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4.40	29/07/2022	Implementing DG TAXUD and QA4 review comments.	I,R	As Required.

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3.30	09/03/2021	Implementing QA4 review comments. Submitted for Acceptance (SfA) to Taxation and Customs Union DG.	I, R	As Required.
3.20	01/03/2021	Implementing the following RTCs in the scope of QTM534: • RTC50929 • RTC51209 • RTC51210 • RTC51312 Submitted for Review (SfR) to Taxation and Customs Union DG.	I, R	Impacted sections for RTC50929: 3.1.7; RTC51209: 3.1.13; RTC51210: 3.1.4; RTC51312: 3.1.4.

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3.10	21/09/2020	Implementing DG TAXUD and QA4 verification comments. Re-Submitted for Acceptance (re-SfA) to Taxation and Customs Union DG.	I, R	As Required. Furthermore, it is re-SfAed due to include further changes related to RTC43090. Affected section: 3.1.16
3.00	16/09/2020	Implementing QA4 and DG TAXUD review comments. Submitted for Acceptance (SfA) to Taxation and Customs Union DaG.	I, R	As Required. Furthermore, RTC43090 implemented. Affected sections: 3.1.16, 3.1.3
2.90	16/09/2020	Implementing RFC44270, RFC43080, RFC43086, RFC43087, RFC43091, RFC43119, RFC43120, RFC44203, RFC44205, RFC44254, RFC47209, RTC43100, RTC43090. Submitted for Review (SfR) to Taxation and Customs Union DG.	R	Impacted Section: RTC44270 Section: 6.2 RTC43080 Section: Annex A. RTC43086 Section: 3.1.7 RTC43087 Section: 3.1.9 RTC43091 Section: 3.1.8 RTC43119 Section: 3.1.5 RTC43120 Section: 3.1.4 RTC44254 Section: 3.1.4 RTC47209 Section: 7.2.1.1 RTC43100 Section: 3.1.17 RTC43090 Sections: 3.1.16,
2.80	21/07/2020	Implementing QA4 and DG TAXUD review comments. Submitted for Acceptance (SfA) to Taxation and Customs Union DG.	R	As Required
2.70	08/07/2020	Implementing RfC45403. Submitted for Review (SfR) to Taxation and Customs Union DG.	R	Impacted Section: 3.1.4

Version	Date	Description	Action[1]	Section
2.60	24/03/2020	Implementing QA4 and DG TAXUD review comments. Submitted for Acceptance (SfA) to Taxation and Customs Union DG.	R	As Required
2.50	13/03/2020	Implementing RfC43381, RfC41030, RfC43127 Eurolook alignment. Submitted for Review (SfR) to Taxation and Customs Union DG.	R	RfC43381:Impacted Sections 3.3.1, 3.3.2, 3.3.3, 7.1.1.1, 7.1.2.1, 7.2.1.1, 7.2.2, 8.1. RfC41030: Impacted Sections 3.1.4
2.40	30/01/2020	Implementing QA4 review comments. Submitted for Acceptance (SfA) to Taxation and Customs Union DG.	R	As Required
2.30	28/01/2020	Implementing RfC42453. Submitted for Acceptance for Review only (SfA for Review only) to Taxation and Customs Union DG.	R	Annex B
2.20	23/01/2020	Implementing QA4 and DG TAXUD review comments. Submitted for Acceptance (SfA) to Taxation and Customs Union DG.	R	As Required
2.10	09/01/2020	Implementing QTM377 (RfCs 32135, 36819). Submitted for Review (SfR) to Taxation and Customs Union DG.	R	Impacted sections: 3.3.5, Annex B.
2.00	02/10/2019	Implementing QA4 and DG TAXUD review comments. Submitted for Acceptance (SfA) to Taxation and Customs Union DG.	R	As Required
1.90	13/09/2019	Implementing QTM317 (RfCs 35589, 35573, 35577, 35579, 35581, 35582, 35586, 35590). Submitted for Review (SfR) to Taxation and Customs Union DG.	I, R	Impacted sections: 3.1.4, 3.1.9, 3.1.10, 3.1.14, 3.1.17
1.80	14/05/2019	Implementing QA4 and DG TAXUD review comments.	I, R	As Required

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1.70	07/05/2019	Implementing MS and Trade representatives' comments as per RfC 35391. Submitted for Review (SfR) to Taxation and Customs Union DG.	I, R	Impacted sections: 3.3.5
1.61	28/02/2019	Submitted for review to MS and Trade representatives.	I, R	As Required
1.60	22/02/2019	Implementing QA4 and DG TAXUD comments. Implementing additional RfCs for QTM314 (RfCs 32971, 32972). Submitted for Acceptance (SfA) to Taxation and Customs Union DG.	I, R	Impacted sections: 7, Annex B
1.50	06/02/2019	Implementing QTM314 (RfCs 32664, 32737). Submitted for Review (SfR) to Taxation and Customs Union DG.	I, R	Impacted sections: 3.1.9, 7
1.40	07/11/2018	Implementing QA4 and DG TAXUD comments. Submitted for Acceptance (SfA) to Taxation and Customs Union DG.	I, R	As Required
1.30	15/10/2018	Implementing QTM248 (ICS2 STI and CR Elaboration iteration 2). Submitted for Review (SfR) to Taxation and Customs Union DG.	I, R	Impacted sections: 3.2.1, 3.3.3, 4.5, 5.2.2, 7.2.2.
1.20	04/06/2018	No review comments were raised. Document version and history updated.	I, R	As Required

Version	Date	Description	Action[1]	Section
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1.10	31/05/2018	Implementation of Member States. Comments (in the scope of QTM700). Submitted for Review (SfR) to Taxation and Customs Union DG.	I, R	As Required
1.00	23/04/2018	Implementing QA4 & DG TAXUD review comments. Submitted for Acceptance (SfA) to Taxation and Customs Union DG.	I, R	As Required
0.10	04/04/2018	Draft Submitted for STI Project Group (21/03). And for information to ECCG members.	I, R	As Required
0.03	12/03/2018	Implementing DG TAXUD comments. Submitted for Information (SfI) to Taxation and Customs Union DG.	I, R	As Required
0.02	22/02/2018	Implementing internal review comments. Submitted for Information (SfI) to Taxation and Customs Union DG.	I, R	As Required
0.01	02/02/2018	First draft. Submitted for internal review.	I	As Required

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1 INTRODUCTION

1.1 Objectives

The purpose of this document is to describe the interfaces of the ICS2 Common Repository (CR) with the Trader Interface (TI), the National Entry System (NES) and the Transit ENS Data Processing Bridge (TED) exposed over CCN2. The document lays out the functional and technical characteristics of the implementation of the interfaces.

1.2 Scope

The scope of the document is to define:

- The services of the CR consumed by the TI, NES and TED;
- The services to be implemented by the TI, NES and TED that will be consumed by the CR;
- How the CR, TI, NES and TED services must be orchestrated to support the business processes defined in the common functional specifications [R04];
- The services of reference systems (CS/RD2, CRS, TARIC3, ECICS2) that are required by ICS2 to perform semantic validation;
- The services offered by DG TAXUD to monitor ICS2 operations;
- An overview of the User Interface provided by CR, TI, MON&BS and SSA supporting ICS2 operations;
- How to connect to services and user interfaces over CCN2.

The description of the interface between the ICS2 Trader Interface and the Economic Operators is out of scope of this document. It is defined in the ICS2 Trader Interface Control Document [R06].

1.3 Target Audience

The intended audience for this document is:

- Member States specifications and development teams of the NTI and NES;
- DG TAXUD's ICS2 Project team;
- DG TAXUD B3 unit that is responsible for the infrastructure design and operations;
- ITSM3 Operations Contractor that is responsible for Operations and Administration of the DG TAXUD systems and infrastructure.

1.4 Structure of this document

The present document contains the following chapters:

- **Chapter 1: Introduction** – describes the structure, the scope and objectives of this document;
- **Chapter 2: Overview** – a high level description of the applications and interfaces offered by ICS2 applications;
- **Chapter 3: ICS2 services** – describes the ICS2 services orchestration and definitions;
- **Chapter 4: Support services** – describes the supporting services to ICS2 system;
- **Chapter 5: ICS2 User Interfaces** – describes the ICS2 user interfaces;
- **Chapter 6: CCN2 Prerequisites** – describes the CCN2 prerequisites;
- **Chapter 7: Consume CCN2 Web Services –** describes the CCN2 synchronous and synchronous web services consumption by ICS2;
- **Chapter 8: Provide National Asynchronous CCN2 Web Services** – describes how CCN2 web service registration and request processing is performed;

- **Annex A: STI and CR releases** – defines the scope of IT and CR releases;
- **Annex B: ICS2 Services** – defines IE message header;
- **Annex C: ICS2 Error Codes –** defines the Error Codes and their validation prerequisites;
- **Annex D: ICS2 Message Version -** defines the IE message version to indicate the messages that have multiple versions;
- **Annex E: ICS2 Service Version** – defines the service version per IE message version.

1.5 Reference Documents

The table below lists the documents that are referred to in the current document.

Ref.	Title	Reference	Version	Date
R01	ICS2 Design Blueprint	N/A	2.40	18/09/2020
R02	CR Service Specifications	SDEV-ICS2-CR-SSD	4.60	12/10/2022
R03	ICS2 Technical Service Contract	CD3-ICS2-TSC	N/A	17/02/2022
R04	ICS2 Common Functional Specifications	ICS2-CFSS	2.04	21/12/2023
R05	CCN2 Integration Manual	CCN2-CIMA-R1.3.1	12.00	02/04/2020
R06	HTI Interface Control Document	CD3-ICS2-HTI-ICD	3.30	02/03/2022
R07	CCN2 R1 System Technical Design Specifications	CCN2-CTCS	14.00	30/07/2020
R08	ICS2 Release 2 Scope document	N/A	1.00	03/06/2019
R09	CS/RD2 Design Document for Reference Data Application	CS/RD2 DDRDA	3.20	04/01/2023
R10	CRS Member State Design Documentation Package	CD3-CD-CRS-MSP	9.00	17/01/2020
R11	Functional Message Exchange Specification for TARIC3	TARIC3-FMES	4.50	16/05/2016
R12	STI Services Specifications	CD3-ICS2-STI-SSD	N/A	26/09/2022
R13	ICS2 Release 1 Scope document	N/A	1.0.1	05/04/2019
R14	CCN2-CFSS-R1.5 System Functional Specifications	CCN2-CFSS-R1.5	13.00	30/07/2020
R15	CR Use-Case Specifications & Requirements	SDEV-ICS2-CR-UCS	8.60	26/09/2024
R16	ICS2 BPM L4	ICS2-BPM L4 Process Description	2.03	15/12/2023
R17	NCTS Phase 6 - Technical System Specifications for the TED – ICS2-CR Interface	Interface Control Document for NCTS-P6 and ICS2-CR	3.10	24/10/2023

Ref.	Title	Reference	Version	Date
R18	ICS2 CR Physical Data Model	SDEV-ICS2-CR-PDM	5.00	26/09/2024

Table 1: Reference documents

1.6 Applicable Documents

The table below lists the documents with which the current document must be compliant (e.g. FWC, SC, RfA).

Ref.	Title	Reference	Version	Date
A01	Framework Contract	TAXUD/2021/CC/162	N/A	24/06/2021
A02	Specific Contract n° 22	TAXUD/2024/DE/140	N/A	18/06/2024
A03	SOFT-DEV Framework Quality Plan	SDEV-FQP	1.20	17/06/2024

Table 2: Applicable documents

1.7 Abbreviations and Acronyms

For a better understanding of the present document, the following table provides a list of the principal abbreviations and acronyms used.

See also the 'list of acronyms' on TEMPO.

Abbreviation/Acronym	Definition
ACOFE	Member State of Actual Customs Office of First Entry
AEO	Authorised Economic Operator
AEOS	Authorised Economic Operator - Safety and Security
BAS	Business Activity Service
CCN2	Common Communication Network 2
CDCO	Centrally Developed and Centrally Operated
CoA	Confirmation of Arrival
CoD	Confirm on Delivery
CoE	Confirmation of Exception
CR	Common Repository
CRS	Customer Reference Services
CS	Connectivity Service
CS/RD2	Central Services / Reference Data 2
DDRDA	Design Document for Reference Data Application
DG TAXUD	Directorate-General Taxation and Customs Union
DNL	Do Not Load
DS	Data Service

Abbreviation/Acronym	Definition
ECICS2	European Customs Inventory of Chemical Substances 2
ENS	Entry Summary Declaration
EORI	Economic Operator Registration & Identification
FC	Framework Contract
HRCM	High Risk Cargo and Mail
HTI	Harmonized Trader Interface
HTTP	HyperText Transfer Protocol
ICS2	Import Control System 2
IE	Information Exchange
IMS	Involved Member State
IT	Information Technology
MEP	Message Exchange Pattern
MON&BS	Monitoring and Business Statistics
MRN	Master Reference Number
MS	Member State
MSoC	Member State of Control
NA	National Administration
NDA	Nationally Developed Application
NES	National Entry System
NTI	National Trader Interface
OMS	Other Member State
PN	Presentation Notification
RMS	Responsible Member State
SAML	Security Assertion Markup Language
SC	Specific Contract
SfA	Submitted for Acceptance
SfI	Submitted for Information
SfR	Submitted for Review
SOAP	Used to be an acronym for Simple Object Access Protocol
STI	Shared Trader Interface
TARIC3	The Integrated Tariff of the European Union
TDN	Transport Document Number
TED	Transit ENS Data Processing Bridge
TES	Trans-European System
TI	Trader Interface
ULK	Unique Linking Key

Abbreviation/Acronym	Definition
URL	Uniform Resource Locator
UTC	Coordinated Universal Time
UUID	Universally Unique Identifier
WS	Web service
WSDL	Web Services Description Language
XSD	XML Schema Definition

Table 3: Abbreviations and Acronyms

1.8 Definitions

For a better understanding of the present document, the following table provides a list of the main terms used.

See also the 'glossary' on TEMPO.

Term	Definition
Trader Interface	The Trader Interface allows interactions with the Economic Operators in the context of ICS2. The Trader Interface will be implemented to meet the ICS2 requirements. Either as centrally developed and operated IT services/components (Shared Trader Interface) or as a national development (National Trader Interface). Both options will comply with the same requirements and respect the same specifications called Harmonised Trader Interface.
CCN2 Partner	A Partner is an entity participating in the CCN2 Platform either by offering services to the CCN2 Platform or by consuming services offered by the CCN2 Platform. For the ICS2, different Partners are National Administrations (NA) in Member States (MS) and internal EC Directorates such as DG TAXUD.
CCN2 Endpoint	A CCN2 endpoint forms the service implementation abstraction provided by CCN2. This endpoint is used by the service consumer to send requests to. Each service request is performed via the same CCN2 endpoint URL, no matter to which partner endpoint (concrete service implementation) it should be routed to.
Partner Endpoint	A Partner endpoint represents the concrete service implementation and has a real physical address only known and accessible by the CCN2 platform. The CCN2 platform inspects the requests to the CCN2 endpoints and routes them to the appropriate Partner endpoint.

Table 4: Definitions

2 OVERVIEW

The figure below shows the system and user interfaces offered by the different applications composing ICS2 over CCN2:

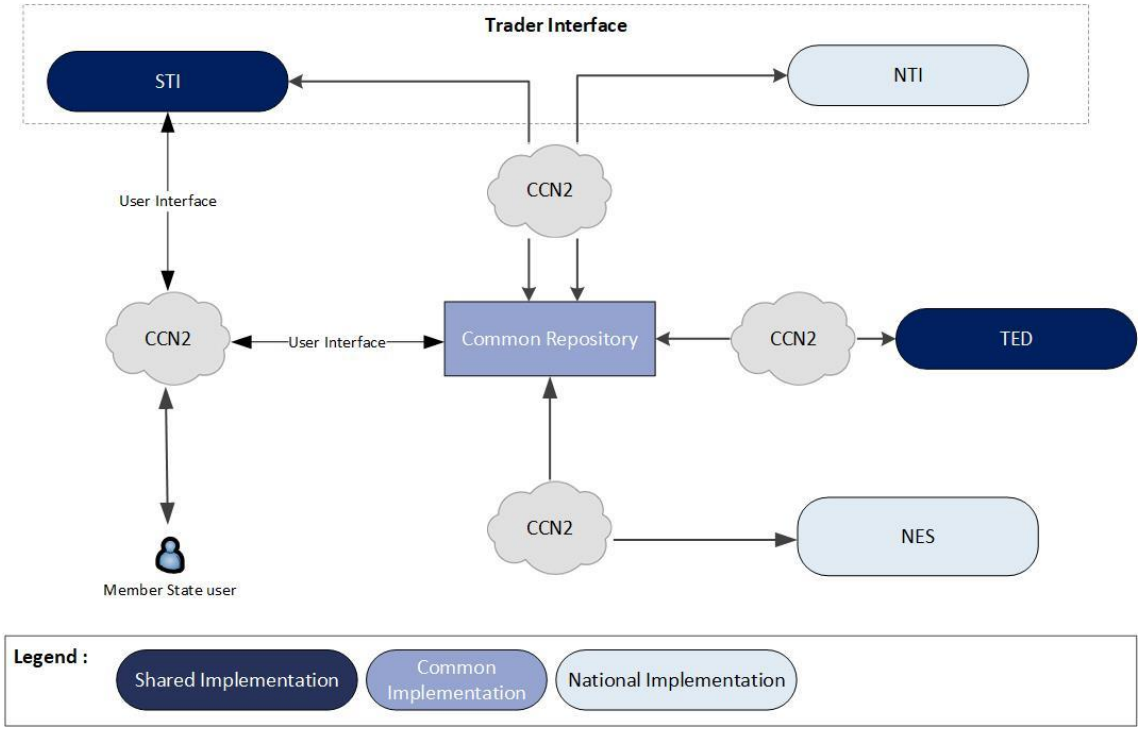

Figure 1: ICS2 overview

In the context of the ICS2 program, an Economic Operator must be able to interact with the national entry systems (NES) which are responsible among other actions for the risk analysis, the controls result and the lodging of the PN; but this interaction occurs only indirectly through an ICS2 trader interface. Such a trader interface in turn interacts only directly with the central ICS2 common repository which is responsible for ENS lifecycle management (i.e. prepare ENS for risk analysis) as well as orchestrating the risk management process with the relevant NES. Interaction between the ICS2 common repository and the ICS2 TI, NES and TED systems goes over the customs common network (CCN2).

The Trans-European helpdesks interact with the TI and the CR via a user interface.

The CR user interface also allows national and central risk analysts to configure the dynamic rules for ENS data quality and data consistency and to query the ENS data.

The ICS2 Member State technical specifications package is composed of several documents:

- **Design Document for National Application** (this document)

  The DDNA gives an overview of the system and user interfaces offered by the different applications of ICS2 over CCN2. It defines how to connect to the interfaces over CCN2. Its main purpose is to support the implementation of National Applications involved in the ICS2 system;

- **Design blueprint**

  The document [R01] describes the design blueprint of the ICS2 system, focusing on the integration of the components located in the different domains (external, shared, common and national);

- **Service Specifications**

  Services specifications [R02], [R12] and [R17] are provided for each service of the CR, TI and TED respectively. One document is provided per service defining operations, pre-requisites and outcomes of the service consumption; It should be noted that as of CFSS v2.04 [R04], ICS2 will support multiple message and service versions. The XSD namespace specifies the message version in the CFSS guidelines for each IE message.

- **Web Service Definitions and Canonical Schema**

The WSDL and XSD files [R03] provide the technical specifications of the service interfaces of the CR and TI respectively. There is one WSDL per service. As per CCN2 Integration Manual [R05], each WSDL is composed of an abstract part, a CCN2 endpoint concrete part, and a partner concrete part as required by CCN2.

3 ICS2 SERVICES

The ICS2 business processes are defined in the ICS2 common functional specifications [R04] and will not be repeated in this document. Instead, a different viewpoint is given in this chapter focusing on the system operations executed by the services implementing the business processes and the orchestration between them.

The orchestration is depicted with the help of high-level sequence diagrams. For each exchange of information, the service used is mentioned and the relevant operation is provided in parentheses, i.e. “service_name (operation)”.

The sequence diagrams only depict exchange of messages over CCN2 between CR and TI, NES or TED. Interactions with traders are not depicted.

The sections of this chapter have been organised following the same grouping of processes as the ones defined in [R16]:

- Register ENS filing;
- Prepare ENS for risk analysis;
- Relate ENS filings;
- SSA MS Involvement list;
- SSA Enrichment;
- Late enrichment response;
- Perform risk analysis;
- Send referral;
- Process arrival of the means of transport;
- Process presentation of goods;
- Process control decision and results;
- Handle AEO notification;
- Amend ENS filing;
- Invalidate filing;
- E-Screening by OMS;
- Update risk analysis result;
- Update e-Screening assessment;
- Revoke presentation of goods;
- Consult ENS;
- Query ENS.

The approach to exception handling common to all business processes is explained in section 3.2.

3.1 Services orchestration

3.1.1 Register ENS filing

The diagram below shows the sequence of the service operations performed when TI or TED submits an ENS filing to the CR.

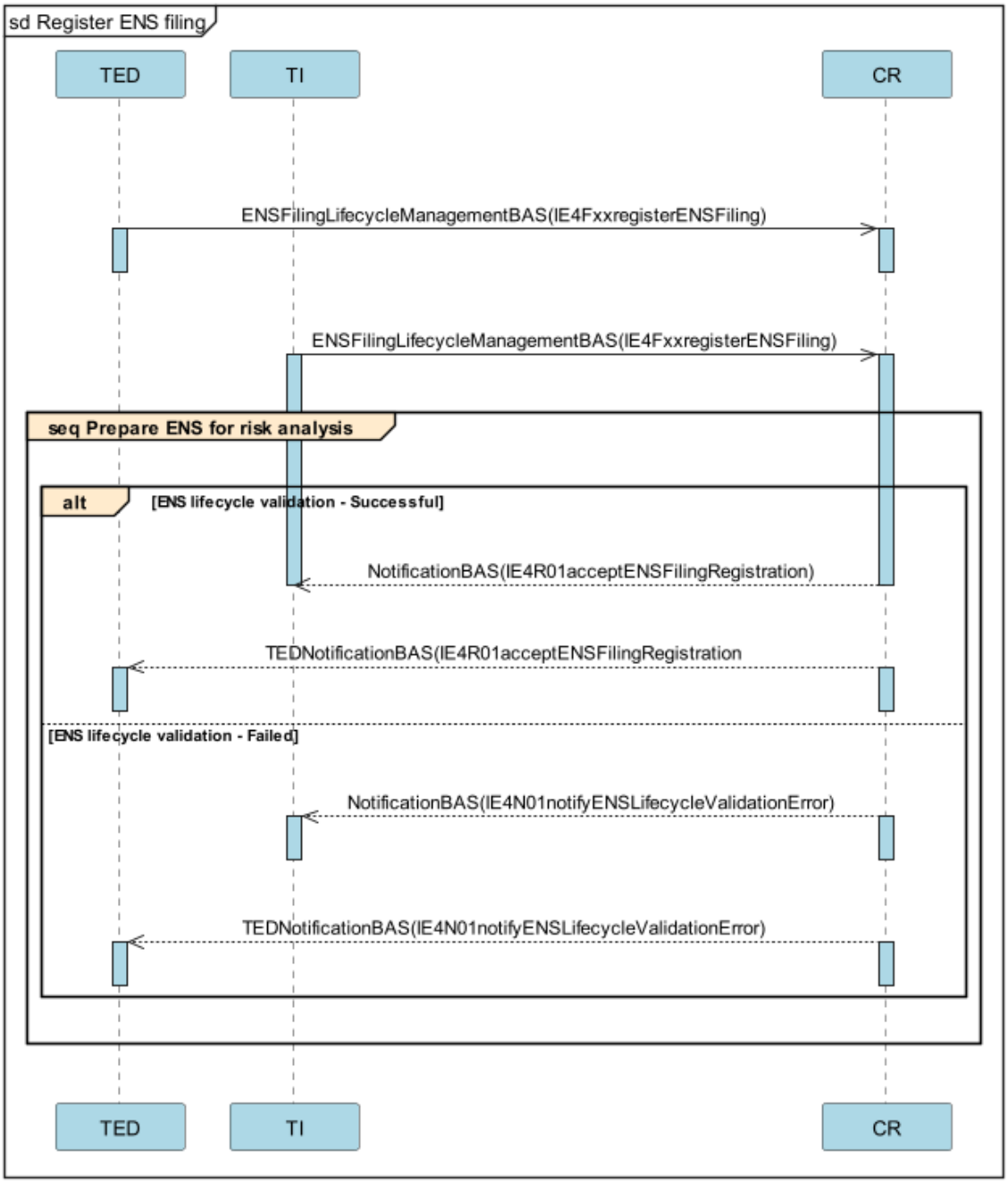

Figure 2: 'Register ENS filing' time-sequence diagram

The TI or TED submits the registered ENS filing along with the assigned MRN to the CR[2], for further validation. For the case of TED 4Fxx takes the value F34, F50, F51. CR's validation results (lifecycle validation success/failure) are communicated back to TI or TED to inform accordingly the person filing (and the carrier only in the case of ENS acceptance).

[2] In the operation name depicted in the sequence diagram, 'xx' stands for the ID of the filing type.

3.1.2 Prepare ENS for risk analysis

The diagram below shows the sequence of the services operations performed when CR receives an ENS filing by the TI or TED, where the filing is validated again to be rejected or finally accepted and prepared for risk analysis.

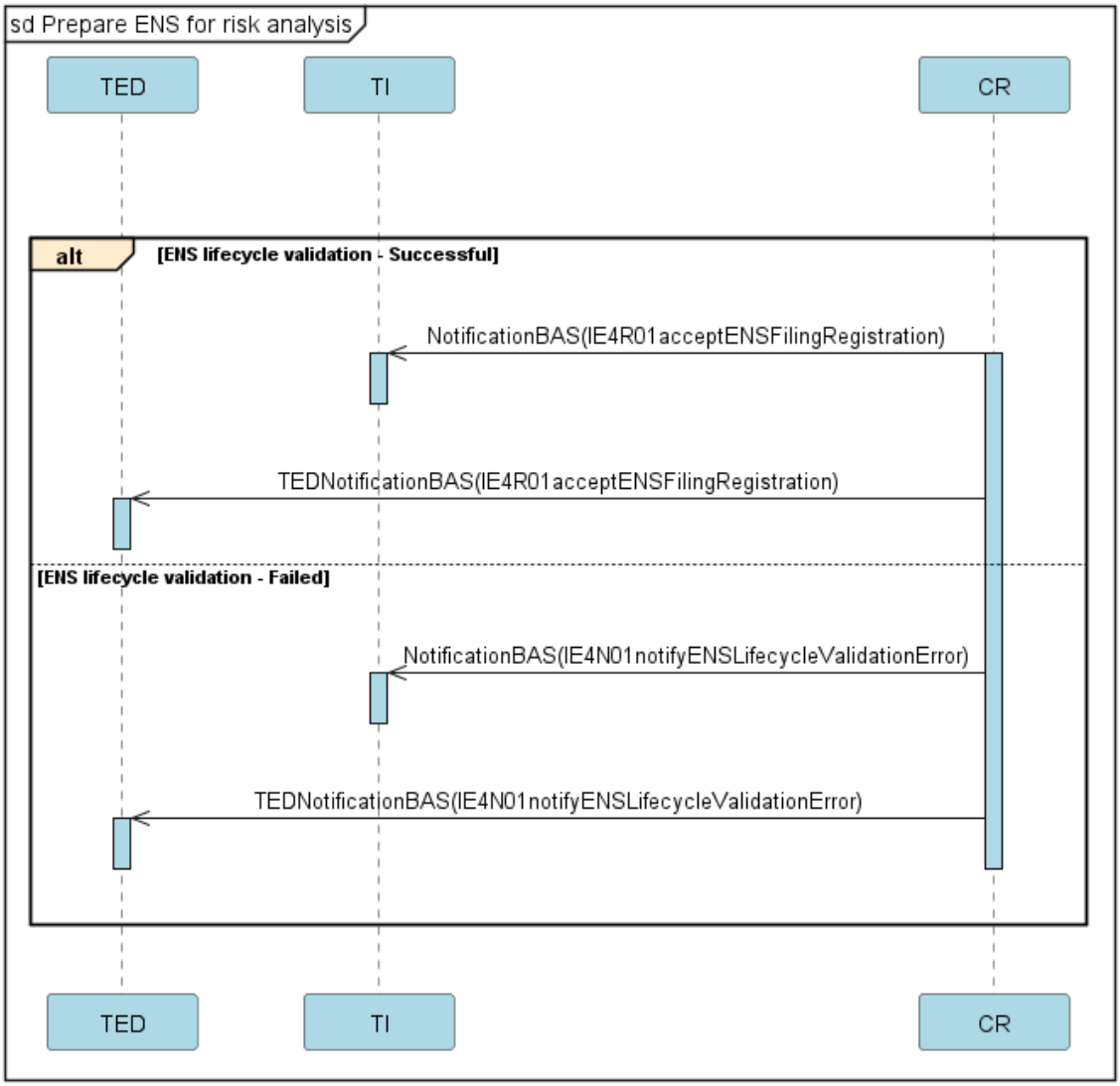

Figure 3: 'Prepare ENS for risk analysis' time-sequence diagram

The CR finally accepts or rejects the ENS filing and the ENS filing acceptance or rejection is communicated to the TI or TED, in case of final ENS filing acceptance, it is prepared for air-preloading or full risk analysis.

3.1.3 Relate ENS filings

The diagram below shows the sequence of the services operations performed when CR detects that all particulars are not present.

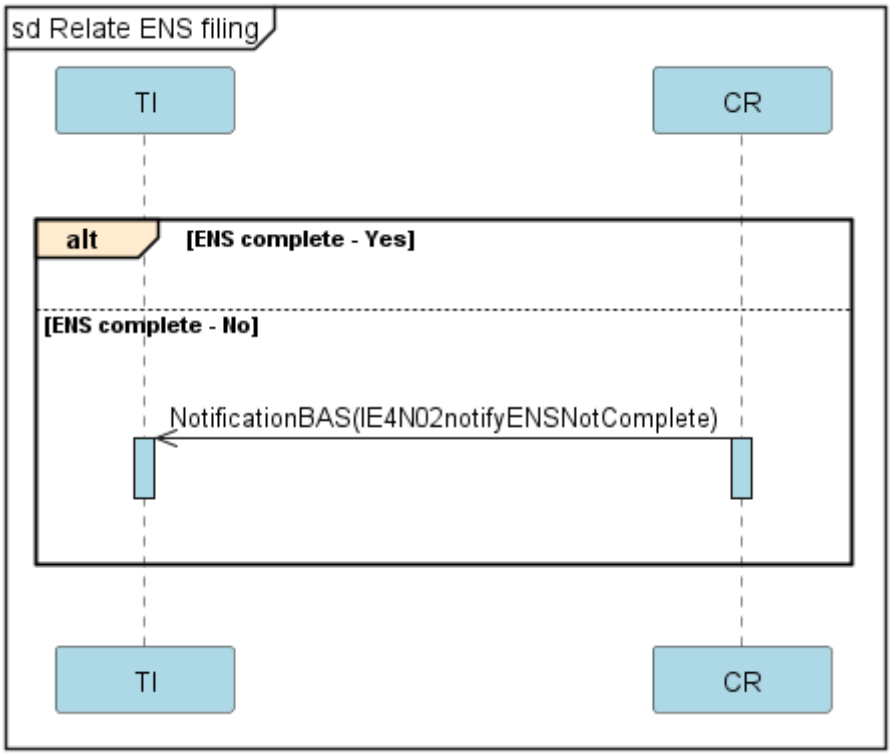

Figure 4: 'Relate ENS filings' time-sequence diagram

The CR attempts to relate ENS filings that could potentially constitute an ENS using other data elements than the ULK. If a complete ENS cannot be instantiated, CR notifies TI that ENS is not complete. The master level filing with all so far linked house level filings (or the complete ENS) is made available to the risk analysis.

3.1.4 SSA MS Involvement list

The CR System delivers ICS2 SSA XML messages into a JMS queue where the SSA produces them in a kafka topic and vice-versa.

The diagram below shows the sequence of the CR – SSA communication during the MS Involvement flow, where the CR sends a request to SSA to assess which additional MS should be involved in a given PLACI/ENS risk assessment, and receives a response with an updated IMS/RMS list.

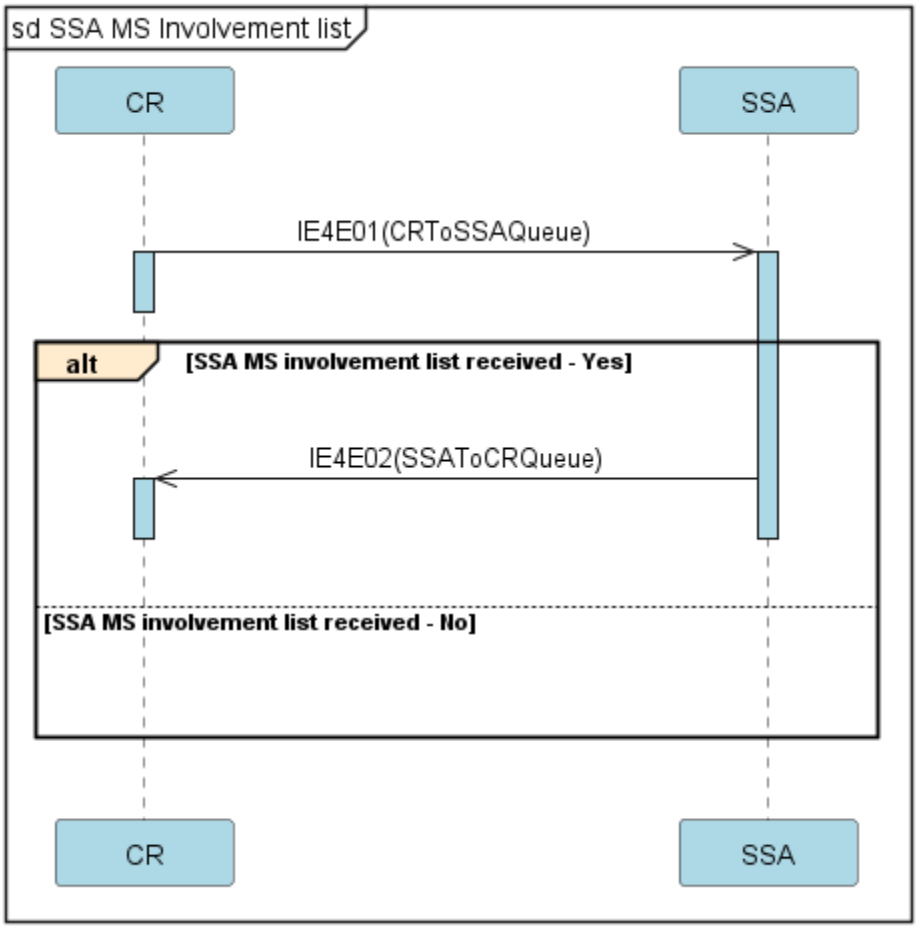

Figure 5: 'SSA MS Involvement list' time-sequence diagram

3.1.5 SSA Enrichment

The CR System delivers ICS2 SSA XML messages into a JMS queue where the SSA produces them in a kafka topic and vice-versa.

The diagram below shows the sequence of the CR – SSA communication during the SSA Enrichment flow, where the CR sends a request on PLACI/ENS to be enriched, and receives a response with an enriched information related to these entities.

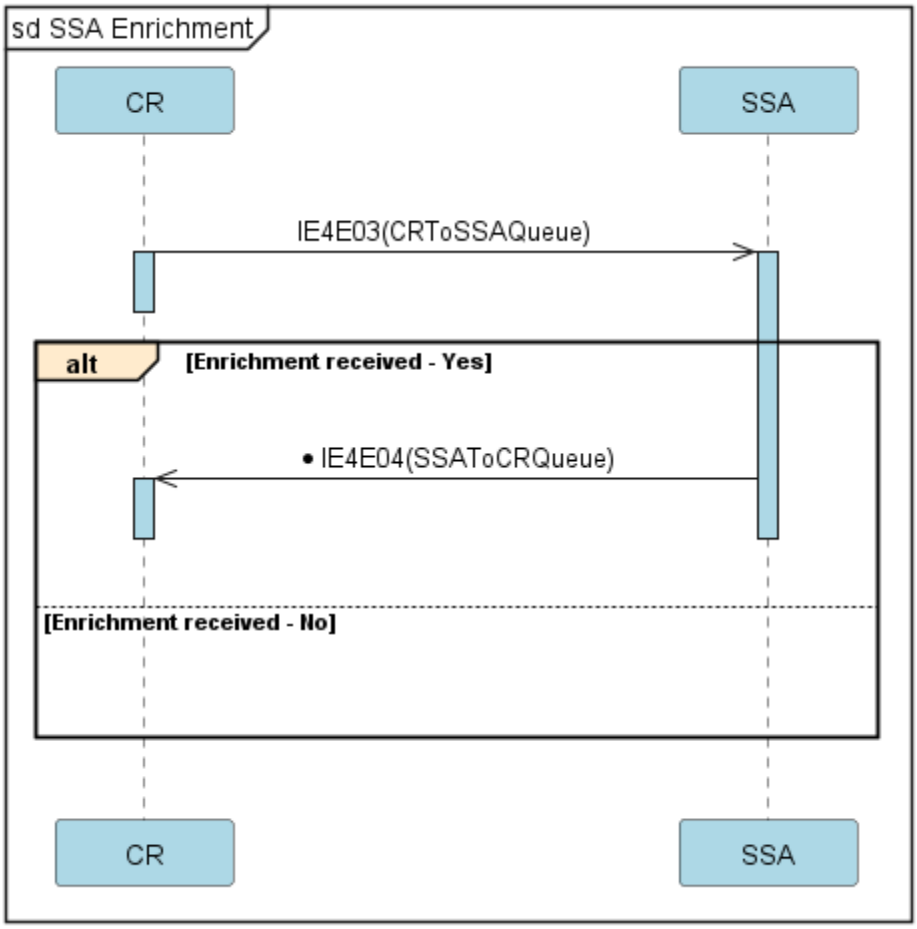

Figure 6: 'SSA Enrichment' time-sequence diagram

3.1.6 Late enrichment response

The diagram below shows the sequence of the services and operations performed, when late enrichment responses are ready to be risk analysed, for a decision on risk to be taken in terms of safety and security.

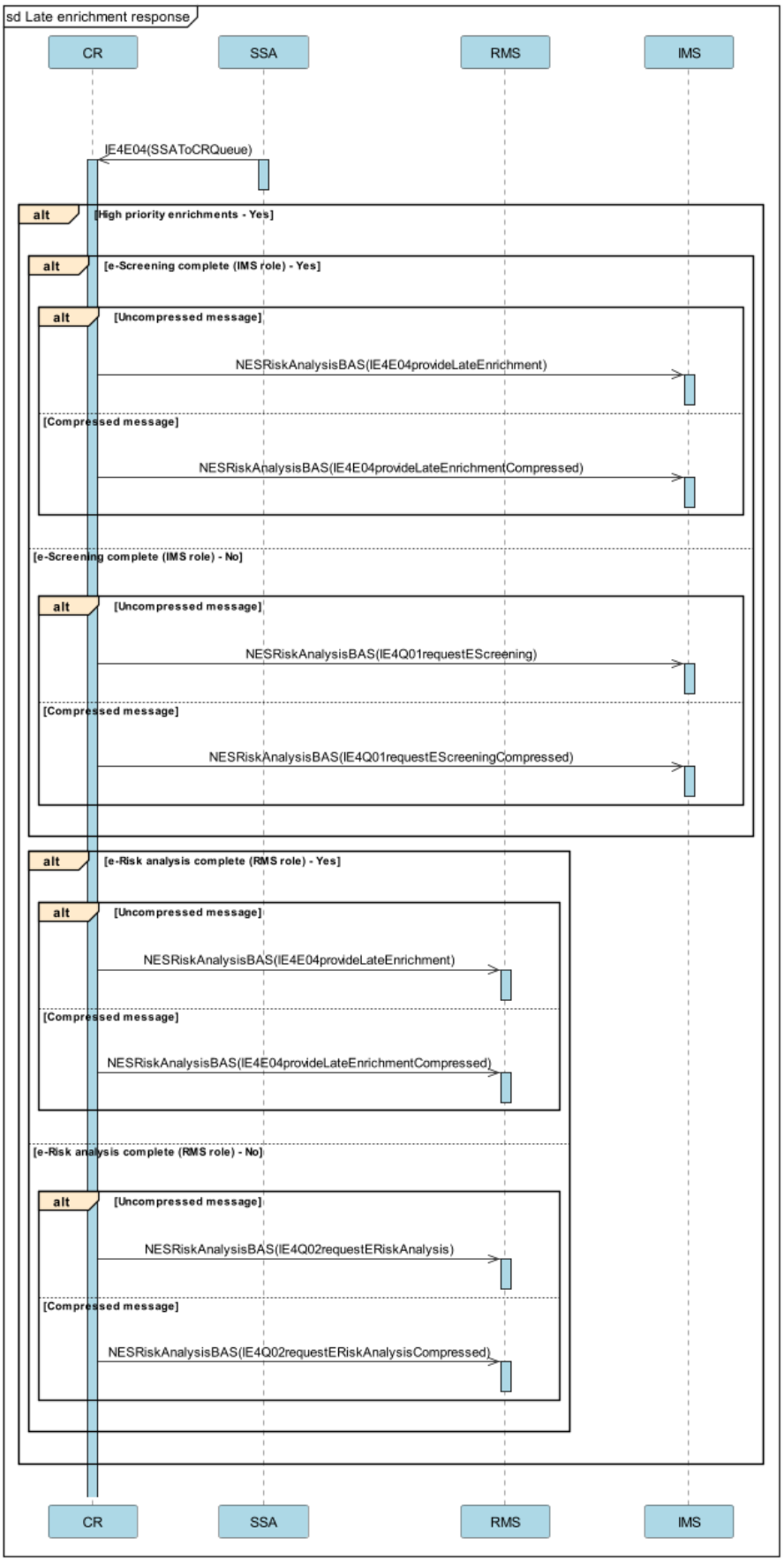

Figure 7: 'Late enrichment response' time-sequence diagram

The Responsible Member State and the Member States to be involved in the late enrichment process are identified by the CR. The related enhanced Risk analysis Request message or the late enrichment response message, depending on if there is an ongoing Risk Analysis, are communicated to all the relevant member states for e-Risk analysis and/or e-Screening.

The Responsible Member State and the Involved Member States take into account the late enrichment and they may trigger the Update Risk Analysis flow, by sending an updated e-Risk Analysis and/or e-Screening result.

3.1.7 Perform risk analysis

The below diagram shows the sequence of the services operations performed once an ENS is ready to be risk analysed for a decision on risk to be taken in terms of safety and security.

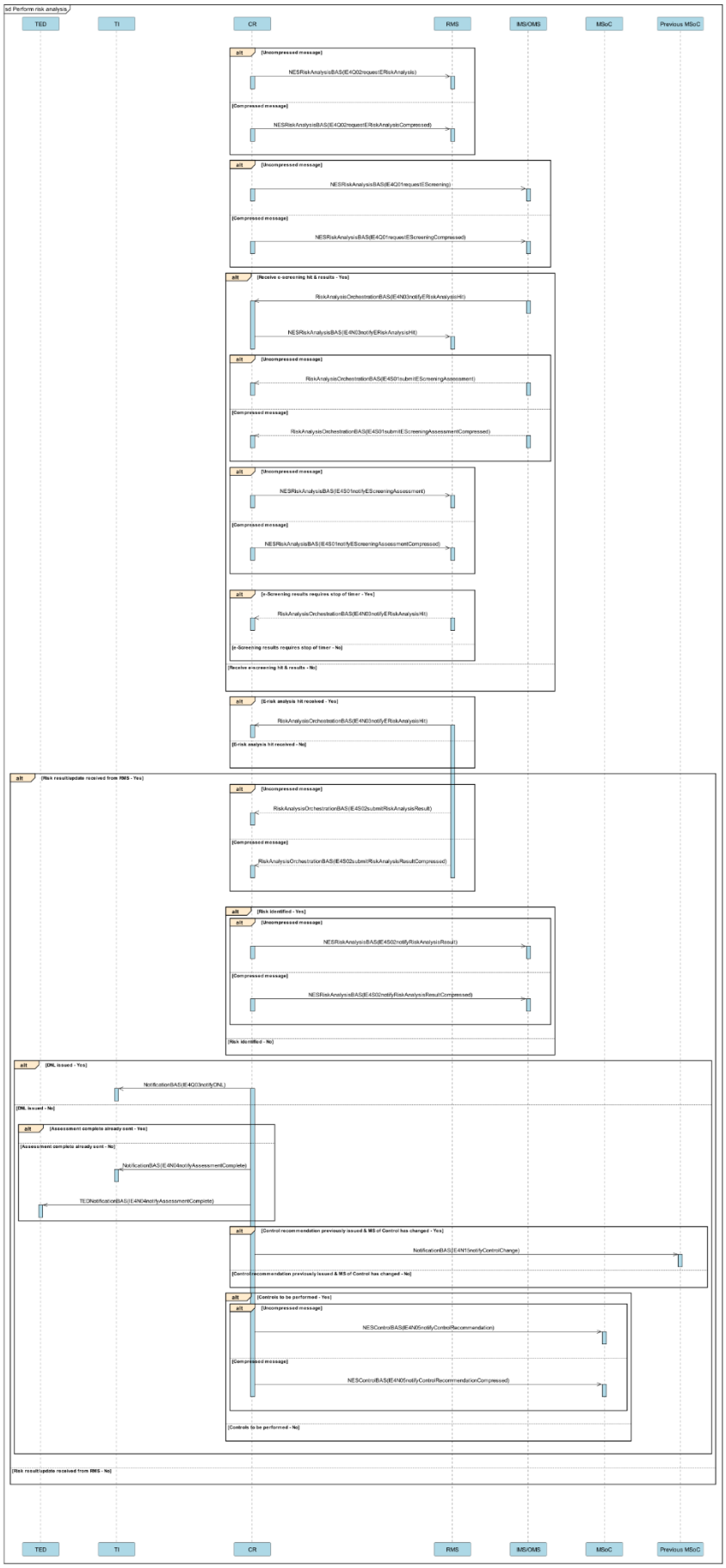

Figure 8: 'Perform risk analysis' time-sequence diagram

The Member States to be involved in the Risk analysis process are identified by the CR, and the registered ENS filing or ENS is communicated to all the relevant Member States for e-Screening. Additional Involved Member State(s) may be identified for the e-Screening process in case they had submitted specific OMS parameters, which matched the currently processed ENS.

The Responsible Member State takes into account the final results of the e-Screening process performed by the IMSs. Results of the e-Screening from involved Member State(s) are collected by the CR, allocated and made available to the Responsible Member State before that Member State completes the risk analysis process. In addition, the IMS can communicate an e-Screening Hit notification to the RMS, via the CR, in order for the RMS to proceed with the issuing of the risk analysis result within a shorter period or not. If a hit notification is communicated by the IMS, only then the RMS needs to respect the e-Screening hit timer before providing e-risk analysis results to the CR. Except in case a DNL is identified.

After completing the risk analysis the RMS assigns a risk analysis result code on whether the goods will be subject to prohibition to be loaded on the means of transport (DNL) or should be subject to controls upon their arrival or presentation. In case of risk identified, the risk analysis result is communicated to all IMS(s) which had sent an e-Screening outcome on the ENS or ENS filing via the message IE4S02. In case of DNL, the risk analysis result is communicated to all MSs. TI is informed once that the risk assessment is complete and risk analysis result is communicated to the respective IMS(s) and the Control recommendations are communicated to the assigned MS of control. The control recommendation notification contains risk analysis results. If MS of control is changed, then the previous MS of control is notified that it is no longer in the role of MS of control in the respective case.

In case there are no risk analysis results received from the RMS, the flow continues, and if it is needed, an Assessment complete message will be forwarded from CR to TI or TED.

In case there is an Updated Risk Analysis result submitted to CR by the RMS, then the CR system continues the Risk Analysis process flow (i.e. Sends Control Recommendations or DNL).

It should be noted that the total number of hits for this service will be highly resource intensive which may imply a significant increase of files to be handled manually by the RMS once other, i.e. IMS, will contribute with its findings following the e-Screening process. In order to conduct the task properly for any MS in its role as RMS it is crucial for the IMS to provide the RMS with relevant and precise information to minimize the need for further recommunication of the RMS with the IMS.

3.1.8 Send referral

The diagram below shows the sequence of the services operations performed when RMS needs additional information to take a final decision on risk analysis results.

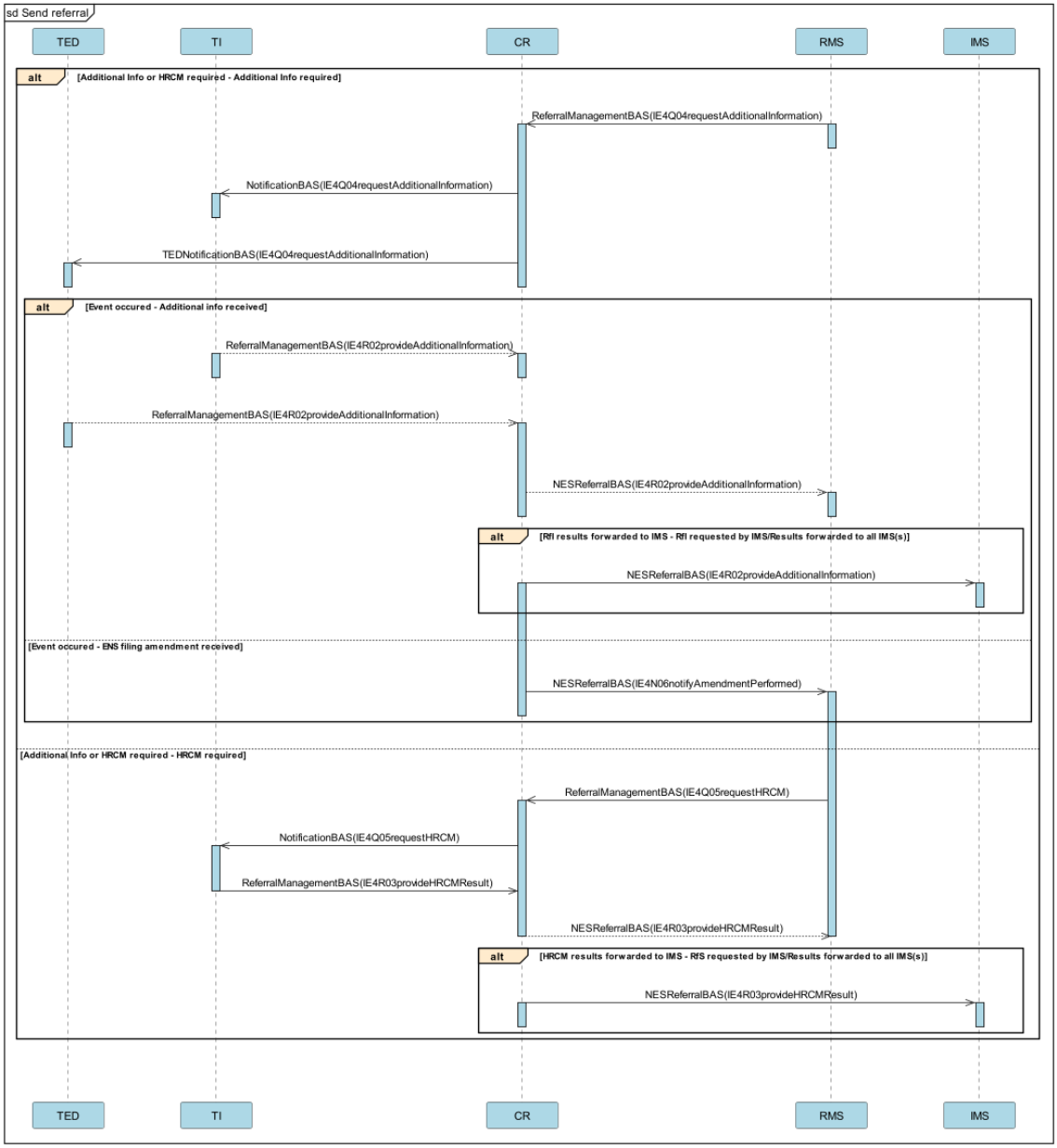

Figure 9: 'Send referral' time-sequence diagram

During the risk analysis process, the RMS can apply, when necessary, appropriate risk mitigation measures to ensure a proper risk analysis outcome. These measures can be a request for information or a request for HRCM screening in the air cargo pre-loading phase, which is forwarded through CR to TI and consequently to the Economic Operator. For TED only a request for information can be forwarded. The referral result is sent to the RMS. In case an IMS requested the referral, the referral results are also forwarded to it.

3.1.9 Process arrival of the means of transport

The diagram below shows the sequence of the services operations performed when an Arrival notification is received.

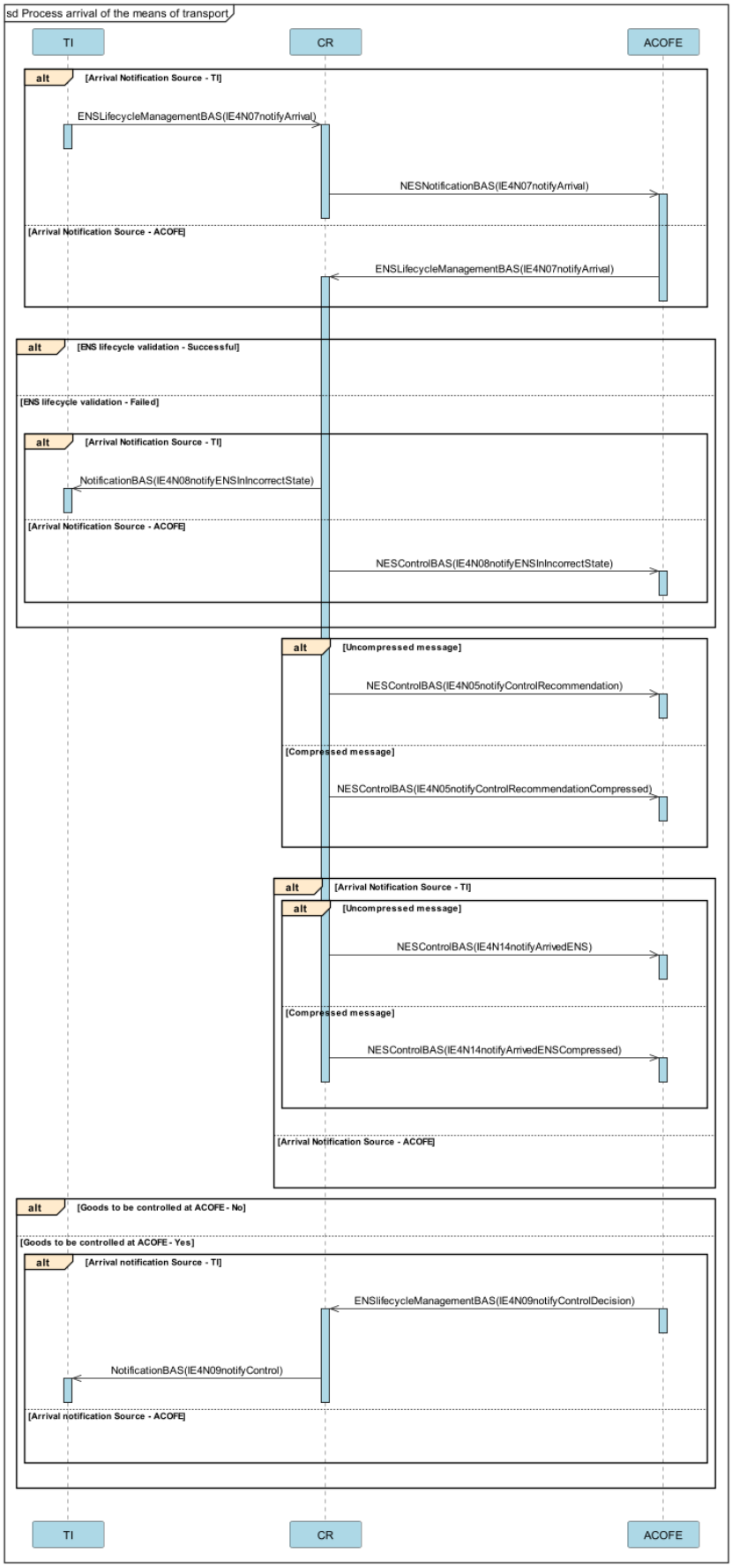

Figure 10: 'Arrival of the means of transport' time-sequence diagram

An Arrival Notification is received by CR either from the TI, in which case CR notifies the Actual Customs Office of First Entry (ACOFE), or from the NES of the ACOFE. The relevant ENS(s) are identified and if the ENS(s) are in incorrect state then TI ("Person notifying the Arrival", "Person filing the ENS" and "Notify Party") or the ACOFE are informed. Then the ENS data and control recommendations are communicated to the ACOFE. In case the Arrival notification was lodged via the Trader interface, a list of all ENS(s) that are covered by this Arrival notification is communicated to the ACOFE. If the ACOFE finally decides to control certain goods, then the control decision is communicated to the TI ("Person notifying the Arrival", "Person filing the ENS" and "Notify Party"), if the Arrival notification was submitted via TI.

3.1.10 Process presentation of goods

The diagram below shows the sequence of the services operations performed when a Presentation notification is received.

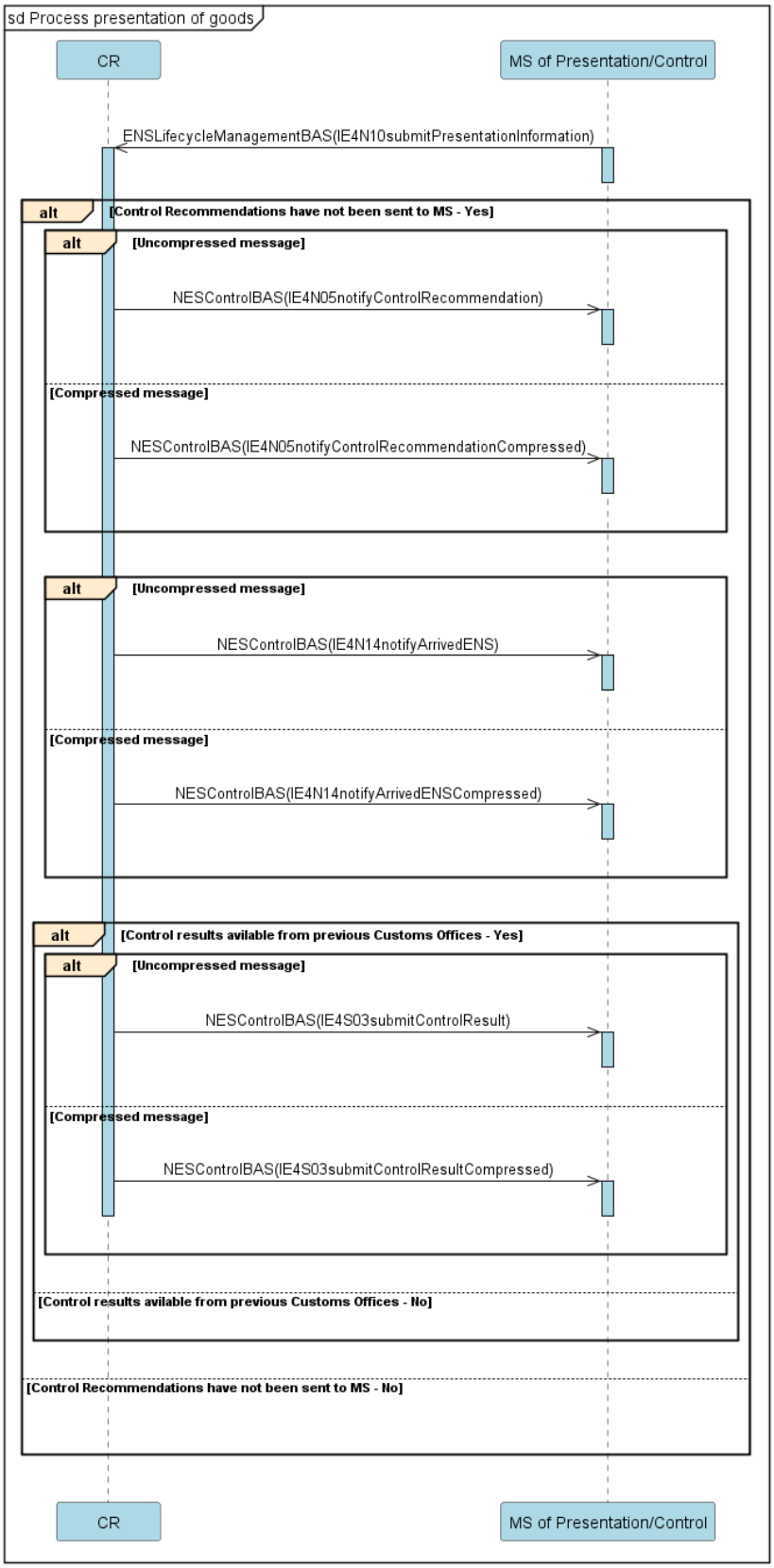

Figure 11: 'Process presentation of goods' time-sequence diagram

A presentation notification is submitted from the Member State of Presentation/Control (at final destination) to the Common Repository. The relevant ENS(s) are identified and the respective ENS(s) state, data and control recommendations are communicated to the Member State of

Presentation/Control (at final destination). In case there are control results available from previous Customs Offices of Presentation, they are communicated to the Member State of Presentation/Control (at final destination) as well. If the Member State issuing the presentation notification message has requested ENS data (flag is raised), then a complete message including the ENS data, risk analysis results and control recommendations will be replied. This will be also the case when the MS of presentation is not RMS, not IMS, not MS of Control. That MS will also then receive the whole ENS. In such case, also an e-screening is recommended. An additional check is added in the CR system, where the Customs Office of Presentation reference number is referring (first two letters) to a MS included in code list CL717. In case the MS is not included, then an error message will be returned to the Member State of Presentation/Control (at final destination).

3.1.11 Process control decision and results

The diagram below shows the sequence of the services operations performed when controls are performed to the goods presented.

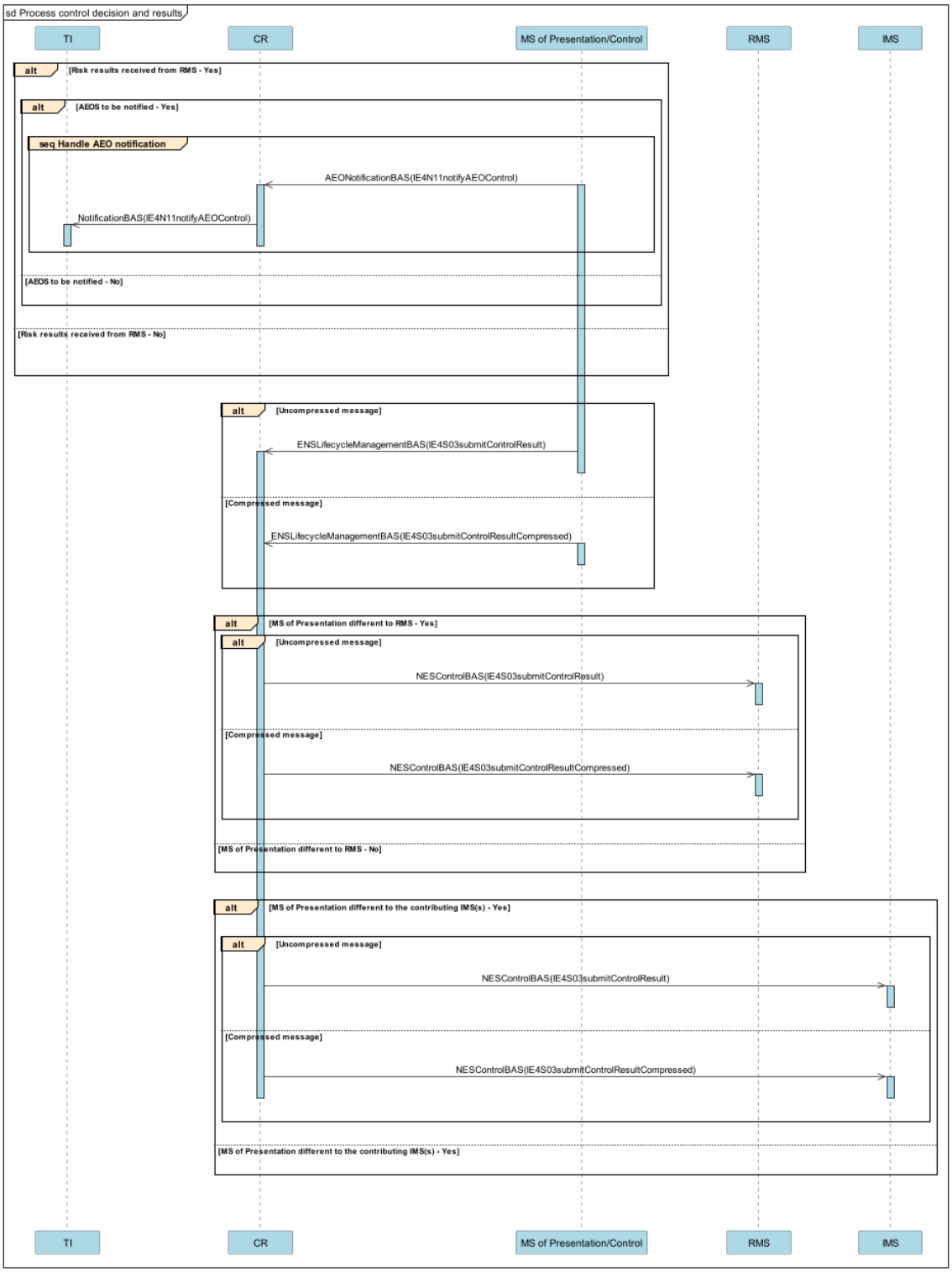

Figure 12: 'Process control decision and results' time-sequence diagram

ENS(s) data and control recommendations are made available to the Member State of Presentation/Control (at final destination) which performs the controls to the presented goods and submits the control results to the Common Repository. The CR stores the results and forwards them to the RMS and IMS(s) which contributed to the Risk Analysis in case they are different from the Member State of Presentation/Control (at final destination).

3.1.12 Handle AEO notification

The diagram below shows the sequence of the services operations performed when Control recommendations are received by the Member state of Presentation/Control (at final destination).

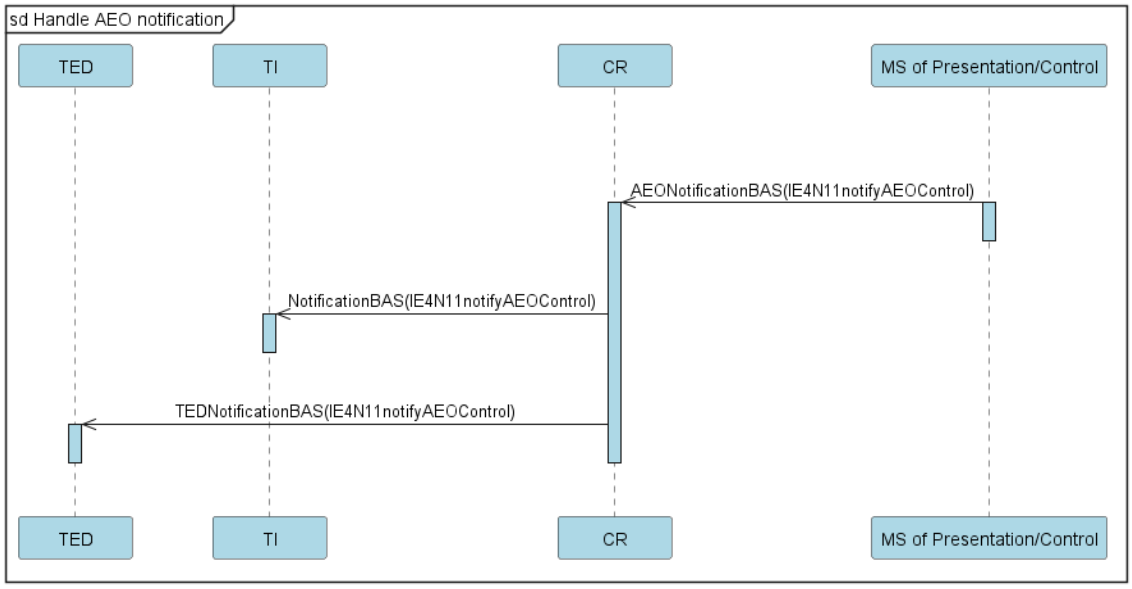

Figure 13: 'Handle AEO notification' time-sequence diagram

The MS of Presentation/Control decides to send an AEO control notification. The Control notification is received by the Common Repository, which checks whether the Person filing and the Carrier (where applicable) hold an AEOS authorisation and should be informed of the control by an advance control notification. Where checks are completed with positive result, the notification is sent to TI or TED.

3.1.13 Amend ENS filing

The diagram below shows the sequence of the services operations performed when an ENS filing amendment is received.

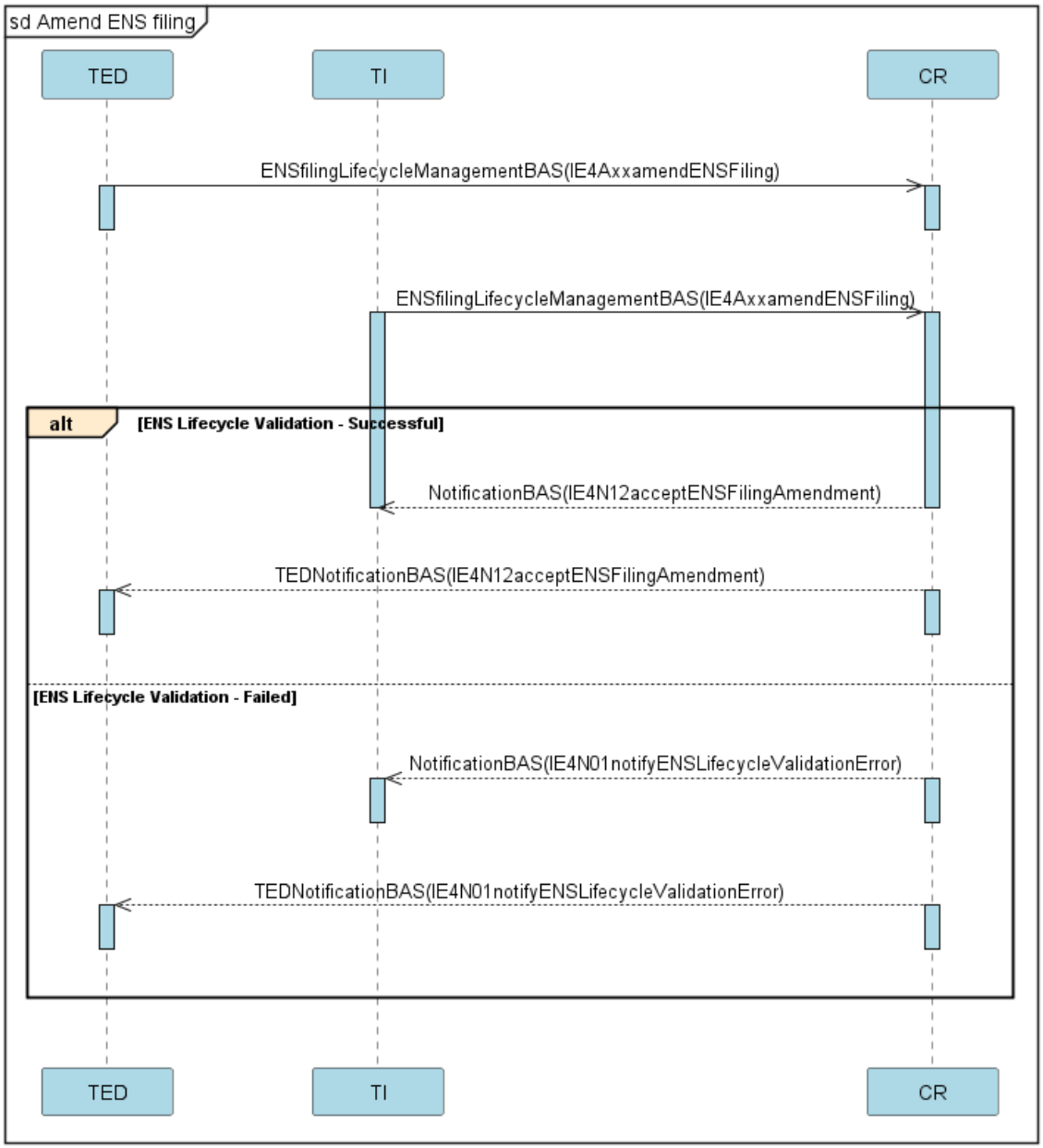

Figure 14: 'Amend ENS filing' time-sequence diagram

An ENS filing amendment is received by TI or TED and forwarded to CR which checks if the particular ENS filing can be amended[3]. The filings and their corresponding amendments should have the same namespace version. If the amendment is sent in a different namespace version from the corresponding filing it will be rejected with IE4N99. The TI or TED is informed accordingly if the amendment is performed or rejected.

3.1.14 Invalidate filing

The diagram below shows the sequence of the services operations performed when an ENS filing invalidation request is received by the system.

[3] In the operation name depicted in the sequence diagram, 'xx' stands for the ID of the filing type.

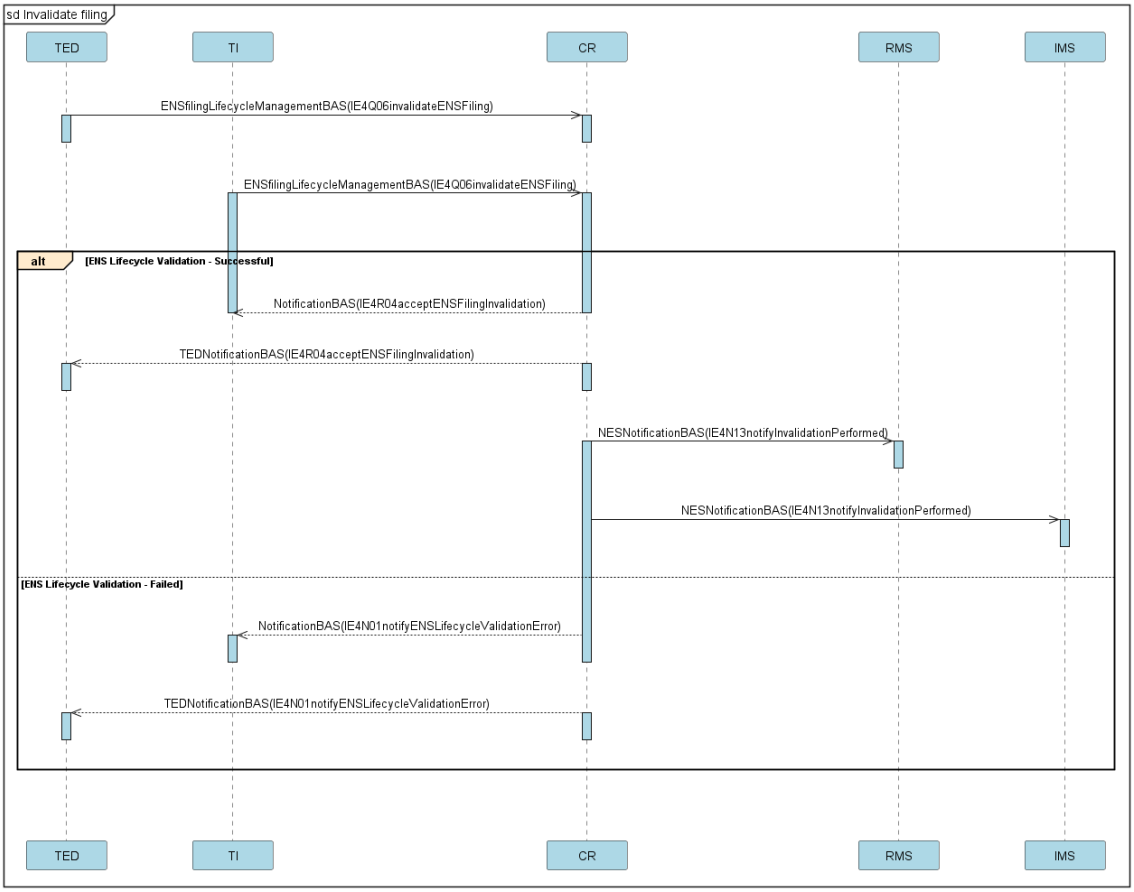

Figure 15: 'Invalidate filing' time-sequence diagram

An invalidation ENS filing request is received by TI or TED and forwarded to CR which checks if the particular ENS filing can be invalidated. The TI or TED is informed of the outcome. If the invalidation process is performed, the RMS and IMSs are informed accordingly.

3.1.15 E-Screening by OMS

The diagram below shows the sequence of the services operations performed when a MS does not act as an RMS or IMS (other MS), but holds nationally a specific relevant risk information and can contribute to the risk analysis process.

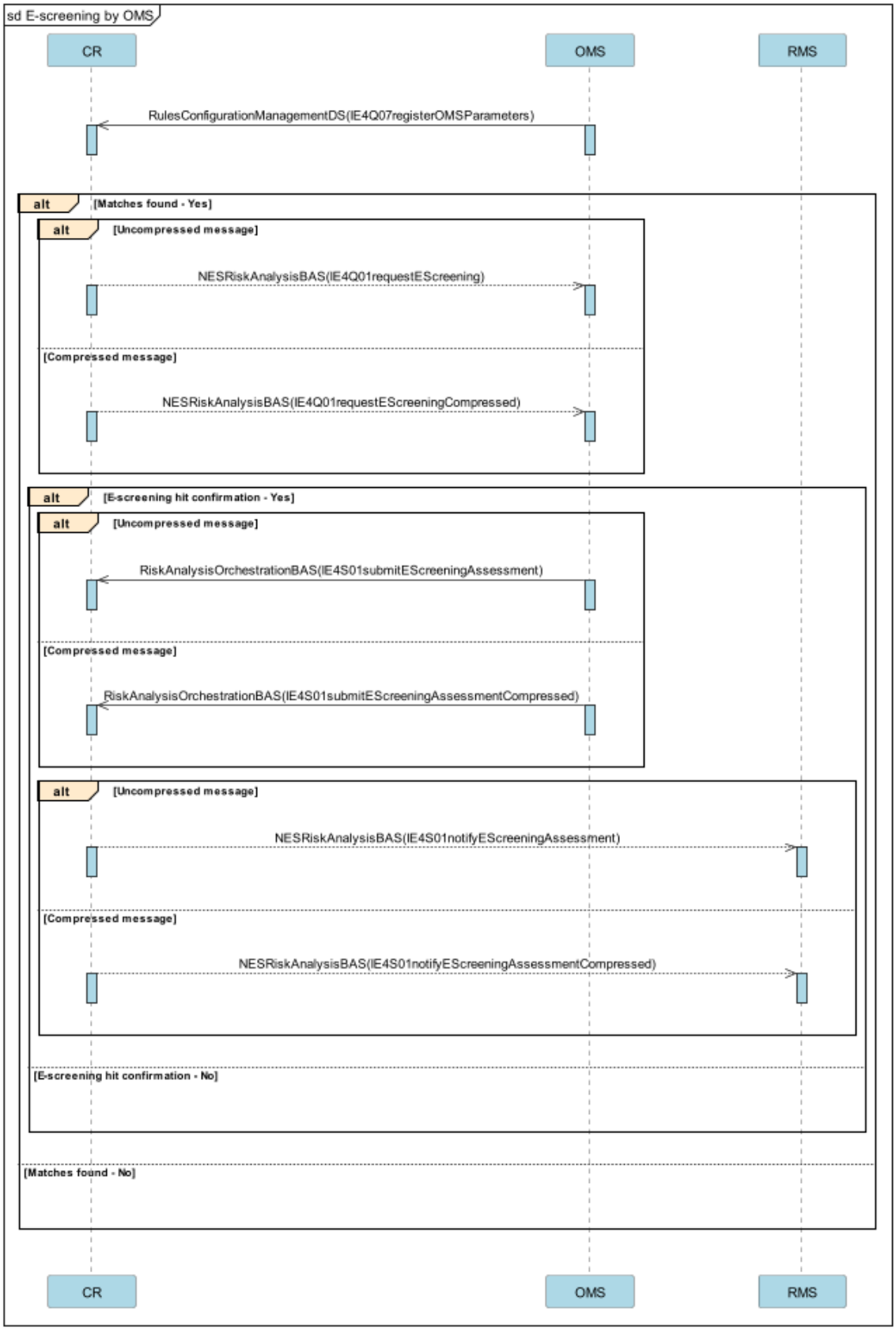

Figure 16: 'E-Screening by OMS' time-sequence diagram

A Member State sends parameters to the CR concerning specific cases when the Member State (OMS) requests to become involved in e-Screening even if normally this Member State would not be an IMS according to the rules on determination of the roles of the MSs in the risk analysis

process. The CR checks whether any ENS or ENS filing matches the stored parameters and it is in an applicable state for the OMS to be involved in the risk analysis process. If relevant ENS (filings) is/are found, e-Screening is requested by the OMS on the findings. The assessment outcome from the e-Screening hit of the OMS is communicated to the CR which forwards this assessment to the RMS.

3.1.16 Update risk analysis result

The diagram below shows the sequence of the services operations performed when an already-set risk analysis result is updated.

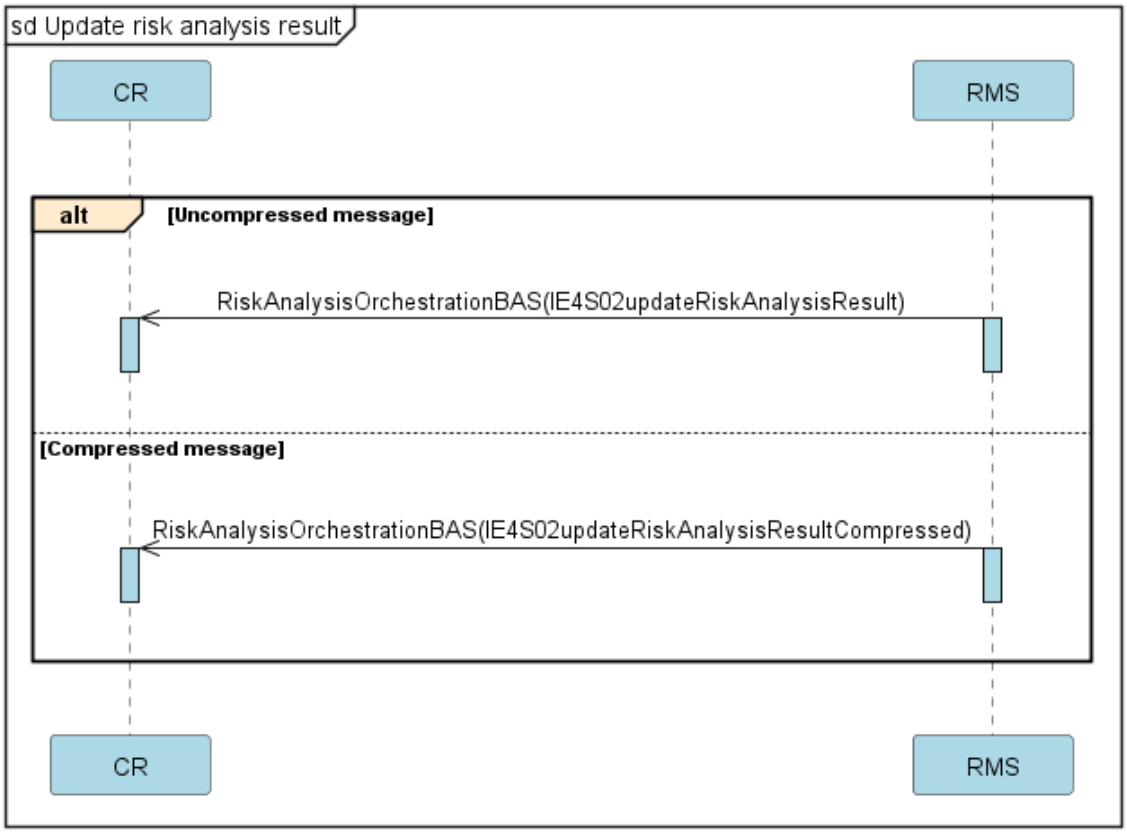

Figure 17: 'Update risk analysis result' time-sequence diagram

When it is decided by the RMS that e-risk analysis is to be repeated or the risk analysis result must be updated, the RMS performs the new risk assessment and communicates the updated e-risk analysis result to the CR.

When CR System receives the updated Risk Analysis result, it continues the Risk Analysis process flow. i.e. In case the updated risk analysis result contains DNL, CR system informs the TI system that a DNL has been issued via a DNL message.

3.1.17 Update e-Screening assessment

The diagram below shows the sequence of the services operations performed when an e-Screening assessment is updated or assessed e-Screening hit is available after the expiration of the e-Screening analysis timer.

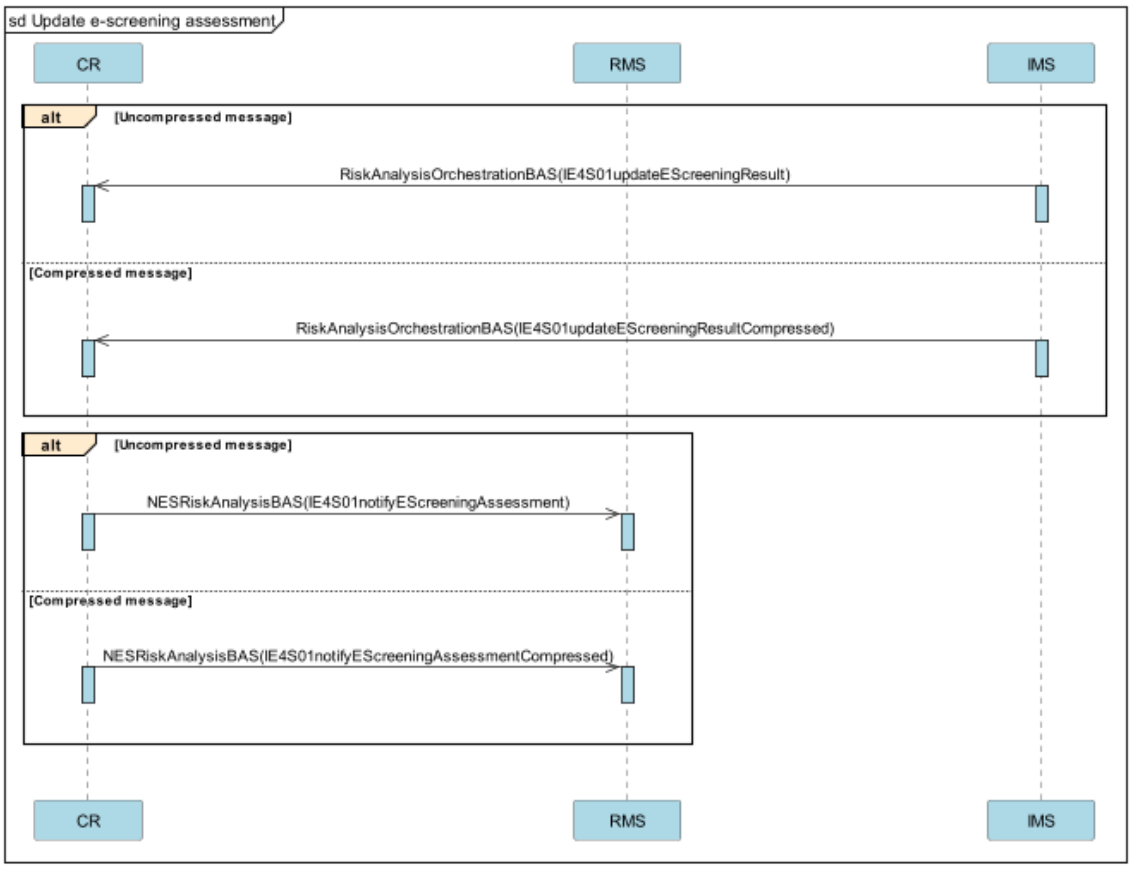

Figure 18: 'Update e-Screening assessment' time-sequence diagram

E-Screening hit assessment is sent by IMS to the CR. CR communicates the received hit assessment to the RMS in order to be considered in terms of risk analysis.

3.1.18 Revoke presentation of goods

The diagram below shows the sequence of the services operations performed when goods have been erroneously presented at a wrong customs office and it is necessary to revoke this presentation.

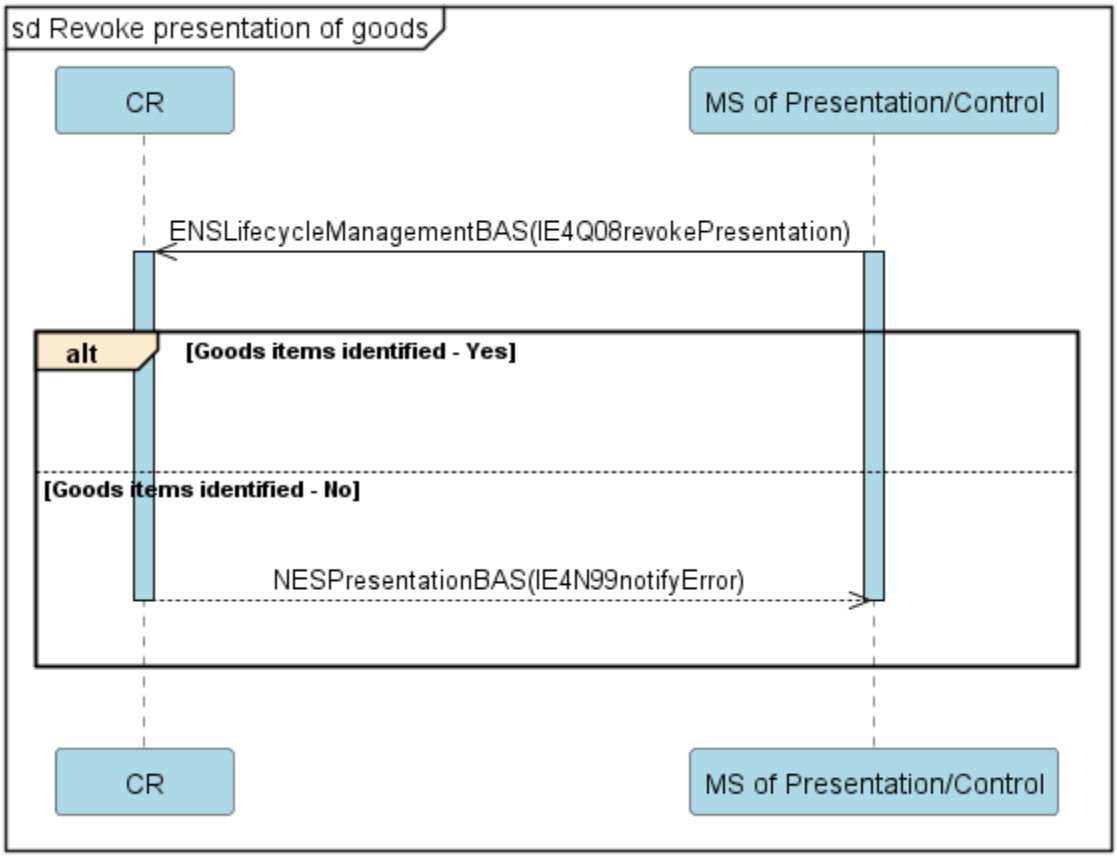

Figure 19: 'Revoke presentation of goods' time-sequence diagram

The ENS(s) identifiers or specific goods item(s) for which the presentation has to be revoked are submitted from the Member State of Presentation/Control (at final destination) to CR. CR identifies the relevant ENS(s) or specific goods item(s) and, if applicable, will rollback ENS(s) state to the previous one. If the ENS(s) are not in a relevant state, an error notification will be sent to the Member State of Presentation/Control (at final destination).

3.1.19 Consult ENS

The diagram below shows the sequence of the services operations performed when a party is requesting for information about a specific ENS filing and/or an ENS that this filing concern.

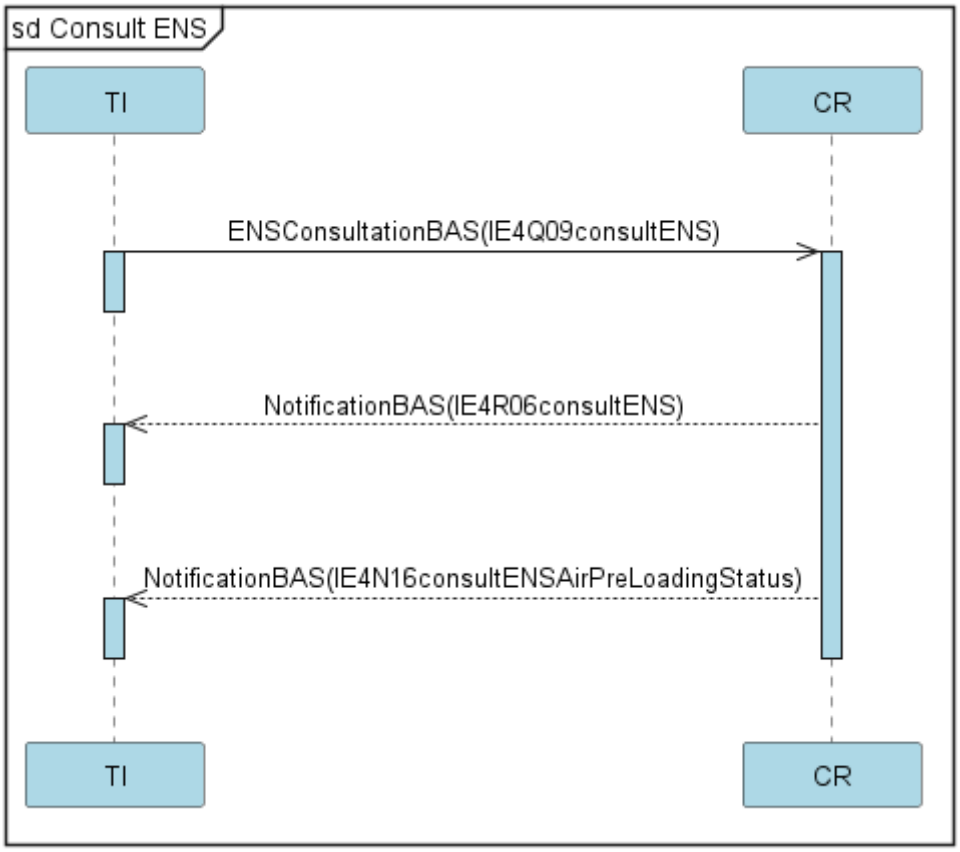

Figure 20: 'Consult ENS' time-sequence diagram

TI submits the ENS consultation request (IE4Q09) to the CR. The CR identifies the relevant ENS information that matches the inserted criteria and at the same time complies with the access rights that the party requesting the consultation has. In case the pre-loading risk assessment status information is requested, then the provided identifiers are checked and, if applicable, the pre-loading risk assessment status information is extracted for the identified receptacles and the linked to them house consignment(s) are communicated. CR sends either the ENS consultation results (IE4R06) to the TI, which enhances this information including also the notifications sent in relation to the relevant ENS filing or the Pre-loading risk assessment status notification (IE4N16). On completing the consultation request process, CR sends the information to the party that requested the consulation.

3.1.20 Query ENS

The diagram below shows the sequence of the services operations performed when a Member State looks for information about an ENS.

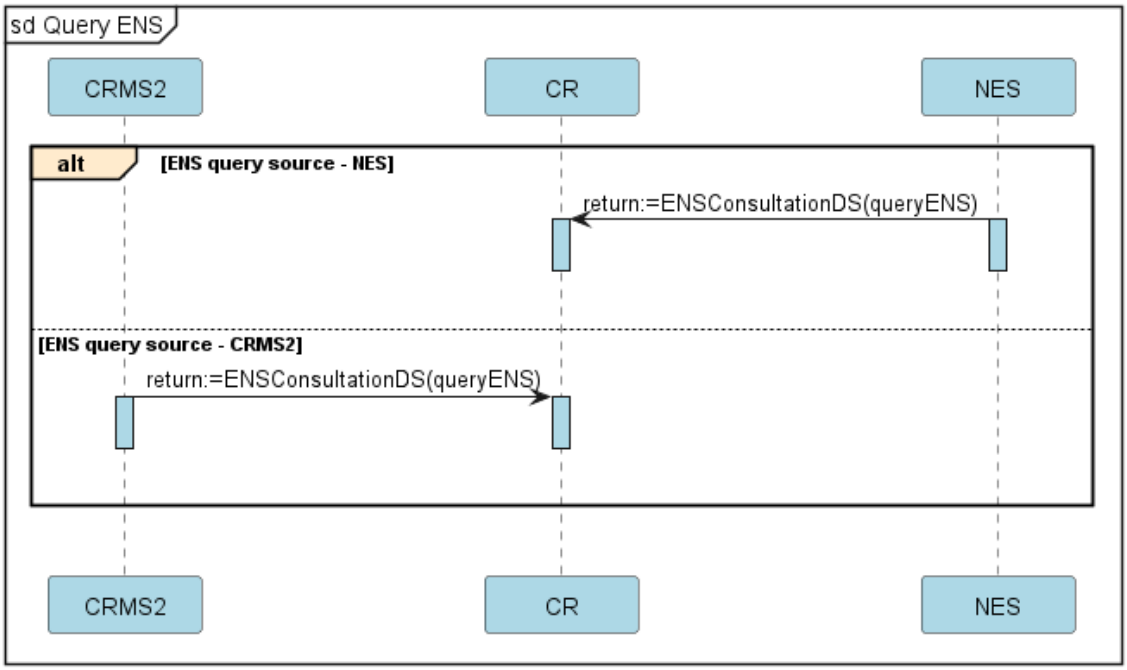

Figure 21: 'Query ENS' time-sequence diagram

The Member State or CRMS2 submits the ENS query (IE4Q10) to the CR. The CR identifies the relevant ENS information that matches the inserted criteria and at the same time complies with the access rights that the requester has. ENS information can be retrieved not only based on ENS or Filing, but also per PLACI as well. Then the CR sends the ENS query results (IE4R05) to the requesting Member State or CRMS2 accordingly.

3.2 Exception handling

An exception may occur during the interaction between CR and NES, CR and NTI, CR and TED and between CR and STI. The communication in the first three cases is done via CCN2 and in the CR-STI is done through JMS queues and the exception handling is distinguished based on the message exchange pattern used (synchronous or asynchronous).

3.2.1 Asynchronous services

In the case where an asynchronous service call is performed there are two categories of exceptions that can be thrown.

- The first category consists of role-based security errors. In this case a fault in the sense of an HTTP 4xx or 5xx status code must be returned synchronously to the web service call initiator.

  Additionally, an error in the sense of a CCN2 CoE is returned in the Acknowledgment service implemented in the side of the call initiator.

  An example of such a CoE is given below:

```
[Action]
 urn:CCN2.Service.Platform.AcknowledgementService/CoE

[Body]
<ccn2ack:CoE>
  <ccn2ack:Severity>ccn2:severityEnum</ccn2ack:Severity>
  <ccn2ack:EventTimestamp>xs:dateTime</ccn2ack:EventTimestamp>
  <ccn2ack:Payload>
    <soap12:Fault>
              <soap12:Code>
```

```
                    <soap12:Value>xs:string</soap12:Value>
                </soap12:Code>
                <soap12:Reason>
                  <soap12:Text xml:lang="xs:string">soap12:reasontext</soap12:Text> *
                </soap12:Reason>
        </soap12:Fault>
</ccn2ack:CoE>
```

It contains a number of mandatory elements as listed below:

- [Body]/ccn2ack:CoE/ccn2ack:Severity:
  A mandatory value (of type ccn2:severityEnum) indicating the severity of the recorded error;
- [Body]/ccn2ack:CoE/ccn2ack:EventTimestamp:
  A mandatory timestamp value (of type xs:dateTime) indicating when the error has been recorded;
- [Body]/ccn2ack:CoE/ccn2ack:Payload/soap12:Fault:
  A mandatory and standard SOAP 1.2 Fault element;
- [Body]/ccn2ack:CoE/ccn2ack:Payload/soap12:Fault/soap12:Code:
  A mandatory and standard SOAP 1.2 Code element defining the specific error that happened;
- [Body]/ccn2ack:CoE/ccn2ack:Payload/soap12:Fault/soap12:Reason:
  A mandatory and standard SOAP 1.2 Reason element providing a human-readable explanation of the fault;

For the last two elements (Code and Reason), the same base structure will be used in all the faults which is like it is described below:

- Error code – A character code identifying a particular error. The error code consists of:
  - Error category – A 4-character code that indicates the error category;
    - SECU – Security (e.g. user is not authorized to access this resource, …);
    - MESS – Message (e.g. input parameter constraint violated, unknown correlationId, ...);
    - TECH – Technical;
  - Service abbreviation – A character code that indicates the service that raised the error;
  - Error number – A numeric code that indicates the specific error number;
- Error reason – A human-readable explanation of the fault;

- The second category consists of errors that cannot be detected synchronously. These messages are accepted by the Web Service for further processing. During the processing of the message an error is being detected and an IE4N99 message is sent back to the ErrorNotificationBAS of the call initiator, as a separate web service call. The error codes, are maintained as a Code List published in CS/RD2 (CL723), which is defined in ICS2 Information Exchange Message Specifications [R04] containing the code and the description. The Annex C. ICS2 Error Codes includes more information regarding each functional error code.

The exception handling from the CCN2 message exchange perspective is described in 7.2.3.

The error message IE4N99 & IE4N00 have the following characteristics and contents:

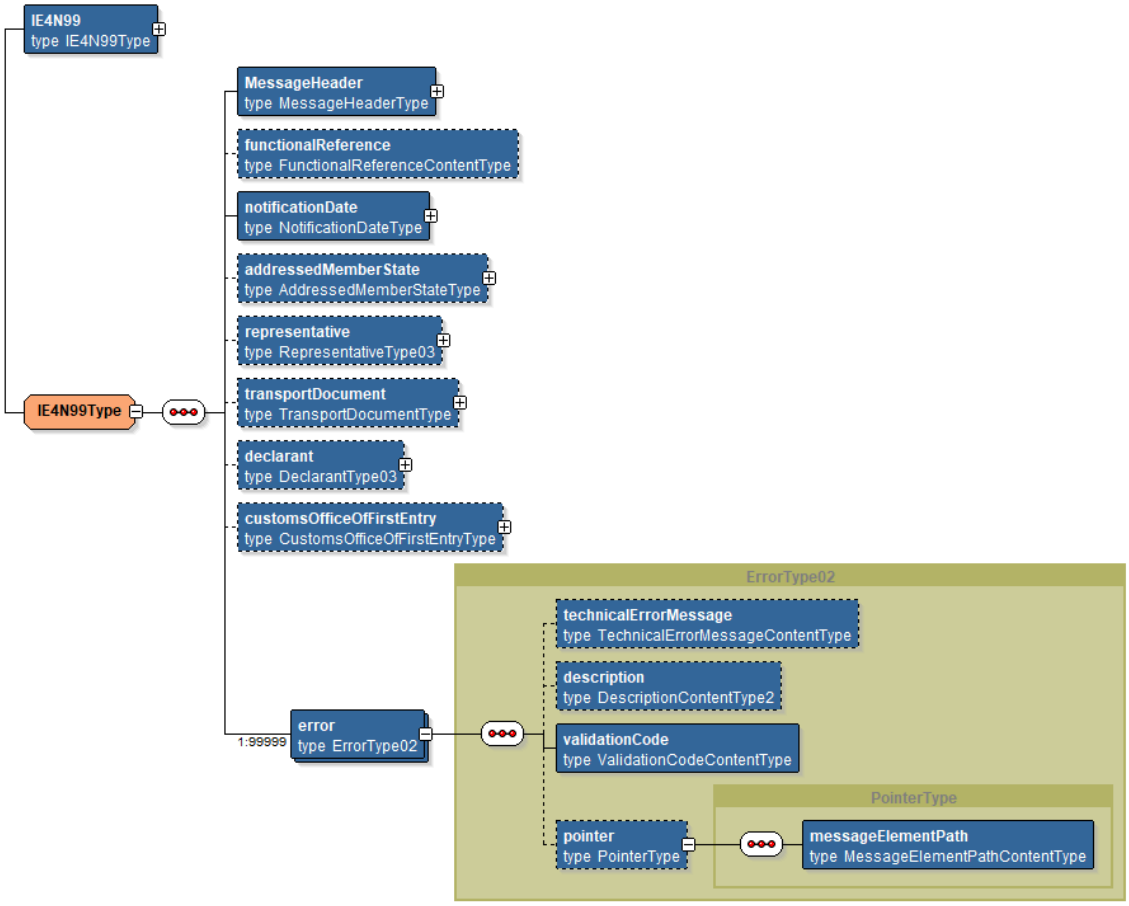

Figure 22: IE4N99 message structure

- **Message Header**: See Annex B;
- **Functional Reference ID**: This item is used to correlate the error message to the original message on a business (or functional) level. As the error messages are asynchronous, it is important that the NES, TI systems or TED can correlate the error to the original message. The “Functional reference” of the message is used as a response to which it is generated, if any. If the message to which it is generated as a response does not have “Functional reference” a unique value is generated by CR;
- **Notification Date**: This item is the timestamp of the validation of the message;
- **Addressed Member State**: the addressed member state indicated in the original message will be used if available. This datagroup is applicable only to IE4N99;
- **Representative**: The legal representative as indicated in the original message will be used if available. This datagroup is applicable only to IE4N99;
- **TransportDocument**: The document number of the original message will be used if available. This datagroup is applicable only to IE4N99;
- **Declarant**: The declarant as identified in the original message will be used if available. This datagroup is applicable only to IE4N99;
- **CustomsOfficeOfFirstEntry**: The MS where the COFE is located as indicated in the original message. This datagroup is applicable only to IE4N99;
- **Error**: Error field(s) with a cardinality 1 to 999, which can include up to 999 different errors per message:

- **Technical error message** gives more info about the error if relevant. For instance, in case of a Rules and Conditions violation this field may contain the ID of the Rule or Condition that was violated. This description is not translated, only English will be used;
- **Description:** This is a text field that gives more details on the error in a human readable format. Only English is used;
- **ValidationCode:** This field contains the code that defines the type of the error. Values are maintained in the Code List CL723, published in CS/RD2. The CL723 is applicable only to IE4N99;
- **The pointer:** This field contains the location of the error defined by an XPath location of the original XML document.

- The IE4N99 is sent to the ErrorNotificationBAS service of NES, TI, CR or TED, as defined in sections 3.3.1, 3.3.2, 3.3.3 below, by any stakeholder as an error response to an asynchronous message received;
- The IE4N99 message cannot be rejected with another IE4N99 message;
- Messages with the same CCN2 messageID are considered duplicates by the CR and will be silently ignored without producing an IE4N99reply.

3.2.2 Synchronous services

Most ICS2 services provided over CCN2 are asynchronous, but there are also some synchronous ICS2 services. In case of an error, a synchronous SOAP response should be returned by the web service provider, including a SOAP fault containing the error details.

The exception handling from the CCN2 message exchange perspective is described in 7.1.3.

3.3 Services definition

This section provides an overview over all the services that are to be implemented in national and central domains in the context of ICS2. Details are given in the TI services specification [R12] and the CR services specifications [R02] which also include the NES services specifications. It is defined for each service whether it can be called synchronously or asynchronously.

ICS2 Service Version provides more information regarding the supported service versions per domain.

3.3.1 NES Services

The following services must be implemented by a national ICS2 NES implementation:

Service ID	Exchange Pattern
CCN2.Service.Customs.EU.ICS.NESRiskAnalysisBAS The service covers the functionalities to be provided by any Member state's National IT application to process risk analysis messages sent by the ICS2 CR. It defines a single service end-point that will be implemented by each Member state's application to communicate e-risk analysis and e-Screening analysis requests and results with the ICS2 CR application.	**Asynchronous**
CCN2.Service.Customs.EU.ICS.NESControlBAS The service covers the functionalities to be provided by any Member state's National IT application to process messages sent by the ICS2 CR. It defines a single service end-point that will be implemented by each Member state's application to allow the ICS2 CR application to communicate control recommendations and ENS incorrect state with any Member State national application.	**Asynchronous**
CCN2.Service.Customs.EU.ICS.NESReferralBAS The service covers the functionalities to be provided by any Member state's National IT application to process messages sent by the ICS2 CR. It defines a single service end-point that will be implemented by each Member state's application to allow the ICS2 CR application to communicate amendment events and additional information/HRCM feedback with any Member State national application.	**Asynchronous**
CCN2.Service.Customs.EU.ICS.NESNotificationBAS The service covers the functionalities to be provided by any Member state's National IT application to process messages sent by the ICS2 CR. It defines a single service end-point that will be implemented by each Member state's application to allow the ICS2 CR application to communicate ENS filing invalidation events with any Member State national application.	**Asynchronous**
CCN2.Service.Customs.EU.ICS.NESErrorNotificationBAS The service covers the functionality to be provided by any Member state's National IT application to receive error notifications sent by the ICS2 CR. It defines a single service end-point that will be implemented by each Member state's application to allow the ICS2 CR application to communicate error notifications to any Member State national application.	**Asynchronous**

Table 5: List of services to be implemented by ICS2 NES

3.3.2 TI services

The following services must be implemented by the ICS2 Trader Interface. They will be implemented by the ICS2 shared trader interface (STI). Or the Trader Interface services must also be implemented by Member States that opt out of STI and decide to implement an ICS2 national trader interface (NTI).

Service ID	Exchange Pattern
CCN2.Service.Customs.EU.TI.NotificationBAS The service covers the functionalities to be provided by any ICS2 trader interface IT application (National or Shared) to process messages sent by the ICS2 CR to the Economic Operators. It defines a single service end-point that will be used by the ICS2 CR to send notifications to the Economic Operator.	**Asynchronous**

Service ID	Exchange Pattern
CCN2.Service.Customs.EU.TI.ErrorNotificationBAS The service covers the functionality to be provided by any ICS2 trader interface IT application (National or Shared) to process error messages sent by the ICS2 CR. It defines a single service end-point that will be used by the ICS2 CR to send error notifications to the TI.	**Asynchronous**

Table 6: List of services to be implemented by ICS2 TI

3.3.3 TED Services

The following services must be implemented by the TED:

TED Service name	TED Service Operation	Exchange Pattern
TED Notification BAS	**IE4R04acceptENSFilingInvalidation** This operation is used to receive the message IE4R04 from ICS2-CR	**Asychronous**
	IE4R01acceptENSFiling Registration This operation is used to receive the message IE4R01 from ICS2-CR	**Asychronous**
	IE4N01notifyENSLifecycleValidationError This operation is used to receive the message IE4N01 from ICS2-CR	**Asychronous**
	IE4Q04requestAdditionalInformation This operation is used to receive the message IE4Q04 from ICS2-CR	**Asychronous**
	IE4N12acceptENSFilingAmendment This operation is used to receive the message IE4N12 from ICS2-CR	**Asychronous**
	IE4N04notifyAssessmentComplete This operation is used to receive the message IE4N04 from ICS2-CR	**Asychronous**
	IE4N11notifyAEOControl This operation is used to receive the message IE4N11 from ICS2-CR	**Asychronous**
TED ErrorNotification BAS	**IE4N99notifyError** Handles functional error notifications sent by the Common Repository during invocation of services by the TED. Each time a functional error occurs, an error notification message (IE4N99) is created by ICS2-CR and submitted to the TED via this operation	**Asychronous**

Table 7: List of services to be implemented by TED

3.3.4 CR Services

This section provides an overview over the services that are available in the central or common domain.

The central CR IT application provides the necessary services to receive trader Information Messages from the TI systems, to process them and to exchange information with the NES or

TED according to the business processes defined in the ICS2 common functional specifications [R04].

Service	Exchange Pattern
CCN2.Service.Customs.EU.ICS.ENSFilingLifecycleManagementBAS The service covers the functionalities to be provided by the ICS2 CR application to process messages sent by the TI systems or TED. It defines a single service end-point that will be implemented by the ICS2 CR to process ENS registration, amendment and invalidation with the Economic Operator systems.	**Asynchronous**
CCN2.Service.Customs.EU.ICS.ENSLifecycleManagementBAS The service covers the functionalities to be provided by the ICS2 CR application to process messages sent by the TI systems or the NES. It defines a single service end-point that will be implemented by the ICS2 CR to communicate ENS lifecycle information with the ICS2 TI application or the Member States' national applications.	**Asynchronous**
CCN2.Service.Customs.EU.ICS.RiskAnalysisOrchestrationBAS The service covers the functionalities to be provided by the ICS2 CR application to process messages sent by the NES. It defines a single service end-point that will be implemented by the ICS2 CR to communicate ENS risk analysis assessments with the Member States national applications.	**Asynchronous**
CCN2.Service.Customs.EU.ICS.ReferralManagementBAS The service covers the functionalities to be provided by the ICS2 CR application to process messages sent by the TI systems, NES or TED. It defines a single service end-point that is implemented by the ICS2 CR to communicate additional ENS information with the ICS2 TI application, the Member States' national applications or TED.	**Asynchronous**
CCN2.Service.Customs.EU.ICS.AEONotificationBAS The service covers the functionalities to be provided by the ICS2 CR application to process messages sent by the NES. It defines a single service end-point that will be implemented by the ICS2 CR to communicate in advance decided controls to AEOs with the Member States' national applications.	**Asynchronous**
CCN2.Service.Customs.EU.ICS.RulesConfigurationManagementDS The service covers the functionalities to be provided by the ICS2 CR application to process ENS parameters sent by the NES. It defines a single service end-point that will be implemented by the ICS2 CR in order the Member States' national applications to communicate nationally specific relevant risk information in relation to a presence of security and safety risks, to ICS2 CR.	**Synchronous**
CCN2.Service.Customs.EU.ICS.CRErrorNotificationBAS The service covers the functionalities to be provided by the ICS2 CR application to process messages sent by the TI systems, NES or TED. It defines a single service end-point that will be implemented by the ICS2 CR to communicate technical and functional errors with the ICS2 TI Application and the Member States' national applications or TED.	**Asynchronous**
CCN2.Service.Customs.EU.ICS.ENSConsultationBAS The service covers the functionalities to be provided by the ICS2 CR application to process messages sent by the TI systems. It defines a single service end-point that will be implemented by the ICS2 CR to communicate consultation information with the ICS2 TI application.	**Asynchronous**
CCN2.Service.Customs.EU.ICS.ENSConsultationDS The service covers the functionalities to be provided by the ICS2 CR application to process messages sent by the NES. It defines a single service end-point that will be implemented by the ICS2 CR to communicate ENS information with the Member States' national applications.	**Synchronous**

Table 8: List of services implemented by the ICS2 CR

3.3.5 CCN2 Logical Destinations

In order to uniquely identify which service to consume, the client should also be aware of the CCN2 logical destination of the partner that exposes a service. A list of the CCN2 logical destinations can be found below:

Partner	ICS2 Subsystem	CCN2 logical destination
DG TAXUD	ICS2_CR	CCN2.Partner.EU.Customs.TAXUD/ICS_CR.{ENV}
National Administrations	ICS2_NES	CCN2Partner{CountryCode}.Customs.TAXUD/ICS_NES.{ENV}
National Administrations	ICS2_TI	CCN2Partner{CountryCode}.Customs.TAXUD/ICS_TI.{ENV}
DG TAXUD	TED	CCN2.Partner.EU.Customs.TAXUD/TED.{ENV}

Table 9: List of CCN2 logical destinations used in ICS2

where {CountryCode} and {ENV} is the country code of each National Administration and environment (e.g. CONF, PROD) as described in 8.1.1.

3.3.6 Messages prioritization

DG TAXUD and Member States will size their infrastructure to meet the performance requirements of ICS2 operations. It might happen though that messages start to be buffered in exceptional circumstances such as:

- unexpectedly high peak of messages;
- unexpected downtime of a given service.

In such circumstances, an internal mechanism to prioritise messages is implemented by ICS2 in order to handle specific messages with higher priority according to their message type. It is recommended that a similar operational mechanism may also implemented by Member States in their NES systems; at least by those impacted by larger volumes.

The messages in ICS2 have been categorised in three different categories taking into account the mode of transport, the state which a given business process has obtained and its urgency of information exchanges with regard to the potential process disruption and the consequent practical damage this may have for traders and administration. The categories are defined as follows:

- **Category A – high priority:** messages required to ensure the timely application of measures already decided by the customs authorities. Messages to trade to avoid business damage are also in this category;
- **Category B – normal priority:** messages required for a proper execution of the given business process regarding the process' time sequence and constraints;
- **Category C – low priority**: messages which are notifications for information and transparency reasons only.

Table 10: Message prioritisation

defines the category for all ICS2 messages:

Message ID	Category A	Category B	Category C
IE4Fxx		X	
IE4Axx		X	
IE4Q01		X	
IE4Q02		X	
IE4Q03	X		
IE4Q04		X	
IE4Q05	X		

Message ID	Category A	Category B	Category C
IE4Q06			X
IE4Q07		X	
IE4Q08			X
IE4Q09		X	
IE4Q10		X	
IE4R01		X	
IE4R02		X	
IE4R03	X		
IE4R04			X
IE4R05		X	
IE4R06			X
IE4S01		X	
IE4S02	X		
IE4S03			X
IE4N01		X	
IE4N02			X
IE4N03	X		
IE4N04	X		
IE4N05		X	
IE4N06		X	
IE4N07	X		
IE4N08			X
IE4N09	X		
IE4N10		X	
IE4N11			X
IE4N12			X
IE4N13			X
IE4N14		X	
IE4N15		X	
IE4N16		X	
IE4N99		X	
IE3Q01	X		
IE3Q03	X		
IE3R03	X		
IE3N03	X		
IE3N06	X		
IE3N08	X		
IE3N12	X		
IE3Fxx		X	
IE3Axx		X	
IE3Q02		X	
IE3R01		X	
IE3R02		X	
IE3R04		X	
IE3R08		X	
IE3N01		X	

Message ID	Category A	Category B	Category C
IE3N99		X	
IE3Q04			X
IE3Q05			X
IE3R07			X
IE3N02			X
IE3N04			X
IE3N05			X
IE3N07			X
IE3N09			X
IE3N10			X

Table 10: Message prioritisation

4 SUPPORT SERVICES

Semantic validations of messages sent and received by TI, NES, CR and TED will be performed based on reference data provided by CS/RD2, CRS, ECICS2 and TARIC3 services.

Also, Business and IT monitoring services will be offered to Member States by DG TAXUD.

4.1 Replicate reference data

Information exchanges between the EO, TI, CR, NES and TED include coded reference data, as defined in the IE messages of the ICS2 common specifications [R04]. Code lists are maintained in the CS/RD2 application. Member State that implements TI and NES must replicate reference data via an asynchronous channel, as is the case for all trans-European systems. Various exchange patterns are offered by CS/RD2:

- Push mechanism based on scheduled dissemination (recommended pattern);
- Pull mechanism based on request/response over CCN2 web services.

For more information on the services offered by CS/RD2 please refer to the Design Document for Reference Data Application [R09].

4.2 Replicate CRS trader data

Information exchanges between the EO, TI, CR, NES and TED include trader information. The CRS application is a reference system centralising up to date information of traders managed by other acquisition points such as the EOS application that is the acquisition point managing trader contact information and the unique holder of EORI number.

Member States that implement TI and NES must replicate CRS data via an asynchronous channel to validate EORI numbers. For more information on the replication options offered by CRS please refer to the CRS Member State Design Documentation Package [R10].

4.3 Replicate TARIC3 goods data

Information exchanges between the EO, TI, CR, NES and TED include coded goods information (commodity code). The TARIC3 application is the reference system centralising up to date information on goods data.

Member State that implements TI and NES must replicate TARIC3 data via an asynchronous channel. For more information on the replication options offered by TARIC3 please refer to Functional Message Exchange Specification for TARIC3 [R11].

4.4 Replicate ECICS2 data

Information exchanges between the EO, TI, CR, NES and TED include coded information on chemical substance (CUS code). The ECICS2 application is the reference system centralising up to date information on such data and exporting CUS data to CS/RD2 in order to disseminate CUS codes and their validity periods to the Member States.

4.5 Monitor ICS2 services

A range of IT services will be required to monitor the operations of ICS2, such as:

- Functional and data auditing based on collection of information about how the CR and TI applications are used;
- Service monitoring to check TI and CR web services availability not only as being accessible but also being functional at a minimal response time;

- Availability management to allow TES and TAXUD helpdesks to manage start/end of scheduled and unscheduled unavailability;
- Business statistics on the data exchanged, for example the number over time of ENS filing per mode of transport or e-Screening request per risk category;
- Message tracking to locate business messages such as ENS filing, ENS or notifications end-to-end across STI/NTI- CR-NES-TED, based on business parameters (MRN,…).

4.6 Expose data to SSA – SSA views

The CR data is exposed to the SSA with the SSA Views. SSA is accessing the CR Stand-by read-only database through Denodo. The SSA views are constructed on the CR database and offer the data to the SSA per member state. The calculation of the Owner member state is stored separately in the CR database in the MS_TAG tables. The SSA views are listed in the PDM document [R18].

5 ICS2 USER INTERFACES

This chapter describes an overview of the functionality of the CR, TI, MON&BS, and SSA user interfaces provided to Member States users. For more detailed information, please refer to CR user manual, MON&BS user manual and the STI user manual for Member States using the STI[4]. Detailed information on SSA can be found in its respective user manual.

The user interfaces will be provided in a phased approach, please refer to **Annex A** for more details on the scope of each release.

5.1 STI Administrator UI Component

5.1.1 For MS

DG TAXUD and MS helpdesk users have no access directly to STI UI component. They can indirectly monitor the message flow via the ICS2 Monitoring and Business Statistics application and also manage trader preferences if needed.

5.1.2 For Economic operators

The Economic Operator is enabled to manage its information via the STI user interface:

- Create, amend, invalidate ENS filings;
- Create and submit arrival notifications;
- Consult HRCM screening outcome and other additional information;
- Consult notifications
- Self-register and follow up a Conformance Test Campaign;
- Manage its preferences (declaration of authorised access points and notifications).

This functionality is available from STI Release 2 onward (please refer to **Annex A**).

5.2 CR user interface

5.2.1 ENS query

The MS helpdesk users and the MS users responsible for the risk analysis and the customs controls are enabled to search for ENS data related to one or more ENS(s). The ENS data includes the ENS and related filings, ENS filings amendment history, risk analysis results, data quality issue flag, data consistency issue flag, flag from ENS enrichment, control recommendations, e-Screening results, notifications exchanged with TI, NES and TED, ENS current state and history of states and control results.

The MS national systems implementations may also use a dynamic URL generation function that will enable their users to access specific pages of the CR user interface, directly, to a specific ENS Dossier, ENS Filing or PLACI Dossier. The national systems implementations can generate and use the following URLs:

- For ENS Dossier: https://{URL}/#/screen/ensdata/ensdossier;id={MRN}
- For ENS Filing: https://{URL}/#/screen/ensdata/ensfiling;id={MRN}
- For PLACI Dossier: https://{URL}/#/screen/ensdata/placidossier;id={TDN};mrn={MRN}

Where {URL} is the CR UI address and {MRN}, {TDN} the values of the corresponding entity to be searched in CR.

[4] The CR and STI user manuals are embedded in the corresponding UIs.

Prerequisite for accessing the pages of the dynamically generated URLs is that an MS user should be logged in to CR UI and have an active browser session. All security restrictions of the MS users still apply when using this feature.

5.2.2 Configuration of business rules

The MS users involved in the risk analysis procedure are enabled to search for business rules for data quality check, data consistency checks, identification of related ENS filings of the same ENS, data enrichment and automatic determination of the role of MS in the risk analysis process (RMS/IMS). However, they are enabled to configure only the business rules for data quality check and data cleansing, while European Commission users are enabled to configure all the rules.

While configuring a rule, it is possible to run a simulation against the planned configuration, before saving the changes. Once simulation of the rule is complete, the outcome will contain metrics that will provide an estimation of the impact of the change. Considering these metrics, the user can save the configuration changes on the rule or discard them.

5.2.3 Configuration of OMS parameters

The MS users involved in the risk analysis procedure are enabled to search for OMS parameters against which ENS(s) or ENS filings shall be additionally checked. Only the MS Risk analysts are enabled to configure these OMS parameters.

5.2.4 Configuration of timers

The MS helpdesk users and the MS users involved in the risk analysis are enabled to search for time limits that the system will have to wait for:

- Filings of the same ENS to be linked before checking automatically for related ENS filings already registered;
- The completion of IMSs' e-Screening tasks in the context of full risk analysis;
- The completion of IMSs' e-Screening tasks in the context of air-preloading risk analysis;
- The completion of risk analysis.

5.3 Business statistics & Monitoring consultation

The consultation through MON&BS depends on the access role. The MS with access to the Business Statistics is enabled to consult pre-defined business statistics that are compiled by CR.

This module provides information to MS, with monitoring role, and EC Help Desk users on the health of the STI & CR systems in the form of for example messages processed per type and per interface, service requests and planned Unavailability.

5.4 SSA user interface

The SSA is an advanced platform accessible to users from DG TAXUD and the Member States, whose functionalities can be used according to the respective roles and persmissions of the users. The system is primarily designed to help customs authorities manage security and safety risks effectively through the following features:

Customs Analytical Toolbox (CAT): This constitutes a set of data analytical tools specifically dedicated to customs activities. Key features include:

- **Analytical Graphical Studio:** A user-friendly graphical environment that allows professionals with varying levels of expertise and analysis to work together as experts. It serves as a space for users to create and edit models from an existing algorithm library, or develop their own algorithms. It also offers features for running a model against a dataset and training these models, visualising the results of running a model and communicating online and offline with other experts.

- **R&D - Code based**: A programming environment for data scientists. It supports the creation and editing of algorithms and models.
- **Algorithm Library**: A collection of algorithms that can be used to develop models, ranging from basic statistical tools to advanced analytics and machine learning.
- **Data Visualisation**: Supports data exploration and offers a framework to create specific data views.

Customs Risk Analysis Support: Contains features that can be used by risk analysts outside of the lab. Key features include:

- **Risk Lists**: Supports the functionalities of Risk Lists.
- **Risk Indicators**: Supports the functionalities of Risk Indicators.

ENS Enrichment: Enables online transactional processing of deployed Risk Lists, Risk Indiacotrs or CAT models in real-time. Key features include:

- **Enrichment Catalog**: Contains a list of available Enrichments with a detailed description.
- **Enrichment Configuration**: Allows MS to select and configure Enrichments.

Supporting Services: A set of transversal features which includes:

- **Project lifecycle Management**: Supports the lifecycle of a project, from initiation to completion.
- **Data Management / Governance**: Contains features allowing data governance, data access management, and connectivity to multiple data sources.
- **Security Management**: A set of security-related features which ensure user authentication and access management.

6 CCN2 PREREQUISITES

6.1 Be a Registered CCN2 Partner

ICS2 Common Repository services are provided over the CCN2 Platform, thus a service provider or a service consumer needs to be registered as CCN2 partner.

A CCN2 Partner is "*an entity participating in the CCN2 Platform either by offering services to the CCN2 Platform or by consuming services offered by the CCN2 Platform*".

In order to be registered as a CCN2 Partner an organisation should follow the instructions described in chapter 5.3.1 of the CCN2 Integration Manual document [R05], also respecting the naming conventions of CCN2 described in chapter 12.1 of the CCN2 Integration Manual document [R05].

6.2 Have Registered User(s) in CCN2

In order to consume a service offered over CCN2 a registered CCN2 user is needed, who must be identified as a member of a CCN2 Partner's organisation.

Upon creation of a CCN2 partner, at least a user with the role "Partner User Administrator" is created and assigned to the CCN2 partner. This user has the role to manage the daily administration activities relating to Partner end-users such as:

- User lifecycle management;
- Profile management;
- Credential management.

Partner end-users are the ones to consume the services according to the roles, as defined in the Use Case document [R15], they are assigned. As described in chapter 12.1.5 of the CCN2 Integration Manual document [R05] the roles have the form CCN2.Role.ICS.<Role Name>. In the tables below the roles for the various actors and / or systems that constitute the ICS2 project are displayed:

Available roles for human actors to access CR / TI / MON&BS / SSA User Interface	
Role name	**Purpose**
CCN2.Role.ICS.CustomsRiskAnalyst	Role of a national risk analyst that is authorised to access the ICS2 CR application and/or ICS2 MON&BS application user interface to perform actions of role CustomsRiskAnalyst.
CCN2.Role.ICS.CustomsControlClearanceOfficer	Role of a national customs control and clearance officer that is authorised to access the ICS2 CR application and/or ICS2 MON&BS application user interface to perform actions of role CustomsControlClearanceOfficer.
CCN2.Role.ICS.CustomsControlClearanceManager	Role of a national customs control and clearance manager that is authorised to access the ICS2 CR application and/or ICS2 MON&BS application user interface to perform actions of role CustomsControlClearanceManager.
CCN2.Role.ICS.CustomsRiskManagementOfficial	Role of a national customs risk management official that is authorised to access the ICS2 CR application user and/or ICS2 MON&BS application interface to perform actions of role CustomsRiskManagementOfficial.

Available roles for human actors to access CR / TI / MON&BS / SSA User Interface	
Role name	**Purpose**
CCN2.Role.ICS.StatisticsAnalyst	Role of a national statistics analyst that is authorised to access the ICS2 CR application and/or ICS2 MON&BS application user interface to perform actions of role StatisticsAnalyst.
CCN2.Role.ICS.OMSNationalAuthorityOfficial	Role of a national Authority Official that is authorised to access the ICS2 CR application user interface to perform actions of role OMSNationalAuthorityOfficial.
CCN2.Role.ICS.MSServiceSupportMonitoring	Role of a national IT Administrator Official that is authorised to access the ICS2 MON&BS application user interface to perform actions of roleMSServiceSupportMonitoring.
CCN2.Role.ICS.MSServiceSupportMessages	Role of a national IT Administrator Official that is authorised to access the ICS2 MON&BS application user interface to perform actions of roleMSServiceSupportMessages.
CCN2.Role.ICS.MSServiceSupportAvailability	Role of a national IT Administrator Official that is authorised to access the ICS2 MON&BS application user interface to perform actions of roleMSServiceSupportAvailability.
CCN2.Role.ICS.MSServiceSupport	Role of a national IT Administrator Official that is authorised to access the ICS2 CR application user interface to perform actions of roleMSServiceSupport.
CCN2.Role.ICS.BusinessProcessAnalyst	Role of a national Business Process Analyst that is authorised to access the ICS2 CR application and/or ICS2 MON&BS application user interface to perform actions of role BusinessProcessAnalyst.
CCN2.Role.SSA.Executive	Role required for a user to access the SSA Portal.
CCN2.Role.Superset	Role of a SSA user that requires access to the Superset tool, a platform for modern data exploration.
CCN2.Role.Denodo	Role of a SSA user that requires access to the Denodo tool, a data virtualization and data integration platform.
CCN2.Role.Dataiku	Role of a SSA user that requires access to the Dataiku tool, a collaborative data science platform.

Table 11: Available roles for human actors to access CR / TI / MON&BS / SSA User Interface

Roles needed by NES to access CR services	
Role name	**Access to services / purpose**

CCN2.Role.ICS.NationalEntrySystem	Role of a national ICS2 IT application (NES) that is authorised to consume the service operations exposed by CR and indicated by the role name NationalEntrySystem.

Table 12: Roles needed by NES to access CR services

Roles needed by TI or TED to access CR services	
Role name	**Access to services / purpose**
CCN2.Role.ICS.TraderInterface	Role of a national ICS2 IT trader interface application (TI) that is authorised to consume the service operations exposed by CR and indicated by the role name TraderInterface.

Table 13: Roles needed by TI or TED to access CR services

Role needed by ICS2-CR to access TED services	
Role name	**Access to services / purpose**
CCN2.Role.ICS.CommonRepository	Role that is authorised to consume the service operations exposed by TED.

Table 14: Roles needed by ICS2-CR to access TED services

Roles to protect NES or TI services	
Role name	**Access to services / purpose**
CCN2.Role.ICS.CentralRepository	Role of the ICS2 Common Repository that sends requests and notifications to the ICS2 NES and TI applications.

Table 15: Roles to protect NES or TI services

Finally, for information purposes the roles in the table below are reserved for DG TAXUD usage only:

Available roles for human actors to access CR / TI / MON&BS User Interface (DG TAXUD)	
Role name	**Access to services / purpose**
ECServiceSupportMonitoring	Role of a European Commission Helpdesk user that is authorised to access the ICS2 MON&BS application user interface to perform actions of role ECServiceSupportMonitoring.
ECServiceSupportMessages	Role of a European Commission Helpdesk user that is authorised to access the ICS2 MON&BS application user interface to perform actions of role ECServiceSupportMessages.
ECServiceSupportAvailability	Role of a European Commission Helpdesk user that is authorised to access the ICS2 MON&BS

	application user interface to perform actions of role ECServiceSupportAvailability.
ECServiceSupport	Role of a European Commission Helpdesk user that is authorised to access the ICS2 CR application and / or ICS2 TI application user interface to perform actions of role ECServiceSupport.
RiskManagementPolicyOfficer	Role of a European Commission risk management policy officer that is authorised to access the ICS2 CR application and / or ICS2 TI application and/or ICS2 MON&BS application user interface to perform actions of role RiskManagementPolicyOfficer.
BusinessProcessOfficial	Role of a European Commission data business process official that is authorised to access the ICS2 CR application and / or ICS2 TI application and/or ICS2 MON&BS application user interface to perform actions of role BusinessProcessOfficial.
ItServiceManager	Role of a European Commission IT Service Manager user that is authorised to access the ICS2 CR application and / or ICS2 TI application and/or ICS2 MON&BS application user interface to perform actions of role ItServiceManager.
ECStatisticsAnalyst	Role of a European Commission statistics analyst that is authorised to access the ICS2 MON&BS application user interface to perform actions of role ECStatisticsAnalyst.

Table 16: Available roles for human actors to access CR / MON&BS User Interface

7 CONSUME CCN2 WEB SERVICES

The ICS2 Common Repository Web Services are exposed over CCN2. A service consumer sends the SOAP requests to the CCN2 Endpoint (see Figure 23).

According to the CCN2 Service Connectivity principles, a consumer of a service exposed by the CCN2 Platform does not directly access the target endpoint (Partner Endpoint in Figure 23) offered by the service provider. Instead, it relies on the CCN2 endpoint exposed by the platform.

Figure 24 shows a service provided by CDCO ICS2 IT Application at Partner Endpoint and the respective CCN2 Endpoint to be used by all consumers of this service.

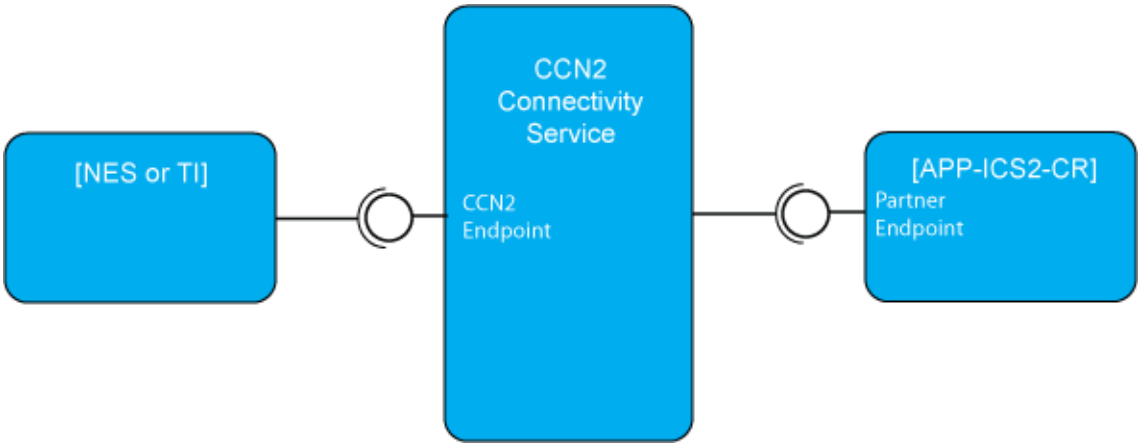

Figure 23: National ICS2 consuming a common service

The invocation of a service (consumption) via CCN2 is explained in chapter 6.3.2 of the CCN2 Integration Manual [R05].

According to CCN2 System Functional Specifications [R14] the maximum size of a message that is sent through CCN2 is 20MB[5]. If a message exceeds this size, CCN2 will return an error message of type CCN2-VAL-1005 as defined in CCN2 System Technical Design Specifications [R07].

Nevertheless, please note that STI system may accept bigger messages than this size as the message sent to CR via CCN2 will use compression in base64 encoding for attachments. Similarly, NES systems should make use of compression capabilities in case of sending messages via CCN2 which contain attachments and which total size may exceed 20MB.

The following sections explain how to consume a web service exposed over CCN2 in the common domain.

The first step to consume a web service is to retrieve the WSDL describing the service contract. The WSDL files of the ICS2 Web Service Definitions are provided already in the ICS2 Technical Specifications documentation and can be found in the Technical Service Contracts: [R02] and [R12]. As indicated in this reference, CCN2 uses the SOAP1.2 for WSDL 1.1 HTTP Binding Extension.

In CCN2, WS-Addressing is used (section 4.8.3.1 of the CCN2 Integration Manual [R05]).

To build a SOAP request to consume a service, you need to:

- Obtain the appropriate service contract via the CCN2 “service discovery” service (explained in chapter 6.3.1 of the CCN2 Integration Manual [R05]);
- Use as endpoint for the service request the physical address of the CCN2 endpoint that is provided by the CCN2 endpoint definition. Please note that this will be available via the CCN2 “service discovery” service;

[5] It should be noted that an updated build of CCN2 (CCN2ng) is under construction. This update may allow a revision of the maximum size allowed for messages across CCN2.

- Each service request consists of a SOAP header and a SOAP body as defined in the Web Service Definitions [R02] and [R12]. The SOAP header contains CCN2 information, such as addressing, while the SOAP body contains the business information.

7.1 Consume synchronous CCN2 Web Services

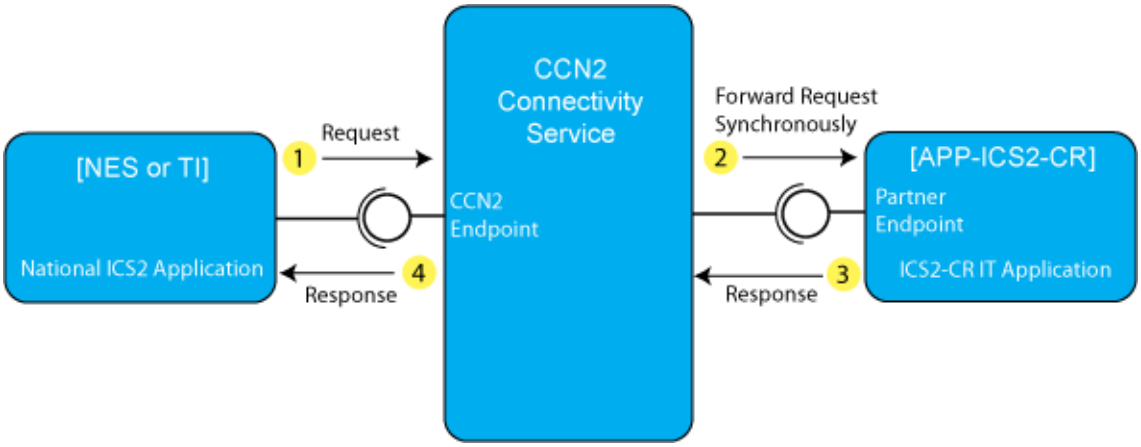

Figure 24: National ICS2 consuming a synchronous common service

7.1.1 Send Request Message

The following section explains what needs to be included in the SOAP message in order to consume a synchronous web service operation exposed by ICS2.

7.1.1.1 Header

- The information required in the SOAP header is CCN2 specific and includes:
  - WS-Security information (UsernameToken with plaintext password);
  - WS-Addressing information.
- Each service request needs authentication information added to the SOAP header. This is done by setting the appropriate WS-Security Header as explained in the CCN2 Integration Manual [R05] in chapter 4.8.5.1. An example header using WS-Security UsernameToken[6] with a plaintext password is shown in Example 1);
  - The wsu:Id attribute is a client-generated string label and can be provided by you in your request. However, this attribute is optional for the ICS2 and is not interpreted;
    The wsse:Username represents a username to authenticate in CCN2. In order to be successfully authorised for the request you are performing, you need to provide a user that is granted the necessary roles.
    The wsse:Password is of Type http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-1.0#PasswordText and the value reflects the user password in CCN2.

```
<soap12:Header>
    <wsse:Security soap12:mustUnderstand="true" soap:role="CCN2.Platform”>
    <wsse:UsernameToken
            wsu:Id="UsernameToken-78d8a587-2cff-432f-9805-df6439923a69">
     <wsse:Username>ICS.beapplication</wsse:Username>
     <wsse:Password Type="…#PasswordText">xxxx</wsse:Password>
    </wsse:UsernameToken>
     </wsse:Security>
     …
```

[6] Following the WS-Security standard UsernameToken profile available under http://docs.oasis-open.org/wss/v1.1/wss-v1.1-spec-os-SOAPMessageSecurity.pdf

```
</soap12:Header>
```

Example 1: SOAP Security Header

See also section 6.2 for information about the registration of a CCN2 user.

- Each service request needs to provide WS-Addressing information in the SOAP Header for CCN2. It is required to indicate, which partner has sent the request (wsa:From), to which partner endpoint (service implementation) the service request is supposed to be routed to (wsa:To) and to provide a unique message ID (wsa:MessageID) for the request. This is done by setting the appropriate WS-Addressing header (as defined in the CCN2 Integration Manual [R05]).

  The values in the wsa:From and wsa:To are referring to Logical Destination IDs as explained in the CCN2 Integration Manual [R05] in chapter 4.8.2.2. For the request the Logical Destination ID that a Partner has for ICS2 must be used in the wsa:From header element. Please note that the Logical Destination ID must be prefixed by "partner:".

  In order to be able to consume a service over CCN2, the Logical Destination ID of the targeted service provided should be known in order to be used in the wsa:To header field. When consuming a central ICS2 service, the following need to be provided:
  - partner:CCN2.Partner.EU.Customs.TAXUD/ICS_CR.{ENV} for the services offered by ICS2;

  The {ENV} placeholder depends on the environment. The possible values are:
  - CONF: for the Conformance Testing environment;
  - PROD: for the Production environment.

  The wsa:MessageID needs to be a unique ID and needs to be provided so that the CCN2 Platform can enable the Reliability – "Exactly Once" Delivery Support feature (§4.8.4.3 of [R05]), that guarantees that a message is delivered exactly once to the service provider. The consuming Partner needs to make sure to use each MessageID only once unless resending the very same message again (for example for retrying in case of permanent target error).

  The wsa:Action element must be set to the value defined in the wsaw:Action element of the abstract part of the WSDL. The naming convention used for this wsaw:Action element is the following:

  {ServiceID}/{OperationName}

  Where
  - {ServiceID} is the CCN2 service ID for the invoked service:
  - {OperationName} is the name of the invoked service operation.

  E.g. "CCN2.Service.Customs.EU.ICS.ENSConsultationDS/QueryENS"

  The wsa:ReplyTo must be "http://www.w3.org/2005/08/addressing/anonymous" for synchronous requests or omitted completely.

  Please also see Example 2 that shows a WS-Addressing header for a request from NA-BE ICS2 (referenced by partner:CCN2.Partner.BE.Customs.TAXUD/ICS_NES.PROD) to the CDCO ICS2 (referenced by partner:CCN2.Partner.EU.Customs.TAXUD/ICS_CR.PROD).

```
<soap12:Envelope>
 <soap12:Header>
      <!-- Addressing SOAP Headers -->
      <wsa:From>
            <wsa:Address>partner:CCN2.Partner.BE.Customs.TAXUD/ICS_NES.PROD</wsa:Address>
      </wsa:From>
      <wsa:To>partner:CCN2.Partner.EU.Customs.TAXUD/ICS_CR.PROD</wsa:To>
```

```
        <wsa:Action>
        CCN2.Service.Customs.EU.ICS.ENSConsultationDS/QueryENS
        </wsa:Action>
        <!-- Unique message identifier assigned by the service consumer -->
        <wsa:MessageID>uuid:0787bcbd3604-4bec-a7a5-dcb9ff704dc1</wsa:MessageID>
        <!-- Optional -->
        <wsa:ReplyTo>
          <wsa:Address>http://www.w3.org/2005/08/addressing/anonymous</wsa:Address>
        </wsa:ReplyTo>

        <!-- CCN2 Security SOAP Headers (wsse:UsernameToken) must be added here -->
        <wsse:Security soap12:mustUnderstand="true">
       <wsse:UsernameToken
                wsu:Id="UsernameToken-2de9a499-83e0-462f-847d-924b20fcaff1">
        <wsse:Username>ICS.beapplication</wsse:Username>
        <wsse:Password Type="…#PasswordText">xxxx</wsse:Password>
       </wsse:UsernameToken>
        </wsse:Security>

  </soap12:Header>
  <soap12:Body>…</soap12:Body>
</soap12:Envelope>
```

Example 2: SOAP Request WS-Addressing header example (adapted from CCN2 Integration Manual [R05])

The following WS-Addressing header fields have to be set with the appropriate value for the service consumer and the service recipient:

WS-Addressing header	Purpose	Mandatory
<wsa:From>	Reference to the consumer Logical Destination. The following naming convention must be respected: partner:CCN2.Partner.{Country Code}.Customs.TAXUD/{APP}.{ENV} where • {Country Code} is the country code of the service consumer Partner's country[7]. • {APP} is the application calling the service. It should be "ICS2" for a national ICS2 application. • {ENV} is the environment: o CONF for Conformance Testing; o PROD for Production. (e.g.: "partner:CCN2.Partner.BE.Customs.TAXUD/ICS_NES.PROD")	Y
<wsa:To>	Reference to the provider Logical Destination as registered in CCN2 (e.g.: "partner:CCN2.Partner.EU.Customs.TAXUD/ICS_CR.PROD")	Y
<wsa:MessageID>	Unique identifier of the message. If two messages have the same identifier they must have exactly the same content (header and body).	Y
<wsa:Action>	A value that uniquely identifies the semantics implied by this exchange. In this field the service and the operation to be consumed is defined.	Y
<wsa:ReplyTo>	Reply Endpoint, referring to an "anonymous" endpoint denoting a synchronous interaction, with a value for the address that must be "*http://www.w3.org/2005/08/addressing/anonymous*".	Y

Table 17: WS-Addressing header fields for sending synchronous requests

7.1.1.2 Body

The SOAPBody of the request messages (payload) must follow the service specifications [R02] and [R12] of the consumed service.

7.1.2 Receive a Response Message

Once the functional processing of the request is executed, the service provider sends back the response synchronously (i.e. in the same HTTP connection) containing the HTTP status code 200.

[7] According to [R05] §12.1.1 the country code part of a CCN2 Partner name is defined as per ISO 3166-1 alpha-2, i.e. two-letter country codes with capital letters; As far as DG TAXUD is concerned, "EU" is used.

7.1.2.1 Header

Example 3 shows a WS-Addressing header for a response from CDCO ICS2 (referenced by partner:CCN2.Partner.EU.Customs.TAXUD/ICS_CR.PROD) to the NA-BE ICS2 (referenced by partner:CCN2.Partner.BE.Customs.TAXUD/ICS_NES.PROD).

```
<soap12:Envelope>
  <soap12:Header>
        <!-- Addressing SOAP Headers -->
        <wsa:From>
                <wsa:Address>partner:CCN2.Partner.EU.Customs.TAXUD/ICS_CR.PROD</wsa:Address>
        </wsa:From>
        <wsa:To>http://www.w3.org/2005/08/addressing/anonymous</wsa:To>
        <wsa:Action>
        CCN2.Service.Customs.EU.ICS.ENSConsultationDS/QueryENS
        </wsa:Action>
        <!-- Unique message identifier assigned by the service consumer -->
        <wsa:MessageID>urn:uuid:f9adaaf78871-4305-97d2-8901f452b9e6</wsa:MessageID>
        <!-- The message identifier of the initial request -->
        <wsa:RelatesTo>uuid:0787bcbd3604-4bec-a7a5-dcb9ff704dc1</wsa:RelatesTo>

  </soap12:Header>
  <soap12:Body>…</soap12:Body>
</soap12:Envelope>
```

Example 3: SOAP Response WS-Addressing header example (adapted from CCN2 Integration Manual [R05])

The WS-Addressing header fields are the same as of the ones for the request described in Table 17: WS-Addressing header fields for sending synchronous requests

with the below described differences:

- *ReplyTo* field is omitted;
- *RelatesTo* field which should be set with the message ID (value of *MessageID* field) of the request.

7.1.2.2 Body

The response messages follow the definition provided in the service specifications [R02] and [R12].

7.1.3 Receive an Error Response

Exceptions are modelled as SOAP Faults in the WSDL contract.

There are two sources of exception:

- Service SOAP Faults triggered by the target service consumed;
- CCN2 SOAP Faults triggered by the CCN2 infrastructure.

This CCN2 FaultType is also used and referred in the ICS2 Web Service Definitions [R02] and [R12].

7.1.3.1 Service SOAP Faults

The different services define dedicated Exceptions as SOAP Faults as described in the appropriate Service Specification document.

An example for a SOAP Fault that is returned by the ICS2 can be found in Example 4.

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope">
   <soap:Header>…</soap:header>
   <soap:Body>
      <soap:Fault>
         <soap:Code>
            <soap:Value>soap:Sender</soap:Value>
         </soap:Code>
         <soap:Reason>
            <soap:Text xml:lang="en">…</soap:Text>
         </soap:Reason>
         <soap:Detail>
            <ft:Fault xmlns:ft="http://xmlns.ec.eu/BusinessObjects/ICS2/ServiceFaultType/V1">
               <errorCode>…</errorCode>
               <errorReason>…</errorReason>
            </ft:Fault>
         </soap:Detail>
      </soap:Fault>
   </soap:Body>
</soap:Envelope>
```

Example 4: SOAPFault sent by ICS2

7.1.3.2 CCN2 SOAP Faults

CCN2 uses a dedicated FaultType (under the CCN2 common schema, namespace: xmlns:cmn="http://ccn2.ec.eu/CCN2.Service.Platform.Common.Schema") that is returned by the CCN2 platform when any technical problem occurred during the reception or forwarding of the message. This is returned as a cmn:Fault element which is reused as part of the fault message for a dedicated SOAP Fault.

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope">
   <soap:Header/>…</soap:header>
   <soap:Body>
      <soap:Fault>
         <soap:Code>
            <soap:Value>soap:Sender</soap:Value>
         </soap:Code>
         <soap:Reason>
            <soap:Text xml:lang="en">Security Error</soap:Text>
         </soap:Reason>
         <soap:Detail>
            <sch:Fault xmlns:sch="http://ccn2.ec.eu/CCN2.Service.Platform.Common.Schema">
               <StatusCode>CCN2-IAM-1001</StatusCode>
               <FaultMessage>Username and/or password combination is incorrect</FaultMessage>
            </sch:Fault>
         </soap:Detail>
      </soap:Fault>
   </soap:Body>
</soap:Envelope>
```

Example 5: Platform SOAPFault sent by CCN2

7.2 Consume Asynchronous CCN2 Web Services

ICS2 provides the majority of its services in an asynchronous manner. In this MEP, called One-Way MEP or Fire-and-Forget, described in [R05] §4.8.3.5, the service does not reply with a functional response. Instead, the reception of an acknowledgment relating to the delivery of the request can be specified by the service consumer. Functional responses (notifications) and error messages occur as separate callback service calls as outcomes of the asynchronous services and are not returned as an output / response of the service call.

The service consumer has to have set the *wsa:ReplyTo* SOAP header, in order to specify to the CCN2 Platform where to route an asynchronous positive acknowledgement (i.e. CoD), confirming the delivery of the request to the target Partner's endpoint.

If the *wsa:ReplyTo* SOAP Header is not included in the request message, the CCN2 Platform will use *wsa:From* of the initial request message to reply to the initial caller. If none of those headers is specified, the CCN2 Platform will not be able to reply to the initial caller. One of them must therefore be specified in all cases where the service consumer expects a response.

In case of an exception, an asynchronous negative acknowledgement (i.e. CoE) is sent back to the initial caller, as optionally specified by the *wsa:FaultTo* SOAP Header of the request message.

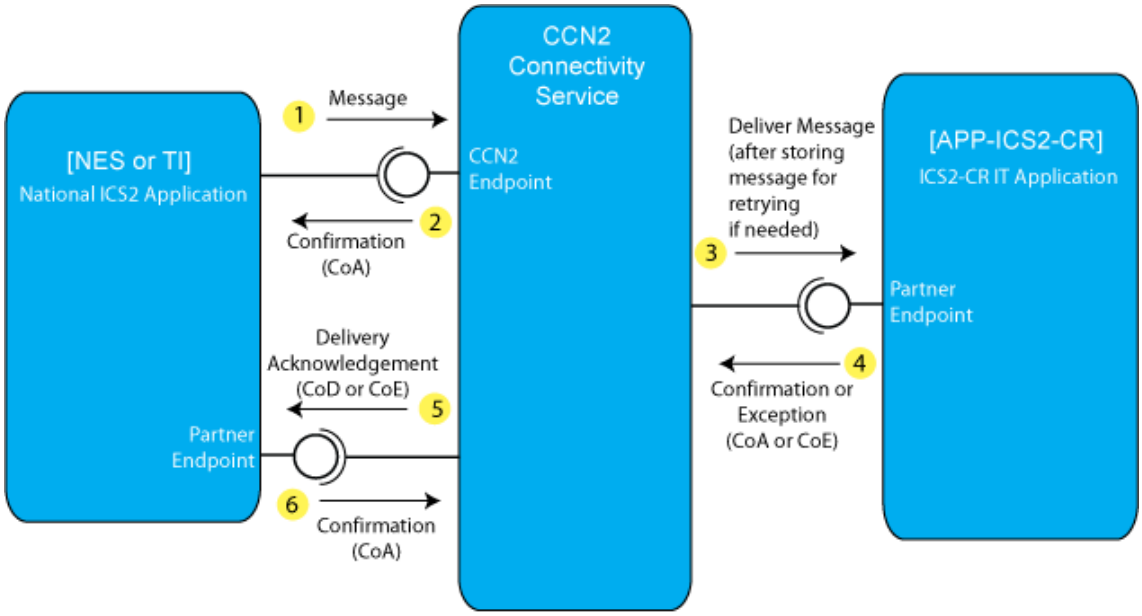

Figure 25: National ICS2 consuming asynchronously a common service

7.2.1 Send Request Message

7.2.1.1 Header

Similarly, to the case of the synchronous service consumption the client should set the message header to contain the necessary security and addressing information needed by CCN2 to authenticate, and route the messages sent.

The header should be set in the same manner as for synchronous requests with the following changes:

WS-Addressing header	Purpose	Mandatory
<wsa:ReplyTo>	Reply Endpoint. An endpoint reference including a destination for acknowledgment to this request. If this attribute is not specified, the Source Endpoint (<wsa:From>) is used.	N
<wsa:FaultTo>	Fault Endpoint. A specific endpoint reference to receive a differed reporting on exception. If this attribute is not specified, the Reply Endpoint is used. If the Reply Endpoint is not specified, the Source Endpoint is used.	N

Table 18: WS-Addressing header fields differences in asynchronous compared to synchronous requests

Please also see Example 6 that shows a WS-Addressing header for a request from NA-BE ICS2 (referenced by partner:CCN2.Partner.BE.Customs.TAXUD/ICS_NES.PROD) to the CDCO ICS2 (referenced by partner:CCN2.Partner.EU.Customs.TAXUD/ICS_CR.PROD).

```
<soap12:Envelope>
  <soap12:Header>
        <!-- Addressing SOAP Headers -->
        <wsa:From>
        <wsa:Address>partner:CCN2.Partner.BE.Customs.TAXUD/ICS_NES.PROD</wsa:Address>
        </wsa:From>
        <wsa:To>partner:CCN2.Partner.EU.Customs.TAXUD/ICS_CR.PROD</wsa:To>
        <wsa:Action>
        CCN2.Service.Customs.EU.ICS.RiskAnalysisOrchestrationBAS/IE4S02submitRiskAnalysisResult
        </wsa:Action>
        <!-- Unique message identifier assigned by the service consumer -->
        <wsa:MessageID>uuid:0787bcbd3604-4bec-a7a5-dcb9ff704dc1</wsa:MessageID>
        <!— Optional -->
        <wsa:ReplyTo>
          <wsa:Address>partner:CCN2.Partner.BE.Customs.TAXUD/ICS_NES.PROD</wsa:Address>
        </wsa:ReplyTo>

        <!-- CCN2 Security SOAP Headers (wsse:UsernameToken) must be added here -->
        <wsse:Security soap12:mustUnderstand="true">
       <wsse:UsernameToken
                wsu:Id="UsernameToken-2de9a499-83e0-462f-847d-924b20fcaff1">
        <wsse:Username>ICS.beapplication</wsse:Username>
        <wsse:Password Type="…#PasswordText">xxxx</wsse:Password>
       </wsse:UsernameToken>
        </wsse:Security>

        <!-- CCN2 Custom Header -->
    <ccn2:MessageHeader xmlns:ccn2="http://ccn2.ec.eu/CCN2.Service.Platform.Common.Schema">
        <ccn2:Version>1.0</ccn2:Version>
        <ccn2:SendingDateAndTime>2020-07-29T14:25:09.803Z</ccn2:SendingDateAndTime>
        <ccn2:MessageType>CCN2.Service.Customs.EU.ICS.RiskAnalysisOrchestrationBAS/IE4S02submitRiskAnalysi
sResult</ccn2:MessageType>
        <ccn2:RequestCoD>true</ccn2:RequestCoD>
    </ccn2:MessageHeader>
  <soap12:Body>…</soap12:Body>
</soap12:Envelope>
```

Example 6: SOAP Request WS-Addressing header example (adapted from CCN2 Integration Manual [R05])

7.2.1.2 Body

The SOAPBody of the request messages (payload) must follow the service specifications [R02] and [R12] of the consumed service.

7.2.2 Receive a Response Message

Compared to the synchronous MEP, the immediate result of such invocation does not include a (functional) response. Instead, the CCN2 Platform synchronously sends back a technical acknowledgment to the client through a HTTP 202. Note that this HTTP response does not include any additional information. Such confirmation guarantees that the CCN2 Platform has safely stored the message for differed processing.

In case of an exception, a fault is returned within the same HTTP session in the form of a negative HTTP status code (i.e. 4xx / 5xx) reporting a failure during the acceptance of the SOAP message by the CCN2 Platform.

When invoking a service asynchronously a service consumer is able to specify that he wants to receive information about the effective delivery of the related message by setting appropriate header flag *RequestCoD* to true. The specified reply endpoint (*wsa:ReplyTo*) or fault endpoint (*wsa:FaultTo*) in the initial request must be made available by the service consumer, behaving in this case also as a service provider. Such endpoints are registered, as any other service endpoints, through the CCN2 service registration process as described in the §7.4 of the CCN2 Integration Manual [R05].

Once the CCN2 Platform has successfully achieved the asynchronous transmission of the service request message to the target service endpoint and the CoD flag is set to true, it notifies the call initiator about its delivery.

According to the result of such transmission, the CCN2 Platform calls back the call initiator using:

- The Reply (Acknowledgement) Endpoint in case of a successful message delivery;
- The Fault (Acknowledgement) Endpoint in case of negative acknowledgement reporting an exception. A standard CCN2 Exception Report construct is used to describe the nature of the related exception.

Such acknowledgement messages include a specific WS-Addressing SOAP Header attribute describing their relationship with the initial service request (i.e. wsa:RelatesTo, for correlation purpose), including the initial request message ID. Details on the structure and contents of acknowledgment messages can be found in §4.8.4.1 of [R05]. Two examples of such acknowledgement messages, one positive and one negative generated by the CCN2 Platform are shown below.

```
<soap12:Envelope>
  <soap12:Header>
        <!-- Addressing SOAP Headers -->
        <wsa:From>
                <wsa:Address>partner:CCN2.Partner.EU.Customs.TAXUD/ICS_CR.PROD</wsa:Address>
        </wsa:From>
        <wsa:To>partner:CCN2.Partner.BE.Customs.TAXUD/ICS_NES.PROD</wsa:To>
        <wsa:Action>urn:CCN2.Service.Platform.AcknowledgementService/CoD</wsa:Action>
        <!-- Unique message identifier assigned by the service consumer -->
        <wsa:MessageID>uuid:9e105bd62f93-4bb0-8eea-bcd128cb2aae</wsa:MessageID>
<wsa:RelatesTo RelationshipType="http://ccn2.ec.eu/addressing/ack">
         urn:uuid:0787bcbd3604-4bec-a7a5-dcb9ff704dc1
        </wsa:RelatesTo>
        <!-- CCN2 Security SOAP Headers (wsse:UsernameToken) must be added here -->
  </soap12:Header>
  <soap12:Body>
    <ccn2ack:CoD>
      <ccn2ack:EventTimestamp>2025-05-18T21:32:52</ccn2ack:EventTimestamp>
        </ccn2ack:CoD>
  </soap12:Body>
</soap12:Envelope>
```

Example 7: Received Asynchronous Positive Acknowledgment example (adapted from CCN2 Integration Manual [R05])

```
<soap12:Envelope>
  <soap12:Header>
        <!-- Addressing SOAP Headers -->
        <wsa:From>
                <wsa:Address>partner:CCN2.Partner.EU.Customs.TAXUD/ICS_CR.PROD</wsa:Address>
        </wsa:From>
        <wsa:To>partner:CCN2.Partner.BE.Customs.TAXUD/ICS_NES.PROD</wsa:To>
        <wsa:Action>urn:CCN2.Service.Platform.AcknowledgementService/CoE</wsa:Action>
        <!-- Unique message identifier assigned by the service consumer -->
        <wsa:MessageID>uuid:9e105bd62f93-4bb0-8eea-bcd128cb2aae</wsa:MessageID>
        <wsa:RelatesTo RelationshipType="http://ccn2.ec.eu/addressing/ack">
        urn:uuid:0787bcbd3604-4bec-a7a5-dcb9ff704dc1
        </wsa:RelatesTo>
        <!-- CCN2 Security SOAP Headers (wsse:UsernameToken) must be added here -->
  </soap12:Header>
  <soap12:Body>
    <ccn2ack:CoE>
      <ccn2ack:Severity>ccn2:severityEnum</ccn2ack:Severity>
      <ccn2ack:EventTimestamp>xs:dateTime</ccn2ack:EventTimestamp>
      <ccn2ack:Payload>
        <soap12:Fault>
          <soap12:Code>
            <soap12:Value>xs:string</soap12:Value>
           ( <soap12:Subcode>
              <soap12:Value>xs:string</soap12:Value>
              <soap12:Subcode>…</soap12:Subcode> ?
            </soap12:Subcode> ) ?
```

```
          </soap12:Code>
          <soap12:Reason>
            <soap12:Text xml:lang="xs:string">soap12:reasontext</soap12:Text> *
          </soap12:Reason>
          <soap12:Node>xs:anyURI</soap12:Node> ?
          <soap12:Role>xs:anyURI</soap12:Role> ?
          <soap12:Detail>
            <ccn2:Fault>
              <StatusCode>xs:string</StatusCode>
              <FaultMessage>xs:string</FaultMessage>
            </ccn2:Fault>
          </soap12:Detail>
        </soap12:Fault>
    </ccn2ack:CoE>
  </soap12:Body>
</soap12:Envelope>
```

Example 8: Received Asynchronous Negative Acknowledgment example (adapted from CCN2 Integration Manual [R05])

Please note that the RelationshipType attribute value indicates the nature of the reply, namely:

- Confirmation of Delivery: *http://ccn2.ec.eu/addressing/ack;*
- Exception Report: *http://ccn2.ec.eu/addressing/err.*

Finally, the call initiator will send back an acknowledgement (CoA) to the CCN2 Platform.

7.2.3 Receive An Error Response

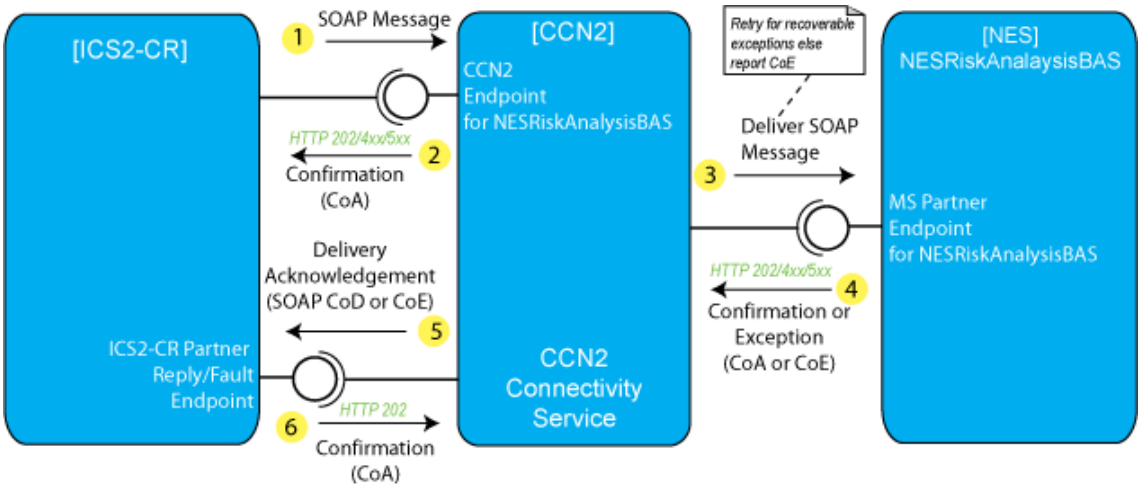

Figure 26: CCN2 asynchronous flow with error flow

For the CCN2 One-Way MEP the consumer of the service operation does not expect any functional response, but rather a synchronous response in the format of an acknowledgement with an HTTP code as explained below:

In case CCN2 rejects the request, a synchronous negative response (HTTP 4xx/5xx code) is returned to the client, and the failure is reported through an asynchronous negative acknowledgement (CoE) to the specified client application's Fault Endpoint. In case CCN2 accepts the request, a synchronous positive response (HTTP 202 code) is returned to the client. In this case there are two sub-cases:

- The service provider application successfully receives the request and informs the CCN2 platform synchronously with an HTTP 202 code. In this case CCN2 sends a CoD to the client application's Reply Endpoint if specified in the request;
- The service provider application does not receive the request because of a permanent failure in the transmission of the request (e.g. message timeout) or the service provider application returns a fault for the specific request (e.g. syntactical error). In these cases the failure is reported through an asynchronous negative ecknowledgment (CoE) to the

speicified client application’s Fault Endpoint. More details are provided by the technical specifications of the One-Way MEP in CCN2 Integration Manual [R05].

For a complete list of HTTP Error Codes supported by CCN2 please refer to the CCN2 Platform Integration manual [R05].

Finally, a CoE (Confirmation of Exception) message is sent asynchronously in case of delivery failure ([R05] - §4.8.4.1).

8 PROVIDE NATIONAL ASYNCHRONOUS CCN2 WEB SERVICES

This chapter describes the steps required to register a web service in CCN2. It also describes how to process requests received through CCN2.

The CCN2 platform is an enabler for secure, reliable and high-performance communication between CCN2 partners in the Common Domain and offers capabilities to perform interoperable service-oriented communication.

As it can be seen in Figure 27, a service consumer sends the service requests to the CCN2 endpoint without knowing the physical address of the Partner Endpoint. CCN2 extracts routing information from the WS-Addressing headers that were provided or the payload if a content-based routing was configured. With this routing information, it can forward the request to the appropriate Partner endpoint.

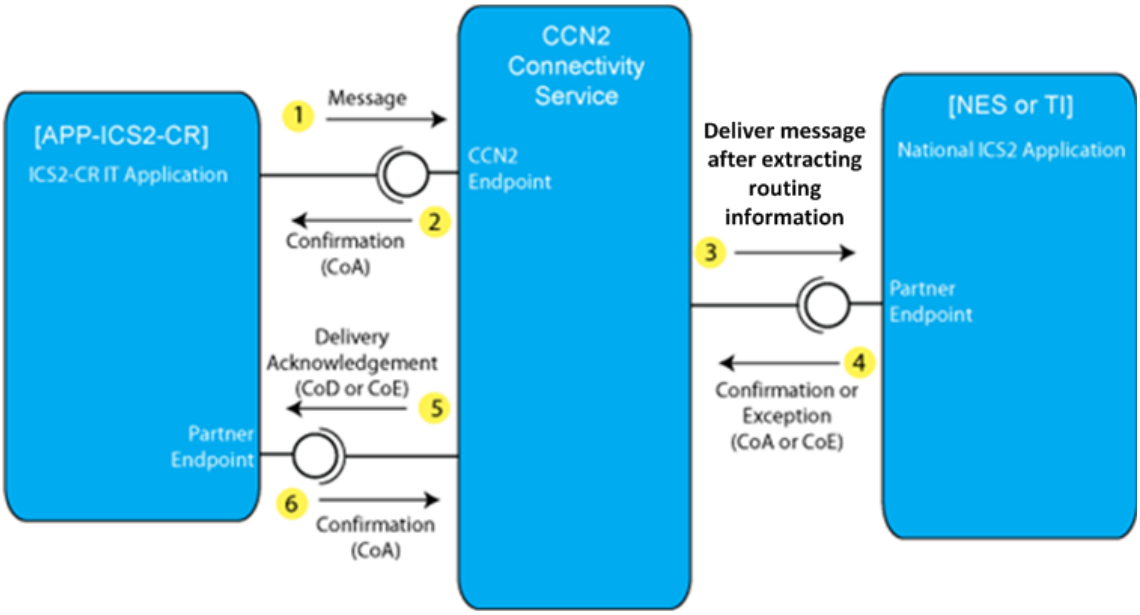

Figure 27: Providing a national service implementation with CCN2

8.1 Register a Web Service in CCN2

In order to make services available via CCN2, a national implementation (NDA) needs to provide a partner concrete WSDL as an implementation for the abstract service definition that is available in CCN2. This partner concrete WSDL contains the NDA concrete service definition with a physical address for the partner endpoint. This partner concrete WSDL has to be registered in CCN2 to expose this service via CCN2 (as described in chapter 7.4.2 of the CCN2 Integration Manual [R05]).

Each National Administration that intends to make a national service implementation available has to register its own service partner endpoint according to the explanation provided in the chapter 7.4.2 of the CCN2 Integration Manual [R05]. To do that, you will have to:

- Build a partner concrete WSDL for the service you intend to provide based on the abstract WSDL using the CCN2 Service ID described in chapter 3.3.1;
- Perform a request to CCN2 to register a Partner Endpoint as described in the chapter 7.4.2 of the CCN2 Integration Manual [R05]). With this request, you need to provide the specific partner concrete WSDL describing your partner endpoint. This partner concrete WSDL needs to contain an EndpointReference element which indicates the physical partner endpoint (please see Example 8 below).

  The provided partner concrete WSDL artefact for the registration of the national ICS2 implementation partner endpoint has to follow the CCN2 naming pattern. The used

service ID has to be the same as registered with the CCN2 endpoint concrete WSDL for the service that you intent to provide (see chapter 3.3.1 for the list of CCN2 Service IDs).

The Destination ID registered for the service must respect the following naming convention:

CCN2.Partner.{Country Code}.Customs.TAXUD/ICS_{SUBSYSTEM}.{ENV}

where

- {Country Code} is the country code of the service consumer Partner's country[8].
- {ENV} is the environment:
  - CONF for Conformance Testing;
  - PROD for Production.
- {SUBSYSTEM} is the ICS2 subsystem:
  - CR for Common Repository;
  - NES for NES subsystems;
  - TI for NTI.

(e.g. CCN2.Partner.BE.Customs.TAXUD/ICS_NES.PROD).

Below, you can find an example EndpointReference that needs to be provided in your partner concrete WSDL[9].

```
<wsa:EndpointReference>
   <wsa:Address>https://{host}:{port}/{serviceURL}</wsa:Address>
   <wsa:Metadata>
      <ccn2:ServiceID>
            CCN2.Service.Customs.EU.ICS.NESRiskAnalysisBAS
      </ccn2:ServiceID>
      <ccn2:ServiceName>NES Risk Analysis BE</ccn2:ServiceName>
      <ccn2:ServiceDescription>BE NES Risk Analysis Service…</ccn2:ServiceDescription>
      <ccn2:ServiceVersion>http://ccn2.ec.eu/Version/1.0.0</ccn2:ServiceVersion>
      <ccn2:ServiceState>http://ccn2.ec.eu/State/Test</ccn2:ServiceState>
      <ccn2:DestinationID>CCN2.Partner.BE.Customs.TAXUD/ICS_NES.PROD</ccn2:DestinationID>
   </wsa:Metadata>
</wsa:EndpointReference>
```

Example 9: EndpointReference example for registering a partner service endpoint in CCN2

- To be able to authenticate requests that are sent to your partner endpoint, you need to refer to a dedicated CCN2 security policy with the registration of the partner endpoint in your partner concrete WSDL. This policy tells CCN2 to propagate the SAML token of the authenticated user that performed the request via the CCN2 endpoint. This policy is available when the partner concrete WSDL imports the generic WSDL CCN2_Policies_1.0.0_0.1.0.wsdl which is provided by the CCN2 platform as follows:

```
<wsdl:import namespace="http://ccn2.ec.eu/CCN2.Service.Platform.SecurityPolicies" location="
../../../../Policies/CCN2/CCN2_Policies_1.0.0_0.1.0.wsdl"/>
```

Example 10: Import of common CCN2 Policy WSDL

Then, the partner concrete WSDL refers the SAML token Security policy to receive the SAML token[10]:

[8] According to [R05] §12.1.1 the country code part of a CCN2 Partner name is defined as per ISO 3166-1 alpha-2, i.e. two-letter country codes with capital letters; with the exception of Greece and the United Kingdom, where "GR" and "UK" must be used accordingly. As far as DG TAXUD is concerned, "EU" is used.

[9] The namespace prefix wsa: is referring to the WS-Addressing namespace as described in the standard under http://www.w3.org/Submission/ws-addressing/

[10] The namespace wsp: is referring to the WS-Policy namespace as described in the standard under http://www.w3.org/Submission/WS-Policy/

```
<wsp:PolicyReference URI="#CCN2.Policy.Platform.Auth.SAML-SignEncrypt"/>
```

Example 11: Referring to the CCN2 SAML Token Policy

- Provide this partner concrete WSDL together with your request to register the service partner endpoint. This procedure is described in chapter 7.4.2 of the CCN2 Integration Manual [R05].

8.1.1 Partner Concrete WSDL Templates

For the services that have to be provided by Member States on CCN2 (see section 3.3.1), a partner concrete WSDL template is provided.

In order to define its own partner concrete WSDL, the Member State has to instantiate this template for each of these services.

The Member State must then provide the actual partner concrete WSDLs to ITSM3 Application Management for deployment on CCN2. The following table indicates the placeholders that must be replaced in the template.

Placeholder	Description
{partner_Service_EndPoint}	The final partner endpoint address (URL) at which the service is made available. e.g. http://{host}:{port}/ICS2/NESRiskAnalysisBAS/V1
{CountryCode}	The country code for which the service is defined. According to [R05] §12.1.1 the country code part of a CCN2 Partner name is defined as per ISO 3166-1 alpha-2, i.e. two-letter country codes with capital letters; with the exception of Greece and the United Kingdom, where “GR” and “UK” must be used accordingly. As far as DG TAXUD is concerned, “EU” is used.
{ENV}	The identification of the environment for which the service is made available. This parameter is used to discriminate the services deployed on different environments. The convention is: • “PROD” for the production environment; • “CONF” for the conformance testing environment.

Table 19: Placeholders in the Partner Concrete WSDL Templates

Finally, the template file contains a [DestinationID] placeholder.

This placeholder must be replaced in the actual file name by the value taken from the <ccn2:DestinationID> tag of the WSDL (in which the relevant placeholders are properly filled in); but, the “/” character present in this tag must be replaced by a “.” character.

8.2 Process requests

A national ICS2 implementation receives different types of messages in the provided service implementations. The different messages are explained in the corresponding Service Specification document [R12].

8.2.1 User authorisation

*Requests that an NA will receive via CCN2 can only be done with an authenticated and authorised user. They will have the role "*CCN2.Role.ICS.*CentralRepository" as described in Table 15: Roles to protect NES or TI services*

.

This means that the SOAP requests that are performed via CCN2 towards a national implementation contain a SAML token which is provided by CCN2, due to the corresponding Policy reference that is included in your partner concrete WSDL definition (as described in Example 11). Those SAML tokens contain assertions according to the above roles.

8.2.2 Send Response

The Message Exchange Patterns for our service interfaces are defined as asynchronous one-way. There is no need to send a response.

9 SERVICE OPERATIONS WITH COMPRESSED PAYLOAD

To circumvent the 20MB CCN2 limit, CR offers alternative endpoints to/from the NES systems that accept the input in compressed format (base64 encoded). This is applied only for endpoints that large data is expected in extreme cases. The impacted webservices are:

- Ougoing: NESRiskAnalysisBAS, NESControlBAS.
- Incoming: RiskAnalysisOrchestrationBAS, ENSLifecycleManagementBAS

The complete list of the new operations, and further details are listed in the service specifications of each service, see [R02].

9.1 Structure of the compressed variant of an operation

The new "compressed" operations will include a new <messageEnvelope> with usefull uncompressed metadata, e.g. messageType, compressionMethod… The <urn:messageEncoded> element holds the compressed textual UTF-8 encoded XML payload (serialized in a byte buffer). This byte buffer is compressed using the deflate compression algorithm. A request example is:

```
    <ns2:IE4Q01requestEScreeningCompressedReqMsg
xmlns:ns2=""http://xmlns.ec.eu/BusinessActivityService/ICS/INESRiskAnalysisBAS/V2"">
      <messageEnvelope xmlns=""urn:wco:datamodel:eu:request:ics2:1"">
        <messageType>IE4Q01</messageType>
        <messageVersion>2.0</messageVersion>
        <messageId>0bda3346be48-438c-8336-b788d20a8a45</messageId>
        <correlationId>f186e3a0-15ad-4c02-b2de-f12341ebf4f4</correlationId>
        <messageTimestamp>2025-02-21T13:45:41Z</messageTimestamp>
        <messageSender>CR</messageSender>
        <messageRecipient>NES.HR</messageRecipient>
        <compressed>true</compressed>
        <compressionMethod>deflate</compressionMethod>
      </messageEnvelope>
      <messageEncoded
xmlns=""urn:wco:datamodel:eu:request:ics2:1"">eJy9Wtly3Diy/ZWOeeknt7CRBBxqTYALSHADwAUk8VZW0e66o80lyTM9X3
9RkmXJtmSP5nbcCEUVCSYyk4k8iTwoHf/9X+dnv3xa99e7y4vff4W/gV9/WS9OL7e7iw+//zoO4g399e8nxzIjBsBfvOzF9e9/u91f
vP3n6eXb7eZmc365Xc/errdvd6fX6C3628lxs15fbz6sxbrZrvuT4/P7W7k9Ae+2G4xJ+G4l9A3B9PQNxTh88y6idIvAhm5IcHz0KH
58ernfr2ebG++Zv30PabjiDXgDg832DTkF6M07tF3fvIcIE7i+e0/ek+Ojr+c8GB92/sL7enWCAAre+KkIDhC/JcFbAt0Xo49iDxP79e
LwEkn3RebzyINAt57urnbrxc1Jm/W/FY9yjw+Oj56PiLi9OD34ecK+TPoydPz+89XmrFvfr3u/JOsJfMPf9NUbBMjHW3L58fzTR8
T+Bd436zcE1nFI6k7iJBGsDCSpeuhMkM5tBqexDCa/CceNLFtJdGpnFjKJFz25pAi0cnFJOixrbiLbD6YBTvuCUBH/oq5Cum4DV
ndo6nNJcxr7QjEWkYgHwPwO0VuOPKWlo57TNgS5LXWCLSOkzoGOm7zVTS5Cq1SjOhGo0tg0FIP1KTsD1wZONxp3s0rMr
PHsRA4rlyMbhE0EwtdV/yfV/uil9vPo698ldxefLs8+rdtmPVStQwlfX/hB5OhZUV/hrg4N8Luz9VkVffVUxUvS+931P7gvpn9e766/
vuvWj7fr9c0zP/Bub8nu9uO79Yru6RXcovM/4P7TTXjuS/APFRz7cK0fLr0/B0r1cP2cUR9w3+XuxeU+uTy/Olvvo7z1U/jF9r4BfrZ
TJs813l9Nu1/I/pF5PGPnv7UN/yPbxQ9tPxfBb0b97f0/PJz8L5Wo1u8=</messageEncoded>
    </ns2:IE4Q01requestEScreeningCompressedReqMsg>
```

Example 12: Compressed message sample

9.2 Configuration for the support of the compressed variant.

Every National webservice provider that supports the compressed variants must communicate this to the central team to configure the CR to start using these compressed variants for invocations above a certain threshold (e.g. 50KB).

Annex A. STI AND CR RELEASES

The ICS2 Transition Strategy [R13], [R08] introduces the concept of a phased rollout of ICS2, based on different releases of STI and CR. This appendix defines the scope of each release in terms of supported ENS filing types, ICS2 business processes and messages, and user interface functionality.

A.1. ENS FILING TYPES

The table below lists the filing types introduced in each release of STI and CR.

Release	ENS filing type
Release 1	• Express consignments (F32); • Postal consignments (F43, F44).
Release 2	• Postal consignments (F42); • Express consignments (F30, F31, F33); • Air cargo (F20, F21, F22, F23, F24, F25, F26, F27, F28, F29).
Release 3	• Sea and inland waterways (F10, F11, F12, F13, F14, F15, F16, F17); • Road mode of transport (F50); • Rail mode of transport (F51).

Table 20: ENS filing types per release

A.2. ICS2 BUSINESS PROCESSES AND MESSAGES

The table below summarises the ICS2 business processes and messages as defined in [R04] that are introduced in each release of STI and CR.

Message ID	ICS2 business process	Release 1	Release 2	Release 3
IE4Fxx	L4-ICS2-01 Register filing	Please refer to Table 20: ENS filing types per release above		
IE4Axx	L4-ICS2-07 Amend filing	Please refer to Table 20: ENS filing types per release above		
IE4Q01	L4-ICS2-03 Perform risk analysis	x	x	x
IE4Q02	L4-ICS2-03 Perform risk analysis	x	x	x
IE4Q03	L4-ICS2-03 Perform risk analysis	x	x	x
IE4Q04	L4-ICS2-03-01 Send referral	x	x	x
IE4Q05	L4-ICS2-03-01 Send referral	x	x	x
IE4Q06	L4-ICS2-08 Invalidate filing	x	x	x
IE4Q07	L4-ICS2-09 e-Screening by OMS	x	x	x
IE4Q08	L4-ICS2-12 Revoke presentation of goods	x	x	x
IE4Q09	L4-ICS2-13 Consult ENS		x	x

Message ID	ICS2 business process	Release 1	Release 2	Release 3
IE4Q10	L4-ICS2-14 Query for ENS	x	x	x
IE4R01	L4-ICS2-02 Prepare ENS for risk analysis	x[11]	x	x
IE4R02	L4-ICS2-03-01 Send referral	x	x	x
IE4R03	L4-ICS2-03-01 Send referral	x	x	x
IE4R04	L4-ICS2-08 Invalidate filing	x	x	x
IE4R05	L4-ICS2-14 Query for ENS	x	x	x
IE4R06	L4-ICS2-13 Consult ENS		x	x
IE4S01	L4-ICS2-03 Perform risk analysis	x	x	x
IE4S02	L4-ICS2-03 Perform risk analysis	x	x	x
IE4S03	L4-ICS2-04 Process arrival of means of transport		x	x
	L4-ICS2-06 Process control decision and results	x	x	x
IE4N01	L4-ICS2-02 Prepare ENS for risk analysis	x[11]	x	x
IE4N02	L4-ICS2-02-01 Relate ENS filings		x	x
IE4N03	L4-ICS2-03 Perform risk analysis	x	x	x
IE4N04	L4-ICS2-03 Perform risk analysis	x	x	x
IE4N05	L4-ICS2-03 Perform risk analysis	x	x	x
	L4-ICS2-04 Process arrival of means of transport		x	x
	L4-ICS2-05 Process presentation of goods	x	x	x
	L4-ICS2-06 Process control decision and results	x	x	x
IE4N06	L4-ICS2-03-01 Send referral	x	x	x
IE4N07	L4-ICS2-04 Process arrival of means of transport		x	x
IE4N08	L4-ICS2-04 Process arrival of means of transport		x	x
IE4N09	L4-ICS2-04 Process arrival of means of transport		x	x
IE4N10	L4-ICS2-05 Process presentation of goods	x	x	x
IE4N11	L4-ICS2-06-01 Handle AEO notification	x	x	x
IE4N12	L4-ICS2-07 Amend filing	x	x	x
IE4N13	L4-ICS2-08 Invalidate filing	x	x	x

[11] The following tasks of L4-ICS2-02 Prepare ENS for Risk Analysis are out of scope of CR Release 1:

- T-02-13 Link ENS filings and check ENS completeness
- T-02-14 Start linking expiration timer
- T-02-15 Check data consistency
- T-02-16 Enrich ENS data for full risk analysis
- T-02-17 Determine MS roles for full risk analysis
- T-02-18 Match ENS against stored parameters
- T-02-19 Start timers for completion of eScreening for full risk analysis

Message ID	ICS2 business process	Release 1	Release 2	Release 3
IE4N14	L4-ICS2-04 Process arrival of means of transport		x	x
IE4N15	MS of control change notification		x	x
IE4N16	L4-ICS2-13 Consult ENS			x
IE4N99	All processes	x	x	x

Table 21: ICS2 business processes and messages per release

A3. USER INTERFACES

A.3.1 STI

The STI user interface described in section 5.1 will be available:

- For Economic Operators: from Release 2.

A.3.2 CR

All the user interfaces described in section 5.2 will be available from CR Release 1.

A.3.3 MON&BS

All the user interfaces described in section 5.3 will be available from MON&BS Release 1.

A.3.4 SSA

The user interfaces described in section 5.4 will be available from Release 2.

Annex B. ICS2 SERVICES

B1. IE4XX MESSAGE HEADER

In IE4xx messages, a message header is introduced to help the interaction between TI and CR. The elements of this message header are shown below:

```
<xs:complexType name="MessageHeaderType">
  <xs:annotation>
    <xs:documentation>Used by all messages</xs:documentation>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="messageId" type="MessageIdContentType" />
    <xs:element name="correlationId" minOccurs="0" type="MessageIdContentType" />
    <xs:element name="replyToMessageId" minOccurs="0" type="MessageIdContentType"
/>
    <xs:element name="messageTimestamp" type="MessageTimestampContentType" />
    <xs:element name="messageSender" type="PartnerNameContentType" />
    <xs:element name="messageRecipient" type="PartnerNameContentType" />
    <xs:element name="conformanceCampaign" minOccurs="0"
type="ConformanceCampaignContentType" />
  </xs:sequence>
 </xs:complexType>
 <xs:simpleType name="MessageIdContentType">
  <xs:restriction base="xs:token">
    <xs:maxLength value="291" />
  </xs:restriction>
 </xs:simpleType>
 <xs:simpleType name="MessageTimestampContentType">
  <xs:annotation>
    <xs:documentation />
  </xs:annotation>
  <xs:restriction base="xs:dateTime">
    <xs:pattern value=" (\d{4}-\d\d-\d\dT\d\d:\d\d:\d\dZ)" />
  </xs:restriction>
 </xs:simpleType>
 <xs:simpleType name="PartnerNameContentType">
  <xs:restriction base="xs:token">
    <xs:maxLength value="14" />
    <xs:pattern value="[a-zA-Z0-9.-]{1,14}" />
  </xs:restriction>
 </xs:simpleType>
 <xs:simpleType name=" ConformanceCampaignContentType ">
  <xs:restriction base="xs:token">
    <xs:maxLength value="20" />
    <xs:pattern value="[A-Z]{2} .{1,18} " />
  </xs:restriction>
 </xs:simpleType>
```

The usage of the above elements is explained below:

messageId: This is the messageId of the message. It should always be unique overall for all Member States and therefore a UUID following RFC 4122 must be used.

correlationId: This is an optional field and can be empty. The correlationId of the received message should be used if possible.

replyToMessageId: This field can be left empty, but if filled in, it should contain the messageId of the received message if the new message is a direct reply or error. Common Repository always follows this approach related to the responses to TI / NES systems (e.g. IE4N99 Functional Error message).

messageTimestamp: This is the timestamp at the moment of sending the message. The format of the timestamp allows time in UTC.

messageSender: This is the system that acts as the sender of the message. The MS systems must be identified as NES.{MS} where MS is the ISO 3166 alpha 2 country code. Some example values are CR, STI, NTI.XX, NES.XX, where XX is the country code.

messageRecipient: This is the system that acts as the recipient of the message. The MS systems must be identified as NES.{MS} where MS is the ISO 3166 alpha 2 country code. Some example values are CR, STI, NTI.XX, NES.XX, where XX is the country code.

conformanceCampaign: This element is not used in the message exchanges between CR and NES. It is only used in the message exchanges between a Trader Interface and the CR when the CR is configured to accept messages for conformance testing (e.g. in the Conformance environment). Its value in such case will be the ISO 3166 alpha 2 code of a MS under conformance testing.

Annex C. ICS2 ERROR CODES

The following table provides explanatory information regarding each functional error code value (CL 723). This will ensure that there is a common understanding between various stakeholders about the root cause that triggered each specific error code.

CL Value	CL Value Description	Explanatory root cause information
12	Incorrect (code) value	This error code is used during the semantic validation of all messages. All violations of CLs, Rules, and Conditions, except C3047 and C3048 where code 13 is used, return this error with a pointer to the data element causing the error is included in IE3N99. Also, during registration or amendment, a check is made for TDN uniqueness, same TDN in one of the HCs of the Filing. A pointer to the TDN causing the error is included in IE4N99. During the registration or the amendment of an ENS filing a check is performed for the uniqueness of the transport document references within the ENS filing. If the same house transport document reference is used in one of the house consignments of the ENS filing this error is returned.
13	Missing	No proper combination was provided in the Arrival notification (IE4N07) to identify the related ENS(s). Also, when the main payload (actual message payload) is missing, or an attachment (binary attachment) is referenced in the main payload but the actual attachment missing, or there is an attachment but no reference on it in the main payload. This error is returned when the message is empty (only the message envelope is sent) or a referenced attachment is missing or a reference to an included attachment is not provided. Also, violations of C3047 and C3025 use this error code. In all cases, a pointer to the data element causing the error is included in IE3N99.
14	Value not supported in this position (code value constraint)	An exception occurs during IE4E02 and IE4E04 validation IE4N99 is return. Also, all syntax violations use this code. It is possible a mandatory element not provided, but also a redundant element to be used.
26	Duplicate detected	A message with a duplicate message ID is detected.
39	Element too long (length constraint)	The provided value for a data element is more than the specified length.
40	Element too short (length constraint)	The provided value for a data element is less than the specified length.

CL Value	CL Value Description	Explanatory root cause information
71	House consignment in a wrong state	After a request of an ENS filing to be amended or invalidated it is checked if any of its house consignments are in state "Presented" or "Controlled". Then the amendment or the invalidation request is rejected and of the related to the ENS filing house consignments are already presented or under controls. This error is returned via IE3N07 House consignment in incorrect state notification when the house consignments part of an ENS in an Arrival notification are already "Presented" or "Controlled". In addition, after an ENS filing is requested to be amended or invalidated in application code, it is checked if the house consignments are in the state "Presented" or "Controlled" **or "Invalidated**." Then, the amendment or invalidation request is rejected (T-07-06-BR04, T-08-06-BR03). In addition, after a request of an ENS filing to be invalidated it is checked if the House consignments linked to goods shipments that have been lodged through the ENS Filing are in state "Presented" or "Controlled". Then the invalidation request is rejected (T-08-06-BR04).
72	ENS filing in wrong state	In case an amendment is submitted for an invalidated ENS filing, then the amendment is rejected with this error. (T-07-06-BR02) If a submitted amendment of an ENS filing precedes another already submitted amendment. (T-07-06-BR03). During the ENS lifecycle validation on an amendment to an ENS filing, if the MRN of the current ENS filing or a house consignment contained in the current amendment is referenced in a Control Notification (IE4N09) or an AEO Control Notification (IE4N11), then the current amendment is rejected(T-07-06-BR05). During ENS lifecycle validation on ENS filing invalidation request, if the ENS to which this MRN is related is referred to by any Control notification then the ENS filing cannot be invalidated, and the Invalidation request is rejected(T-08-06-BR05). During the ENS lifecycle validation on amendment of ENS filing, if a DNL had been issued for at least one of the PLACI contained in the amended filing, then the amendment is rejected(T-07-06-BR07).
80	Unknown Transport Document Reference	In a submitted ENS Consultation request (IE3Q05) by the economic operator the used transport document reference is either non-existing or the requestor is not authorised to access its data(T-13-03-BR01). In addition in an Arrival notification, during the identification of relevant ENS data for each TDN, in related

CL Value	CL Value Description	Explanatory root cause information
		Transport Documents, that was not identified this error is returned(T-04-08-BR01). During the process of Presentation of goods, if an unknown Transport Document is referenced (in master or in-house consignment) in the request then this error is returned for the related ENS(T-05-04-BR01-R2). During the process Revoke the presentation of goods (IE4Q08), if an unknown Transport Document is referenced in the relevant ENS or House Consignment then this error is returned(T-12-03-BR01).
81	Duplicate Transport document	Per ENS filing types, there are uniqueness rules for the master and house-level transport documents. If those uniqueness rules are violated, this error is returned (T-02-03-BR02).
90	Unknown MRN	An amendment or an invalidation request is submitted for an ENS filing but the indicated MRN is not found. (T-07-06-BR02, T-08-06-BR02) ENS Consultation request is submitted for an MRN for which the requestor is not authorized to access the data.(T-13-03-BR01) The submitted F25 has to contain the MRN of an already submitted F23. (T-02-03-BR11) The MRN in the arrival notification has to be related to an ENS. If not ENS is identified for the MRN, then this error will be returned.(T-04-08-BR01) In addition, the corresponding error code is triggered when an ENS Consultation request is submitted for an MRN for which the related filings are empty. In a Control results request (IE4S03), if the ENS version of the MRN is not found it means that it is not an ENS MRN and this error is returned. When an IE4N09 Control notification is received the contained MRN is checked and if the related ENS is not found, then this error is returned.(E-04-12-BR01) For the process Revoke presentation of goods, for each of the related ENS indicated in the IE4Q08, if no ENS is found through the MRN indicated in the message then this error is returned. (T-12-03-BR01) For the process presentation of goods, for each of the Related ENS indicated in the IE4N10, if the MRN indicated in the message is not found then this error is returned for the specific ENS. (T-05-04-BR01-R1)
91	Duplicate MRN	MRN already exists in ICS2.

CL Value	CL Value Description	Explanatory root cause information
93	Invalid MRN	The MRN of an arrival notification is used in an ENS Consultation request where the MRN of ENS filing is expected.(T-13-03-BR01) In a control decision notification, a validation is done in CR (this is also not described in any of BRs) for checking whether there is an arrival MRN for the ENS MRN, in order to extract the Arrival MRN and replace the incoming IE4N09 MRN with the Arrival MRN prior sending it to STI. If no Arrival MRN is found for ENS MRN, then this error code is returned.
94	Duplicate LRN	The submitted ENS filing is with LRN already used by the economic operator.
95	Uniqueness Error (not for traders)	The "Functional reference" of the presentation notification (IE4N10) has to be unique. (T-05-04-BR01-R2) The "Referral request reference" in IE4Q04/IE4Q05 has to be unique per country. In addition this error is returned: 1. when any of the Referral request references in IE4Q04 is not unique for the MS issuing the RfI.(E-03-01-07-BR01) 2. When ENS Consultation request is submitted, the functional reference of the Consultation request (IE4Q09) has to be unique, otherwise this error is returned.
96	Incorrect entity reference	When ENS Consultation request is submitted for information regarding the "Pre-loading risk assessment status" and house transport document is used instead of MRN/Receptacles, then this error is returned. The error is returned also when the used MRN is an MRN of ENS filings different from the master ENS filings for the transportation of postal consignments (F40, F41, F42, F45). In addition to the above the following are also returning the error code. When declarant is not corresponding to the declarant of one of the provided transport document (House level)/Transport document (Master level) during pre-arrival in case of IE4Q04 (T-03-01-27-BR01). Hc is not identifiend by tdn and carrier in DB during presentation IE4N10. ENS/MRN is not found in DB during presentation IE4N10 for each IE4N10/Related ENS (T-05-04-BR01-R2)
97	Not found	If no ENS is identified based on the content of the submitted arrival notification. Based on the identifiers (MRN/master transport document/receptacles) in the submitted ENS Consultation request no ENS can be identified, then this error is returned.

CL Value	CL Value Description	Explanatory root cause information
		The following scenarios are triggering the specific error code: o RA response cannot be linked with RA request. To do this RA request reference, functional reference and RMS should be the same in both messages; o E-screening results cannot be linked with e-screening request. To do this RA request reference, functional reference and IMS should be the same in both messages; o Risk hit notification issued by RMS cannot be linked with RA request. To do this RA request reference, functional reference and RMS should be the same in both messages; o Risk hit notification issued by IMS cannot be linked with e-screening request. To do this RA request reference, functional reference and IMS should be the same in both messages; o Transport equipment indicated in IE4N10 cannot be found in DB; o Receptacle indicated in IE4N10 cannot be found in DB; o HRCM (IE4Q05) request reference cannot be found (E-03-01-10-BR01); o Additional information request (IE4Q03) request reference cannot be found (E-03-01-07-BR01); o Estimated date and time of arrival and conveyance reference number in IE4N07 cannot match any ENS in DB (T-12-03-BR01); o Transport equipment and MRN indicated in IE4Q08/ RelateEns/MRN cannot be found in DB; o Receptacle and MRN indicated in IE4Q08/RelateEns/MRN cannot be found in DB (T-12-03-BR01); o During ENS consultation (IE4Q09) If the "Request pre-loading risk assessment status" is "1" and MRN is provided, but no ENS is identified
98	Unknown Reference	If the lodged ENS filing amendment contains a "Referral request reference" which cannot be found then this error is returned. The following scenarios are triggering the specific error code:

CL Value	CL Value Description	Explanatory root cause information
		○ Transport equipment indicated in IE4N10 cannot be linked with MRN indicated in the same IE4N10; ○ Receptacle indicated in IE4N10 cannot be linked with MRN indicated in the same IE4N10; ○ Transport document (Master level) indicated in IE4N10 cannot be linked with MRN indicated in the same IE4N10; ○ Transport document (House level) indicated in IE4N10 cannot be linked with MRN indicated in the same IE4N10; ○ Transport document (Master level) and Transport document (House level) cannot be linked with Transport Document (Master level) indicated in the same IE4N10; ○ Receptacle and Transport document (House level) cannot be linked with Receptacle indicated in the same IE4N10; ○ Referral Request Reference of IE4R02 cannot be found (E-03-01-08-BR01); ○ Referral Request Reference of IE4R03 cannot be found (T-03-01-11-BR01);
99	Update not allowed	IE4S02 containing DNL is attempted to be updated but it is not allowed.
100	Not satisfactory data quality	When an ENS filing is submitted but the quality of the included data is low, multiple rules are defined on the central level to ensure the provided data element values are detailed enough and contain meaningful information.
101	It is not possible to add or remove goods items or house consignments via an ENS filing amendment	When via an ENS filing amendment it is attempted to add new house consignments or goods items or to remove already existing ones.
102	Not allowed Unicode character	In case the ENS filing contains characters which are not Cyrillic, Latin or Greek[12], the ENS filing is rejected with "102" "Not allowed Unicode character" with pointer(s) to the elements resulting in the rejection.
104	Element cannot be amended	There is a list of data elements in the ENS filings content which are non-amendable. If an ENS filing amendment

[12] Characters from the following UnicodeBlocks are allowed: basic_latin, latin_1_supplement, latin_extended_a, latin_extended_b, greek, cyrillic, cyrillic_supplementary, phonetic_extensions, phonetic_extensions_supplement, latin_extended_additional, greek_extended, general_punctuation, superscripts_and_subscripts, currency_symbols, number_forms, cyrillic_extended_a

CL Value	CL Value Description	Explanatory root cause information
		contains amended values, then it will be rejected with this error.
105	ENS not found	No ENS can be found based on the indicated MRN in the Control results (IE4S03). The indicated identifiers such as house transport document reference(s) or receptacle(s) are not part of the identified ENS (based on the MRN or the master transport document reference) in the submitted presentation information (IE4N10).

Table 22: ICS2 Error Codes

Annex D. ICS2 MESSAGE VERSION

The following table provides explanatory information regarding the supported namespace versions per message type.

Message ID	Namespace version	
	V2	V3
IExx10	X	X
IExx11	X	
IExx12	X	
IExx13	X	X
IExx14	X	
IExx15	X	
IExx16	X	
IExx17	X	X
IExx11	X	
IExx20	X	
IExx21	X	
IExx22	X	
IExx23	X	
IExx24	X	
IExx25	X	
IExx26	X	
IExx27	X	
IExx28	X	
IExx29	X	
IExx30	X	
IExx31	X	
IExx32	X	
IExx33	X	
IExx34	X	X
IExx40	X	X
IExx41	X	X
IExx42	X	
IExx43	X	
IExx44	X	
IExx45	X	X

Message ID	Namespace version	
	V2	V3
IExx50	X	X
IExx51	X	X
IE4Q01	X	
IE4Q02	X	
IE4Q03	X	
IE4Q04	X	
IE4Q05	X	
IE4Q06	X	
IE4Q07	X	
IE4Q08	X	
IE4Q09	X	X
IE4Q10	X	
IE4R01	X	X
IE4R02	X	
IE4R03	X	
IE4R04	X	
IE4R05	X	
IE4R06	X	
IE4S01	X	
IE4S02	X	
IE4S03	X	
IE4N01	X	
IE4N02	X	
IE4N03	X	
IE4N04	X	X
IE4N05	X	
IE4N06	X	
IE4N07	X	
IE4N08	X	
IE4N09	X	X
IE4N10	X	
IE4N11	X	
IE4N12	X	
IE4N13	X	
IE4N14	X	

Message ID	Namespace version	
	V2	V3
IE4N15	X	
IE4N16		X
IE4N99	X	
IE4E01	X	
IE4E02	X	
IE4E03	X	
IE4E04	X	
IE3Q01	X	
IE3Q02	X	
IE3Q03	X	
IE3Q04	X	
IE3Q05	X	X
IE3R01	X	
IE3R02	X	
IE3R03	X	
IE3R04	X	
IE3R07	X	
IE3R08	X	
IE3N01	X	
IE3N02	X	
IE3N03	X	
IE3N04	X	
IE3N05	X	
IE3N06	X	
IE3N07	X	
IE3N08	X	X
IE3N09	X	
IE3N10	X	
IE3N11	X	
IE3N12		X
IE3N99	X	

Table 23: ICS2 Message Versions

Annex E. ICS2 SERVICE VERSION

The embedded file below lists the service version for each message version, specifying the decommission dates of the old service upon the release of the new service. The file includes the services exposed from CR to NES and CR to TI, which are documented in the related 'NES Service Version Management' and 'TI Service Version Management' sheets, respectively. The sheet “CR Service version management” includes services exposed from CR to NES, CR to TI, and CR to CRMS2, which are also documented in the related 'NES Service Version Management' and 'TI Service Version Management' sections, respectively, to ensure that NES and TI, are informed and being consulted about the updates to the CR services exposed to them.



Service version management.xlsx

*** *End of document* ***