

SECTION I - General Introduction

1 Guideline Overview

1.1 Purpose

This document describes the user's guideline concerning **NCTS** – New Computerised Transit System - . It specifies the sequences of Information Exchanges (IEs) to be supported, as a number of message exchanges protocols, and the detailed structure and building rules of these Information Exchanges.

Information Exchanges are foreseen in the Common Domain (between National Administrations), in the National Domain (local to a National Administration), and in the External Domain (between National Administration and traders).

External Domain exchanges will always take place on the public network, private networks or on the Internet. The different formatting and transport mechanisms will therefore be defined in detail in this guideline. Moreover, additional design constraints and additional details on error and exception handling will be stated.

1.2 Scope

This guideline is restricted to the electronic Information Exchanges within NCTS.

This version is applicable to Phase 3.1 of the NCTS. It foresees a partial (but significant) implementation of the full NCTS as depicted in the FTSS.

It is aligned with the Functional Transit System Specifications of the European Commission version 4.0 as amended by Corrigendum 1/2000. This FTSS document contains a full specification of the entire NCTS (encompassing all Phases), foreseeing a number of electronic and other (paper) Information Exchanges.

1.3 Structure

This guideline is structured in sections (further subdivided in chapters) and a number of appendices:

SECTION I - GENERAL INTRODUCTION includes the following chapters:

- Chapter 1 describes the **purpose**, the **scope** and the **internal structure** of the guideline.
- Chapter 2 contains **definitions** used in this guideline (terminology, acronyms and abbreviations).
- Chapter 3 describes the applicable **standards** and the used policy within this guideline.
- Chapter 4 describes the **symbolism and the conventions** used in the various models included in this document. It also discusses the technical naming conventions used for the data dictionary that has been included in this document.

SECTION II - SCOPE OF DEVELOPMENT discusses the items that need to be developed for any Phase 3.1 Transit application. It is subdivided as follows:

- Chapter 1 summarises the various requirements for any Transit application in Phase 3.1, and presents an **overall view** of the IEs to be supported during Phase 3.1.

SECTION III - CORE BUSINESS, contains detailed definition of the **message protocols** to be supported for the four different Business Processes in Transit. These message protocols are described by a collection of **Time Sequence Diagrams** (TSDs), supported by **State Transition Diagrams** (TSDs). The various chapters within this section deal with the main Transit scenarios performed by the different parties in Transit (Office of Departure, Office of Destination, Office of Transit, Trader at Departure and Trader at Destination).

SECTION IV – TECHNICAL MESSAGE STRUCTURE, defines the detailed technical structure of the Information Exchanges. For technical reasons, the technical message format is sometimes different from the logical format defined at FTSS level (the same applies to rules and conditions associated to these IEs). This section is further subdivided as follows:

- Chapter 1 introduces the **data dictionary**. It defines a number of items that make up a message such as data items, data groups, and code lists (sets of discrete values). This chapter is accompanied by appendix C.
- Chapter 2 presents the detailed **Technical Message Structure (TMS)** for the different IEs. The detailed TMS for all messages in Phase 3.1 is included in appendix T. This chapter will only explain how the appendix needs to be interpreted and used.
- Chapter 3 discusses the issue of **consistency**. It defines with which Transit documents this guideline needs to be consistent (such as FTSS, SAM), and it explains how this consistency has been achieved during the TMS definition.

SECTION V – DESIGN PRINCIPLES, explains how the system, defined in the previous sections, needs to be built. Basically, every IE needs to be formatted in the UN/EDIFACT format. This section states a number of principles that are common, regardless of the message format and transportation mechanism:

- Chapter 1 discusses the overall **approach**.
- Chapter 2 discusses the usage of **character sets** and **data item conventions**.
- Chapter 3 defines **exception handling** (how NCTS should prevent and handle failure, defects, errors or mistakes).

SECTION VI – EDIFACT MESSAGE FORMATTING, defines in detail how messages need to be formatted in UN/EDIFACT. This section is subdivided as follows:

- Chapter 1 reflects **generalities** concerning EDIFACT.
- Chapter 2 defines **EDIFACT conventions** for Transit and explains how the **standard UNSMs** have been **modified**. Appendices G and H accompany this chapter.
- Chapter 3 describes the different EDIFACT **UNSMs** that are used in NCTS, and explains how the different IEs have been mapped upon the various UNSMs.
- Chapter 4 describes the **message hierarchies for UNSM's**. Appendices I and H accompany this chapter.
- Chapter 5 shows the **correlation tables**.
- Chapter 6 defines the **structure and use** of the EDIFACT **error messages**.

2 Definitions

2.1 Terminology

A number of terms are used with a very specific meaning in this guideline:

Name	Description
Code List	A set of discrete values. Some data items can contain only a set of discrete values, in which case they will have an associated code list.
Data group	A data group is a part of the Technical Message Structure; it groups data items related to the same subject, and it is denoted by a data group name.
Data item	A data item is an elementary (atomic) piece of information; part of a data group.
Functional Message Structure (FMS)	Logical data structure of an Information Exchange, as defined in the FTSS document

Name	Description
Information Exchange (IE)	A logical exchange of information between two locations. An IE is the conceptual exchange of information between two organisations, independent of its physical means.
Location	A location is the place where the Transit business is performed.
Message formatting	Representation (of a Technical Message Structure) in or mapping to an exchange syntax (e.g. XML or UN/EDIFACT).
Message transport	The sending (and reception) of a formatted message across a communications platform (such as CCN/CSI, the Inter(Intra)net)
Organisation	An organisation is a number of individuals acting in a concerned way towards a common business purpose with allocated roles and responsibilities. An organisation can have one or more roles of a specific type.
Technical Message Structure (TMS)	The data structure of the Information Exchange as it needs to be implemented. A TMS is a structure (and hierarchy) of data groups.
Time Sequence Diagram	Graphical representation of the message flow between locations over time for a particular Transit operation.

Table 1: Definitions

2.2 Acronyms and Abbreviations

The following acronyms are used in this guideline:

Acronym	Description
AAR	Anticipated Arrival Record
ATR	Anticipated Transit Record
BGM	Beginning of Message. This is the name of a segment of an EDIFACT-message.
CCN	Common Communication Network
CD	Common Domain
CONTRL	Syntax and service report message, (CONTRL) EDIFACT message
CSI	Common Systems Interface
CUSDEC	CUSStoms DECLARATION EDIFACT message (UNSM)
CUSRES	CUSStoms RESponse EDIFACT message (UNSM)
DTD	Document Type Definition
DTI	Direct Trader Input
EBP	Elementary Business Process
EC	European Community
EDI	Electronic Data Interchange
EDIFACT	Electronic Data Interchange for Administration, Commerce and Transport
EFTA	European Free Trade Association
FMS	Functional Message Structure
FTSS	Functional Transit System Specification
FTX	Free TeXt. This is the name of a segment of an EDIFACT-message.
GSS	Generic Security Services

Acronym	Description
HS6	Harmonised System 6
HTML	HyperText Markup Language
HTTP	HyperText Transfer Protocol
HTTPS	HTTP over SSL
IE	Information Exchange
ISO	International Standards Organisation
IT	Information Technology
KEL	Known Error List
LRN	Local Reference Number
MRN	Movement Reference Number
NA	National Administration
NCF	Notification of Crossing Frontier
NCTS	New Computerised Transit System
OoDep	(Customs) Office of Departure
OoDes	(Customs) Office of Destination
OoTra	(Customs) Office of Transit
OTS	Old Transit System
PLL	Paper Loading List
QoS	Quality of service
SAD	Single Administrative Document
SAM	Single Administrative Message
SGML	Standard Generalised Markup Language
SSL	Secure Socket Layer
STD	State Transition Diagram
TAXUD	TAXation and Customs Union DG
TCP	Transit Computerisation Project
TMS	Technical Message Structure
TraDep	Trader at Departure
TraDes	Trader at Destination
TSD	Time Sequence Diagram
UCLAF	Unité de la Co-ordination de la Lutte Anti-Fraude
UDP	Upload/Download Parsing
UML	Unified Modelling Language
UN	United Nations
UN/EDIFACT	See 'UN' and 'EDIFACT'
UNB, UNH, UNT, UNZ,	These are not abbreviations but names of (service) segments of an EDIFACT-message.

Acronym	Description
UCD, UCI, UCM, UCS	
UNS	User Needs Specification
UNSM	United Nations Standard Message (e.g. CUSDEC)
WWW	World Wide Web
XML	Extensible Markup Language

Table 2: Acronyms

3 Applicable standards

3.1 Applicable Standards

The following standards are applicable to this document:

Ref.	Reference	Title	Release
S6	ISO 9735	ISO 9735 - Electronic data interchange for administration, commerce and transport (EDIFACT) - Application level syntax rules	
S7	UNTDID, D96B	United Nations Trade Data Interchange Directory D.96B (United Nations)	
S8	UN/ECE TRADE /WP.4/R.1186/Rev. 1	Syntax and Service Report Message (CONTRL)	1
S9	Unicode 1999-05-17 (Revision 2)	Unicode standard	
S10	ISO 8859-1 ISO 8859-2 ISO 8859-7	Character set standards	

Table 3: Applicable Standards

[S6] and [S7] are mandatory EDIFACT standards. For EDIFACT formatting, most Transit IEs will be mapped upon EDIFACT messages (UNSMs) defined in the EDIFACT directory [S7]. Some IEs require however mapping upon an EDIFACT message that is not part of this message directory; this EDIFACT message (CONTRL) is defined in [S8].

Additional standards to be taken into account are a number of character set standards ([S11] and [S10]).

4 Symbolism and Conventions Used

This chapter presents the symbolism used in this document. It is necessary to understand this section before reading the remaining sections. An explanation of symbolism used in the appendices can be found at the beginning of the relevant appendix.

4.1 Time Sequence Diagrams

The IE sequences are presented using Time Sequence Diagrams (TSDs). Time Sequence Diagrams visualise the IE sequence between all locations involved in a particular scenario for a Transit movement. Examples of scenarios for Transit movements are the core flow for simplified procedures and the core flow including diversion.

As TSDs can only be used to show one possible flow of IEs, a large number of TSDs is required to specify all allowed IE sequences in NCTS. The following **roles** that can be taken by organisations, are used in this version of the guideline:

role type	Role name	organisation
OoDep	Office of Departure	Customs Office
OoDes	Office of Destination	Customs Office
OoTra	Office of Transit	Customs Office

TraDep	Trader at Departure	Trader
TraDes	Trader at Destination	Trader

Table 4: Role types and organisations in NCTS

A Customs Office is conceptually a National Administration (NA).

For some of these roles, being Office of Destination and Office of Transit, distinction is made between the Actual Office and the Declared Office. This depends on the particular scenario.

Time sequence diagrams can only depict one possible sequence of IEs that is used to control one particular Transit operation. Each different Transit operation might lead to another time sequence diagram.

All the components of a Time Sequence Diagram are shown in the following figure:

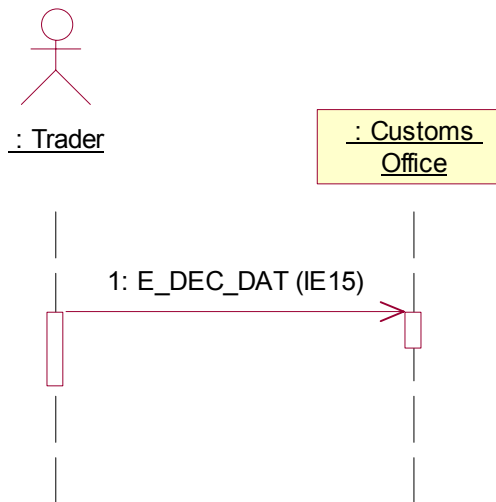


Figure 1: Time Sequence Diagram

The TSDs conform to the Unified Modelling Language, which is an industry standard for Object Oriented modelling.

In a TSD time passes from top to bottom. Each role is represented by an icon with the name of that role and a vertical line, called the 'lifeline'.

Each IE between two roles is represented by an arrow between the lifelines, where the arrow shows the direction of the IE. Attached to the arrow, a label gives the sequence number of this IE in the scenario, the coded name of the IE and the IE-number.

Following the UML-terminology, Customs Offices are shown as regular classes (rectangles), while the Traders are shown as classes of stereotype Actor (person-icon).

The narrow rectangles on the lifelines are called 'focus of control'. It represents the relative time that the flow of control is focused in that role, thus the time that the role is directing messages. When more than one message starts from (or ends in) the same focus of control, this means these messages are sent (or received) shortly after each other. The arrows will appear close to each other in that case as well.

Not all possible combinations are given in this guideline; only the most relevant have been included.

4.2 State Transition Diagrams

State transition diagrams consist of states and transitions between those states. Each state represents the state of a Transit movement for a particular role (OoDep, OoTra or OoDes). Each transition starts at a given state and goes to another state. A transition is allowed to reach its original state. Each transition is triggered by the exchange of a message between two organisations.

Every state transition diagram in this document is related to one particular role only. For every role, it will define how state transitions take place according to events (such as the reception of a message from another role).

States will be shown as a box, and transitions will be shown by an arrow.

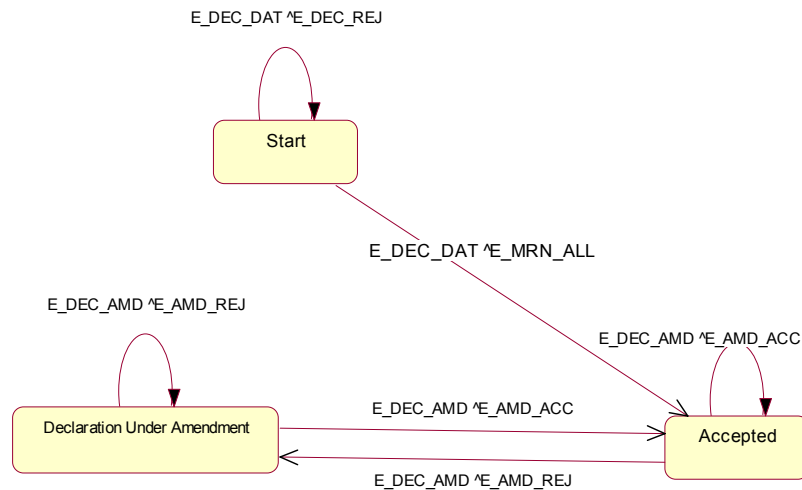


Figure 2: Example of STD

State transitions are always marked as A ^B : This means the transition is caused by the receipt of message A and as a consequence of the change of state, message B will be sent. In the example above (which is part of the STD for the Office of Departure), the transition from “Accepted” to “Declaration Under Amendment” is triggered by the reception of an `E_DEC_AMD` message. As a result, an `E_AMD_REJ` message is sent back from Office of Departure to the Trader at Departure.

When multiple messages are sent as a consequence of an event, these multiple messages will be separated by a dot sign (“.”). This dot sign needs to be understood as a logical AND.

4.3 Data dictionary

The data dictionary, contained within this guideline, defines 3 specific items:

- Data groups;
- Data items;
- Code lists (sets of discrete values).

A number of naming and spelling conventions and rules have been maintained for these throughout this guideline. The rules are as follows:

Data groups

1. Every name shall start with a letter.
2. Every name can contain letters, digits, and a number of additional characters: the space character, the brackets “(“ and “)””, the ampersand character “&”, the underscore “_”, and the slash “/”. No other characters are allowed.
3. Only uppercase letters are allowed.

Data items

1. Every name shall start with a capital (uppercase) letter.
2. Every name can contain letters, digits, and a number of additional characters: the space character, the brackets “(“ and “)”, the ampersand character “&”, the underscore “_”, and the slash character “/”. No other characters are allowed.
3. Within the name, lowercase letters shall preferably be used (except for the first character, and except for abbreviations which will always be in uppercase).

Code lists

The same rules as for data items will apply.