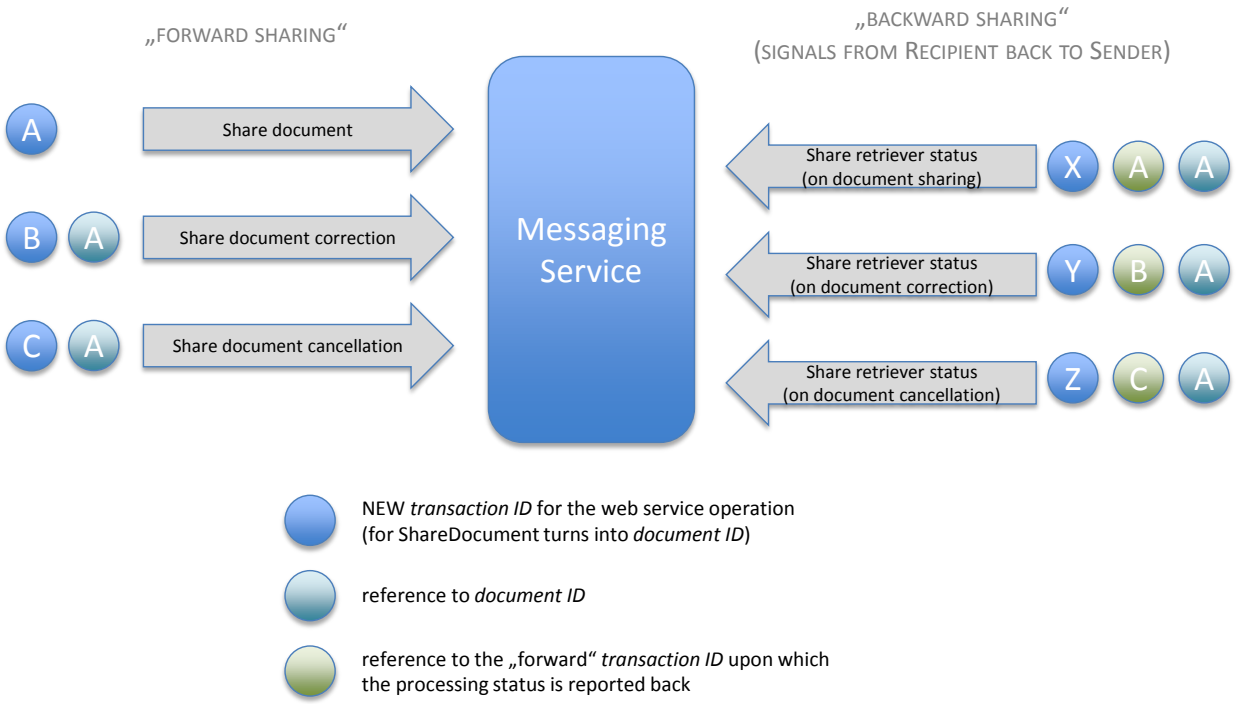
For "write access operations" to the Messaging Service so-called *transaction IDs* are required. Prior to calling the "write access operation" (such as ShareDocument, CancelDocument, ShareRetrieverStatus) a new transaction ID has to be requested from the Messaging Service via the RequestTransactionID operation, and then passed as input to the "write access operation".

If a "write access operation" fails (SOAP fault), then the status of the EUDIN messaging service is left unchanged ("atomic" behaviour, a transaction either succeeds or fails, but nothing inbetween), except for the transaction ID being "used up", information on the (failed) transaction available via QueryTransactionStatus and administrative data such as log entries being generated (the latter administrative data is not accessible via web service operations though).

For the initial (successful) sharing of a data instance (document), the *transaction ID* turns into the *document ID*. When subsequently document corrections or document cancellations are shared, the respective ShareDocument and CancelDocument operation call inputs have to contain a reference to said *document ID*.

In addition to "forward sharing" (sharing of documents, document corrections and document cancellations to recipients) there is "backward sharing": Each recipient/retriever of data instances can and shall report back the status of processing the "forward transaction". This is done with the ShareRetrieverStatus operation (see p.85).

Just as with the "forward sharing" operations such as ShareDocument and CancelDocument, a new transaction ID is also required for each call of a "backward sharing" operation. In addition, the input of "backward sharing" operations also has to contain a reference to a forward sharing operation call and a reference to the shared document. Both are provided via transaction IDs. For sharing the retriever status on the initial sharing of a document, the reference to the forward sharing operation call and the reference to the shared document are identical. For sharing the retriever status on document corrections or cancellations, the reference to the forward sharing operation call and the reference to the shared document cannot be identical.



5.2.4 Party and site identification/IDs

The waste shipment related data interchanged via the EUDIN Messaging Service contains data on parties, such as notifier, consignee, recovery or disposal facilities, carriers and competent authorities.

The waste shipment control procedures require identification of parties, i.e., an unambiguous way of recognizing if data relates to a same known party or a different one. For example, there is a need for unambiguously telling if a recovery or disposal facility named in a specific notification is the same party named in a specific pre-consent. Party IDs (identifiers) are used for this purpose. Party IDs are for example contained in the notification and movement document paper form templates specified in the EU waste shipments regulation [3].

For EDI purposes, the handling of such IDs needs to be further defined.

It is a key principle of EUDIN to NOT require an additional central registration of all the parties (notifiers, consignees, carriers, etc.) and to NOT require the administration of such a central register. Instead, the aim is to use existing registration and identification schemes.

Examples for such schemes:

- Cross-national schemes such as Global Location Numbers (https://www.gs1.org/gln) or EU VAT identification number
- National schemes, such as Business Registers
- Specific organisational schemes, such as Identifiers locally assigned by a Competent Authority

For participating in EDI via the EUDIN Messaging Service there is no need to switch to different party and location identification schemes than those already in use.

There is however a need to support “enrichment” with identifiers from other identification schemes, as will be illustrated.

Within the EUDIN data formats, party and location IDs come as tuples containing

a. Identification scheme identifier, and
b. Party/site identifier (stemming from that particular identification scheme).

The PartyIdentifier structure (see p.58) is an example of such a tuple. The identification scheme identifier references one of the entries of an EUDIN codelist. Identification schemes supported within EUDIN data instances are thus well-defined. For example, for party identification the following identification schemes are supported:

a. One of the identification schemes explicitly listed in codelist 9609, such as Global Location Numbers (identification scheme ID: "GLN")

b. For each country, one specific national identification scheme used in that country, such as Business Register or identifiers locally assigned by a Competent Authority (identification scheme ID: ISO 3166-1 numeric code for that country, as found in codelist 3862, such as 752 for Sweden)

For each party and location, multiple such [identification scheme ID, party/location ID] tuples can be contained in data instances.

IT solutions partaking in EUDIN data interchange are expected to work as follows:

- In addition to the already in use primary party and location IDs, enable storage of further [identifaction scheme ID, party/location ID] tuples;
- When **sharing data** (initially or in corrections) to recipients, for each party/site
    a. the IT system provides at least one ID tuple (with an identification scheme "known" to EUDIN, see above). This is typically the ID already in use within this country or at this competent authority.
    b. the IT system provides all available ID tuples for that party/site

  Following this principle, data sharing typically does not require any preparation with regard to ID management (assigning new IDs to existing party/site entries, etc.), except if there are parties previously not assigned any IDs at all.
- When **receiving data**, the receiving IT system is expected to compare, for each party/site, all the provided IDs with the IDs "known" by that system. If for a party/site any of the provided ID tuples matches that of a "known" party, there is nothing left to do.

  If there is no match, then one of the following may apply:

    a. **new**: the party/site has not previously been known/mentioned in any of the available shipment related data: the party/site has to be added as a new entry to the "known" parties/sites

    b. **existing**: the party/site is already known/mentioned in the available shipment data, but not by any of the IDs provided in the received data.

        Example: the received data may refer to a company X as the waste recipient (of a shipment from country C to B), and company X may already be known at the EDI recipient in country B of having previously been a notifier of a shipment from country B to A. The received data may however contain the GLN for company X, whereas the receiving IT system only knows the business register number for company X.

    In this case, an association between the "known" party/site, and the party/site found in the received data has to be created, by adding the received IDs to the "known" entry.

        Example: In the previous example, the record for company X, which already contains its business register number, will be amended with the company's GLN.

  Various mechanisms may be used within the IT system for automatically deciding whether "new" or "existing" applies. Typically, in some situations, the IT system will have to pass the final decision, over whether "new" or "existing" applies, to a user.

Note: Once the association has been made, and additional IDs have been assigned to a party or site, these IDs will also be transmitted in the sharing of data from that point on.

Example: Once the GLN is added to the record for company X, when waste shipment data relating to company X is shared via the EUDIN messaging service, both the business register number and the GLN will be provided for company X in the shared data.

Finally, it is crucial to note that the "ID enrichment" process described above applies to the interchange of **notifications** only. Data relating to individual movements (movement announcement, confirmation of waste receipt, etc.) is expected to only contain party IDs from the "pool" of party IDs in the notification, i.e., the same IDs as those found in the notification, or a subset thereof.

5.3 Service "Transboundary Movements of Waste Messaging"

5.3.1 RequestTransactionID

Request a transaction ID from the EUDIN Messaging Service.

A transaction ID is required by a client system for "write access operations" such as ShareDocument, CancelDocument and ShareRetrieverStatus.

The transaction ID serves mainly two purposes:

1. Idempotency: A case where an identical request is received by the EUDIN Messaging Service multiple times for whatever reasons, such as problems occurring at the transport layer, does not cause any inconcistencies at business level, i.e., will be treated the same as if only one of the requests had been received;
2. Reliability: When a client fails to receive a response to a previously sent request, such as in a time-out case, the client can find out whether or not the invoked operation has already succeeded and thus whether or not to operation should be re-invoked.

Note that the Messaging Service allocates and assigns transaction IDs in an ascending order. The order given by "string sorting" (alphanumeric sorting) of transaction IDs corresponds to the order in which transaction IDs are allocated and assigned by the Messaging Service.

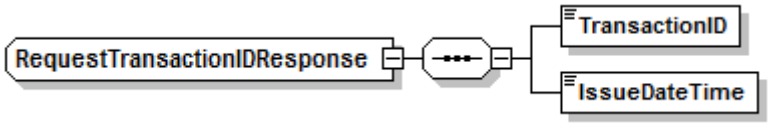
Input:

RequestTransactionIDRequest

There is no input to this operation.

Output:

RequestTransactionIDResponse



Name/Typ	min..max	Definition
TransactionID StrictAssignmentIdentifier	1..1	The ID allocated by the Messaging Service for the client to be used as input to subsequent operation requests.
IssueDateTime dateTime	1..1	The point in time of the transaction ID issuance. This is provided for purposes such as debugging.

5.3.2 ShareDocument

Shares the document (movement announcement, certificate of waste receipt, etc.) with the specified recipients.

The recipients have to be specified via the ID by which they are known to the EUDIN Messaging Service. A list of parties known to the EUDIN Messaging Service, together with the IDs by which they are known to the EUDIN Messaging Service, is published on the EUDIN website.

A note can be provided from sharer to recipient for each recipient.

The document will be made available for electronic access to the recipient.

Depending on the configuration stored for the recipient at the EUDIN Messaging Service, the sharing of a document to a recipient may also trigger a fax to be sent to the recipient by the EUDIN Messaging Service on behalf of the document sharer.

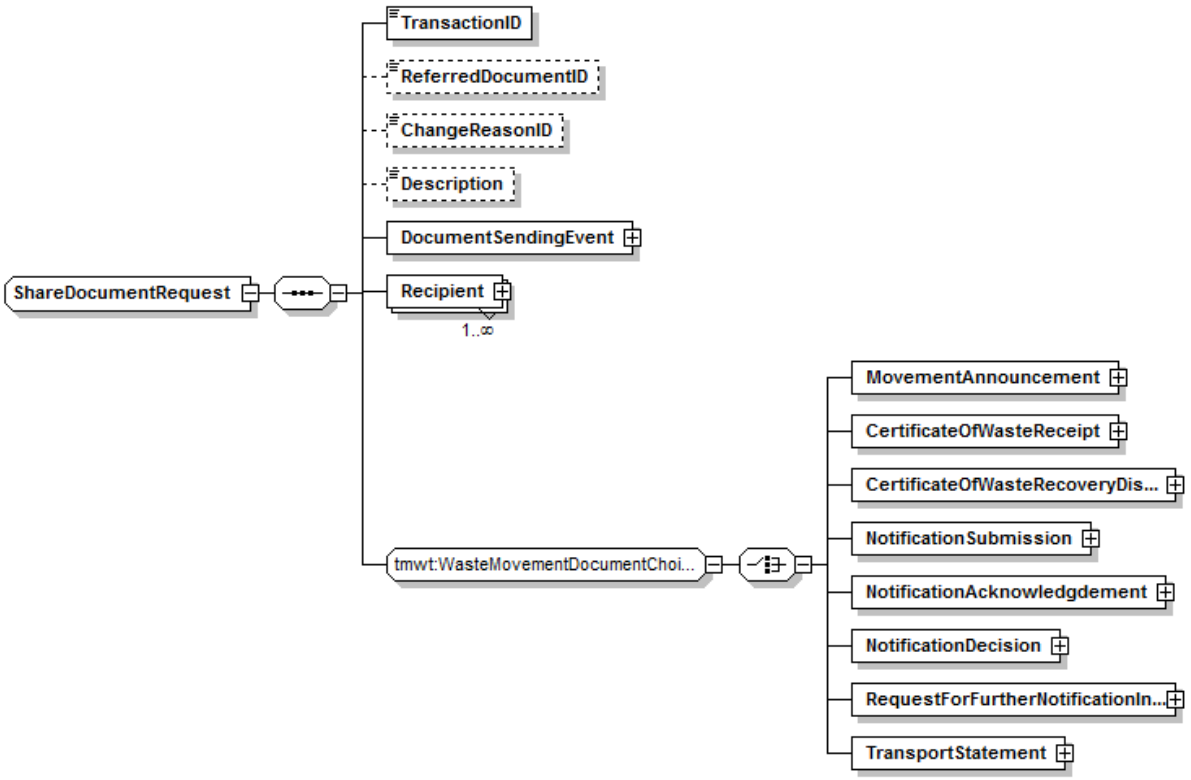
A transaction ID has to be requested from the EUDIN Messaging Service prior to sharing a document. The transaction ID has to be provided as input to the document sharing operation. The transaction ID can henceforth be used to request status information from the EUDIN Messaging Service via the QueryTransactionStatus operation.

The ShareDocument operation works asynchronously: The ShareDocument operation returns without fault if the EUDIN Messaging Service could successfully initiate the processing and validation of the document submitted for sharing. The results of these processing and validation steps are provided asynchronously. The transaction status can subsequently be queried with the QueryTransactionStatus operation.

The ShareDocument operation guarantees an atomic mode of operation: On success, the document will be available to ALL the recipients. On failure, the document will be available to NONE of the recipients. This does however not include the sending of faxes, which may have succeeded with one recipient but failed with another.

Input:

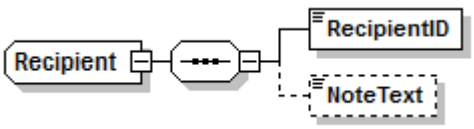
ShareDocumentRequest



Name/Typ	min..max	Definition
TransactionID StrictReferenceIdentifier	1..1	A transaction ID previously requested with the RequestTransactionID operation. Note 1: When the ShareDocument operation successfully completes, then the transaction ID passed to the parameter is henceforth the document ID by which the Messaging Service identifies the shared document. Note 2: A transaction ID obtained from the Messaging Service can only be used once in invoking a ShareDocument operation.
ReferredDocumentID StrictReferenceIdentifier	0..1	The ID of the document to be corrected. Note 1: The *ReferredDocumentID* MUST be set for sharing document corrections, and MUST NOT be set for the initial sharing of documents. Note 2: This is the ID used as transaction ID in the initial sharing of the document with the ShareDocument operation, which subsequently gets used as the document ID by the EUDIN messaging service (see 5.2.3 for further information).
ChangeReasonID ReferenceIdentifier	0..1	The reason for correcting the document (codelist 7521), such as changed circumstances or erroneous content. Note 1: The *ChangeReasonID* MUST be set for sharing document corrections, and MUST NOT be set for the initial sharing of documents. Note 2: “Changed circumstances” applies to the correction of an announced movement of waste, if changes to the announced movement of waste get known prior to the initially announced departure date, including the postponing of the movement of waste to a later date. If an announced movement of waste cannot take place as planned, and if there is no replacement for this movement of waste, or updated details on the movement of waste are not known by the announced date of waste movement, cancellation (see ShareDocumentCancellation operation) is required instead of correction. “Erroneous content” can apply to corrections of any shared documents, including movement announcements. Involved parties are expected to only exchange “final” complete and correct data (rather than initially sharing “dummy data” for subsequent correction or cancellation), therefore cancellations or corrections due to “erroneous content” are accecptable only as rare exceptions rather than on a regular basis.

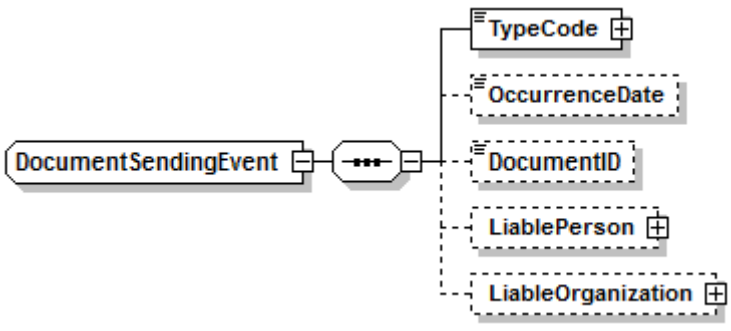
Description DescriptionText	0..1	A description of the party sharing the document or document correction. Note 1: A description will typically NOT be provided for the initial sharing of a document. The main use case for providing a description is document correction, where correction reasons may be explained in addition to the classification provided via *ChangeReasonID*. Example: If a document correction is shared from one competent authority to another, the description explaining the correction is provided by the authority sharing the correction. Any of the following three cases may apply: 1. A description has been provided electronically by the notifier (or consignee, etc.) and is passed on by the authority without any changes (in case the authority deems the description complete and suitable); 2. A description has been provided electronically by the notifier (or consignee, etc.) and is passed on by the authority with amendments made by that authority (amended with additional information available to the authority, and not provided electronically by e.g. the notifier). In an extreme case, the original description may be completely replaced by the authority; 3. No electronically provided description is available to the authority, and the description is written purely by the authority.
DocumentSendingEvent DocumentSendingEvent (p.72)	1..1	Information about the sending (sharing) of the document, such as the (natural) person sharing the document. Note: This is of special relevance where the system identified and authenticated to the EUDIN messaging service “represents” multiple EUDIN participants, such as in the case of Nordic TFS.
Recipient Recipient (p.72)	1..*	The parties with whom the document is requested to be shared. The EUDIN ID for each recipient has to be provided. Optionally, a note from sharer to recipient can be provided for each recipient. Note: For corrections, the list of correction recipients MUST be identical to the list of recipients of the underlying document sharing. The EUDIN Messaging Service will however technically accept the document correction sharing request independent of whether or not lists of recipients match.
MovementAnnouncement, CertificateOfWasteReceipt, etc.	1..1	The waste movement related document to be shared.

Recipient



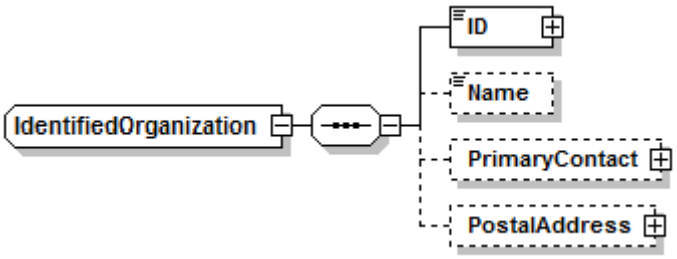
Name/Typ	min..max	Definition
RecipientID StrictReferenceIdentifier	1..1	The EUDIN ID of the recipient (from codelist 8630). Note: Only individual EUDIN participants can be listed as recipients. Systems representing multiple parties, such as Nordic TFS, MUST NOT be specified as recipient.
NoteText String1024	0..1	An optional note to the recipient.

DocumentSendingEvent



Name/Typ	min..max	Definition
TypeCode DocumentEventTypeCode	1..1	The type of document related event (codelist 9868). Note: This must be set to “document sending” (GTIN 9008390106600).
OccurrenceDate DateMandatoryDateTime	0..1	The point in time when this document has been sent/shared. Note: The document sending event occurrence date will be ignored for individual EUDIN participants. Instead, the EUDIN Messaging Service time of processing the ShareDocument-request will be stored as sending time. Only for systems representing multiple EUDIN participants, such as Nordic-TFS, will the OccurrenceDate be processed and stored.
DocumentID DocumentAssignmentIdentifier	0..1	The ID assigned to the document by its sender.
LiablePerson Person (p.41)	0..1	The natural person sending the document.
LiableOrganization IdentifiedOrganization (p.73)	0..1	The entity (authority, company, …) sending the document. Note 1: The entity MUST be specified with its EUDIN ID. Note 2: If the web service operation is called by a system representing multiple EUDIN participants (such as Nordic TFS), the authenticated web service user (such as Nordic TFS) MUST be different from the EUDIN participant referred to in DocumentSendingEvent/LiableOrganization/ID. In all other cases, the authenticated web service user MUST be identical to the EUDIN participant referred to in DocumentSendingEvent/LiableOrganization/ID.

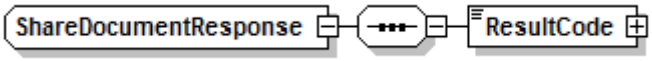
IdentifiedOrganization



Name/Typ	min..max	Definition
ID PartyAssignmentIdentifier	1..1	The EUDIN participant ID (codelist 8630).
Name LongNameText	0..1	The organization (authority, enterprise, undertaking, …) name.
PrimaryContact Contact (p.31)	0..1	Contact information for the organization.
PostalAddress StructuredAddress (p.46)	0..1	The adress of the organization. For a company this is the head office address.

Output:

ShareDocumentResponse



Name/Typ	min..max	Definition
ResultCode Code	1..1	The result code is not used in this version of the web service.

5.3.3 ShareDocumentCancellation

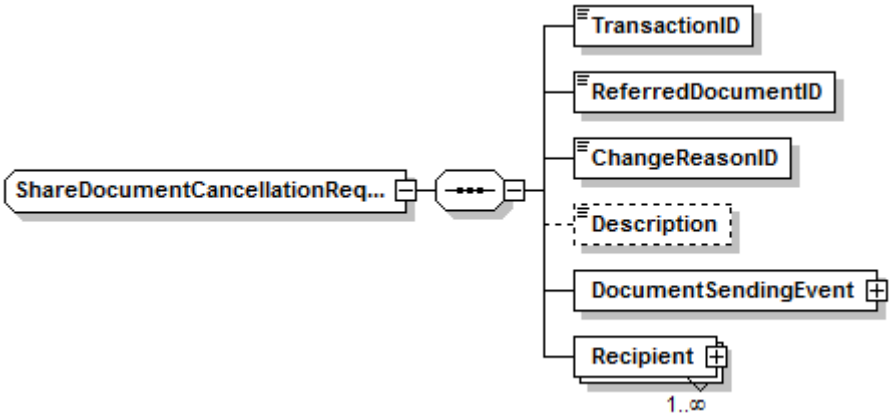
Share the cancellation of a previously shared document.

This operation will be mainly required for the cancellation of movement announcements. If an announced movement cannot take place, such as due to weather conditions, and if a new date for the

announced transport does not exist or is not known prior to the announced transport date, the movement announcement will have to be cancelled.

Input:

ShareDocumentCancellationRequest

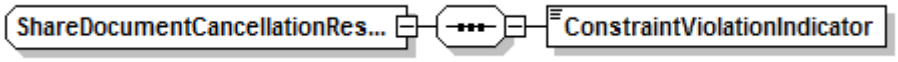


Name/Typ	min..max	Definition
TransactionID StrictReferenceIdentifier	1..1	A transaction ID previously requested with the RequestTransactionID operation, and not yet used in another operation call. Note: The transaction ID can subsequently be used in the QueryTransactionStatus operation.
ReferredDocumentID StrictReferenceIdentifier	1..1	The ID of the document to be cancelled. Note: This is the ID used as transaction ID in the initial sharing of the document with the ShareDocument operation, which subsequently gets used as the document ID by the EUDIN Messaging Service (see 5.2.3 for further information).
ChangeReasonID ReferenceIdentifier	1..1	The reason for cancelling the document (codelist 7521), such as changed circumstances or erroneous content. “Changed circumstances” applies to the cancellation of an announced movement of waste, if it cannot be conducted as planned, and if a new date for the movement of waste is not known prior to the initially announced departure date. If a new date is known by that time, cancellation is NOT required, and the movement announcement can rather be corrected with a new date of shipment instead (ShareDocument operation in “correction mode”, also with “changed circumstances” specified as the reason for change. “Changed circumstances” is not applicable to cancellations of anything else than movement announcements. “Erroneous content” can apply to cancellations of any shared documents, including movement announcements. Involved parties are expected to only exchange “final” complete and correct data (rather than initially sharing “dummy data” for subsequent correction or cancellation), therefore cancellations or corrections due to “erroneous content” are accecptable only as rare exceptions (rather than on a regular basis).
Description DescriptionText	0..1	A description of the cancellation and its reasons.
DocumentSendingEvent DocumentSendingEvent (p.72)	1..1	Information about the sending (sharing) of the document cancellation, such as the (natural) person sharing the cancellation. In the most common case, the legal entity defined as sender (sharer) in LiableOrganization has to be the legal entity authenticated to the EUDIN Messaging Service. However, for systems representing multiple EUDIN participants, such as Nordic TFS, the legal entity defined as sender MUST be different from the authenticated legal entity. The document cancellation sending event occurrence date will be ignored for individual EUDIN participants. Instead, the EUDIN Messaging Service time of processing the ShareDocument-request will be stored as sending time. Only for systems representing multiple participants, such as Nordic-TFS, will the OccurrenceDate be processed and stored.

Recipient Recipient (p.72)	1..*	The parties with whom the document cancellation is requested to be shared. The EUDIN ID for each recipient has to be provided. Note 1: The list of cancellation recipients SHOULD in most cases be identical to the list of recipients of the underlying document sharing. The EUDIN Messaging Service will however technically accept the cancellation request independent of whether or not lists of recipients match. Note 2: The list of recipients MUST NOT contain systems representing multiple EUDIN participants, such as Nordic TFS.

Output:

ShareDocumentCancellationResponse



Name/Typ	min..max	Definition
ConstraintViolationIndicator Indicator	1..1	An indication of whether or not the EUDIN messaging service has detected pointers to potentially incorrect data in the document cancellation sharing. Note 1: If ConstraintViolationIndicator is set to true, the ShareDocumentCancellation operation has nevertheless completed successfully and passes on the cancellation request to recipients. If the operation call fails it will instead result in a SOAP fault. Note 2: Additional details on the pointers to potentially incorrect data or violated constraints can subsequently be retrieved with the QueryDocumentValidationResult operation. Note 3: In initial releases of the EUDIN messaging service, the messaging service may not validate anything else than XML Schema conformance. Validation of further constraints, including "soft" constraints which only provide pointers and hints to potentially incorrect data, but do not prevent processing, may however be subsequently introduced in further releases.

5.3.4 QueryTransactionStatus

Queries the status of a document sharing transaction.

This operation cannot be invoked by anyone else then the submitter of the document.

The operation faults if the transaction ID is not known to the Messaging Service, or if no transaction has been invoked with that transaction ID.

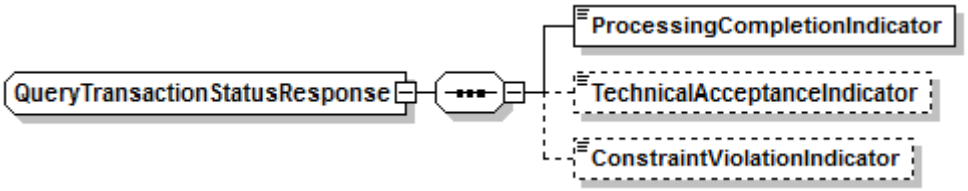
Input:

QueryTransactionStatusRequest

Name/Typ	min..max	Definition
TransactionID StrictReferenceIdentifier	1..1	A transaction ID that prior to the QueryTransactionStatus call has been used in any of the "write access" operations, such as ShareDocument, ShareDocumentCancellation or ShareRetrieverStatus.

Output:

QueryTransactionStatusResponse



Name/Typ	min..max	Definition
ProcessingCompletionIndicator Indicator	1..1	An indication of whether or not the EUDIN Messaging Service has completed the processing of the transaction (write access operation).
TechnicalAcceptanceIndicator Indicator	0..1	An indication of whether or not the EUDIN messaging service could successfully complete the "write access" operation (could accept the request). Note 1: For technically rejected requests (TechnicalAcceptanceIndicator is set to false) the EUDIN messaging service remains in its initial state, except for logging and status information. For example, if a ShareDocument operation call is technically rejected, the recipients specified within the requests will neither be able to retrieve the document from the Messaging Service, nor will they learn about the failed sharing attempt. Note 2: The TechnicalAcceptenceIndicator will be contained in the result if and only if the ProcessingCompletionIndicator is true.
ConstraintViolationIndicator Indicator	0..1	An indication of whether or not the EUDIN messaging service found violations of data requirements. Note 1: The ConstraintViolationIndicator will be contained in the result if and only if a TechnicalAcceptanceIndicator with the value "true" is there. Note 2: A ConstraintViolationIndicator set to true is a pointer to a potentially incorrect request (a "warning"), which nevertheless has been accepted and processed by the messaging service. Note 3: If the ConstraintViolationIndicator is set to true, details on the violated constraints can be retrieved with the QueryDocumentValidationResult operation.

5.3.5 QueryDocumentValidationResult

Queries the result of an automatic validation of a document previously submitted for sharing.

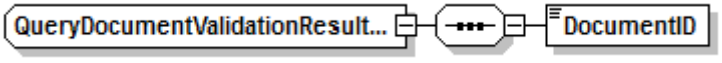
Note 1: In its current release, validation results are only available for validations conducted by the EUDIN Messaging Service (within that central messaging node). In the current Messaging Service release the validation result data format cannot be used for sharing validation results from Messaging Service endpoint to endpoint (such as in the ShareRetrieverStatus operation).

Note 2: There are the following indications for calling the QueryDocumentValidationResult operation:

1. A "write access" operation fails, and the SOAP fault indicates the violation of validation rules (FailureID set to 203 "Violation of data requirements");
2. A "write access" operation succeeds and the output indicates the violation of constraints (ConstraintViolationIndicator set to true).

Input:

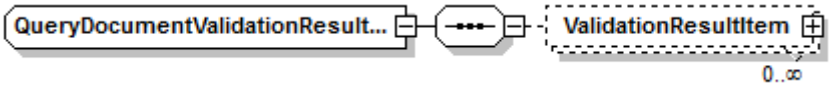
QueryDocumentValidationResultRequest



Name/Typ	min..max	Definition
DocumentID StrictReferenceIdentifier	1..1	The ID of the previous "write access" transaction, such as the transaction ID used for a document sharing operation.

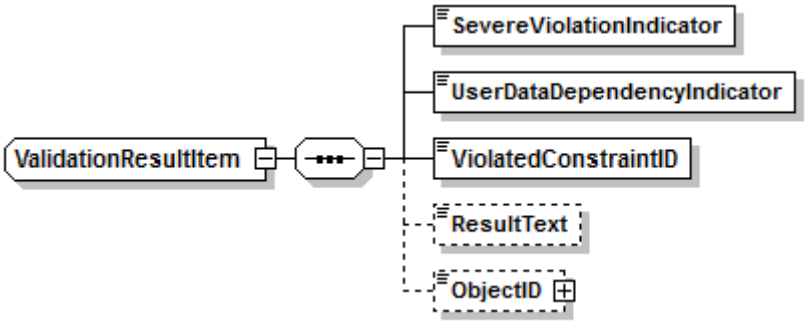
Output:

QueryDocumentValidationResultResponse



Name/Typ	min..max	Definition
ValidationResultItem ValidationResultItem	0..*	Each validation result item reflects a violation of a constraint. Note: If a single type of constraint is violated multiple times, there will be an entry for each of the violations.

ValidationResultItem



Name/Typ	min..max	Definition
SevereViolationIndicator Indicator	1..1	An indication of whether or not the violation is severe (is a violation that leads to technical rejection).
UserDataDependencyIndicator Indicator	1..1	An indication of whether or not the violation may be caused by the data directly provided by a user, such as by providing incomplete or inconsistent data. Note: Pointing out details of a violation by a software to a user in order for the user to subsequently correct or complete data may only be appropriate if the user data dependency indicator is set to true. See also error handling provisions in section 7.4 (p.95ff).
ViolatedConstraintID StrictReferenceIdentifier	1..1	The ID of the violated constrained. Used to reference the constraint in a set of published constraints (“data requirements document”).
ResultText LongDescriptionText	0..1	A textual description of the constraint violation.
ObjectID OptionalTypeReferenceIdentifier	0..1	This optional ID may be used to reference a object instance within the submitted document which causes the violation. For example, if the first name is required to be provided for a person, but is missing in the data instance, this object ID may be set to the ID provided for the person in the data instance.

5.3.6 QueryUpdateB

The purpose of this operation is the synchronisation of a client with updates recorded at the server (EUDIN Messaging Service) for an EUDIN participant.

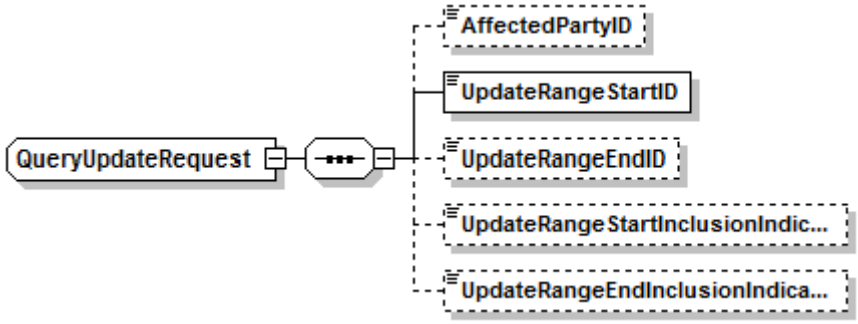
An update falls under one of these categories:

1. “Forward sharing”
    a. Initial sharing of a document (resulting from a ShareDocument operation call);
    b. Sharing of a document correction (resulting from a ShareDocument operation call in “correction mode”);
    c. Sharing of a document cancellation (resulting from a ShareDocumentCancellation call);
2. “Backward sharing”
    a. Sharing of retriever status (resulting from a ShareRetrieverStatus call).

Note: "Own" updates (updates to the EUDIN Messaging Service by the same EUDIN participant as the one retrieving updates with the QueryUpdateB operation) are included in the returned set of updates. This way distributed client instances of the same EUDIN participant can also synchronize sent/shared items via the EUDIN Messaging Service.

Input:

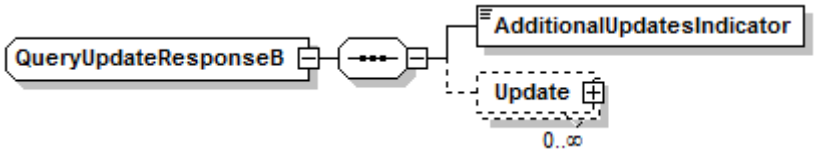
QueryUpdateRequest



Name/Typ	min..max	Definition
AffectedPartyID StrictReferenceIdentifier	0..1	The ID of the party in question which for updates are queried. If no party ID is provided, the party is derived from the credentials (authentication information). For individual EUDIN participants, no other updates than its own can be queried. For system participants such as Nordic TFS there are however two possibilities: 1. The system queries the updates for all its system participants at once. In this case the ID by which the system is known to EUDIN needs to be provided; 2. The system queries the updates for one specific participant of the system. In this case the ID by which the system participant is known to EUDIN needs to be provided.
UpdateRangeStartID StrictReferenceIdentifier	1..1	The lowest update ID in the range of update IDs to be queried. Note 1: Whether or not the update range start ID is included in the query can be controlled with the start inclusion indicator. Note 2: The EUDIN Messaging Service uses ascending (though not necessarily contigous) identifiers for updates. In most cases, a client queries "new" updates, i.e., updates it has not queried yet. This is done by passing the latest (highest) ID of all the updates the client already is aware of, in combination with the update range start inclusion indicator set to false.
UpdateRangeEndID StrictReferenceIdentifier	0..1	The highest update ID in the range of update IDs to be queried. Note 1: Whether or not the update range end ID is included in the query can be controlled with the end inclusion indicator. Note 2: An update range end ID should only be provided as input to the query operation, if a range of updates known to the client is queried. When querying new updates, no range end ID should be set in the input.
UpdateRangeStartInclusionIndicator Indicator	0..1	An indication of whether or not the update range start ID is included in the range of queried update IDs. Note 1: In the most common use case, when updates "new" to a client are queried, the latest update ID known to the client is passed in UpdateRangeStartID, no value is passed in UpdateRangeEndID, and "false" is passed in UpdateRangeStartInclusionIndicator. Note 2: The operation defaults to including the start ID in the range of queried update IDs.
UpdateRangeEndInclusionIndicator Indicator	0..1	An indication of whether or not the update range end ID is included in the range of queried update IDs. Note: The operation defaults to including the end ID in the range of queried update IDs.

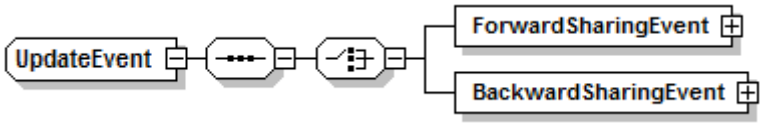
Output:

QueryUpdateResponseB



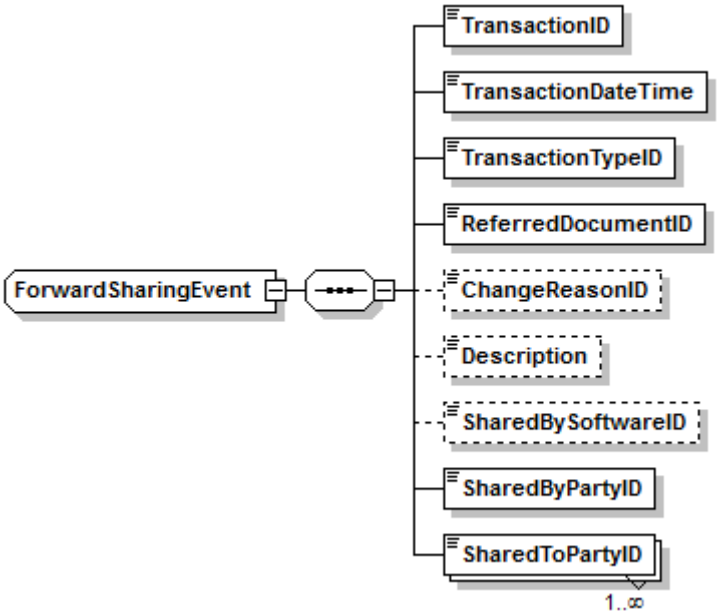
Name/Typ	min..max	Definition
AdditionalUpdatesIndicator Indicator	1..1	An indication of whether or not more updates than those returned by the operation are available in the range of queried updates. Note: If the number of updates within the specified range of update IDs exceeds a defined limit, in order to keep the response size reasonable the EUDIN Messaging Service will only return a limited number of updates and let the client know about additional updates being immediately available by setting the AdditionalUpdatesIndicator to true.
Update UpdateEvent (p.79)	0..*	Each Update instance reflects an update, such as the sharing of a document.

UpdateEvent



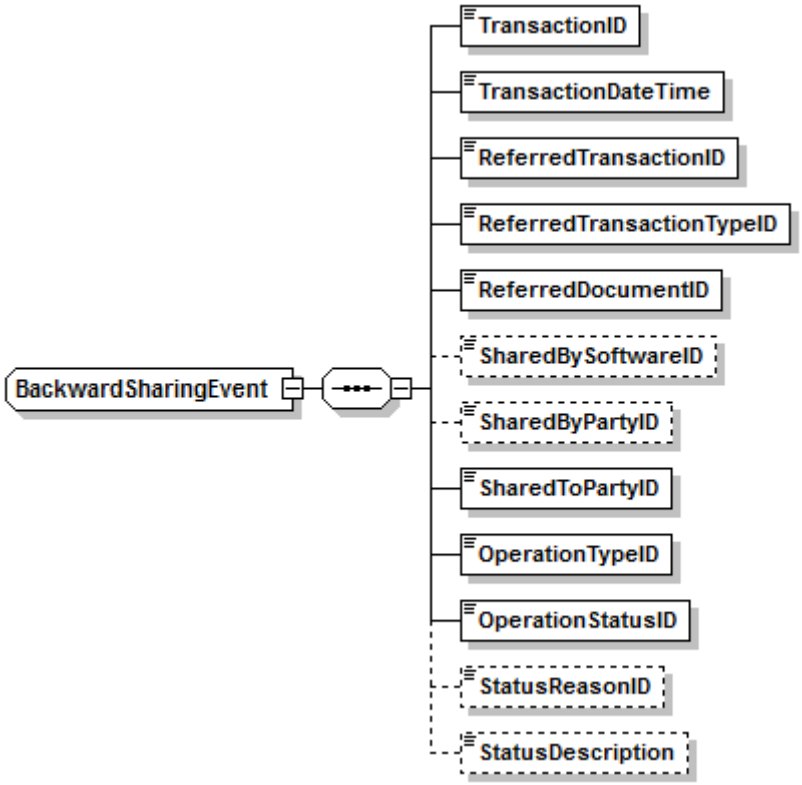
Name/Typ	min..max	Definition
ForwardSharingEvent ForwardSharingEvent (p.79)	0..1	A “forward sharing” update, i.e., the sharing of a document, a document correction or a document cancellation to recipients.
BackwardSharingEvent BackwardSharingEvent (p.81)	0..1	A “backward sharing” update, i.e., the sharing of a recipient’s status of processing a “forward transaction” back to the initial sender.

ForwardSharingEvent



Name/Typ	min..max	Definition
TransactionID StrictReferenceIdentifier	1..1	The transaction ID used for the "forward transaction" (sharing of a document, of a document correction, or a document cancellation). Note: For a document sharing operation (see element *TransactionTypeID*), the transaction ID gets used as the document ID by the EUDIN Messaging Service. Transaction IDs of document sharing operations returned by QueryUpdateB can thus subsequently be used as input to the RetrieveDocument operation (p.82).
TransactionDateTime dateTime	1..1	A timestamp recorded by the EUDIN Messaging Service for the "forward transaction".
TransactionTypeID ReferenceIdentifier	1..1	The type of "forward transaction", such as sharing of a document, sharing of a document correction, or sharing of a document cancellation (codelist 2514).
ReferredDocumentID StrictReferenceIdentifier	1..1	The ID by which the EUDIN Messaging Service references the document to which the "forward transaction" refers: • For the initial sharing of a document, *ReferredDocumentID* and *TransactionID* are identical; • For the sharing of a document correction or document cancellation, *ReferredDocumentID* ist different from *TransactionID*: *TransactionID* is the ID of the correction or cancellation, whereas *ReferredDocumentID* is the ID of the initial sharing of the document (which is subsequently used as document ID by the EUDIN Messaging Service).
ChangeReasonID ReferenceIdentifier	0..1	The reason for correcting or cancelling the document (codelist 7521), such as changed circumstances or erroneous content. Note: The *ChangeReasonID* is set for all document correction and document cancellation sharings, and is never set for the initial sharing of a document.
Description DescriptionText	0..1	The description provided for the forward sharing event by the sharing party. Note: Descriptions are typically expected provided for sharing document corrections and document cancellations, but not for the initial sharing of documents.
SharedBySoftwareID StrictReferenceIdentifier	0..1	The ID of the software/system by which the "forward transaction" was invoked (codelist 9388). Note: *SharedBySoftwareID* is only set if the "forward transaction" was invoked by a software or system representing multiple EUDIN participants, such as Nordic TFS, otherwise it is omitted.
SharedByPartyID StrictReferenceIdentifier	1..1	The ID of the EUDIN participant who shared a document, a document correction or a document cancellation (codelist 8630).
SharedToPartyID StrictReferenceIdentifier	1..*	The IDs of the recipients to whom a document, a document correction or a document cancellation has been shared (codelist 8630). Note: The information about recipients is restricted as follows: 1. If the party retrieving updates is identical to the party at the start point of the "forward transaction", or "represents" a party at the start point of the "forward transaction" (such as with Nordic TFS), then IDs of all recipients are provided; 2. In all other cases, IDs of only the following recipients are provided: a. The party retrieving the update information if it is occurring as recipient, but none of the other participants; b. Or, if a system representing multiple parties is querying updates, information about all the recipients represented by the system, but not about any other recipients not represented by the system.

BackwardSharingEvent



Name/Typ	min..max	Definition
TransactionID StrictReferenceIdentifier	1..1	The transaction ID used for the "backward transaction" (the sharing of a retriever's status of processing a "forward transaction").
TransactionDateTime dateTime	1..1	A timestamp recorded by the EUDIN Messaging Service for the "backward transaction".
ReferredTransactionID StrictReferenceIdentifier	1..1	The transaction ID of the "forward transaction" to which the "backward transaction" refers (the "forward transaction" that the retriever processed or attempted to process). This is a transaction ID stemming from one of the following: • Sharing a document (ShareDocument operation) • Sharing a document correction (ShareDocument operation in "correction mode") • Sharing a document cancellation (CancelDocument operation)
ReferredTransactionTypeID ReferenceIdentifier	1..1	The type of "forward transaction" to which the "backward transaction" refers (the type of "forward transaction" that the retriever processed or attempted to process), such as document sharing, document correction sharing, or document cancellation sharing (codelist 2514).
ReferredDocumentID StrictReferenceIdentifier	1..1	The ID of the document underlying the "forward transaction" to which the "backward transaction" refers. Note 1: This is the ID used as transaction ID in the initial sharing of the document with the ShareDocument operation, which subsequently gets used as the document ID by the EUDIN messaging service. Note 1: If the retriever's status refers to the sharing of a document, "ReferredTransactionID" and "ReferredDocumentID" are identical. If the retriever's status refers to the sharing of a document correction, or the sharing of a document cancellation, "ReferredTransactionID" and "ReferredDocumentID" are different from each other.
SharedBySoftwareID StrictReferenceIdentifier	0..1	The ID of the software/system by which the "backward transaction" was invoked (codelist 9388). Note: *SharedBySoftwareID* is only set if the "backward transaction" was invoked by a software or system representing multiple EUDIN participants, such as Nordic TFS, otherwise it is omitted.

SharedByPartyID StrictReferenceIdentifier	0..1	The ID of the EUDIN participant who invoked the “backward transaction”, i.e., who shared the retriever’s status (codelist 8630). Note: A retriever’s status may be shared by software only, such as by Nordic TFS, and not originate from one of parties participating in EUDIN, such as the CAs of Sweden or Denmark. In such a case the *SharedByPartyID* element is omitted.
SharedToPartyID StrictReferenceIdentifier	1..1	The ID of the EUDIN participant to whom the status at the recipient’s end of the “forward transaction” is shared (codelist 8630). Note: This is a reference to the party that invoked the “forward transaction” (shared a document, shared a document correction, or shared a document cancellation), i.e., the start point of the “forward transaction” is identical to the end point of the “backward transaction”.
OperationTypeID ReferenceIdentifier	1..1	The type of “forward transaction” related operation at the retriever’s end (codelist 6801). Example: The status information can refer to “storage and validation” of a shared document, document correction or document cancellation.
OperationStatusID ReferenceIdentifier	1..1	The status of the “forward transaction” related operation at the retriever’s end (codelist 2089). Example: The status can be “success” or “failure”.
StatusReasonID ReferenceIdentifier	0..1	A reason for the status at the recipient’s end of the “forward transaction” (codelist 6376). Example: For a “failure” status the reason can be “unknown notification ID”, such as when a movement announcement is received for a notification ID that cannot be found in the database at the recipient’s end of the “forward transaction”. Note: Codelist 6376 only covers some of the potential status reasons. For reasons not covered in that codelist, *StatusReasonID* is omitted, and only a textual description of the reason provided in *StatusDescription*.
StatusDescription DescriptionText	0..1	A textual description of the status at the recipient’s end of the “forward transaction”.

5.3.7 RetrieveDocument

Retrieve a document from the EUDIN Messaging Service.

The following types of documents can be retrieved:

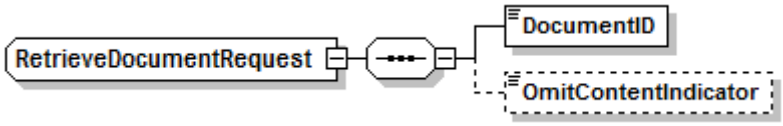
1. A document shared by another EUDIN participant to this EUDIN participant;
2. A document this EUDIN participant shares with other EUDIN participants.

Note 1: The RetrieveDocument operation MUST NOT be used for polling, i.e., for repeated checks for status changes of a document. Instead, the QueryUpdate operation can be used for repeatedly checking the availability of such updates.

Note 2: The RetrieveDocument operation grants access only to those documents, to which the authenticated requester is the sharer or recipient, or is known to be authorized to represent the sharer or recipient (the latter is relevant for systems like Nordic TFS). An attempt of accessing other documents will result in failure.

Input:

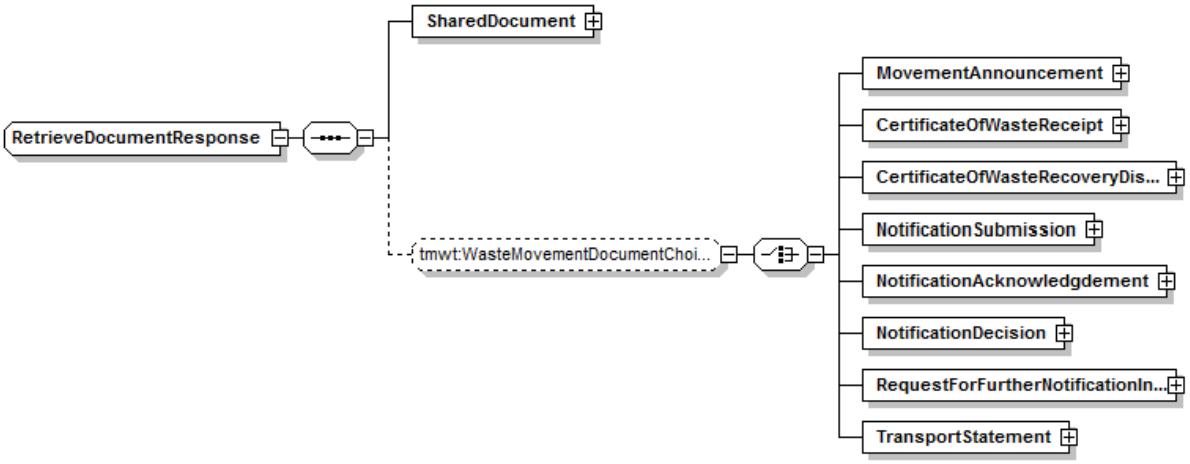
RetrieveDocumentRequest



Name/Typ	min..max	Definition
DocumentID StrictReferenceIdentifier	1..1	The ID by which the document is known to the EUDIN Messaging Service. Note: Document ID and document sharing update ID are identical. This means that an update ID of a document sharing update can be passed as document ID for retrieval of the document.
OmitContentIndicator Indicator	0..1	An indication of whether or not the document content shall be omitted from document retrieval. If set to true, then only meta-information about the document is retrieved, but not the document content. Note: The default behaviour of the RetrieveDocument operation is retrieval of the document content. In other words, it is not necessary to pass an OmitContentIndicator parameter set to false if the document content shall be retrieved.

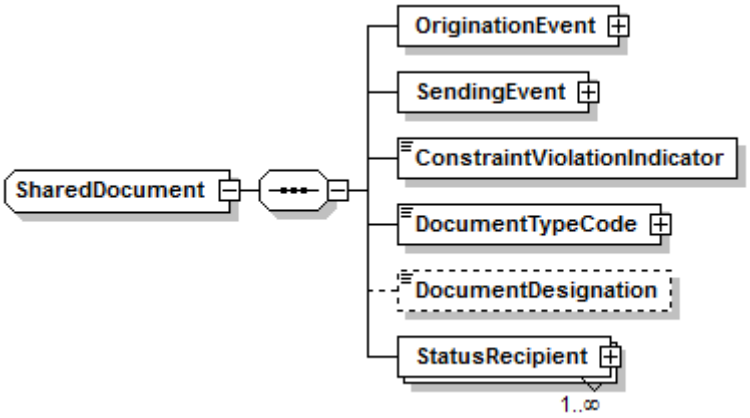
Output:

RetrieveDocumentResponse



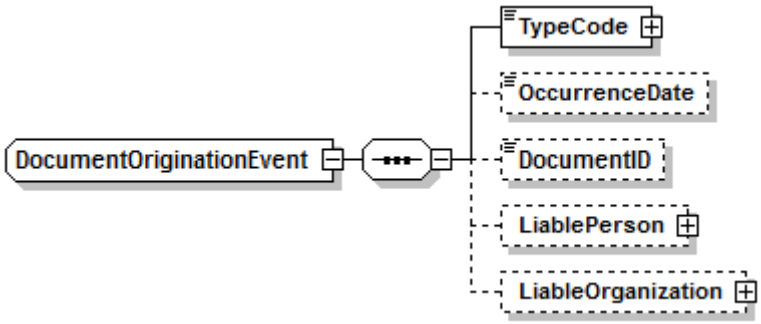
Name/Typ	min..max	Definition
SharedDocument SharedDocument (p.83)	1..1	Meta-information about the requested document, such as document type and document recipients.
MovementAnnouncement, CertificateOfWasteReceipt, etc.	0..1	The waste movement related document (actual contents). Note: Is omitted if *OmitContentIndicator* was set to true in the *RetrieveDocument* request.

SharedDocument



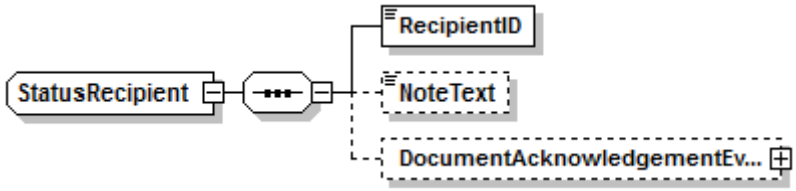
Name/Typ	min..max	Definition
OriginationEvent DocumentOriginationEvent (p.84)	1..1	Information about who created the document at what point in time.
SendingEvent DocumentSendingEvent (p.72)	1..1	Information about who sent the document at what point in time.
ConstraintViolationIndicator Indicator	1..1	An indication of whether or not the document violates data requirement constraints checked by the EUDIN Messaging Service.
DocumentTypeCode Code	1..1	The type of waste shipment related document (codelist 7909).
DocumentDesignation NormalizedString256	0..1	The title or designation of the document.
StatusRecipient StatusRecipient (p.85)	1..*	The recipients with whom the document is shared via the EUDIN Messaging Service. Note: The information about recipients is restricted as follows: 1. If the update concerns the sharing of a document by the authenticated party or by a party represented by an authenticated system, then information about all the recipients is contained in the document meta information; 2. In all other cases, the meta information about the document contains information only about the following recipients: a. Information about the authenticated party who is the recipient, but not about any other recipients; Or, if a system representing multiple parties is authenticated, information about all the recipients represented by the system, but not about any other recipients not represented by the system.

DocumentOriginationEvent



Name/Typ	min..max	Definition
TypeCode DocumentEventTypeCode	1..1	The type of document related event (codelist 9868). Note: This must be set to “document origination” (GTIN 9008390106594).
OccurrenceDate DateMandatoryDateTime	0..1	The point in time when this document has been created.
DocumentID DocumentAssignmentIdentifier	0..1	The ID assigned to the document by its creator.
LiablePerson Person (p.41)	0..1	The natural person creating the document.
LiableOrganization Organization (p.40)	0..1	The entity (authority, company, …) creating the document. Note: The entity MUST be specified with its EUDIN ID.

StatusRecipient



Name/Typ	min..max	Definition
RecipientID StrictReferenceIdentifier	1..1	The EUDIN ID of the recipient (codelist 8630).
NoteText String1024	0..1	An optional note of the document sharer to the recipient.
DocumentAcknowledgementEvent DocumentAcknowledgementEvent	0..1	DEPRECATED.

5.3.8 ShareRetrieverStatus

Share the status of processing a “forward transaction” at the recipient’s end back to the source of the “forward transaction”.

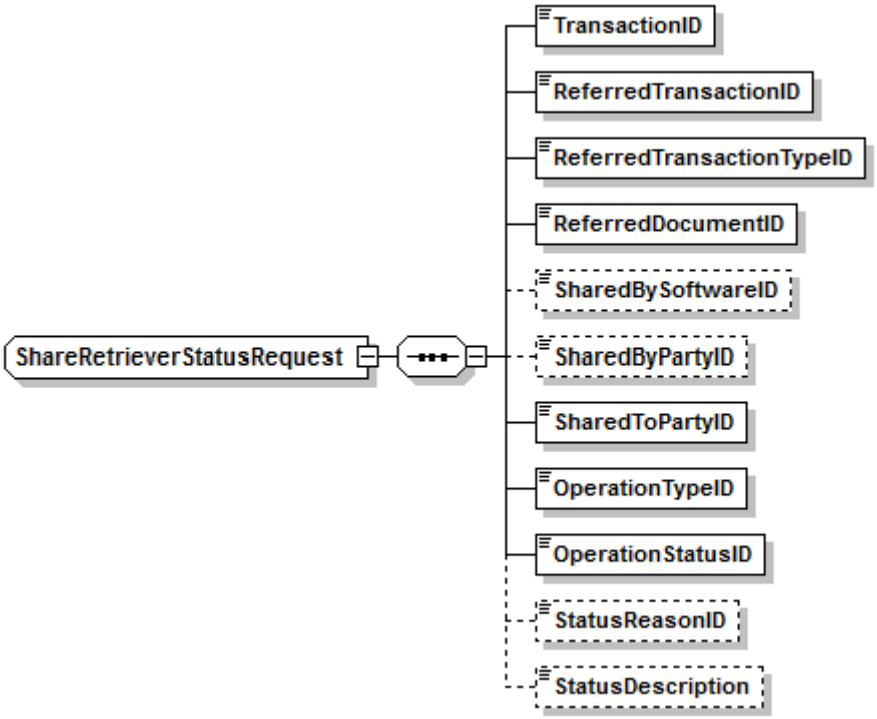
“Forward transaction” refers to any of

- sharing a document (ShareDocument operation),
- sharing a document correction (ShareDocument operation in “correction mode),
- sharing a document cancellation (CancelDocument operation).

Note: Sharing the retriever’s status back to the source of the “forward transaction” is referred to as “backward transaction” within this document.

Input:

ShareRetrieverStatusRequest

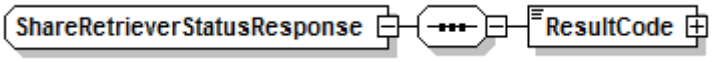


Name/Typ	min..max	Definition
TransactionID StrictReferenceIdentifier	1..1	A transaction ID previously requested with the RequestTransactionID operation, and not yet used in another operation call. Note: The transaction ID can subsequently be used in the QueryTransactionStatus operation.
ReferredTransactionID StrictReferenceIdentifier	1..1	The transaction ID of the "forward transaction" that the retriever processed or attempted to process. This must be a transaction ID stemming from one of the following: • Sharing a document (ShareDocument operation) • Sharing a document correction (ShareDocument operation in "correction mode") • Sharing a document cancellation (CancelDocument operation) Note: The party sharing the retriever's status MUST have been listed as a recipient in the referred "forward transaction".
ReferredTransactionTypeID ReferenceIdentifier	1..1	The type of "forward transaction" processed or attempted to process, such as document sharing, document correction sharing, or document cancellation sharing (codelist 2514).
ReferredDocumentID StrictReferenceIdentifier	1..1	The ID of the document underlying the "forward transaction" that the retriever processed or attempted to process. Note 1: This is the ID used as transaction ID in the initial sharing of the document with the ShareDocument operation, which subsequently gets used as the document ID by the EUDIN messaging service. Note 2: If *ShareRetrieverStatus* is used to report on the recipient's status of processing a document sharing operation, then "ReferredTransactionID" and "ReferredDocumentID" MUST be identical. In all other cases, such as the processing of corrections or cancellations, *ReferredTransactionID* and *ReferredDocumentID* MUST NOT be identical (see 5.2.3 for further explanations).
SharedBySoftwareID StrictReferenceIdentifier	0..1	The ID of the software/system by which the "backward transaction" (sharing of status information) is invoked (codelist 8630). Note: *SharedBySoftwareID* MUST be set if *ShareRetrieverStatus* was invoked by a software or system representing multiple EUDIN participants, such as Nordic TFS. Otherwise it MUST be omitted.

SharedByPartyID StrictReferenceIdentifier	0..1	The ID of the individual EUDIN participant by which the "backward transaction" (sharing of status information) is invoked (codelist 8630). Note: A status may be shared by software only, such as by Nordic TFS, and not originate from one of the parties participating in EUDIN, such as the CAs of Sweden or Denmark. In such a case the *SharedByPartyID* element MUST be omitted.
SharedToPartyID StrictReferenceIdentifier	1..1	The ID of the EUDIN participant to whom the status regarding the processing of a "forward transaction" at the recipient's end is shared (codelist 8630). Note: This MUST be a reference to the party that invoked the "forward transaction" (shared a document, shared a document correction, or shared a document cancellation), i.e., the start point of the "forward transaction" MUST be the end point of the "backward transaction".
OperationTypeID ReferenceIdentifier	1..1	The type of "forward transaction" related operation at the retriever's end (codelist 6801). Example: The status information can refer to "storage and validation" of a shared document, document correction or document cancellation.
OperationStatusID ReferenceIdentifier	1..1	The status of the "forward transaction" related operation at the retriever's end (codelist 2089). Example: "Success" or "failure".
StatusReasonID ReferenceIdentifier	0..1	A reason for the status at the recipient's end of the "forward transaction" (codelist 6376). Example: For a "failure" status the reason can be "unknown notification ID", such as when a movement announcement is received for a notification ID that cannot be found in the database at the recipient's end of the "forward transaction". Note: Codelist 6376 can only cover some of the potential status reasons. For reasons not covered in that codelist, *StatusReasonID* MUST be omitted, and only a textual description of the reason provided in *StatusDescription*.
StatusDescription DescriptionText	0..1	A textual description of the status at the recipient's end of the "forward transaction".

Output:

ShareRetrieverStatusResponse



Name/Typ	min..max	Definition
ResultCode Code	1..1	The result code is not used in this version of the web service.

5.3.9 DEPRECATED: QueryUpdate

~~DEPRECATED: Replaced by QueryUpdateB (5.3.6 at p.77).~~

~~The purpose of this operation is the synchronisation of a client with updates recorded at the server (EUDIN Messaging Service) for an EUDIN participant.~~

~~An update falls under one of these categories:~~

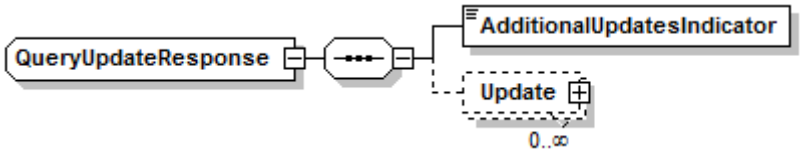
1. ~~This EUDIN participant's sharing of a document to another EUDIN participant;~~
2. ~~Another EUDIN participant's sharing of a document to this EUDIN participant;~~
3. ~~Update with regard to a recipient's acknowledgement of a document shared by this EUDIN participant, such as a recipient's acknowledgement of a document shared by this EUDIN participant.~~

Input:

~~The input to the QueryUpdate operation is identical to the input of the QueryUpdateB operation (see 5.3.6 at p.77).~~

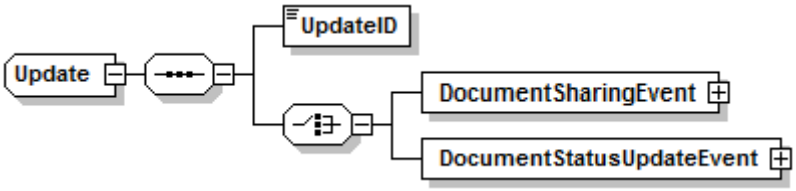
Output:

QueryUpdateResponse



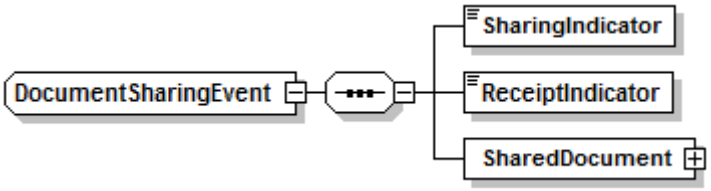
Name/Typ	min..max	Definition
AdditionalUpdatesIndicator Indicator	1..1	~~An indication of whether or not more updates than those returned by the operation are available in the range of queried updates.~~ ~~Note: If the number of updates within the specified range of update IDs exceeds a defined limit, in order to keep the response size reasonable the EUDIN Messaging Service will only return a limited number of updates and let the client know about additional updates being immediately available by setting the AdditionalUpdatesIndicator to true.~~
Update Update (p.32)	0..*	~~Each Update instance reflects an update, such as the sharing of a document or a recipient's acknowledgement of a shared document.~~

Update



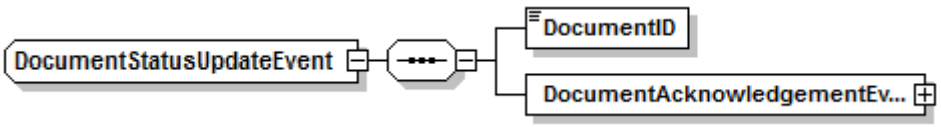
Name/Typ	min..max	Definition
UpdateID StrictReferenceIdentifier	1..1	~~The ID the EUDIN Messaging Service assigned to the update when it initially occurred.~~
DocumentSharingEvent DocumentSharingEvent (p.89)	0..1	~~Details about the sharing of a document.~~ ~~Note 1: For updates about the sharing of a document ID, the update ID equals the document ID. Thus, after getting to know about a document sharing update, a client can retrieve the document with the RetrieveDocument operation by passing the update ID.~~ ~~Note 2: The QueryUpdate operation returns an update information about the sharing of a document in both of the following cases:~~ ~~1. Another party has shared a document with this party;~~ ~~2. This party has shared a document with another party.~~
DocumentStatusUpdateEvent DocumentStatusUpdateEvent (p.89)	0..1	~~Details about a status update of a shared document.~~ ~~Note: The QueryUpdate operation returns update information about a document's change of status in both of the following cases:~~ ~~1. A recipient of a document shared by this party has updated the status, such as acknowledged the document;~~ ~~2. This party has updated the status of a document shared by another party, as in the acknowledgement of the document.~~

DocumentSharingEvent



Name/Typ	min..max	Definition
SharingIndicator Indicator	1..1	~~An indication of whether or not the update referes to this party's sharing of a document to another party.~~ ~~Note: For a system representing multiple parties this is set to true if it is any of the parties represented by the system that shares the document.~~
ReceiptIndicator Indicator	1..1	~~An indication of whether or not the update refers to "another" party's sharing of a document to this party.~~ ~~Note 1: For a system representing multiple parties this is set to true if the document is shared with any of the parties represented by the system.~~ ~~Note 2: Only for a system representing multiple parties can both the sharing and receipt indicator be set to true in the document sharing event information returned by the QueryUpdate operation.~~
SharedDocument SharedDocument (p.83)	1..1	~~Meta information about the shared document, such as the type of document and the sharing itself.~~

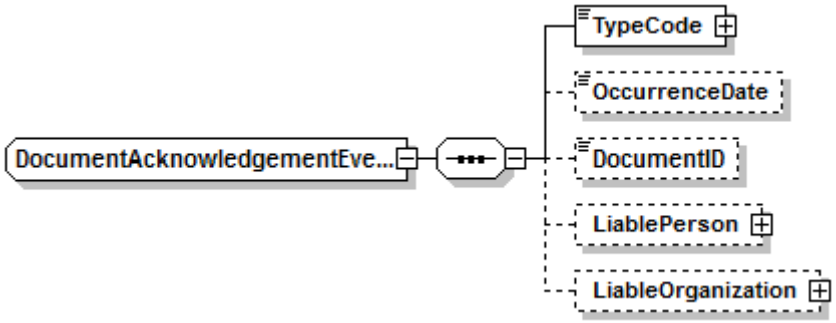
DocumentStatusUpdateEvent



Name/Typ	min..max	Definition
DocumentID StrictReferenceIdentifier	1..1	~~The ID used by the EUDIN Messaging Service for the document affected by a status update.~~

DocumentAcknowledgementEvent DocumentAcknowledgementEvent (p.90)	1..1	~~Details about the acknowledgement of the document, such as the party sharing the acknowledgement and the occurrence date of the acknowledgement.~~

DocumentAcknowledgementEvent



Name/Typ	min..max	Definition
TypeCode DocumentEventTypeCode	1..1	~~The type of document related event (codelist 9868).~~ ~~Note: This must be set to "document acknowledgement" (GTIN 9008390106617).~~
OccurrenceDate DateMandatoryDateTime	0..1	~~The point in time when this document has been acknowledged.~~
DocumentID DocumentAssignmentIdentifier	0..1	~~The ID assigned to the document by the party acknowledging it.~~
LiablePerson Person (p.41)	0..1	~~The natural person acknowledging the document.~~
LiableOrganization Organization (p.40)	0..1	~~The entity (authority, company, ...) acknowledging the document.~~ ~~Note: The entity MUST be specified with its EUDIN ID.~~

5.3.10 DEPRECATED: ShareDocumentAcknowledgement

DEPRECATED: Replaced by ShareRetrieverStatus (p.85).

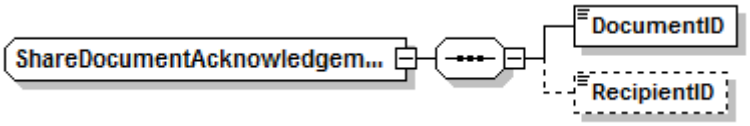
~~This is to signal back to a document sharer that a person (NOT a software) at the recipient has "taken a look" at the received document, that the recipient is aware of the document and its contents and has at least started processing/handling the document.~~

~~Note 1: The person does not acknowledge anything else: In particular, the acknowledgement says nothing about whether or not the person finds the document contents acceptable or correct.~~

~~Note 2: The acknowledgement MUST be triggered by a USER INTERACTION with a recipient's software. This can be either an explicit acknowledgement, such as the pressing of a button ("acknowledge receipt/handling of document to sender"), or an implicit acknowledgement, such as an automatic acknowledgement when a user "opens" (displays on a screen) or prints a received document. ALL documents shared via the EUDIN Messaging Service are EXPECTED to be acknowledged by recipients. There MUST NOT be any automatic acknowledgements triggered by anything else than user interactions.~~

Input:

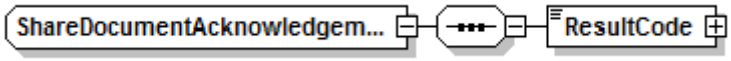
ShareDocumentAcknowledgementRequest



Name/Typ	min..max	Definition
DocumentID StrictReferenceIdentifier	1..1	~~The ID by which the document to be acknowledged is known to the EUDIN Messaging Service. Document ID and document sharing update ID are identical. This means that an update ID of a document sharing update can be passed as document ID for acknowledging the document receipt.~~
RecipientID StrictReferenceIdentifier	0..1	~~The EUDIN ID of the participant acknowledging the document. By default, the EUDIN Messaging Service will record the document as acknowledged by the authenticated EUDIN participant. If however a system representing multiple parties is authenticated to the EUDIN Messaging Service (e.g. Nordic TFS), then the acknowledging party has to be explicitely specified.~~

Output:

ShareDocumentAcknowledgementResponse



Name/Typ	min..max	Definition
ResultCode Code	1..1	~~The result code is not used in this version of the web service.~~

6 OPERATIONAL EUDIN MESSAGING SERVICE

6.1 Web Service Endpoint Specification

Web service endpoint information is published on http://www.eudin.org.

7 PROVISIONS FOR SOFTWARE IMPLEMENTING THE INTERFACE

7.1 Generation and processing of XML instances

Software with the functionality of deserialization or serialization (reading or writing, processing or generation) of data instances is in compliance with the EUDIN/TMW specification if the following provisions are met:

Software provision 1 (ID 825)**:** Generated data instances MUST be XML Schema valid. ■

Software provision 2 (ID 607)**:** Generated data instances MUST comply with all of the following data requirements:

1. Data requirements marked as mandatory;
2. Data requirements marked as relating mainly to the representation of data (rather than defining constraints on data provided by persons). ■

Software provision 3 (ID 439)**:** Software generating data instances SHALL make sure that data instances comply with ALL data requirements.

Note: This implies that if user input is incomplete or inconsistent in a way that prevents the generation of data instances which are compliant with all data requirements, then software shall reject generating the data instance, and shall point out to the user which input is missing or inconsistent. ■

Software provision 4 (ID 302)**:** In the processing of data instances, data instances MUST be technically accepted if they comply with all data provisions marked as mandatory.

Note: A human user may in succession not accept the content of the message. ■

Software provision 5 (ID 990)**:** In the processing of data instances, data instances MAY be technically rejected if there is a violation of any of the data provisions marked as mandatory or marked as mainly relating to the representation of data. ■

Software provision 6 (ID 647)**:** Software MUST ensure that human users become aware of the occurrence of technical rejections: The user sending a business document MUST be made aware of any technical rejection. When software users other than administrators are made aware of technical rejections, it MUST be made clear to these users that the technical rejection is an "exceptional" error, i.e., an error that cannot occur if both the sending and the receiving software application are implemented in full compliance to the interface specification. ■

Software provision 7 (ID 714)**:** The occurrence of technical rejections SHALL be logged by both sending and receiving software applications for debugging purposes. ■

The terms "technical acceptance" and "technical rejection" are used as follows:

Many of the benefits that arise from the electronic administration of data, such as the accumulation (sums, mean values, etc.) of data for reports, require the data to be sufficiently structured. If incoming data does not fulfil certain formal (structural) prerequisites, then the software cannot deal with the data in the way it is expected to do. For this reason, the waste movement data exchange interface defines various formal rules that the exchanged data MUST comply with. Any data instances not complying with these formal rules may be automatically rejected by software without human interaction. This is called **technical rejection**. Any data instance processed without automatic rejection is called **technically accepted**. This has to be distinguished from the acceptance of the contents by a person receiving or processing the data, such as a responsible person at the Competent Authority: Data will often be both technically acceptable (fulfil all the rules for electronic processing) and semantically inacceptable (the responsible person or party may find the data content not suitable for the business process, such as incomplete, contradictory or implausible).

7.2 Master data handling

The information contained in movement of waste related documents such as notification or movement announcement includes identification information: For example, information to identify the notifier, the consignee, or a recovery or disposal facility. Over a longer period of time, such as one or two years, it will be common that the same business or recovery or disposal facility is referenced in multiple documents. For example, a business may occur as a consignee in multiple movement announcements. Or a business may occur as notifier in notification A, and as consignee in notification B.

For an automated processing of data unambiguous identification is a requirement. Therefore the use of identifiers is supported by the EUDIN data formats.

It is very common for software solutions to use so-called master data registries. There information on "objects" such as businesses, persons or facilities is kept in one place, together with one or more identifiers. The same identification information does not need to be repeatedly entered, no matter how many times a business (or any other object) occurs in transactions. For example, a software solution might support a user in providing identification information in the following way: The user enters a small part of a businesses' name, following which the software solution displays a list of all registered businesses matching this name. The user then selects the appropriate entry from the list of matching businesses. This way, the business is uniquely identified (the software solution uses an identification string from the master data registry), and the user is saved the work of having to repeatedly enter all the identification information, such as name and address for a business.

Software provision 8 (ID 381)**:** It is RECOMMENDED (but not required) that software applications implementing the interface operate with master data. ■

For a software application operating with master data, the question arises on how to deal with the processing of data instances. The following examples illustrate some of the questions that arise:

- A business is identified in a movement announcement. An identifier of the business is provided within the movement announcement. The business already exists within the master data instance used by the software application processing the movement announcement (there are matching identifiers).
    - Case 1: Name and address stored within master data match name and address within the movement announcement.

      Question: Should the redundancy of storing identical name and address both in master data and the movement announcement instance be avoided, and should the movement announcement instance rather only contain a reference to the master data entry? In other words: Should only the identifier be stored with the movement announcement instance?
    - Case 2: Name and address stored within master data do not match name and address within the movement announcement.

      Question: How to deal with the mismatch? Should there be any automatic overwriting, and if so, where – in the master data or the business document?
- A business is identified in a movement announcement. An identifier of the business is provided within the movement announcement. Within the master data instance used by the software application processing the movement announcement there is no entry with the identifier provideded in the movement announcement.
    - Case 1: There is no entry in the master data instance with matching name and address.

      Question: Should there be an automatic addition of a new master data entry?
    - Case 2: There is an entry in the master data instance with matching name and address.

      Question: Should there be an automatic replacement of identifiers? If so, where, within master data or within the business document?

The provisions in relation to these topics are as follows:

Software provision 9 (ID 818)**:** The business document (or data) received and processed by a software application MUST be stored in its entirety. In particular, names, addresses and other information contained in the business document MUST be stored with the business document, even if deemed redundant with master data entries. ■

Software provision 10 (ID 359)**:** The business document MUST be stored as is. In particular, there MUST NOT be any overwriting, such as with master data contents. ■

Software provision 11 (ID 181)**:** For software applications using master data, it is RECOMMENDED to provide a functionality to users which lists all the differences there are between information stored in business documents and corresponding information within master data.

Note: If such functionality is provided, historic data needs to be taken into account. For example, if a company moves its headquarter in 2012, then for a movement announcement for a movement that occurred in 2010 the “old” headquarter address is the “correct” address. ■

Software provision 12 (ID 620)**:** For software applications using master data, it is RECOMMENDED to provide functionality to users by which they can semi-automatically update master data entries with information provided in (received) business documents. ■

Software provision 13 (ID 764)**:** Data instances relating to individual shipments of waste (movement announcement, confirmation of waste receipt, etc.) MAY be rejected by a receiving IT system if the notification, to which these data instances refer, is not "known" to that IT system (is not electronically available to that system).

Note: By default, parties participating in EDI via the EUDIN Messaging Service MUST have the notification electronically available in their IT systems (both sender and recipient) prior to interchanging data instances relating to individual shipments of waste. The notification may have become available through EDI via the EUDIN Messaging Service or by other means. ■

Software provision 14 (ID 922)**:** Data instances relating to individual shipments of waste (movement announcement, confirmation of waste receipt, etc.) MAY be rejected by a receiving IT system if they contain party or location (site) IDs not contained in the notification for these shipments. ■

7.3 Codelist handling

Codelists are lists which for every entry contain at least 2 parts, linking identifiers to semantics:

1. At least one identifier of the entry;
2. (Human-readable) text specifying semantics of the entry.

Note: The semantics can be specified in different ways, including:

1. Names identifying the semantics to human readers;
2. Definitions or descriptions of what the list entry stands for.

Codelists are used where options have to be selected from a relatively static set of choices. In waste movement related data, the following are examples for such sets of choices:

1. The list of transport modes, such as rail and road;
2. The list of recovery or disposal operations, such as "R6" for "Regeneration of acids or bases".

The following are important examples of how codelists are used in software applications:

1. Codelists are used for presenting a choice to users, such that a user can select one or more of the available options;
2. In the processing of data, codelists are used for validating data instances. The goal of the validation is to ensure that the encountered information actually corresponds to one of the available options. For example, where the identification of a recovery or disposal operation is expected, "R6" is valid information, whereas "A1020" is invalid information.

Previously in this paragraph, codelists have been described as "relatively static" set of choices. Typically, codelists change less often than once a year. It needs to be observed though that over a longer period of time some codelists do occasionally change, and that codelists need to be expected to change at any point in time to come. For example, the list of countries changes whenever countries unite or separate. And the list of recovery or disposal operations may be changed by amendments to the waste shipment regulation.

Obviously, in the electronic interchange of data, there is a requirement for codelists to be "in synch", as it could lead to problems, such as the rejection of business documents, if the sending software application uses a more recent version of a codelist than a receiving software application.

There are more than 40 codelists in use in the EUDIN data formats.

It is on purpose that these codelists are not encoded within the XML Schema Definitions published by EUDIN: XML Schema Definitions are often used in software implementation frameworks for the semi-automatic generation of functionality such as the parsing of XML instances. If codelists were encoded within the XML Schema Definitions, there would be the risk that some software applications would have to be recompiled and redistributed each time a codelist changes.

The operator of the EUDIN Messaging Service also acts as the maintenance agency for the codelists used in EUDIN data formats. The codelists and its updates are published via the Internet, such that up-to-date lists can be queried and polled at any time. There are the following modes of access:

1. Via website: Codelists can be viewed online with a web browser, and can be downloaded for subsequent use within software that supports the electronic exchange of waste movement related data;
2. Via web service: Software can poll codelists automatically.

Links to codelist resources are published on the EUDIN website, http://www.eudin.org.

The maintenance of codelists includes their history: The complete history of a list can be queried at any time. The history includes the information what has changed when and why. It is possible to retrieve "consolidated lists", which include all (current and expired) entries of the respective list. As application instances generally need to support all codelist entries, including those whose validity period has expired, local copies of codelists used by software applications will usually be consolidated lists, containing all its entries, including all expired entries.

Software provision 15 (ID 403)**:** Software applications MUST NOT use the EUDIN codelist web service for on-demand access to codelists. Instead, software applications MUST operate with "local copies" of codelists. The EUDIN codelist web service MUST be used for the updating of local copies of codelists only. ■

Software provision 16 (ID 582)**:** Software applications MUST be designed in a way that the updating of "local copies" of codelists does not require any software application deployments. Instead, existing software deployments MUST be prepared to operate with updated versions of codelists. ■

Software provision 17 (ID 829)**:** It is RECOMMENDED that the capability of retrieving updated versions of codelists (for the purpose of updating local codelist copies) from the web service provided by EUDIN is implemented in software solutions. ■

Software provision 18 (ID 254)**:** In the processing of received data and the validation of references to codelist entries, if the validity of references is checked by looking up provided identifiers in local codelist copies, software applications MUST make sure that at the point in time of validation the local codelist copies used for validation are at least as recent as those used by document originators and senders. ■

Software provision 19 (ID 914)**:** It is RECOMMENDED that software solutions automatically check for the availability of updates to local codelist copies regularly, i.e., after a certain period of time has passed since last check for updates. ■

Software provision 20 (ID 738)**:** For software solutions using a time interval to check for updates to local copies of codelists, the time interval SHALL be at most 30 days. In other words: The availability of updates shall be checked at least every 30 days. ■

Software provision 21 (ID 110)**:** For software solutions using a time interval to check for updates to local copies of codelists, the time interval MUST be at least 12 hours and SHALL be at least 24 hours when using the web service provided by EUDIN. In other words: The availability of updates shall not be checked more than once a day. ■

Software provision 22 (ID 475)**:** Local copies of codelists used in software solutions MUST be complete in the sense that they include all expired entries (and information about validity start and/or end for entries with limited validity). ■

7.4 Authentication

Software provision 23 (ID 306)**:** An HTTP Authorization Header with a Base64 encoded username:password combination MUST be provided with all operation calls. ■

Software provision 24 (ID 750)**:** The username:password combination provided with operation calls MUST match the credentials assigned to an IT system at EUDIN registration, or the credentials assigned to a party at EUDIN registration (see 5.2.1 for further information). ■

Software provision 25 (ID 718)**:** If a username:password combination provided with an operation call matches the credentials assigned to a party at EUDIN registration (rather than credentials assigned to an IT system), and if a sender party is identified within the request payload (such as in DocumentSendingEvent), then the party identified in the request payload MUST match the party identified and authenticated via the username:password combination. This applies to both "forward sharing" and "backward sharing" (see 5.2.3 on p.66 for an explanation of these terms). ■

Software provision 26 (ID 298)**:** If a username:password combination provided with an operation call matches the credentials assigned to an IT system at EUDIN registration (rather than credentials assigned to a party), and if a sender party is identified within the request payload (such as in DocumentSendingEvent), then the party identified in the request payload MUST be one of the parties which according to the information registered at the EUDIN Messaging Service uses the IT system identified and authenticated via the username:password combination. This applies to both "forward sharing" and "backward sharing" (see 5.2.3 on p.66 for an explanation of these terms). ■

Software provision 27 (ID 474)**:** In order to retrieve a shared data instance (forward sharing) or a shared signal (backward sharing), or to be informed about such sharing (QueryUpdate), the username:password combination provided with operation calls MUST match one of the following:

1. One of the parties with whom the data instance or signal is shared; or
2. An IT system, which is registered to represent (be used by) at least one of the parties with whom the data instance or signal is shared.

■

7.5 Error handling

Software provision 28 (ID 724)**:** The occurrence of SOAP faults SHALL be logged by client software. ■

Software provision 29 (ID 129)**:** The information logged by client software upon the occurrence of a SOAP fault SHALL include all information returned by the EUDIN Messaging Service

Note: See also 5.2.2 (p.65). ■

Software provision 30 (ID 382)**:** If invoking a web service operation is initially triggered by a user interaction, and if such a web service operation fails with a SOAP fault, the user SHALL be informed by the client software that an error occurred in the interaction of the client software with the EUDIN Messaging Service. ■

Software provision 31 (ID 244)**:** If a web service operation faults, and the client software informs the user about the occurrence of an error in the interaction of the client software with the EUDIN Messaging Service, then the information returned by the web service MUST be dealt with in one of the following two ways:

1. It is NOT displayed to the user; or
2. It is displayed to the user in a way which makes it obvious that it is information for software developers or administrators rather than users, and that thus the only way a user is expected to deal with that information is the passing-on to software administration personel. ■

Annex A. REQUIREMENTS ANALYSIS AND IT SOLUTION DESIGN

A.1. Preface

This Annex provides background information and rationale explaining the motivation in the design of the EUDIN waste movement data interchange solution. This background information is **not** required for the implementation of a connection to the EUDIN Messaging Service Interface.

The Annex starts with a list of the main requirements that have been identified and taken into account.

This is followed by a list of design decisions. It details the most relevant design options that have been identified, which of the respective options were chosen, and why so.

Finally the most relevant resources – mostly standards by organisations such as World Wide Web Consortium (W3), Organization for the Advancement of Structured Information Standards (OASIS) and United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT), but also legal regulations, EU projects, articles and the like – are listed that have been evaluated with respect to their applicability and their impact to the waste movement electronic data interchange. A summary of the results of these evaluations is given.

A.2. Requirements

On top, there is the requirement for an IT solution supporting electronic data interchange of transboundary movement of waste related documents.

The more specific requirements that have been identified are listed in this section.

The requirements are described here as seen from a business perspective, in the sense that these are descriptions of what is wished for, independent of considerations about achievability of these wishes.

The relevance of these wishes varies. The list includes features considered as “nice to have”, which are not requirements in the sense of the word. The term “requirements” is used nevertheless due to its widespread use in IT analysis.

For any solution designed to meet these requirements, the actual goal to be achieved with a solution may translate into “coming as close as possible to meeting the requirement”. For example, with the technical means available to date, for many security related requirements it won’t be possible to provide “100% security”. There won’t be any technical measures providing 100% security. The actual goal to be achieved with a solution will translate into “coming as close as possible to 100% security”. Which can be understood as applying technical provisions that are as hard as possible to break, and cannot be broken by any regularly available means.

1. **Party authentication** (meta requirement)

   Many of the requirements that follow have a shape like this:

   - Information needs to be made available about who performed a specific action at a specific time. Examples for such actions are document creation, document sending, and confirmation of a claim about the contents of the document.
   - The solution needs to be such that those to whom the aforemention information is made available "can be sure" (have reason to believe) that the information is authentic. The most important aspect of this is "to be sure" (to have reason to believe) that the party that in the provided information is identified of having accomplished a specific action (such as document sending) actually is the party that has accomplished that action.

   The requirements that follow do not detail what is meant with "party" and "who accomplishes something". Instead, the details are specified in this "meta requirement".

   It should be observed that business parties such as notifiers, consignees, recovery or disposal facilities and competent authorities are typically organisations (legal entities) rather than persons. Actions (possibly with legal consequences) of an organisation are actions by persons acting for that organisation, in the name of the organisation, and for the account of that organisation.

   In terms of liability and non-repudiation, information that an organisation (a legal entity) has accomplished some action or has confirmed something is usually not regarded as sufficient information. Instead, information about (natural) persons is needed as well:

   - Which person has sent the document in the name of which organisation?
   - Which person has confirmed the document accuracy in the name of which organisation?
   - etc.

   The authentication (verification) of such information is thus twofold:

   1. "Making sure" (giving reason to believe) that the named person is the actual person that accomplished an action;
   2. "Making sure" (giving reason to believe) that the named person was at the point in time when the action occurred authorized to act in the name of and for the account of the named organisation.

   This yields the following requirements with respect to party authentication:

   - In contexts such as liability and non-repudiation, information about who is responsible or who has accomplished some action has to consist of information about one (natural) person and one organisation (legal entity). Where the person is the one who has accomplished some action, and the organisation is the one in whose name the person acted. The solution shall support making this kind of information available.
   - Where verifying the authenticity of information provided about an action accomplished by a party shall be supported by the solution, two aspects of verification have to be taken into account:
     1. "Making sure" (giving reason to believe) that the named person is indeed the person that actually accomplished the action;
     2. "Making sure" (giving reason to believe) that the named person was at the point in time when the action occurred authorized to act in the name of and for the account of the named organisation.

Note: There may or may not be automation for each of the two verification tasks:

- Minimum requirement - “On demand, not automated”: The verification requires per-case investigations (including for example the comparison of handwritten signatures) and cannot be fully automated.
- Full requirement - “Automatic”: The verification is fully automated via IT solutions.

Full automation will be desirable in most cases, but may have “nice to have” status in some cases.

2. **Access control**

   Only authorized entities shall have access to using the Messaging Service (operations).

3. **Connection confidentiality / connectionless confidentiality**

   Only authorized entities shall have access to business document data. This applies to the whole lifecycle of the business document data, including transmission (connection confidentiality).

4. **Traffic flow confidentiality**

   Sensitive data shall not be derivable from traffic flow analysis.

5. **Original business document integrity** without recovery

   The solution shall be such that a recipient “can be sure” (has reason to believe) the document received is unmodified from the document as created by the document originator.

   Variants:

   - Minimum requirement - “On demand, not automated”: Modifications can be detected via per-case investigations without full IT automation.
   - Full requirement - “Automatic”: Modifications are technically impossible and/or can be detected/rejected automatically without human intervention.

   Note 1: With the existing fax-based solution document exchange solution only the minimum requirement is met.

   Note 2: The relevance of the original business document integrity requirement stems particularly from the context of forwarding documents. In the forwarding of documents, deserialization and serialization may occur for any of the parties forwarding the document. For example, when a competent authority of despatch sends a movement announcement to a competent authority of destination, and the competent authority of destination then forwards the document to the consignee, technically the following sequence of events may occur in the software solution used by the competent authority of destination: The movement announcement XML instance is received, deserialised and stored into a relational database. When the competent authority then forwards the document, the movement announcement data is retrieved from the database and serialised into an XML instance. There are two conclusions to derive from this scenario: There is a relatively high probability of integrity constraint violations to be caused by faulty software implementations rather than someone’s intent to deceive. The second conclusion is that it may not be possible to evaluate the integrity from binary comparison of two XML instances. Under various circumstances, two XML instances have to be regarded as identical. For example, the three expressions “<tag></tag>”, “<tag/>” and “<tag />” have to be regarded as identical.

6. **Connection integrity** without recovery

   The solution shall be such that a recipient “can be sure” (has reason to believe) the document received is unmodified from what the sender has sent.

   Modifications shall be detected and/or rejected automatically without human intervention.

7. Document content (accuracy) claim confirmation

There is a requirement for supporting the confirmation of a party (often the originator of a business document) that at a specified point in time (typically the time of finalising the document) the document contents (semantics) are accurate to the best of her knowledge. For example, in a report, the party confirms that to the best of her knowledge the report is an accurate description of what actually happened. As another example, in an announcement the party confirms that to the best of her knowledge the announcement describes the actual intents or plans.

More generally, there is the requirement of supporting the confirmation of any kind of claim about the contents (semantics) of a business document of any party at any point in time.

In detail the following is required:

- A solution for parties to provide said confirmations.
- The solution shall be such that those to whom confirmation information is available “can be sure” (have reason to believe) that the information is authentic, meaning that the party has actually confirmed the claim at the specified point in time (authentication).
- The solution shall prevent parties from falsely denying having given said confirmations (non-repudiation).
- A solution for making said confirmations available to involved parties (parties to whom the business document content itself is available).

The claim confirmation shall include the following information:

- What is claimed.
- Who confirms the claim.
- The point in time when the claim is confirmed.

Claims do not necessarily have to be explicit. For example, when a document originator disseminates a document, this may implicitly be seen as a claim of the document originator about the accuracy of the document contents.

There are two variants of this requirement taken into consideration:

- Minimum requirement – “On demand, not automated”: Verification that a claim about the contents of a business document has actually been confirmed by a party (at a given point in time) can be done via per-case investigations but not with full IT automation.
- Full requirement – “Automatic”: Verification that a claim about the contents of a business document has actually been confirmed by a party (at a given point in time) can be fully automated.

The existing fax-based solution only meets the minimum requirement.

8. **Document origin information**

   To the recipient of a business document, information about the origin of the document shall be available, consisting of information about:

   - Who created the document (who is responsible for the document contents);
     - If available, this shall include an identifier of the document originator that can be used for sending documents to the originator over the same channel/technical solution used for receiving the document.
   - When the document was created;
   - Optionally: Contacts to get back to in case of enquiries about the document.

   As a result of this requirement, in the forwarding of a business document the document origin information has to be forwarded in conjunction with the business document.

9. **Document origin authentication / Non-repudiation with proof of origin**

   The solution shall be such that a recipient "can be sure" (has reason to believe) the document origin information (see previous requirement) is authentic, including that who appears to be the document originator actually is the document originator (authentication). The solution shall prevent parties from falsely denying having created the document (non-repudiation).

   For authentication there are again two variants:

   - Minimum requirement – "On demand, not automated": A verification of the document origin information can be done via per-case investigations but without full IT automation.
   - Full requirement – "Automatic": A verification of the document origin information can be done in a fully automated way.

   Again, the existing fax-based document exchange solution only meets the minimum requirement.

10. **Document sending information**

    To the recipient of a business document, information about the sending of the document shall be available, consisting of information about:

    - Who sent the document;
      - This typically shall include an identifier (addressing identification) of the document sender *S* that can be used for sending documents to *S* over the same channel (Messaging Service) used for receiving the document.
    - When the document was sent;
    - Optionally: Contacts to get back to in case of enquiries about the sending of the document.
    - Optionally: A textual note from the sender to the recipient.

11. **Sending authentication / Non-repudiation with proof of sending**

    The solution shall be such that a recipient "can be sure" (has reason to believe) the document sending information (see previous requirement) is authentic, including that who appears to be the sender actually is the sender (authentication). The solution shall prevent parties from falsely denying having sent the document (non-repudiation).

    The solution shall provide fully automated means of sending authentication and non-repudiation with proof of sending.

    Note: The point in time when a human actor sends a document can be different from the point in time when a document is received by the Messaging Service. For example, the software solution used by the sender may not actually immediately send the document but put the document on a

queue for later sending. Or the network may be dysfunctional for a while, such that the software solution used by the sender can technically send the document only after several retries (and after some time has passed from when the human actor decided to send the document). Despite this, it will be sufficient to take the point in time when the Messaging Service gets aware of the sent document as the point in time of sending the document.

12. Unique recipient identification/addressing, recipient authentication

The solution shall have the following capabilities:

- There is unique information associated with any party to which business documents can be sent via the provided solution. Note: This unique information is called addressing identification in the remainder of the requirements description.
- If the addressing identification is different from information by which a party is known to persons (such as name and address), then a directory (of a "phone book" type) shall be available to any potential sender, wherein each entry associates the identification information with the information by which the party is known and identified by persons.
- A sender instructs the Messaging Service to transmit a business document to a specific party by providing the business document in conjunction with addressing identification to the Messaging Service.

  Note: Typically, technical solutions used by senders will automate the process of providing the addressing identification. The sender will select a party via information by which it is known and identified (such as name and address), and the technical solution will automatically provide the addressing identification to the Messaging Service. This however is beyond the scope of the Messaging Service itself.
- The Messaging Service "transmits" (makes available) the business document exactly to the recipient identified by the sender. The Messaging Service "ensures" (gives reason to believe) that anyone who claims to be the recipient identified by the sender actually is the recipient identified by the sender.
- The solution is such that a sender "can be sure" (has reason to believe) that the directory information used for addressing the business document is authentic, meaning that the one who appears to be associated with a given addressing identification according to a directory entry actually is the party associated with that addressing identification.

13. Document acknowledgement / Non-repudiation with proof of document acknowledgement

The Messaging Service solution shall be such that a recipient can express acknowledgement to each individually received item, and that this acknowledgement status information is made available to the sender. The acknowledgement solely expresses that a human actor (representing the recipient) is aware of (has looked at) the received item.

Note 1: Technical solutions used by recipients may automate the process of providing document acknowledgement. For example, the acknowledgement may be provided automatically as soon as the document is accessed for the first time via human interaction. This however is beyond the scope of the Messaging Service itself.

Note 2: Information about retrieval of a sent document from the Messaging Service is not seen as relevant to the sender. For example, a software solution used by the recipient may automatically poll any items newly received every hour. This provides no information about the awareness of the recipient about received documents. A human user at the recipient may be aware of having received the new item within seconds of the physical retrieval from the Messaging Service, or may not be aware for months (for example, if the recipient's software solution runs without anyone actively using it).

14. **Idempotency**

    Multiple identical requests to a EUDIN Messaging Service must have the same effect on the state of the Messaging Service that a single request has. This includes the prevention of undesired business document duplication by such identical requests.

15. **Reliable transmission**

    The solution shall have the capability to detect/prevent losses in transmission automatically.

16. **Data overflow protection**

    It shall not be possible to impair the Messaging Service by an excess of data.

17. **Request overflow protection**

    It shall not be possible to impair the Messaging Service by an excess of requests/traffic (large number of requests within a short period of time).

18. **Business document / payload compression** (a "nice to have" type of requirement)

    The solution shall support that the business document content is compressed while being transmitted over a network.

19. **Ease of implementation**

    The solution shall be such that implementation and maintenance of a connection from existing software to the Messaging Service can be achieved with relative ease:

    - It is not complicated, especially in the sense that it does not require rare skills;
    - It does take relatively few man-hours to completely implement the connection (this includes test) and to do maintenance work;
    - Software tools facilitating relatively simple implementation exist and are in widespread use;
    - Software tools facilitating relatively simple implementation are available for free or at a low price.

20. **No new provisions and prerequisites for businesses**

    The solution shall be such that a country (its competent authorities for transboundary movements of waste) can participate in the electronic data interchange without imposing new prerequisites on businesses (notifiers, consignees, recovery or disposal facilities). In particular, the following shall be true:

    - The solution shall not require businesses to use IT software solutions at all;
    - The solution shall not require businesses to use any specific software solution, including web applications;
    - The solution shall not require businesses to directly participate in electronic data interchange.

    This is an important requirement in so far, as provisions for businesses that for instance are not covered by the EU-regulation 2006/1013 on shipments of waste, are a matter of national legislation.

    The more countries participate in the electronic data interchange, the higher are the benefits for each country. If countries were required to amend national legislation in order to join the electronic data interchange, this would reduce the number of "candidate countries" and would slow down the process of establishing cross-border electronic data interchange.

    Note: It should be noted that this requirement is not to *prevent* countries from switching to improved solutions for the exchange of data with businesses, such as via web applications or electronic data interchange. On the opposite: Both businesses and competent authorities can benefit a lot from such solutions, and this will contribute to the goals behind the Messaging Service, such as higher efficiency, more effective environmental control and reduction of administrative

burdens. In the light of these goals, countries are *encouraged* to establish such solutions. All the requirement says is that countries shall not be *required* to amend national legislation and establish improved ways of exchanging data with businesses in order to participate in cross-border electronic data interchange.

21. Interconnection with other data interchange system

It shall be possible to use the solution in connection with other data interchange systems, such as Nordic TFS.

This requirement should be observed together with requirements 10 (p.101) “sending information” and 11 (p.101) “sending authentication”: Information about the sender may not stem from the credentials provided to the EUDIN systems, but rather from information provided by an interconnected system.

A.3. Design Decisions

1. *Topic*: Flow of data

Main options considered:

a. Direct data interchange of involved business parties;
b. Relay via competent authorities.

Decision: **Relay via competent authorities**

Description: The EUDIN electronic data interchange is based on the principle that there will be no direct electronic data interchange between businesses and competent authorities other than the businesses’ local competent authorities.

This is illustrated with the following example, in which a notifier shares movement announcement information with these parties:

- Competent authority of dispatch;
- Competent authorities of transit;
- Competent authority of destination;
- Consignee.

By using the EUDIN Messaging Service the flow of data will be as follows:

- The notifier provides the information to the competent authority of dispatch;
- The competent authority of dispatch disseminates the information to the competent authority of destination and the competent authorities of transit;
- The competent authority of destination disseminates the information to the consignee.

Rationale:

This design decision is a direct consequence of requirement 20 (p.103), “No new provisions and prerequisites for businesses”.

2. ***Topic*: Synchronous or asynchronous message processing**

   Main options considered:

   a. Synchronous processing of business document submission and other Messaging Service operations.
   b. Asynchronous processing in justified cases. Operations of a kind such that time lags cannot be ruled out will be realized in an asynchronous manner.

   Decision: **Asynchronous processing in justified cases.** Operations of a kind such that time lags cannot be ruled out will be realized in an asynchronous manner.

   Rationale: Better scalability of asynchronous processing; avoidance of runtime deadlocks; clients can implement synchronous handling on top of asynchronous interface.

3. ***Topic*: Service capabilities requirement for participation in EDI**

   Main options considered:

   a. Service capabilities for callbacks are needed in a business software solution in order to be capable of interchanging TMW business documents electronically via the EUDIN system;
   b. Callbacks will be supported but will not be required for the implementation of connections to the EUDIN Messaging Service.

   Decision: **Callbacks will be supported but will not be required for the implementation of connections to the EUDIN Messaging Service.**

   Rationale: This design decision is a direct consequence of requirement 19 (p.103), “Ease of implementation”. It shall be possible to implement lightweight connections to the EUDIN Messaging Service, where there’s no requirement for accepting incoming requests, having fixed addresses and being persistently conversational.

   The workings of the EUDIN Messaging Service do however require a huge amount of polling if no callback solutions are used, especially polling for the receipt of new business documents. This means that a huge amount of unnecessary traffic will be produced if polling is used even in those cases where a software connecting to the EUDIN Messaging Service could accept callbacks. Therefore callbacks will be supported, but will not be required.

   Note: Callbacks will not be supported in initial versions of the web service.

***4. Topic:* Digital signatures**

Digital signatures come into consideration with several of the identified requirements:

a. Authentication: "Ensuring" (giving reason to believe) that one who is named as having accomplished some action actually is the one who accomplished that action. Actions include the creation and sending of documents, plus explicit or implicit confirmations of claims about the business document contents. One of the most relevant of such claims is the claim about the accuracy of the contents of the business document: The claim that the document contents are accurate to the best of a person's knowledge at a specified point in time.

b. Non-repudiation: Provisions such that a party's false claim of not having accomplished some action (created a document, sent a document, confirmed the document's accuracy,etc.) will generally be implausible and not be believed, and that will thus prevent such false claims.

c. Document integrity: "Ensuring" (giving reason to believe) that a document is unmodified from the way it has been provided by one party.

Main options considered:

a. Use of digital signatures in the IT solution (such as in combination with X.509 certificates and certification authorities).

b. No use of digital signatures in the IT solution for the time being.

Decision: **No use of digital signatures in the IT solution for the time being.**

Rationale: In brief, the globally and EU-wide available standards and technologies for digital signatures are not sufficiently mature to be used in cross-border public administration related data interchange. This is a well-known issue: *Electronic identification, signatures and trust services* are a part of the European Union "Digital Agenda", which was launched in 2010 and is work in progress (see http://ec.europa.eu/digital-agenda/en/trust-services-and-eid). The following is cited from "Questions and Answers" to this work item:

> ***What is the current issue?***
>
> *While hundreds of millions of European are now able to use electronic identification for services like online shopping, and have received better services as a result, these benefits are much less commonly achieved with public services, and especially not outside one's home country.*
>
> *Citizens can rarely, if ever, use their e-ID to interact online with public administrations of other EU Member States. This undermines our rights as Europeans, and causes inconvenience and extra costs associated with time delays and the hassle of maintaining multiple identity documents.*
>
> *The absence of common EU rules on legal recognition of e-ID acts as a brake on those citizens who need to be mobile or undertake business or work activity outside their home country.*
>
> *Equally, the lack of an EU legal framework for essential trust services like time stamping (legally proving the time), electronic documents (legal effect and acceptance), registered electronic delivery (legal proof of a communication channel), and electronic seals (which legally link a person or a company to a document) also means lots of companies divert resources from their key functions to standing in queues, waiting for forms and stamps.*

In a Digital Agenda press release (4 June 2012) the status quo is described as follows:

> *The approach to eSignatures, which builds on the current eSignature Directive (Directive 1999/93/EC), has brought a degree of harmonisation to practices across Europe. All countries in the EU have legal frameworks for eSignatures, however these diverge and make it de facto impossible to conduct cross border electronic transactions. The same holds true for trust services like time stamping, electronic seals and delivery, and website authentication, which lack*

European interoperability. Therefore, this Regulation proposes common rules and practices for these services.

To date, there is only a proposal of a new EU-Regulation on electronic identification and trust services for electronic transactions in the internal market available, see http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52012PC0238:EN:NOT.

The above is meant to give a vague idea of the legal and technical issues that to date exist with applying digital signatures in cross-border public administration solutions. There is a dependency on these issues being solved at EU level or beyond. An application of digital signatures in the EUDIN solution would at this point in time be premature.

Digital signatures were found to be immature to be applied within EUDIN. This in no way means that topics such as origin authentication, sending authentication and document integrity have been ignored or procrastinated in the EUDIN Messaging Service project. They have been carefully considered, as several of the following topics demonstrate and illustrate.

Presenting more detailed results of our evaluation digital signature standards and solutions would be beyond the scope of this document. They can be made available to anyone interested though.

5. ***Topic*: Access control**

Decision: **A register of participants to the EUDIN data interchange will be maintained by the operator of the EUDIN Messaging Service component.**

The registration process is handled by the organisation responsible for the Messaging Service operation (currently the Austrian Ministry of Environment). One ID will be assigned to each participating legal entity. The list of participating legal entities and their assigned IDs will be published on the EUDIN website. The published ID will have to be provided as addressing identification (that is, to tell the Messaging Service who should receive the document, see requirement 12, p.102) when passing documents to the EUDIN Messaging Service. For each legal entity any number of persons can be registered. These have to be persons with the authorization of sending waste movement related documents in the name of the registered legal entity. Username and password will be assigned to registered persons. A one way encryption will be used for storing passwords. For each legal entity, at least one person has to be registered in an “administrator” role. A person in the “administrator” role is authorized by the legal entity of assigning or withdrawing the authorization of sending waste movement related documents in the name of the legal entity to persons or from persons. An E-Mail address has to be provided at least for any persons registered with an “administrator” role.

The public IDs assigned to legal entities during registration will be Global Location Numbers. Only Global Location Numbers newly assigned during the registration process can be used. Any other Global Location Numbers possibly assigned to the participant cannot be used as an ID with the EUDIN Messaging Service.

The credentials (username and password) will be required for any interaction with the EUDIN Messaging Service.

Rationale: As there is no existing identification/authentication solution by which access control could be ensured for potential participants all over the world, a separate one need to be integrated into the EUDIN Messaging Service. The rationale of why for the time being digital signatures are not used in the EUDIN Messaging Service solution is provided in a separate topic, Topic 4. The rationale for not permitting Global Location Numbers assigned outside the EUDIN Messaging Service is the reuse of Global Location Numbers: According to the GS1 policy Global Location Numbers that have become obsolete can be reused when 48 months have passed. Thus in the long run Global Location Numbers assigned outside the EUDIN Messaging Service may not be unique.

6. ***Topic*: Connection integrity**

   Decision: **Clients have to connect to the EUDIN Messaging Service over an SSL (TLS) connection.**

   Rationale: An SSL (TLS) connection provides all the data integrity features needed and is easy to implement.

7. ***Topic*: Traffic flow confidentiality**

   Decision: **No technical provisions specifically targeted at traffic flow confidentiality.**

   Rationale: The information that can potentially be gathered from traffic flow analysis is not considered sufficiently confidential that specific technical provisions would appear justified.

8. ***Topic*: Types of confidentiality**

   Main options considered:

   a. "End-to-end confidentiality": The semantic content of the business documents is not available at the Messaging Service, but only to senders and recipients.
   b. "Link-by-link confidentiality": The semantic content of the business documents is available at the sender, the recipient and the EUDIN Messaging Service, but not inbetween.

   Decision: **"Link-by-link confidentiality"**

   Rationale: If the semantic content is not available to the Messaging Service, the Messaging Service cannot be used for ensuring that the business documents are syntactically correct (conform to XML Schema, use valid codes, etc.). Link-by-link confidentiality is common and much easier to implement than end-to-end confidentiality.

9. ***Topic*: Document origin authentication / Non-repudiation with proof of origin**

   Main options considered:

   a. Data origin authentication via digital signatures.
   b. Data origin authentication without digital signatures.

   Decision: **Data origin authentication without digital signatures**.

   Rationale:

   a. The only widespread and globally applicable technical solution for an automation of document origin authentication is digital signatures. The rationale of why for the time being digital signatures are not used in the EUDIN Messaging Service solution is provided in a separate topic, Topic 4.

   b. As has been detailed in the description of the requirement (requirement 9, p.101), what needs to be provided is reason to believe that document origin information is authentic. The way the EUDIN Messaging Service is devised, there is strong reason to believe the authenticity of document origin information even without digital signatures.

      Note: With a well designed digital signature solution, the reason to believe the authenticity of document origin information could be even stronger. If flawless digital signature solutions were available to be applied in the cross-border electronic data interchange context, it would be advisable to do so. However, as shown in Topic 4, such flawless digital signature solutions are not available to date.

      It is a simple principle by which there is strong reason to believe the authenticity of document origin information even in the absence of digital signatures: The sender being responsible for what is sent. If for example a competent authority has doubts about the authenticity of a notification's originator, it will not forward the document. There is a "chain of trust" in the exchange of documents.

In the example of a competent authority of dispatch forwarding a document it previously received from a notifier, the authority will have reason to believe the authenticity of document origin information. There may be a variety of reasons, such as the following:

- If the document has been provided via fax, there is reason to believe that document origin information is authentic if the document has been sent from a number known to belong to the named originator, and if the named originator's company stamp and signature are found on the document.
- If the document has been provided via a web application, there is reason to believe that the document origin information is authentic, as the web application will require authentication, such as by entering a password only known to a single user.
- If the document has been provided via electronic data interchange, there will be reason to believe that the document origin information is authentic due to authentication methods integrated into the EDI, such as providing passwords or the digital signing of documents.

The last example is one to be emphasized: On a national level, there may be well-established and well-working digital signature solutions. In a scenario where a competent authority forwards a document it has previously received from a business via the EUDIN Messaging Service, it is not a contradiction to the EUDIN Messaging Service principles if the reason for the competent authority to believe the authenticity of document origin information is a digital signature.

What has been found in the analysis of the EUDIN Messaging Service requirements is that the application of existing digital signatures standards and solutions to the EUDIN Messaging Service is not advisable for the time being. The reasons are given in Topic 4. This should not be misinterpreted as a general statement about something being wrong with digital signatures. There are scenarios, contexts and solutions such that digital signatures can be used effectively. This may include the use for authentication in the exchange of waste movement data at a national level.

10. ***Topic*: Sending authentication / Non-repudiation with proof of sending**

Main options considered:

a. Sending authentication by requiring credentials (username and password).
b. Sending authentication via digital signatures.

Decision: **Sending authentication by requiring credentials (username and password).**

The point in time recorded with sending (and provided to the recipient as sending date) will be the point in time when the EUDIN Messaging Service receives the sending request.

Rationale: The rationale of why for the time being digital signatures are not used in the EUDIN Messaging Service solution is provided in a separate topic, Topic 4.

A credentials system can be used for both access control (see Topic 5) and sending authentication.

11. ***Topic:* Original business document integrity**

Main options considered:

a. Original business document integrity via digital signatures (with or without the use of WS-Security, ebXML and/or AS4).
b. Original business document integrity without digital signatures.

Decision: **Original business document integrity without digital signatures.** A set of test cases will be defined which is aimed at detecting integrity violations in any software solutions used by EUDIN messaging participants.

Rationale: The only widespread and globally applicable technical solution for an automation of ensuring original business document integrity is digital signatures. The rationale of why for the time being digital signatures are not used in the EUDIN Messaging Service solution is provided in a separate topic, Topic 4.

In addition a similar rationale applies as with document origin authentication (see Topic 9). A sender will only forward a document if she has reason to believe the document's integrity. Together with connection integrity (see Topic 6) this again yields a chain of trust.

As mentioned in the requirement (requirement 5, p.99) there is a particular threat to document integrity to be taken into account in the forwarding scenario: This threat are faulty software implementations, causing a document to be sent to be different from the way it has previously been received, especially when the received document is deserialised during receipt (the XML content is parsed and stored in a relational database) and serialised for sending (the database content is transformed into an XML instance). Therefore a predefined set of test cases designed for detecting integrity violations will be published.

12. *Topic*: Reliable transmission

Main options considered:

a. Transaction ID: Prior to the submission of data from client to server, a transaction ID has to be requested by the client from the server, and then provided together with the submitted data. With the transaction ID, the client can retrieve status information from the server wether or not the transmission of data was successful.
b. Use of WS-ReliableMessaging (OASIS standard), with or without ebXML or AS4 context.

Decision: **Transaction ID**

Rationale: According to the EUDIN Messaging Service architecture reliability provisions are only useful in the context of submitting data to the Messaging Service if by those submissions the state of the Messaging Service gets changed. For operations that only query information from the Messaging Service, but leave its state completely unchanged, reliability provisions would add no value. In addition, the WS-ReliableMessaging functionality of ensuring that the order of processing messages is equal to the order of sending messages is not required at this transport layer level by the EUDIN Messaging Service. The desired effect of reliability where required can be achieved via a transaction ID solution that is extremely simple to implement for web service clients. In contrast, a solution based on WS-ReliableMessaging could be an obstacle to any implementation with a framework that does not natively support WS-ReliableMessaging. Using WS-ReliableMessaging for an effect that can be achieved by a simple transaction ID does not appear to be justified.

***13. Topic:* Idempotency**

Main options considered:

a. Simple solution with single-use transaction IDs;
b. Application of web services standards ensuring idempotency.

Decision: **Simple solution with single-use transaction IDs.**

Rationale: Idempotency can be ensured with transaction IDs, which are very simple to implement, both at server and client side. Standards available cover a much wider range of requirements. The application of such standards would thus impair rather then enhance interoperability, as it would require to either use an implementation framework supporting the standard, or to implement the much wider range of features without the support provided by an implementation framework.

***14. Topic:* Data overflow protection**

Decision: **Automatic deletion of documents from the Messaging Service under specified conditions.**

Documents will be automatically deleted from the Messaging Service if the following conditions hold true:

If the document is acknowledged (see requirement 13, p.102), and all of the following holds true:

1) At least 90 days have passed since the document was received/accepted by the Messaging Service;
2) At least 30 days have passed since a document acknowledgement was received by the Messaging Service;

If the document is unacknowledged, but there has been read access to the document from a software used by a recipient:

1) At least 2 reminders have been sent to persons representing the recipient informing about unacknowledged documents.
2) A deadline named in the latest reminder has passed, or at least 180 days have passed since sending the latest reminder (if no deadline is named in the latest reminder).

If the document is unacknowledged, and there has been no read access to the document from a software used by a recipient:

1) At least 2 reminders have been sent to persons representing the recipient informing about unretrieved documents.
2) A deadline named in the latest reminder has passed, or at least 720 days have passed since sending the latest reminder (if no deadline is named in the latest reminder).

Only the document itself will be physically deleted. Meta information about the sending and retrieval status of the document will be kept.

Rationale: Without a "clean-up" policy there would be a danger of unsustainable growth of data to be kept at the Messaging Service. Meta information about the sending, retrieving and acknowledging of documents will be kept both for non-repudiation purposes and as a data basis for statistics about the degree of Messaging Service usage.

15. Topic: Request overflow protection

Decision: **Limitations to the number of requests per unit of time, applied individually to each participant.**

For each legal entity participating in the electronic data interchange via the EUDIN Messaging Service, the number of web service requests to the EUDIN Messaging Service will be limited as follows:

- 1000 requests per hour;
- 10000 requests per day.

In addition, for polling requests to the web service there is a limit of two requests per minute (for polling, a rate of not more than one request per minute is recommended).

Rationale: Any rate of requests to be expected for regular transboundary movements of waste related data interchange needs to be supported by the EUDIN Messaging Service.

The distinction between an acceptable rate of requests and a rate of requests that hints at a problem needs thus to be made per-participant.

The limits are also meant to force software implementations not to (overly) use bulk operations, such as retrieving documents only once per month.

16. ***Topic:*** **Interconnection with other data interchange systems – addressing of EUDIN participants**

    Decision:**Opaqueness as to whether a document interchange participant directly participates in the EUDIN interchange, or indirectly by using a data interchange system connected with EUDIN.**

    In particular: The addressing of document interchange participants is the same for all participants, no matter if they are using another data interchange system connected with EUDIN or they are using the EUDIN Messaging Service without such intermediate systems. In all cases, participants will be listed in the directory published by EUDIN (see requirement 12, p.102).

    Rationale: It is a matter of "ease of implementation", that there has to be one way of sharing documents via the EUDIN Messaging Service rather than a different way for each interconnected data interchange system.

17. ***Topic:*** **Interconnection with other data interchange systems – authentication and access control**

    Decision:**Administration of metadata on interconnected systems within EUDIN, including credentials information and information which parties (competent authorities) "belong to"/"are representated by"/participate in the interconnected system.**

    Rationale: The alternative would be for interconnected systems to authenticate to EUDIN individually. For example, for Nordic TFS to authenticate as Sweden's competent authority of transit and retrieve its documents, then to authenticate as Norway's competent authority of transit and retrieve its documents, and so on. The EUDIN credentials information would have to be collected centrally within EUDIN, but also in the interconnected system. This would impair security.

18. ***Topic:*** **Multiple recipients**

    Main options considered:

    a. One-by-one dissemination of documents only (without any provisions for "all-or-nothing", i.e. dissemination to each party, or to none in case of failure).
    b. Dissemination to multiple recipients at once (thus providing an atomic transaction).
    c. One-by-one dissemination of documents only (with provisions for "all-or-nothing", i.e. dissemination to each party, or to none in case of failure).

    Decision: **Dissemination to multiple recipients at once (thus providing an atomic transaction).**

    Rationale: There is both a business case and a technical case for supporting the dissemination to multiple recipients at once. Dissemination to multiple recipients is frequently required in relation to waste shipment documents. For example, someone may need to disseminate a document to competent authorities of transit and destination.

    From a business perspective, a party may want to make sure that a document is available to all recipients at the same time. In other words: A case, where a document is available to one recipient but not the other may be seen as 'to be avoided'.

    From a technical perspective, if a sending application knows a list of recipients, it is much easier to implement the transition of a business document if it can be done at once. If the sending application needs to send each document individually, and each sending of a document can fail individually, a large number of different situations can occur (such as transmission to recipients one to three was successful, transmission to recipient four failed, and transmission to recipient five was successful), each of which needs to be handled with. Following the "ease of implementation" paradigma, there is a case for providing a single operation which makes it possible to disseminate to a list of participants, and which can either succeed (the document is available to all recipients) or fail (the document is available to none of the recipients), but nothing inbetween.

A.4. Application, applicability and impact evaluation of Standards and other resources

Legal and administrative frameworks and initiatives:

- ***Directive*** *1999/93/EC of the European Parliament and of the Council of 13 December 1999 on a Community* ***framework for electronic signatures****; http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31999L0093:EN:NOT;*

  Evaluation result: **Not applied, under observation**.

  Rationale: See Topic 4 (p.106).

- *EU Secure Identity Across Borders Linked* ***STORK 2.0****,https://www.eid-stork2.eu;*

  Evaluation result: **Under observation**.

  Rationale: See Requirement 1 (p.98) and Topic 4 (p.106).

- ***EU Trust Services and e-ID****, Digital Agenda for Europe, http://ec.europa.eu/digital-agenda/en/trust-services-and-eid;*

  Evaluation result: **Under observation**.

  Rationale: See Topic 4 (p.106).

Technical Standards and Recommendations:

- *Advanced Message Queuing Protocol (****AMQP****), OASIS Standard 29 October 2012, https://www.oasis-open.org/standards#amqpv1.0;*

  *Evaluation result:***Not applied.**

  Rationale: While most of the investigated standards are interrelated and build on top of each other, AMQP is something completely different. It builds on TCP, not even HTTP. In terms of interoperability, this does not appear favourable. On the other hand it is also true that several features of AMQP cover requirements of the waste shipment data interchange (queuing, reliability, etc.). AMQP has a longer history of development, but is a relatively new standard, 1.0 was published on 2011. It remains to be observed if AMQP gains significance in electronic data interchange outside the middleware field.

- ***AS4 Profile of ebMS 3.0****, OASIS Standard 23 January 2013, https://www.oasis-open.org/standards#as4profilev1.0;*

  Evaluation result: **Not applied for the time being. Under observation.**

  Rationale: AS4 is a relatively new profile. For the time being, adopting AS4 would rather impair than boost interoperability. If there's however growing native support for AS4 in software development tools, this may justify the implementation of a seperate AS4 profile compliant interface to the EUDIN Messaging Service. Digital signatures and WS-Security are critical to the AS4 profile. The AS4 Profile should therefore not be implemented before the legal and technical preconditions for a cross-border use of electronic identities and signatures are met.

- *Code List Representation (**Genericode**), OASIS Committee Specification 28 December 2007, http://docs.oasis-open.org/codelist/genericode/doc/oasis-code-list-representation-genericode.html;*

  Evaluation result: **Applied**.

  Means of retrieving transboundary movements of waste related codelists in Genericode format will be provided as part of the EUDIN infrastructure (web service and XML download).

  Rationale: There are currently 44 codelists specified to be used in transboundary movements of waste related data. The codelists represent content from various sources, such as legislation (e.g. lists of waste) and standards (e.g. ISO 3166-1 list of countries). Software applications implementing EUDIN electronic data interchange are expected to work with local copies of the relevant codelists. Occasional on-demand updates of codelists are a business requirement, such as when two countries unite. In order to facilitate maintainability, the process of updating codelists shall be fully automatable. This requires codelists to be provided in a machine processable format. The Genericode format fulfils the requirements and yields interoperability.

  Note: Early versions of the EUDIN infrastructure do not include means of retrieving codelists. Existing functionality will not be affected, and there will be backwards-compatibility, when the codelist dissemination functionality will be provided by the EUDIN solution.

- *ebXML Messaging Services (**ebMS**), OASIS Standard 1 October 2007,https://www.oasis-open.org/standards#ebxmlmsgv3;*

  Evaluation result: **Not applied for the time being. Under observation.**

  Rationale: The AS4 Profile abstract comments the ebMS specification as follows: "*The ebMS specification contains numerous options and comprehensive alternatives for addressing a variety of scenarios for exchanging data over a Web Services platform*". "*The overall goal of a profile for a standard is to ensure interoperability by establishing particular usage and practices of the standard within a community of users and by defining the subset of features in this standard that needs to be supported by an implementation*". To time, AS4 appears to be the most promising profile of ebMS. Thus ebMS has been evaluated together wth AS4. The reasoning for not applying ebMS and AS4 for the time being is provided under AS4.

- *Extensible Markup Language (**XML**), W3C Recommendation 26 November 2008; http://www.w3.org/standards/techs/xml;*

  Evaluation result: **Applied.**

  Rationale: XML can be seen as a prerequisite for interoperability and for most other standards related to interoperability.

  Note: XML files are text files, wherein the contents are marked up with identifiers, and wherein a hierarchical structure is possible. XML has become a popular format for serialised electronic data representation due to a number of reasons, including the following:

  - There is a wide support of XML in software tools and implementation frameworks, making the generation and processing of XML instances highly automatable;
  - XML allows for a simple handling of arbitrary 1:n relations within structured data;
  - There are schema languages available for the definition of constraints on the structure and content of XML files;
  - In comparison to other machine processable formats, XML files are relatively easy to read and understand for a human being, which simplifies tasks such as testing and debugging.

The following is an example XML file. It is coloured for better readability. The black text is the content. The red texts are the element names. Typically, for an element there is a start tag (the element in angle brackets), followed by the element content, followed by an end tag (the element name preceded by a slash in angle brackets). Usually element names are chosen such that they give a clue on what the content is (semantics).

```
<?xml version="1.0" encoding="UTF-8"?>
<Person>
  <GivenName>Otto</GivenName>
  <FamilyName>Berner</FamilyName>
  <BirthDate>1967-02-17</BirthDate>
  <ResidenceAddress>
    <CityName>Wien</CityName>
    <Postcode>1020</Postcode>
  </ResidenceAddress>
</Person>
```

- *Extensible Stylesheet Languages (**XSL**), W3C Recommendation 5 December 2006; http://www.w3.org/standards/techs/xsl;*

  Evaluation result: **Not applied. Considered for future application.**

  Rationale: There currently is no requirement for using the functionality provided by XSL. However, XSL is a generic standard, that may be used as part of other applied standards. XSL is likely to play a role in digital signatures and the "what you sign is what you see" principle and is thus considered for future application.

- *ISO/IEC 10646:2003, Information technology – Universal Multiple-Octet Coded Character Set (UCS);*

  Evaluation result: **Applied.**

  Rationale: This standard is applied via the UTF-8 encoding requirement for XML instances. Unicode provides a numbered list of over 100000 characters of the world's writing systems. For instance, character 8721 is the mathematical summation sign ("∑").For a cross-border solution the support for characters of as many natural languages as possible is regarded as a mandatory requirement.

  Note: UTF-8 is one of the most widely used standardised binary representations of Unicode character indices. For example, character 8721 is represented as the 3-byte binary sequence 1110 **0010** 10**00 1000** 10**01 0001** (hex E28891), assembled from prefixes (non-bold) and the binary representation of 8721 (bold). UTF-8 text representations are natively supported on almost all operating systems. Besides UTF-8 there are also other binary representations of Unicode character indices, some of them also widely supported, such as UTF-16.

- *ISO/IEC 19757-3:2006 Information technology – Document Schema Definition Languages (DSDL) – Part 3: Rule-based validation – **Schematron**;*

  Evaluation result: **Not applied. Considered for future application.**

  Rationale: XML Schema is the most widely used and supported XML schema language (a formal language for defining constraints on the structure and other formal aspects of XML instances). XML Schema is also used as a basis for several electronic data interchange standards, including UN/CEFACT standards. XML Schema is thus applied in the EUDIN solution. Schematron is another formal language for expressing such formal constraints. It complements XML Schema well: There are many constraints that cannot be expressed with XML Schema but can be expressed with Schematron. The basic structure of an XML document is however easier to express using XML Schema. Another advantage of Schematron is, that there is more than the distinction between "valid" and "invalid". As an example, hints can be

provided, where there is a high probability that the violation of a formal rule is due to the incorrectness of data, but where there is also a low probability that despite the violation the data is correct. These aspects may be found suitable for deriving and expressing formal rules from data requirements in conjunction with transboundary movements of waste related documents.

- *ISO/TS 15000-5:2005, Electronic Business Extensible Markup Language (ebXML) – Part 5: ebXML Core Components Technical Specification, Version 2.01 (eb**CCTS**);*

  Evaluation result: **Applied.**

  Rationale: Interoperability strongly depends on the use of standardized data formats. The business documents related to transboundary movements of waste, such as notification and movement announcement, have thus been harmonized and standardized at UN/CEFACT. CCTS compliant models are a prerequisite for UN/CEFACT harmonization, and are the basis of the UN/CEFACT Core Component Library. The Core Component Library contains syntax independent semantic building blocks, and serves as the basis for defining syntax definitions, including the UN/CEFACT standardized XML data formats.

- *MIME-Based Secure Peer-to-Peer Business Data Interchange Using HTTP, Applicability Statement 2 (**AS2**), The Internet Engineering Task Force (IETF)Request For Comments (RFC) 4130, http://www.ietf.org/rfc/rfc4130.txt;*

  Evaluation result: **Not applied.**

  Rationale: AS2 is a standard initially published in 1997. AS2 appears to be widely supported by (mostly) commercial EDI software tools. The following is a citation from the "GS1 eTG White Paper: AS4: Web Services for B2B, July 2011".

  > *"Historically, the adoption of electronic data interchange has been stronger among larger companies than among small and medium-size companies. AS2 has allowed many companies to use the public Internet instead of value-added networks and has therefore made EDI more affordable to more companies. However, AS2 requires companies to operate a messaging server that needs to be accessible from the Internet to receive messages from trading partners. The business case to operate such a server is weaker for a small or medium-size company that exchanges relatively few documents, and with a smaller number of partners, than a larger company. SMEs also often have a skills issue, and cannot guarantee service availability to the same extent as larger companies. A common analogy is email: small companies can both send and receive email using only email clients using an infrastructure of SMTP relays offered by Internet Service Providers. These are analogous to AS2 gateways in B2B exchanges. But there is no AS2 equivalent to the POP3 and IMAP functionality that allows businesses to use email clients to receive messages without running an email server themselves."*

  Among others, the "ease of implementation" requirement (Requirement 19,p.103) and the "service capabilities requirement" design decision (Topic 3,p.105) are aspects in disfavour of using AS2.

- *Security Assertion Markup Language (**SAML**), OASIS Standard 15 March 2005, https://www.oasis-open.org/standards#samlv2.0;*

  Evaluation result: **Considered for future application.**

  Rationale: SAML is useful in a scenario where service providers and identity providers are distinct. This may become useful in the interconnection of EUDIN with other electronic data interchange solutions.

- ***SOAP**, W3C Recommendation 27 April 2007, http://www.w3.org/standards/techs/soap;*

  Evaluation result: **Applied.**

  Rationale: SOAP is a protocol commonly used for web services. Most other web services related standards build on SOAP. SOAP is natively supported by most web services frameworks.

  Note: Includes SOAP Message Transmission Optimization Mechanism (MTOM), W3C Recommendation 25 January 2005.

- *UN/CEFACT Core Components Library (**CCL**) 13A, http://www.unece.org/cefact/codesfortrade/unccl/ccl_index.html*

  Evaluation result: **Applied**

  Rationale: In defining data structures for transboundary movements of waste related documents, existing Core Components and Business Information Entities from the CCL were reused where possible in order to achieve interoperability. In addition, the resulting data models have been submitted to UN/CEFACT for harmonization and standardization. As a result, all the data structures of waste movement related documents are now published within the UN/CEFACT Core Component Library.

- ***UN/CEFACT XML Schemas** 13A, http://www.unece.org/cefact/xml_schemas/index;*

  Evaluation result: **Applied.**

  Rationale: As a result of the UN/CEFACT harmonization and standardization, the XML formats for transboundary movements of waste related business documents such as the movement announcement are published as standardized UN/CEFACT XML Schema Definitions.

- *Universal Description and Discovery Integration (**UDDI**), OASIS Standard 19 July 2002, https://www.oasis-open.org/standards#uddiv2;*

  Evaluation result: **No UDDI registration**.

  Rationale: Enabling automatic discovery of the EUDIN Messaging Service Interface appears of questionable use. In addition, support for UDDI seems to be diminuishing.

- *Web Services Description Language (**WSDL**), W3C Recommendation 26 June 2007; http://www.w3.org/standards/techs/wsdl;*

  Evaluation result: **Applied**.

  Rationale: WSDL is a widely used formal language for describing web service interfaces. There is a large number of software development tools supporting the use of WSDL specifications in the semi-automation of interface connection implementation. A WSDL specification is thus provided for the EUDIN Messaging Service in order to further increase interoperability and ease of implementation.

- *Web Services Addressing, W3C Recommendation 9 May 2006; http://www.w3.org/standards/techs/wsaddr;*

  Evaluation result: **Considered for future application / To be applied.**

  Rationale: In its initial realisation, the EUDIN Messaging Service web service will not offer callback. Instead, polling will be required. Callback solutions are foreseen to be implemented in the near future (see Topic 3, p.105). For a callback solutions, forcing the reply to occur on the same channel can be seen as a limiting constraint. WS-Addressing is widely supported and can be used to let clients decide on which channels to receive replies.

- *Web Services Atomic Transaction (**WS-AtomicTransaction**), OASIS Standard 2 February 2009, https://www.oasis-open.org/standards#wstx-wsatv1.2;*

Evaluation result: **Not applied**.

Rationale: WS-AtomicTransaction builds on WS-Coordination. See the rationale for not applying WS-Coordination.

- *Web Services Business Activity (WS-BusinessActivity), OASIS Standard 2 February 2009, https://www.oasis-open.org/standards#wstx-wsbav1.2;*

  Evaluation result: **Not applied**.

  Rationale: WS-BusinessActivity builds on WS-Coordination. See the rationale for not applying WS-Coordination.

- *Web Services Business Process Execution Language, OASIS Standard 11 April 2007, https://www.oasis-open.org/standards#wsbpelv2.0;*

  Evaluation result: **Not applied**.

  Rationale: WS-BusinessActivity builds on WS-Coordination. See the rationale for not applying WS-Coordination.

- *Web Services Context (**WS-Context**), OASIS Standard 2 April 2007, https://www.oasis-open.org/standards#wscontextv1.0;*

  Evaluation result: **Not applied.**

  Rationale: The rationale is similar to that of WS-Coordination.

- *Web Services Coordination (**WS-Coordination**), OASIS Standard 2 February 2009, https://www.oasis-open.org/standards#wstx-wscoorv1.2;*

  Evaluation result: **Not applied. (Considered for future application)**

  Rationale: WS-Coordination describes an extensible framework for providing protocols that coordinate a set of actions spanning multiple Web services that work jointly toward a common goal. There currently is no requirement for using WS-Coordination.

  In its initial realisation, the EUDIN Messaging Service web service will not offer callback. Instead, polling will be required. Once that changes, WS-Coordination can be considered as an approach, for instance for services to register as listeners.

- *Web Services Dynamic Discovery (**WS-Discovery**), OASIS Standard 1 July 2009, https://www.oasis-open.org/standards#ws-discoveryv1.1;*

  Evaluation result: **Not applied. (Considered for future application)**

  Rationale: In its initial realisation, the EUDIN Messaging Service web service will not offer callback. Instead, polling will be required. Once that changes, WS-Discovery may be considered as a way of knowing about the availability of target services, which send an announcement when they join and leave the network.

- *Web Services Federation Language **(WS-Federation)**, OASIS Standard 22 May 2009, https://www.oasis-open.org/standards#wsfedv1.2;*

  Evaluation result: **Not applied. (Considered for future application)**

  Rationale: WS-Federation builds on WS-Security, WS-Trust. And WS-SecurityPolicy. Refer to WS-Security and to Topic 4 (p.106).

- *Web Service Interoperability (**WS-I**), OASIS Profiles, Sample Applications and Testing Tools, 9 November 2010, http://ws-i.org/;*

  Evaluation result: **To be applied.**

Rationale: It appears advisable to evaluate the EUDIN Messaging Service web service interface against WS-I profiles, and to document deviations from the profile, if there are any, and if they can be justified. This will foster interoperability, such as by reducing test and implementation efforts.

- *Web Services Make Connection (**WS-MakeConnection**), OASIS Standard 2 February 2009, https://www.oasis-open.org/standards#wsmcv1.1;*

  Evaluation result: **Considered for future application.**

  Rationale: Interoperability may be enhanced if MakeConnection is supported for the polling of results of asynchronous operations.

- *Web Services Notification (**WSN**), Oasis Standard 1 October 2006, https://www.oasis-open.org/standards#wsnv1.3;*

  Evaluation result: **Not applied.**

  Rationale: Can be considered as an alternative to what is provided via WS-Eventing and related Web Services Resource Access standards. WS-Eventing and other Web Services Resource Access standards appear to be more widely adopted and to have more or less superseded Web Services Notification.

- ***Web Services Policy**, W3C Recommendation 4 September 2007, http://www.w3.org/standards/techs/wspolicy;*

  Evaluation result: **Considered for application/applied.**

  Rationale: Providing a standardised and formalised description of the web service requirements and capabilities can only add to interoperability. If conformance to WS-I profiles can be achieved, then claiming conformance via WS-Policy appears useful.

- *Web Services Reliable Messaging (**WS-ReliableMessaging**), OASIS Standard 2 February 2009,https://www.oasis-open.org/standards#wsrx-rmv1.2;*

  Evaluation result: **Not applied.**

  Rationale: See Topic 12 (p.110).

- ***Web Services Resource Access** - Web Services Enumeration (WS-Enumeration), Web Services Eventing (**WS-Eventing**), Web Services Fragment (WS-Fragment), Web Services Metadata Exchange (WS-MetadataExchange), Web Services Transfer (WS-Transfer), Web Services Event Descriptions (WS-EventDescriptions), Web Services SOAP Assertions (WS-SOAPAssertions), W3C Recommendations 13 December 2012, http://www.w3.org/standards/techs/resaccess;*

  Evaluation result: **Considered for future application**.

  Rationale: In its initial realisation, the EUDIN Messaging Service web service will not offer callback. Instead, polling will be required. Once that changes, standards like WS-Eventing may be well-tailored for the requirements. Most likely better so than standards like WS-Coordination.

- *Web Services Resource Framework (**WSRF**), OASIS Standard 1 April 2006, https://www.oasis-open.org/standards#wsrfv1.2;*

  Evaluation result: **Not applied.**

  Rationale: There is an overlap between Web Services Resource Framework and Web Services Resource Access. Web Services Resource Access appears to be more widely adopted.

- *Web Services Secure Conversation (**WS-SecureConversation**), OASIS Standard 2 February 2009, https://www.oasis-open.org/standards#wstx-wsbav1.2;*

Evaluation result: **Not applied. Considered for future application.**

Rationale: WS-SecureConversation is based on WS-Security and WS-Trust, and can only be evaluated in conjunction with these standards. Thus, see WS-Security and WS-Trust for the rationale, as well as Topic 4 (p.106).

- *Web Services Security (**WS-Security**), OASIS Standard 1 February 2006, https://www.oasis-open.org/standards#wssv1.1;*

  Evaluation result: **Not applied. Considered for future application.**

  Rationale: See Topic 4 (p.106).

- *Web Services Security Policy (**WS-SecurityPolicy**), OASIS Standard 25 April 2012, https://www.oasis-open.org/standards#wssecpolv1.3;*

  Evaluation result: **Not applied. Considered for future application.**

  Rationale: Based on WS-Security and WS-Policy. Refer to WS-Security and to Topic 4 (p.106).

- *Web Services Trust (**WS-Trust**), OASIS Standard 25 April 2012, https://www.oasis-open.org/standards#wstrustv1.4;*

  Evaluation result: **Not applied. Considered for future application.**

  Rationale: WS-Trust extends WS-Security. Refer to WS-Security and to Topic 4 (p.106).

- *XML Advanced Electronic Signatures (**xAdES**), ETSI Standard 2010-12;*

  Evaluation result: **Not applied. Considered for future application.**

  Rationale: See Topic 4 (p.106). The further developments in relation to digital signatures will be observed.

- ***XML Canonicalization**, W3C Recommendation 2 May 2008, http://www.w3.org/standards/techs/xmlc14n;*

  Evaluation result: **Not applied**.

  Rationale: There currently is no requirement for using the functionality provided by XML Canonicalization. However, XML Canonicalization is a generic standard that may be used as part of other applied standards, especially in relation to digital signatures.

- ***XML Encryption**, W3C Recommendation 11 April 2013, http://www.w3.org/standards/techs/xmlenc;*

  Evaluation result: **Not applied (for the time being).**

  Rationale: XML Encryption would only be needed for end-to-end encipherment (transport layer encipherment is accomplished via SSL/TLS). As discussed under Topic 4 (p.106), globally and EU-wide available standards and technologies for digital signatures are not sufficiently mature to be used in cross-border public administration related data interchange. End-to-end encipherment is closely linked to the topic of digital signatures (and its aspects like e-ID, cross-border legal acceptance, etc). The evaluation result is thus the same as with digital signatures.

- *XML Key Management Specification (**XKMS**), W3C Recommendation 28 June 2005; http://www.w3.org/standards/techs/xkms;*

  Evaluation result: **Not applied.**

  Rationale: This standard addresses requirements related to public-key cryptography (signatures and encipherment). As long as public-key cryptography is not used in the EUDIN solution, there is no case for using the XML Key Management Specification.

- *XML Schema (**XSD**), W3C Recommendation 5 April 2012, http://www.w3.org/standards/techs/xmlschema;*

  Evaluation result: **Applied**.

  Rationale: XML Schema is the most widely used and supported XML schema language (a formal language for defining constraints on the structure and other formal aspects of XML instances). XML Schema is also used as a basis for several electronic data interchange standards, including UN/CEFACT standards. With a large number of software development frameworks and tools the implementation of parsing XML instances can be semi-automated by using XML Schema Definitions.

- ***XML Signature**, W3C Recommendation 11 April 2013, http://www.w3.org/standards/techs/xmlsig;*

  Evaluation result: **Not applied. Considered for future application**.

  Rationale: The reasons for not applying XML signature are listed under Topic 4 (p.106). XML Signature has to be considered for future application, as new standards and technologies based on XML Signature may emerge and together may meet the requirements of the EUDIN messaging context.

- *XSL Transformations (**XSLT**), W3C Recommendation 14 December 2012, http://www.w3.org/standards/techs/xslt;*

  Evaluation result: **Not applied**.

  Rationale: There currently is no requirement for using the functionality provided by XSLT. However, XSL is a generic standard, that may be used as part of other applied standards.

Annex B. DOMAIN BACKGROUND

There is a separate document available which describes the relevant waste movement related business processes in a standardized structured manner. This document is known as Business Requirements Specification (BRS) [49].

In order not to duplicate the contents of the BRS, only a brief overview over the relevant domain aspects is given in this Annex.

B.1. Roles

1. **Waste producer**

   The party responsible for the original generation of the waste.

2. **Notifier**

   The party that intends to carry out a shipment of waste or intends to have a shipment of waste carried out and to whom the duty to notify is assigned.

3. **Consignee**

   The party to which the waste is shipped.

4. **Recovery or disposal facility**

   A facility where waste will be treated after a transboundary movement.

   a. **Interim recovery or disposal facility**

      A facility that will not conduct all of the waste treatment. Instead, the waste will be passed on to other facilities.

i. **First interim recovery or disposal facility**

An interim recovery or disposal facility that first receives the waste after its transboundary movement.

ii. **Subsequent interim recovery or disposal facility**

An interim recovery or disposal facility that receives the waste not directly out of a transboundary movement, but from other facilities where to the waste previously had been brought.

b. **Non-interim recovery or disposal facility**

A recovery or disposal facility where from the waste will no longer be handed to other parties / facilities.

5. **Competent Authority**

A body designated by a state to deal with waste movement notifications and to consent, consent with conditions or object to such notifications, and to deal with related authoritative responibilities.

a. **Competent Authority of Dispatch**

The competent authority in the country of dispatch.

b. **Competent Authority of Destination**

The competent authority in the country of destination.

c. **Competent Authority of Transit**

A competent authority in a transit country of the respective waste movement.

B.2. Business processes

1. Depending on various circumstances a notifier may require written consents from the competent authority of dispatch, the competent authority of destination and all the competent authorities of transit (if any). Therefore it will be necessary to **notify** the competent authorities of intended **movements of waste**. In some cases multiple movements of waste may be notified at once, with a (maximum) total number of movements and a (maximum) total amount of waste specified in the notification;
2. A competent authority that receives a waste movement notification checks the provided information. Within a given period of time the authority can either **confirm** the **receipt of a properly completed notification**, or **request further notification information**;
3. Once a competent authority has confirmed the receipt of a properly completed notification it needs to **decide on** the **notification** within a given period of time, namely with consent, consent with conditions or objection, and communicate the decision;
4. For consented waste movements, the notifier has to individually **announce** each actual start of a **movement of waste** (transport of waste, shipment of waste) to the competent authorites several days in advance;
5. For waste received out of a transboundary movement of waste the consignee has to **confirm** the **receipt** to the competent authorities within a short period of time;
6. Each recovery or disposal facility where waste is subsequently being treated has to **confirm** the **completion of** the **recovery or disposal operation** to the competent authorities.