INTEROPERABILITY UNIT			
TAF TSI - ANNEX D.2 : APPENDIX C - REFERENCE FILES			
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AMENDMENT RECORD

Version	Date	Section number	Modification/description	Author
1.0	25.01.2011	All	Initial version	Mickael Varga
1.1	15.05.2012	1.15, 1.16, 2.18, 2.19, 2.20, 2.21, 3.16..	Removal of xml elements and incorporation of new elements according to ERA TAF CCM Board agreements (03.05.2012).	Rodrigo Gutiérrez Domínguez
1.1	15.05.2012	2.18, 2.19, 2.20, 2.21,	Chapter 2.18 has been modified. Chapters 2.19, 2.20 and 2.21 have	Rodrigo Gutiérrez Domínguez
1.1	15.05.2012	4.6.4	This chapter has been removed.	Rodrigo Gutiérrez Domínguez
2.0	08.08.2013	All	All the chapters were revised due to the TAF TSI Revision Process and the TAF TSI CCM WP cycle 2012	Rodrigo Gutiérrez Domínguez
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2.5	27.05.2020	2.4	Validated by the ERA TAF CCB on 27.05.2020	ERA

Important note

The present document belongs to the set of Technical Documents described in Appendix I 'List of technical documents' of the Commission Regulation (EU) No 1305/2014.

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Scope of Deliverable

This document comprises Specification 3 – Reference Files for Deliverable 2 "**Definition of the functional and performance requirements and of the associated data necessary to deliver the TAF system**". It was developed using the intellectual capital of the European Rail Industry to create Functional Requirements Specifications (FRS), which identify the functional, data and performance requirements needed to implement the common reference files as needed to fulfil the TAF TSI vision and the high-level requirements stated in the Regulation.

The following Reference Files are contained in this specification:

- Location Identification
- Company Identification
- Keeper's Rolling Stock Databases

The specification addresses various issues for the reference files including data security and access, operational issues and data content as specified in Chapter 4.2.11.3 of the TAF-TSI.

1. LOCATION IDENTIFICATION REFERENCE FILE

1.1 INTRODUCTION

Normalised codes are needed to support data exchange as defined in the Technical Specification for Interoperability (TSI) relating to the subsystem Telematic Applications for Freight of the Trans-European Conventional Rail System referred to in Article 6(1) of Council Directive 2008/57/EC. To ensure data quality, the TSI for Telematic Applications for Freight (TAF) defines the need for centrally stored and administered reference files to be a repository for these codes. These codes and reference files ensure consistency of data interpretation across various application systems.

For the efficient operation of rail freight on the European network, a reference file for all Railway and Customer Locations must be established. This reference file must be available and accessible to all entitled participants subject to the data exchange specified in the TAF-TSI. The data must represent the actual status at all times (be up to date).

1.2 PURPOSE

The intention of this Functional Requirements Specification is to detail and to clarify the requirements described in the TAF-TSI concerning the Reference File for railway and customer locations.

This document is part of the SEDP project and an SEDP deliverable.

1.2.1 FUNCTIONAL OBJECTIVES

The functional objective of this FRS is to define the following:

- Benefits of the Reference File
- Users of the Reference File
- Use Cases and Process Requirements
- User Rights and Access
- Data Security and Access Rules and Rights

1.2.2 TECHNICAL OBJECTIVES

The technical objective of this FRS is to define the following:

- Physical Security Requirements
- System Reliability and Quality Measures
- LocationIdent File Data Requirements
- Associated messaging for reference file population and maintenance
- Data Quality Assurance
- Interfaces
- External System References

1.2.3 INTENDED AUDIENCE

The intended audience for this reference file is anyone who is involved in the rail transportation chain and who is defined in any message prescribed in the TAF-TSI. It will be used to unequivocally and uniquely identify a location in various applications and for different purposes (documents, messages, marking, etc.).

1.2.4 EVOLUTION OF THE FUNCTIONAL REQUIREMENTS SPECIFICATION AND DISTRIBUTION

The FRS will be distributed to the Representative Bodies from the Railway Sector acting on a European level as defined in Article 3 (2) of Regulation (EC) No 881/2004 and made available to the Stakeholders in the rail freight industry. The FRS will be delivered by electronic means in MS-Word format or in PDF Format and published on the ERA Web-site: era.europa.eu.

New versions will be accessible electronically.

1.2.5 CONFIGURATION MANAGEMENT

A new version of the document will be created if new changes are considered because of the Change Control Management Process led by ERA:

- if there is a change in the requirements which influences the implementation
- if information is added to or deleted from the FRS, eg.
- adding test cases to the field checking in messages or databases.
-

The changes will be included in the FRS. They must be marked in the new document for better realising them.

1.2.6 REFERENCES

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

1.2.7 REGULATORY REFERENCES

Id	Title	Doc ID, Edition	Date	Author / Publisher
1	Directive 2012/34/EU of The European Parliament and of The Council establishing a single European railway area.	Directive 2012/34/EU	21/11/12	EC
2	On the interoperability of the rail system within the Community (Recast)	Directive 2008/57/EC	17/06/08	EC
3	TSI OPE (repealed with effect from 01.01.2012) - Decision 2006/920/EC (as amended by 2009/107/EC and 2010/640/EU)	Decision 2011/314/EU (in force from 01.01.2012 on)	12/05/2011	EC

Id	Title	Doc ID, Edition	Date	Author / Publisher
4	Technical Specification for Interoperability subsystem« Telematic Applications for freight	COMMISSION REGULATION (EU) No 1305/2014 of 11 December 2014, technical specification for interoperability relating to the telematics applications for freight subsystem of the rail system in the European Union and repealing the Regulation (EC) No 62/2006.	11/12/14	EU
4.1	TAF TSI - ANNEX A.5: Figures and Sequence Diagrams of the TAF TSI Messages	ERA_FRS_TAF_A_Index_5.doc	25/01/11	ERA
4.2	TAF TSI – ANNEX D.2 :	Version 2-0	23/03/13	ERA

Id	Title	Doc ID, Edition	Date	Author / Publisher
	APPENDIX A – (WAGON/ILU TRIP PLANNING)			
4.4	TAF TSI – ANNEX D.2 : APPENDIX D – INFRASTRUCTURE RESTRICTION NOTICE DATA	Version 2-0	15/05/12	EC
4.5	TAF TSI — ANNEX D.2: APPENDIX E — COMMON INTERFACE	Version 2-5	15/12/20	ERA
4.6	TAF TSI APPENDIX F — Data and Message Model)	Version 2-5	15/12/20	ERA

1.2.8 OTHER REFERENCES

Id	Title	Doc ID, Edition	Date	Author
1	Standard Numerical Coding of Locations	UIC/OSJD Leaflet 920-2, 4th Edition	01-01-1989	UIC/OSJD
2	International Sorting System for Wagonload Traffic	UIC/OSJD Leaflet 428-1, 1st Edition	01-01-1977	UIC/OSJD
3	ENEE Message Exchange	Version 0.3	03-04-2006	UIC
4	Codes for the Representation of Names of Countries and their Subdivisions - Part 1:	ISO 3166-1	1997	ISO

Id	Title	Doc ID, Edition	Date	Author
	Country Codes Definitions and Abbreviations.			
5	CEN Workshop Agreement for Coding For Railway Undertakings, Infrastructure ManagersAnd Other Companies Involved In The Rail Transport Chain		May 2006	CEN
6	CEN Workshop Agreement on Coding for Railway Business Locations		May 2006	CEN

1.3 ACRONYMS AND DEFINITIONS

For further definitions and acronyms see [4]

1.3.1.1 Location

Location is a place, a geographic point, inside or outside the rail network, which is needed to be identified for operational, technical, administrative or statistical purposes. This can be either a Railway or a Customer location.

Locations can be Stations, Yards, Halts, Terminal or Transhipment Points, Loading Points, Marker Points, Warehouses, Maintenance Workshops, Traction Departments, Town Offices, Railway frontier-points, transit-points, hand-over points and interchange points, Customer Sidings. It can also represent a part or section of them.

1.3.1.2 LocationPrimaryCode

This element identifies a location by its code. A location denotes a place used for technical, commercial, operating or administrative purposes and which belongs to or is

connected with a transport enterprise. This location must be a network rail point managed by an Infrastructure Manager (IM).

1.3.1.3 LocationSubsidiaryCode

This element identifies a location as a part of primary location e.g. a junction, a signal, a marker point, etc. It is unique and is always used in combination with a "LocationPrimaryCode". This may be a non-rail point or a rail point that is not managed by an Infrastructure Manager (IM).

1.3.2 RESPONSIBILITIES

This Functional Requirement Specification was written under the responsibility of the SEDP project team by representatives of European IMs, RUs and others. This document is a deliverable of the SEDP project for the implementation of the TAF TSI. Since 2012 this document has been handed over to the European Railway Agency and it belongs to the ERA Technical Document set for TAF TSI. Therefore, any update of this document shall be brought to the TAF TSI Change Control Management Working Party under the aegis of the European Railway Agency.

1.4 FUNCTIONAL REQUIREMENTS SPECIFICATIONS

The TAF-TSI states in "4.2.11.1. Reference Files" that:

> *"For the operation of freight trains on the European network[…] reference files must be available and accessible to all Service Providers (IMs, RUs, Logistic providers and Fleet managers). The data must represent the actual status at all times."*

The Central Locations Reference file will combine three centrally stored and administered reference files specified in the TAF-TSI as follows:

- Reference File of the Coding of Locations (Primary, subsidiary and zone-track-spot),
- Reference File of the Coding for customer locations,
- Reference File of all European maintenance workshops,

There will be a single Locations reference file for all of the above, managed by a Central Administration Service (CAS).

1.5 BENEFITS

Reference files provide the basis for Data Quality for effective data interchange and application integration. The codes and associated information allow trading partners to uniquely and unequivocally interpret information and apply it to their internal applications without the need for further edits. This provides a unique benefit by reducing manual intervention and enhancing application integration.

1.6 USERS

The following actors are specifically defined within the TSI-TAF, however this list is not all inclusive. Each of these users will require unique location coding to improve data exchange and to interpret and correctly apply the exact location in their application system.

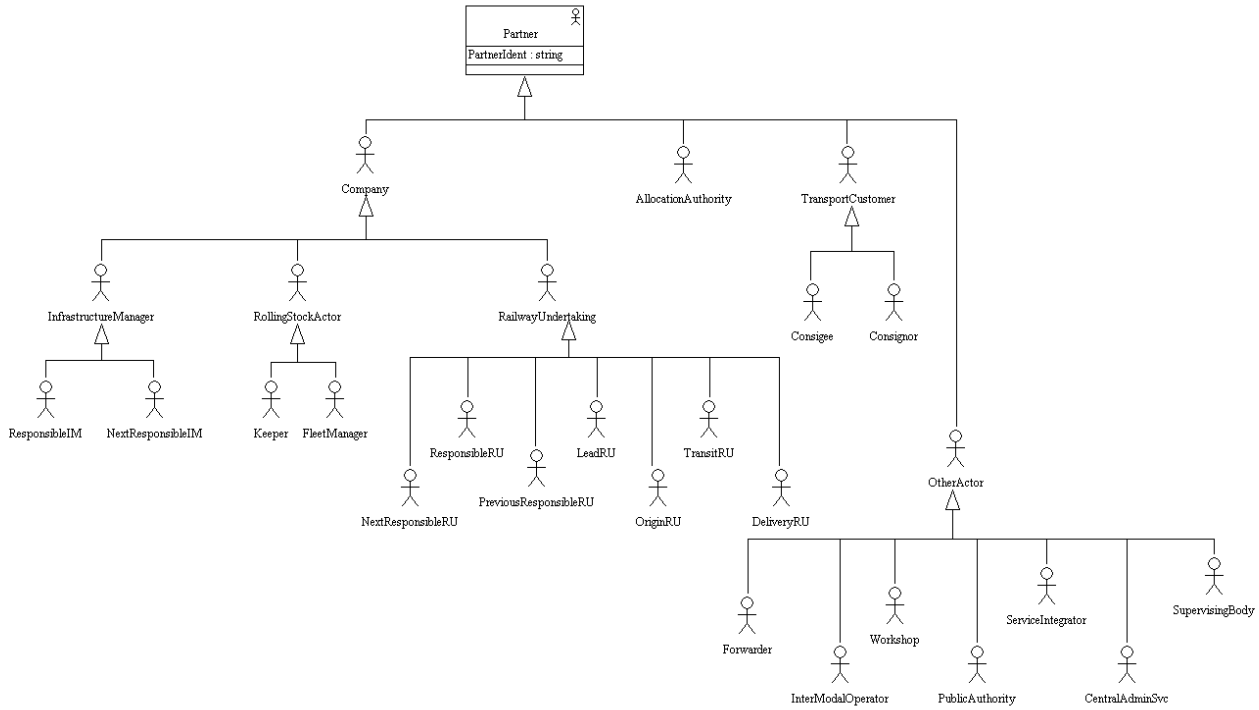

Figure 1: Diagram 1.1 Users of the Location Code File

1.6.1 "ALLOCATIONAUTHORITY" ACTOR

This element defines the organisation responsible for allocating codes within a country. It could a national or private authority or any other Actor entrusted with the responsibility of code maintenance.

It specialises the actor OtherActor.

1.6.2 “COMPANY" ACTOR

Company identifies any actor in the transport chain, notably any *Company*, directly or indirectly involved in rail traffic or having a business relationship with one or more of such companies not being a customer. The definition of *Company* comprehends the following as defined in the TAF-TSI.

- *Customer;*
- *IMPartner;*
- *NextResponsibleIM;*
- *NextResponsibleRU;*
- *Recipient;*
- *ResponsibleIM;*
- *ResponsibleRU,*
- *PreviousResponsibleRU;*
- *RUPartner*;
- *Sender*.

It specialises the actor Partner.

1.6.3 “CUSTOMER” ACTOR

Customer is the entity which has issued the consignment note to the Lead RU.

1.6.4 "DELIVERYRU" ACTOR

The RU responsible for delivery to the

customer It specialises the actor

RailwayUndertaking.

1.6.5 "FLEETMANAGER" ACTOR

The fleet manager is the overall controller of a wagon fleet. Primarily a fleet manager controls the logistics of wagons (dispatching / disposition) from an operational and asset management point of view.

It specialises the actor RollingStockActor.

1.6.6 "COMBINEDTRANSPORTOPERATOR" ACTOR

Party which organises Intermodal transports. Intermodal transport is where the major part of the European journey is by rail and any initial and/or final leg is carried out by another transport mode

It specialises the actor Company.

1.6.7 “INFRASTRUCTUREMANAGER” ACTOR

Infrastructure Manager means any body or undertaking that is responsible, in particular, for establishing and maintaining railway infrastructure. This may also include the management of infrastructure control and safety systems. The functions of the infrastructure manager on a network or part of a network may be allocated to different bodies or undertakings

1.6.8 "KEEPER" ACTOR

The entity, who being the owner or having the right to dispose of it, exploits a vehicle economically in a permanent manner as a means of transport and is registered as such in the Rolling Stock Register.A railway undertaking owning wagons equally has the role of keeper. It specialises the actor RollingStockActor.

1.6.9 "LEAD RU" ACTOR

Responsible RU, which organises and manages the transport line according to the customer’s commitment. It is the single point of contact for the customer. If more than one Railway Undertaking is involved in the transport chain, the LRU is responsible for the co-ordination of the various Railway Undertakings. A customer may be especially for

Intermodal transport an Intermodal service integrator. The LeadRU is a service integrator. It specialises the actor RailwayUndertaking.

1.6.10 "RESPONSIBLE RU" ACTOR

RU responsible for the current operation of the train It specialises the actor RailwayUndertaking.

1.6.11 "ORIGIN RU" ACTOR

The first RU in the rail transportation chain It specialises the actor RailwayUndertaking.

1.6.12 “RAILWAY UNDERTAKING” ACTOR

RailwayUndertaking is a company defined as any public or private undertaking, licensed according to applicable Community legislation, the principal business of which is to provide services for the transport of goods and/or passengers by rail (including shipping companies, covered by international railway tariffs). A requirement is that the undertaking shall ensure traction; this also includes undertakings which provide traction only.

1.6.13 "RESPONSIBLE IM" ACTOR

IM responsible for the train currently operating on its infrastructure It specialises the actor InfrastructureManager.

1.6.14 "NEXT RESPONSIBLE IM" ACTOR

Handover IM

It specialises the actor InfrastructureManager.

1.6.15 "NEXT RESPONSIBLE RU" ACTOR

RU responsible for the physical movement of the train after

interchange It specialises the actor RailwayUndertaking.

1.6.16 "PUBLIC AUTHORITY" ACTOR

Authority as an applicant is a legalised authority having an interest in public transport services. Authority is a legalised institution having an interest in the transport.

It specialises the actor Applicant, OtherActor.

1.6.17 "PREVIOUS RESPONSIBLE RU" ACTOR

RU responsible for the physical movement of the train before the previous interchange.

It specialises the actor RailwayUndertaking.

1.6.18 "TRANSIT RU" ACTOR

The RU who involved in the interchange

It specialises the actor RailwayUndertaking.

1.6.19 “TRANSPORT CUSTOMER” ACTOR

Defines the railway customer - the Consignor or Consignee in the case of the TSI-TAF.

1.6.20 "ROLLINGSTOCK ACTOR" ACTOR

The Keeper, Wagon Owner or Fleet Manager It specialises the actor Company.

1.6.21 "SERVICEI NTEGRATOR" ACTOR

Service Integrator organises the transport chain between Consignor and Consignee. The LeadRU is a ServiceIntegrator.

It specialises the actor Applicant, OtherActor.

1.6.22 "OTHER ACTOR" ACTOR

OtherActor involved in the Rail-Transport-Chain is any company or authority, directly or indirectly involved in rail traffic or having a business relationship with one or more of such companies.

It specialises the actor Partner.

1.6.23 "WORKSHOP" ACTOR

An approved organisation accredited to build, repair and/or maintain vehicles. It specialises the actor OtherActor.

1.6.24 "CENTRALADMINSVC" ACTOR

The Central Service administering the reference file. It specialises the actor OtherActor.

1.7 REFERENCE FILE USER PROFILES

Users will have allocated the following characteristics

- User Identification
- User name
- Password
- Organisation
- Contact details
- Role (defined by *<x-reference>* below)

All users of the **Central Administration Service** will fall into 4 classes with the following rights:

- **Administrative Users** maintaining the central register
- **Authorised Users** representing approved or user companies who need access to the registries in real time and have access to submit updates to the **Central Administration Service**
- **Restricted Users representing individual companies who have rights to**

maintain specific data fields within the record

- **Casual Users** who have read access only

Users must be validated and allocated within one working day of application. Application may be made from the Central Administration Service.

1.7 LOCATIONPRIMARYCODE USE CASES FOR PROCESSES

The Use Cases for PrimaryLocationCode processes are defined below and illustrate the actors involved in each process. There are four distinct use cases (processes) defined:

1. Submission of Existing Codes
2. Submission of New Codes
3. Submission of amendments or deletions to existing codes in the database
4. Enquiries to the reference file

1.7.1 SUBMISSION OF EXISTING LOCATIONPRIMARYCODES

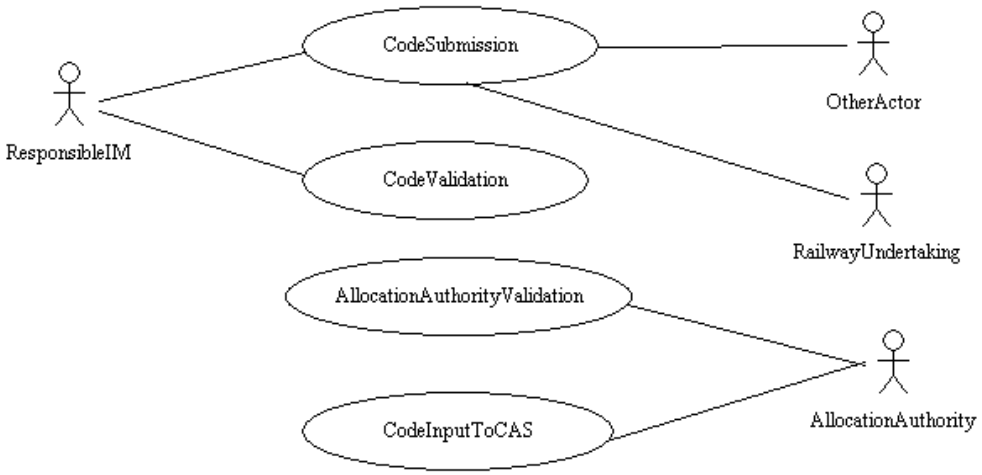

Figure 2: Diagram 1.2 Existing LocationPrimaryCode Submission Process.

1.7.2 SUBMISSION OF NEW LOCATIONPRIMARYCODES

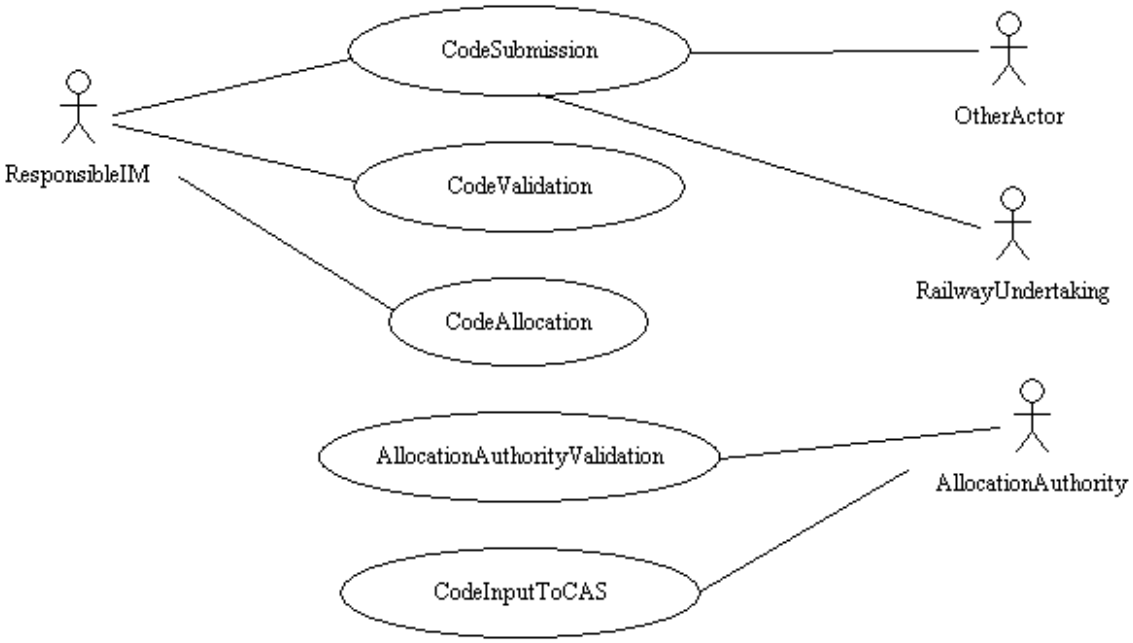

Figure 3: Diagram 1.3 New LocationPrimaryCode Submission Process.

1.7.3 SUBMISSION OF AMENDMENTS/DELETIONS OF LOCATIONPRIMARYCODES

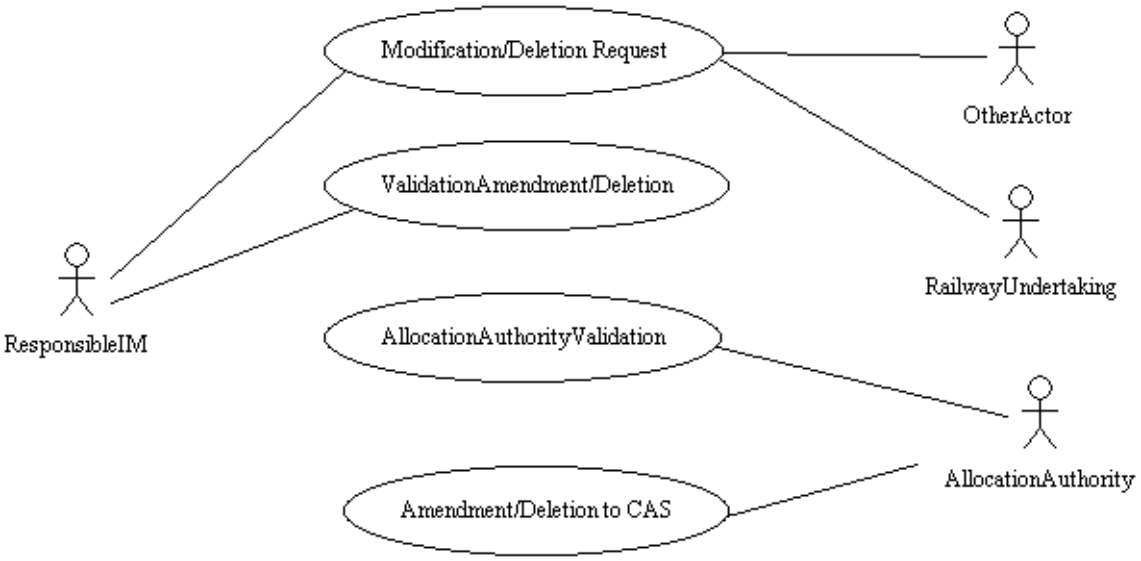

Figure 4: Diagram 1.4 Amendment/Deletion of LocationPrimaryCodes.

1.7.4 ENQUIRIES TO THE REFERENCE FILE

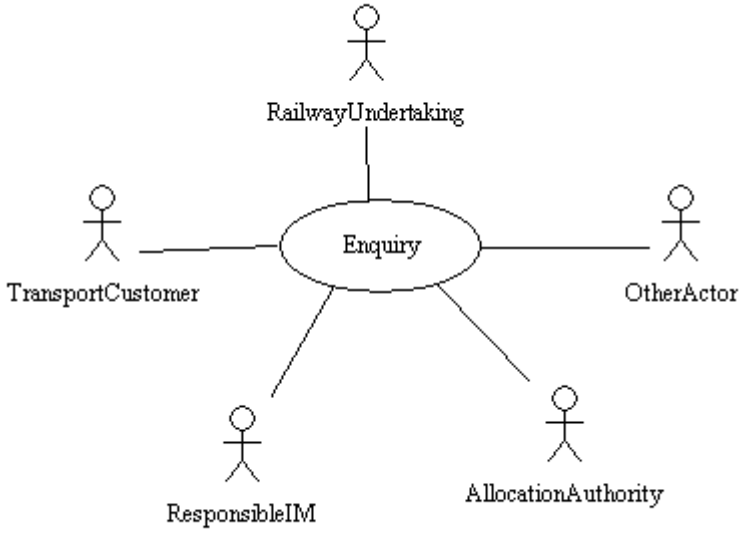

Figure 5: Diagram 1.5 Enquiries to the Reference File.

1.8 LOCATIONPRIMARYCODE PROCESS REQUIREMENTS

This section will describe the process requirements for the management of the Location Primary Code. The following activity diagram shows the high- level interaction and the following subsections describe the detailed processes.

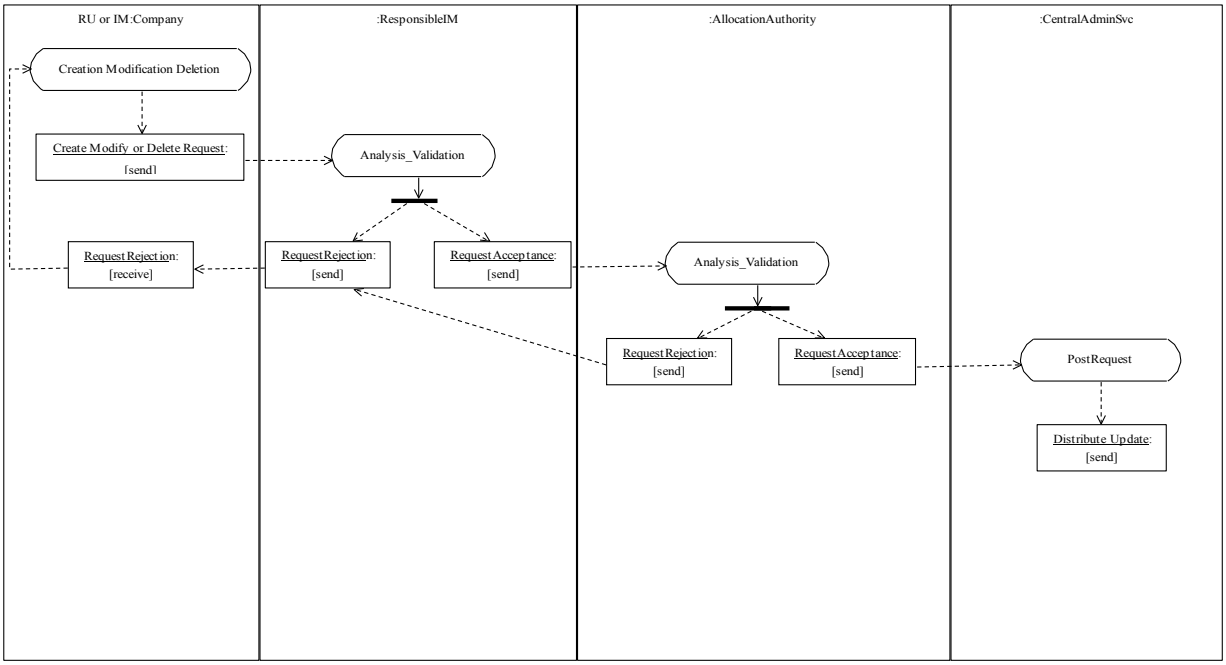

Figure 6: Diagram 1.6 LocationPrimaryCode Activity Diagram.

1.8.1 POPULATING THE DATABASE

1.8.1.1 Propose existing codes

Any IM, RU or Other Actors as Public Authorities, Workshop Owners and Customers may propose codes from their existing reference sources. The coding process should take into account the existing reference database ENEE of Rail locations. Customer primary rail points should be included through the intervention of their RU Suppliers or by customers themselves under contractual agreement with the entity hosting the database and following the rules established on this document and in TAF TSI.

If there is more than one IM within a state, the National Allocation Authority should co- ordinate the codes they allocate to avoid the same code being allocated to more than one location.

1.8.1.2 Validate existing codes by responsible IM

The Submit Request shall be validated by the IM responsible for the rail point to be coded.

1.8.1.3 Validate existing codes within country

The Submit Request shall be validated by the National Allocation Authority responsible for the rail point to be coded.

1.8.1.4 Input existing codes

The National Allocation Authority responsible for the rail points to be coded shall input the validated codes to the CAS.

1.8.1.5 Submit Request for new LocationPrimaryCode

This submission should be possible for IM, RU or Other Actors as Public Authorities, Workshop Owners.

The Actor may request the allocation of a specific code value in their submission, or may opt to leave the code value blank, in which case the IM will allocate the code.

If there is more than one IM within a state, the National Allocation Authority should co-ordinate the codes they allocate to avoid the same code being allocated to more than one location.

1.8.1.6 Validate Submission of Request by relevant IM

The Request shall be validated by the IM responsible for the rail point to be coded. The IM shall validate the request in conformance with its internal procedures and requirements.

1.8.1.7 Validate Submission of Request by National Allocation Authority

In the case where there is a National Allocation Authority, the Request shall be validated in conformance with its national procedures and requirements.

1.8.1.8 Input the new LocationPrimaryCode

The National Allocation Authority responsible for the rail point to be coded shall input the validated code to the CAS.

1.8.2 AMENDMENTS TO OR DELETION OF LOCATIONPRIMARYCODE

1.8.2.1 Submit Request for amendment to or deletion of LocationPrimaryCode

This submission should be possible for IM, RU or Other Actors as Public Authorities, Workshop Owners. Customers may be authorised to ask the IM directly for the amendment of a code under contractual agreement or through the RU supplier because they give the commitment to an RU for a Transport.

1.8.2.2 Validate Submission of Request by responsible IM

The Request shall be validated by the IM responsible for the rail point to be coded and in conformance with its internal procedures and requirements.

1.8.2.3 Validate Submission of Request by National Allocation Authority

The Request shall be validated by the National Allocation Authority responsible for the rail point to be coded in conformance with its national procedures and requirements.

1.8.2.4 Input the amendment to or deletion of LocationPrimaryCode

The National Allocation Authority responsible for the rail point to be coded shall input the validated amendment to the CAS.

1.8.3 ENQUIRY

Enquiries may be made either via the Human Computer Interface (HCI) or via other electronic means through the system interface with the CAS. The enquiry and response will be delivered through the Common Interface in the valid TAF-TSI standard format (See Chapter 3). Anyone has the right to make an enquiry, however response data shall be filtered to exclude commercial or confidential data.

1.9 LOCATIONSUBSIDIARYCODE USE CASES FOR PROCESSES

1.9.1 SUBMISSION OF EXISTING LOCATIONSUBSIDIARYCODES

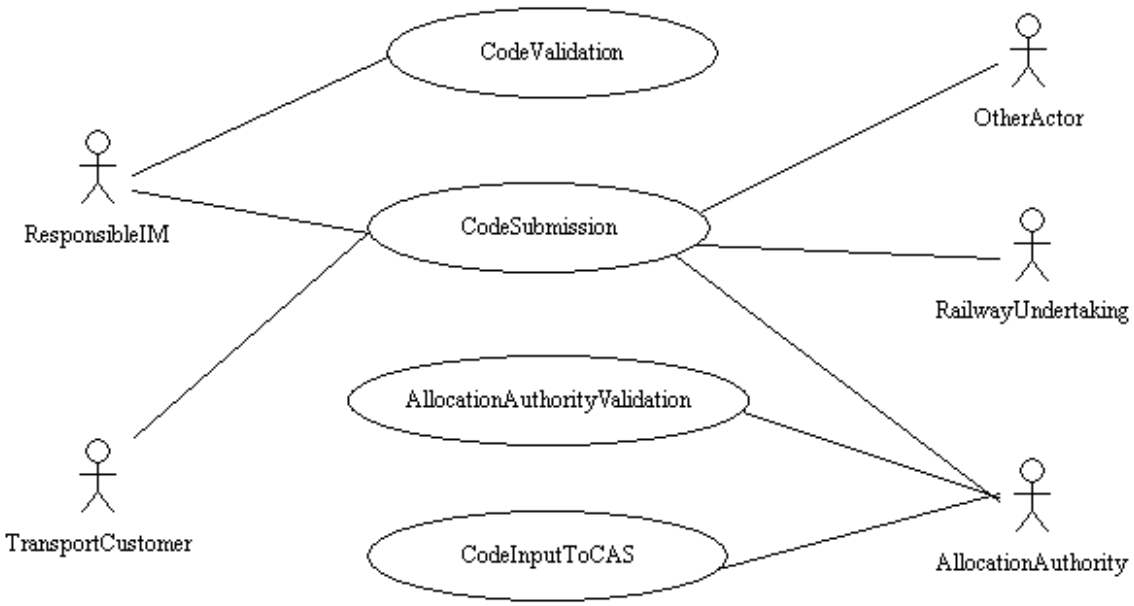

Figure 7: Diagram 1.7 Submission of Existing LocationSubsidiaryCodes.

1.9.2 SUBMISSION OF NEW LOCATIONSUBSIDIARYCODE

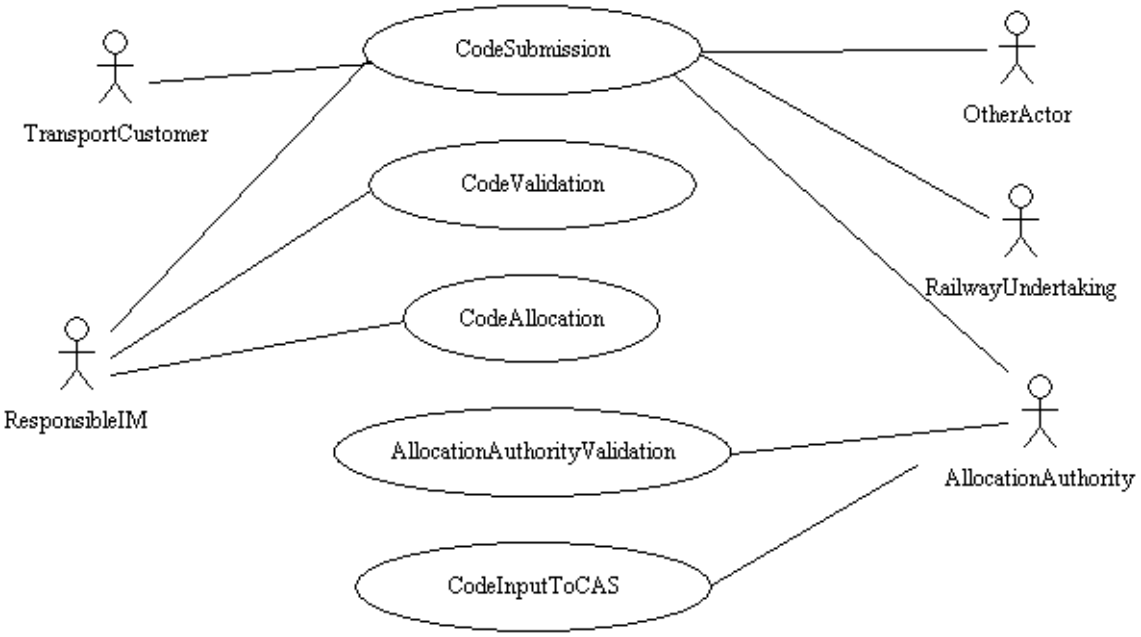

Figure 8: Diagram 1.8 Submission of New Codes.

1.9.3 AMENDMENT/DELETION OF LOCATIONSUBSIDIARYCODE

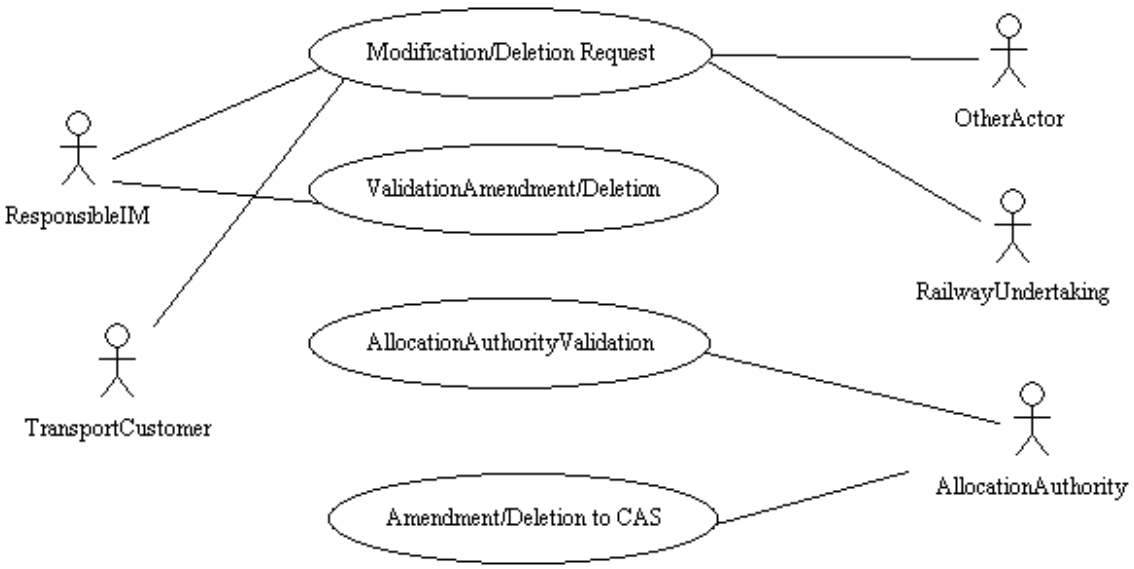

Figure 9: Diagram 1.9 Amendment/Deletion of LocationSubsidiaryCode.

1.10 LOCATIONSUBSIDIARYCODE PROCESS REQUIREMENTS

This section will describe the process requirements for the management of the Location Subsidiary Code.

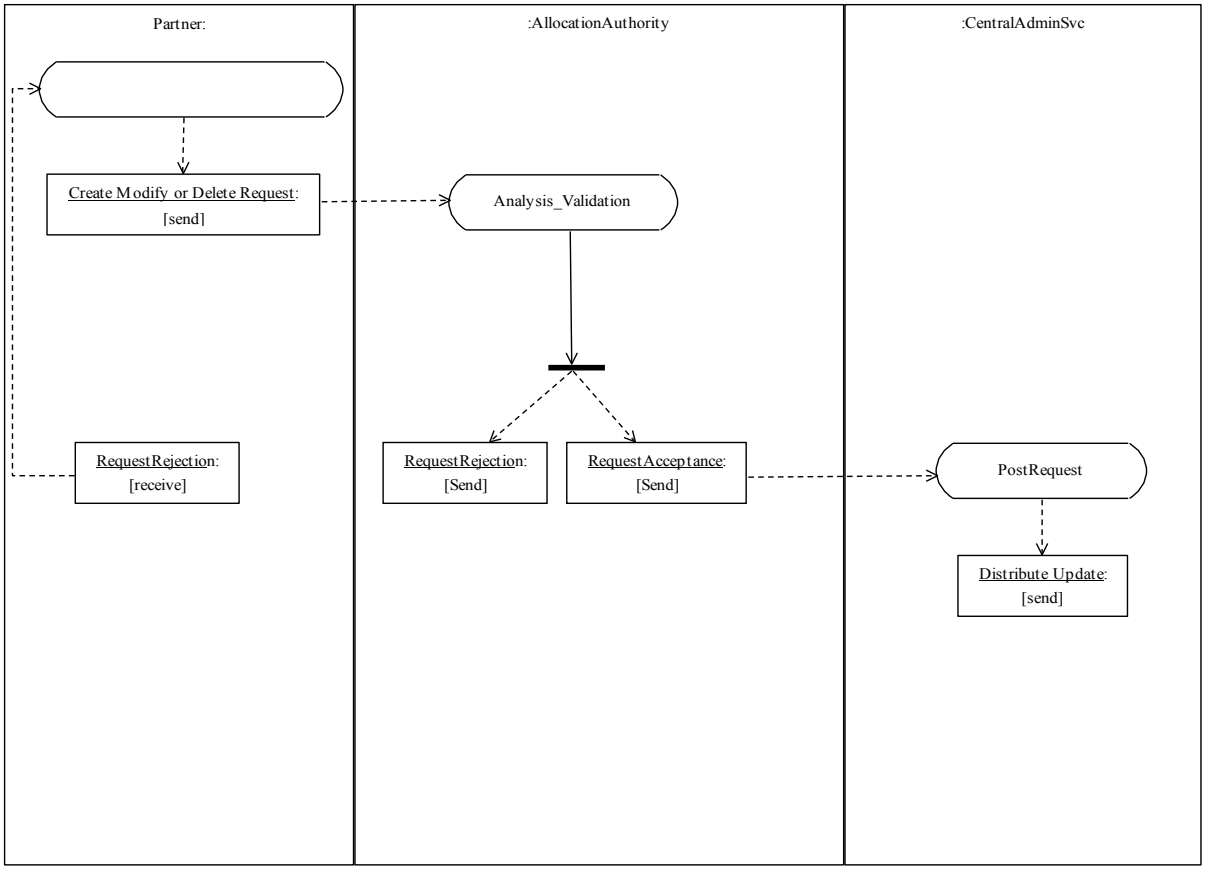

Figure 10: Diagram 1.10 Location Subsidiary Code Process Requirements.

1.10.1 POPULATING THE DATABASE

1.10.1.1 Propose existing codes

Any partner may propose codes to the National Allocation Authority from their existing reference sources.

1.10.1.2 Validate existing codes

The Request shall be validated by the National Allocation Authority responsible for the subsidiary location to be coded in conformance with its national procedures and requirements.

1.10.1.3 Input existing codes

The first population of the reference file will be performed by the National Allocation Authority with the information provided by any partner. Every subsidiary location must have a type code (ref TAF TSI CWA Coding for Railways Business Locations).

1.10.1.4 Submit Request for new LocationSubsidiaryCode

Any Partner may request the allocation of a specific code value from the National Allocation Authority or may opt to leave the code value blank, in which case the National Allocation Authority will allocate the code.

1.10.1.5 Validate Submission of Request

The Request shall be validated by the National Allocation Authority responsible for the subsidiary location to be coded in conformance with its national procedures and requirements.

1.10.1.6 Input the new LocationSubsidiaryCode

The National Allocation Authority shall input the validated code to the CAS.

1.10.2 AMENDMENTS TO OR DELETION OF LOCATIONSUBSIDIARYCODE

1.10.2.1 Submit Request for amendment to or deletion of LocationSubsidiaryCode

Any partner may request an amendment or deletion of a LocaitonSubsidiaryCode.

1.10.2.2 Validate Submission of Request

The Request shall be validated by the National Allocation Authority responsible for the subsidiary location to be coded in conformance with its national procedures and requirements.

1.10.2.3 Input the amendment to or deletion of LocationSubsidiaryCode

The National Allocation Authority shall input the validated amendment to the CAS.

1.10.3 ENQUIRY

Enquiries may be made either via the Human Computer Interface (HCI) or via other electronic means through the system interface with the CAS. The enquiry and response will be delivered through the Common Interface in the valid TAF-TSI standard format (See Chapter 3). Anyone has the right to make an enquiry, however response data shall be filtered to exclude commercial or confidential data.

1.10.4 DATA DUMP (BULK DOWNLOAD)

The data dump option is a tool by which the entire data file may be supplied to the user. This can support comparison of data against the current centralised reference file. In This case, centralised data is usually a copy of source data which is placed on local level. Making sure that data is coherent and reliable in both cases, the actor is allowed perform comparison between national and central level.

1.11 DATA SECURITY AND ACCESS RULES AND RIGHTS

LocationIdent data is unrestricted and available to any interested party. Any interested party is allowed to read the data. Creation of new data and updating existing data can be performed only by the authorised National Allocation Authorities.

1.11.1 LOCATION FILE DATA REQUIREMENTS

The attributes of each code will be provided by the Actor responsible for the submission or amendment of the code (Primary or Subsidiary). The following is a schema of all data included in the file. The detailed data specification may be found at the end of this section.

- A service table is to be maintained with the translation of the description into other languages

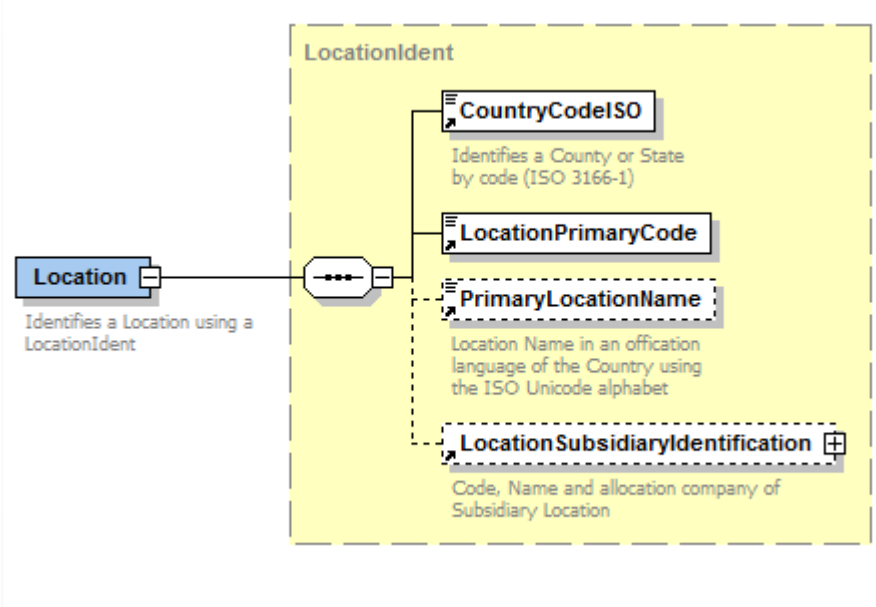

Figure 11: Diagram 1.11 Data Requirements for the Location File.

Figure 12: Diagram 1.12 Data Requirements for the LocationPrimaryCode.

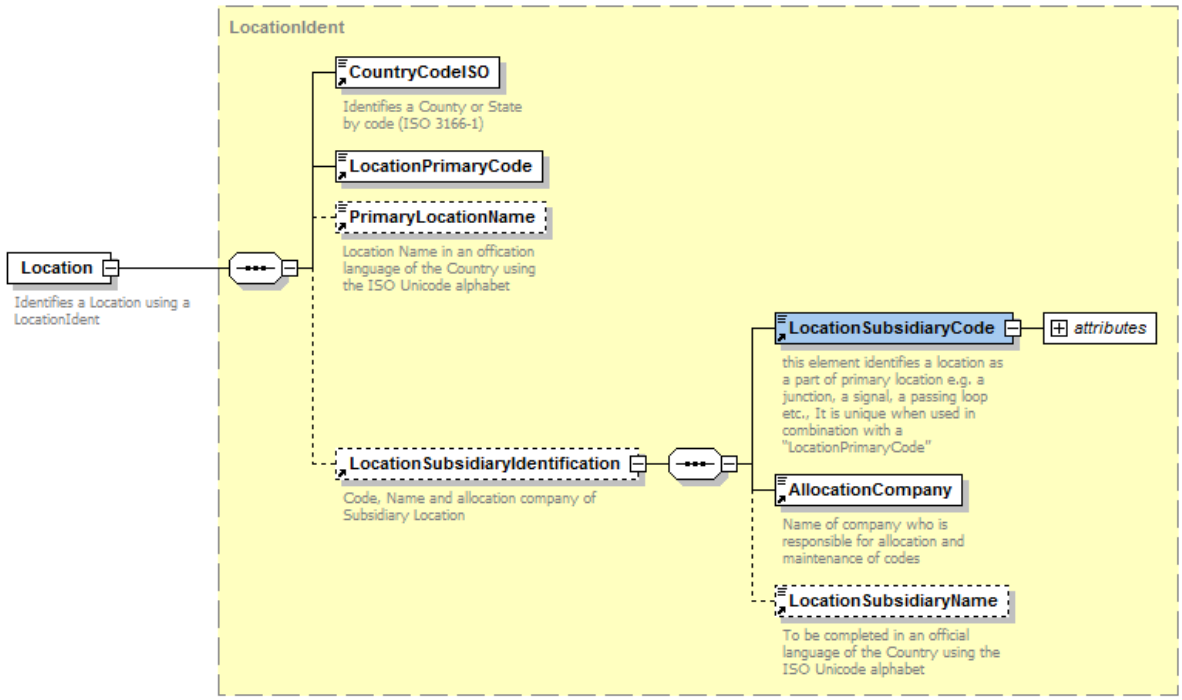

Figure 13: Diagram 1.13 Data Requirements for LocationSubsidiaryIdentification.

1.12 LOCATION FILE DETAILED DATA REQUIREMENTS

The complete definition of all the elements to be used for the location file are located at TAF TSI [4] [5] [6] ANNEX II, ANNEX A, APPENDIX F (ERA/TD/2012-04/INT: APPENDIX F - TAF TSI DATA AND MESSAGE MODEL), which encloses the whole XML catalogue for the implementation of TAF TSI after evary Change Control Management Cycle. Within this document is specified all the different simple elements and complex elements of the so called TAF TSI Catalogue, among them the elements and messages used to implement the functionality described on this Appendix C for References Files. Consequently the corresponding XML element definitions of this document have been deleted.

2. COMPANY IDENTIFICATION REFERENCE FILE

2.1 INTRODUCTION

Normalised codes are needed to support data exchange as defined in Commission Regulation (EC) No 62/2006 of 23 December 2005 concerning the technical specification for interoperability relating to the telematic applications for freight subsystem of the trans-European conventional rail system, amended by Commission Regulation (EU) No 328/2012 of 17 April 2012 and Commission Regulation (EU) No 280/2013 of 22 April 2013.

To ensure data quality, the TSI for Telematic Applications for Freight (TAF) defines the need for centrally stored and administered reference files to be a repository for these codes. These codes and reference files ensure consistency of data interpretation across various application systems.

For the efficient operation of freight trains on the European network, a reference file for all IM', RUs, and Service provider companies must be established. This reference file must be available and accessible to all Service Providers (IMs, RUs, Logistic providers and Fleet managers). The data must represent the actual status at all times.

2.2 PURPOSE

The intention of this Functional Requirements Specification is to detail and to clarify the requirements described in the TAF-TSI concerning the Reference File for railway undertakings, infrastructure managers and other companies involved in the rail transport chain, including.

This document is part of the SEDP project and an SEDP deliverable. Since 2012 this document has been hand over to the European Railway Agency and it belongs to the ERA Technical Document set for TAF TSI. Therefore, any update of this document shall be brought to the TAF TSI Change Control Management Working Party under the aegis of the European Railway Agency.

2.2.1 FUNCTIONAL OBJECTIVES

The functional objective of this FRS is to define the following:

- Benefits of the Reference File
- Users of the Reference File
- Allocation Procedures of the Wagon records
- Use Cases and Process Requirements
- User Rights and Access
- Data Security and Access Rules and Rights
- External System References

2.2.2 TECHNICAL OBJECTIVES

The technical objective of this FRS is to define the following:

- Physical Security Requirements
- System Reliability and Quality Measures
- CompanyIdent File Data Requirements
- Associated messaging for reference file population and maintenance
- Data Quality Assurance
- Interfaces
- External System References

2.3 INTENDED AUDIENCE

The intended audience for this reference file is anyone who is involved in the rail transportation chain and who is defined in any message prescribed in the TAF-TSI. It will be used to unequivocally and uniquely identify the trading partner in various applications and for different purposes (documents, messages, marking, etc.).

2.4 EVOLUTION OF THE FUNCTIONAL REQUIREMENTS SPECIFICATION

2.4.1 DISTRIBUTION

The FRS will be distributed to the Representative Bodies from the Railway Sector acting on a European level as defined in Article 3 (2) of Regulation (EC) No 881/2004 and made available to the Stakeholders in the rail freight industry. The FRS will be delivered by electronic means in MS-Word format or in PDF Format and published on the ERA Web-site: era.europa.eu.

New versions will be accessible electronically.

2.4.2 CONFIGURATION MANAGEMENT

A new version of the document will be created if new changes are considered because of the Change Control Management Process led by ERA:

- if there is a change in the requirements which influences the implementation
- if information is added to or deleted from the FRS, eg.
- adding test cases to the field checking in messages or databases.

The changes will be included in the FRS. They must be marked in the new document for better realising them.

2.5 REFERENCES

The following referenced documents are indispensable for the application of this functional requirements specification. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

2.5.1 REGULATORY REFERENCES

Id	Title	Doc ID, Edition	Date	Author / Publisher
1	Directive 2012/34/EU of The European Parliament and of The Council establishing a single European railway area.	Directive 2012/34/EU	21/11/12	EC

2	On the interoperability of the rail system within the Community (Recast)	Directive 2008/57/EC	17/06/08	EC
3	TSI OPE (repealed with effect from 01.01.2012) - Decision 2006/920/EC (as amended by 2009/107/EC and 2010/640/EU)	Decision 2011/314/EU (in force from 01.01.2012 on)	12/05/2011	EC
4	Technical Specification for Interoperability subsystem« Telematic Applications for freight	COMMISSION REGULATION (EU) No 1305/2014 of 11 December 2014, technical specification for interoperability relating to the telematics applications for freight subsystem of the rail system in the European Union and repealing the	11/12/14	EU

Id	Title	Doc ID, Edition	Date	Author / Publisher
4.1	TAF TSI - ANNEX A.5: Figures and Sequence Diagrams of the TAF TSI Messages	ERA_FRS_TAF_A_Index_5.doc	25/01/11	ERA
4.2	TAF TSI – ANNEX D.2 : APPENDIX A – (WAGON/ILU TRIP PLANNING)	Version 1-0	23/03/13	ERA
4.3	TAF TSI – ANNEX D.2 : APPENDIX C – REFERENCE FILES	Version 2-1	13/05/12	EC
4.5	TAF TSI — ANNEX D.2: APPENDIX E — COMMON INTERFACE	Version 2-0	23/03/13	ERA
4.6	TAF TSI APPENDIX F — Data and MessageModel)	Version 2.1	08/08/13	ERA

2.5.2 OTHER REFERENCES

Id	Title	Doc ID, Edition	Date	Author
1.	Standard numerical coding for railway undertakings,	UIC/OSJD Leaflet 920-1, 6th Edition	11/2005	UIC/OSJD

Id	Title	Doc ID, Edition	Date	Author
	infrastructure managers and others companies involved in rail-transport chains			
2.	Telematic Applications for Freight Technical Specification for Interoperability, Strategic European Deployment Plan Functional Requirements Specification – Common Interface	Version 1-0	04/2006	EC
6	Codes for the Representation of Names of Countries and their Subdivisions - Part 1: Country Codes Definitions and Abbreviations.	ISO 3166-1	1997	ISO
7	CEN Working Agreement for Coding For Railway Undertakings, Infrastructure ManagersAnd Other Companies Involved In The Rail Transport Chain		May 2006	CEN

2.6 ACRONYMNS AND DEFINITIONS

For definitions and acronyms see [4].

2.7 RESPONSIBILITIES

This Functional Requirement Specification was written under the responsibility of the SEDP project team by representatives of European IMs, RUs and others. It is to be used as the specification protocol for the implementation of the reference file. This document is a deliverable of the SEDP project for the implementation on the TAF TSI. Since 2012 this document has been handed over to the European Railway Agency and it belongs to the ERA Technical Document set for TAF TSI. Therefore, any update of this document shall be brought to the TAF TSI Change Control Management Working Party under the aegis of the European Railway Agency.

2.8 FUNCTIONAL REQUIREMENTS AND BENEFITS

Reference files provide the basis for Data Quality for effective data interchange and application integration. The codes and associated information allow trading partners to uniquely and unequivocally interpret information and apply it to their internal applications without the need for further edits. This provides a unique benefit by reducing manual intervention and enhancing application integration.

2.9 USERS OF THE REFERENCE FILE

The following actors are specifically defined within the TSI-TAF, however this list is not all inclusive. Coding is available to any company or state agency (body) involved in a rail-transport chain. A company or agency involved in a rail-transport chain shall mean those who are directly or indirectly involved in rail traffic or having a business relationship with one or more of such companies.

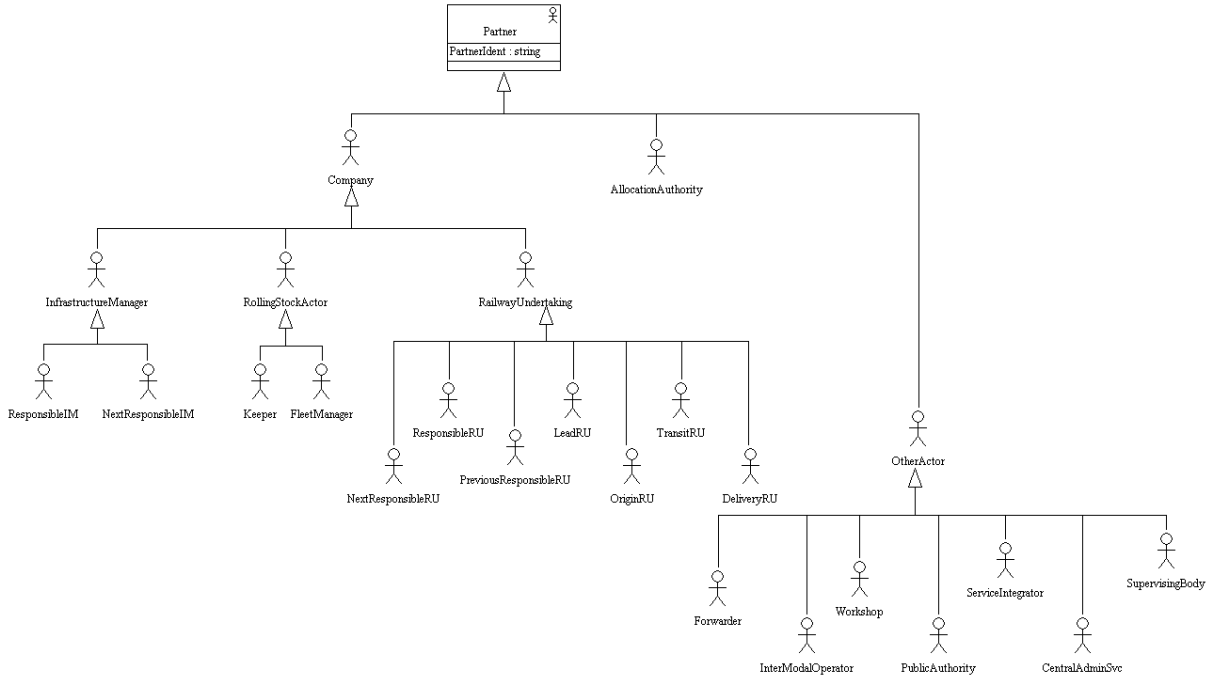

Figure 14: Diagram 2.1 TAF-TSI Actors used in the Company Reference File.

2.9.1 "ALLOCATIONAUTHORITY" ACTOR

This element defines the organisation responsible for allocating codes within a country. It could a national or private authority or any other Actor entrusted with the responsibility of code maintenance.

It specialises the actor OtherActor.

2.9.2 “COMPANY" ACTOR

Company identifies any actor in the transport chain, notably any Company, directly or indirectly involved in rail traffic or having a business relationship with one or more of such companies not being a customer. The definition of *Company* comprehends the following as defined in the TAF-TSI.

- *IMPartner;*
- *NextResponsibleIM;*
- *NextResponsibleRU;*
- *Recipient;*

- *ResponsibleIM;*
- *ResponsibleRU,*
- *PreviousResponsibleRU;*
- *RUPartner*;
- *Sender*.

It specialises the actor Partner.

2.9.3 “CUSTOMER” ACTOR

Customer is the entity which has issued the consignment note to the Lead RU.

2.9.4 "DELIVERYRU" ACTOR

The RU responsible for delivery to the

customer It specialises the actor

RailwayUndertaking.

2.9.5 "FLEETMANAGER" ACTOR

The fleet manager is the overall controller of a wagon fleet. Primarily a fleet manager controls the logistics of wagons (dispatching / disposition) from an operational and asset management point of view.

It specialises the actor RollingStockActor.

2.9.6 "COMBINEDTRANSPORTOPERATOR" ACTOR

Party which organises Intermodal transports. Intermodal transport is where the major part of the European journey is by rail and any initial and/or final leg is carried out by another transport mode

It specialises the actor Company.

2.9.7 “INFRASTRUCTUREMANAGER” ACTOR

Infrastructure Manager means any body or undertaking that is responsible, in particular, for establishing and maintaining railway infrastructure. This may also include the

management of infrastructure control and safety systems. The functions of the infrastructure manager on a network or part of a network may be allocated to different bodies or undertakings

2.9.8 "KEEPER" ACTOR

The entity, who being the owner or having the right to dispose of it, exploits a vehicle economically in a permanent manner as a means of transport and is registered as such in the Rolling Stock Register.

A railway undertaking owning wagons equally has the role of keeper.

It specialises the actor RollingStockActor.

2.9.9 "LEADRU" ACTOR

Responsible RU, which organises and manages the transport line according to the customer's commitment. It is the single point of contact for the customer. If more than one Railway Undertaking is involved in the transport chain, the LRU is responsible for the co-ordination of the various Railway Undertakings. A customer may be especially for Intermodal transport an Intermodal service integrator. See TAF-TSI [4].

The LeadRU is a service integrator.

It specialises the actor RailwayUndertaking.

2.9.10 "RESPONSIBLERU" ACTOR

RU responsible for the current operation of the

train It specialises the actor RailwayUndertaking.

2.9.11 "ORIGINRU" ACTOR

The first RU in the rail transportation

chain It specialises the actor

RailwayUndertaking.

2.9.12 “RAILWAYUNDERTAKING” ACTOR

RailwayUndertaking is a company defined as any public or private undertaking, licensed according to applicable Community legislation, the principal business of which is to provide services for the transport of goods and/or passengers by rail (including shipping companies, covered by international railway tariffs). A requirement is that the undertaking shall ensure traction; this also includes undertakings which provide traction only.

It specialises the actor Company.

2.9.13 "RESPONSIBLEIM" ACTOR

IM responsible for the train currently operating on its

infrastructure It specialises the actor InfrastructureManager.

2.9.14 "NEXTRESPONSIBLEIM" ACTOR

Handover IM

It specialises the actor InfrastructureManager.

2.9.15 "NEXTRESPONSIBLERU" ACTOR

RU responsible for the physial movement of the train after

interchange It specialises the actor RailwayUndertaking.

2.9.16 "PUBLICAUTHORITY" ACTOR

Authority as an applicant is a legalised authority having an interest in public transport services. Authority is a legalised institution having an interest in the transport.

It specialises the actor Applicant, OtherActor.

2.9.17 "PREVIOUSRESPONSIBLERU" ACTOR

RU responsible for the physical movement of the train before the previous interchange. It specialises the actor RailwayUndertaking.

2.9.18 "TRANSITRU" ACTOR

The RU who involved in the interchange

It specialises the actor RailwayUndertaking.

2.9.19 "ROLLINGSTOCKACTOR" ACTOR

The Keeper, Wagon Owner or Fleet

Manager It specialises the actor Company.

2.9.20 "SERVICEINTEGRATOR" ACTOR

Service Integrator organises the transport chain between Consignor and Consignee. The LeadRU is a ServiceIntegrator.

It specialises the actor Applicant, OtherActor.

2.9.21 "OTHERACTOR" ACTOR

OtherActor involved in the Rail-Transport-Chain is any company or authority, directly or indirectly involved in rail traffic or having a business relationship with one or more of such companies.

It specialises the actor Partner.

2.9.22 "WORKSHOP" ACTOR

An approved organisation accredited to build, repair and/or maintain vehicles.

2.9.23 "CENTRALADMINSVC" ACTOR

The Central Service administering the reference file.

2.10 REFERENCE FILE USER PROFILES

Reference File Users will have allocated the following characteristics:

- User Identification

- User name
- Password
- Organisation
- Contact details
- Role (defined in classes below)

All users of the **Central Administration Service** will fall into 3 classes with the following rights:

- **Administrative Users** maintaining the central register
- **Authorised Users** representing approved or user companies who need access to the registries in real time and have access to submit updates to the **Central Administration Service**
- **Casual Users** who have read access only

Users must be validated and allocated within one working day of application. Application may be made from the Central Administrative Service

2.11 COMPANY IDENTIFICATION USE CASES

The use case diagram below illustrates the actors and functions involved in the management of the reference file. The Central Administration Service is a generalisation of 'Other Actor' and is involved in all functions. This actor is also responsible for the publication of codes.

The maintenance processes (updates, deletion) can only made by the owning entity.

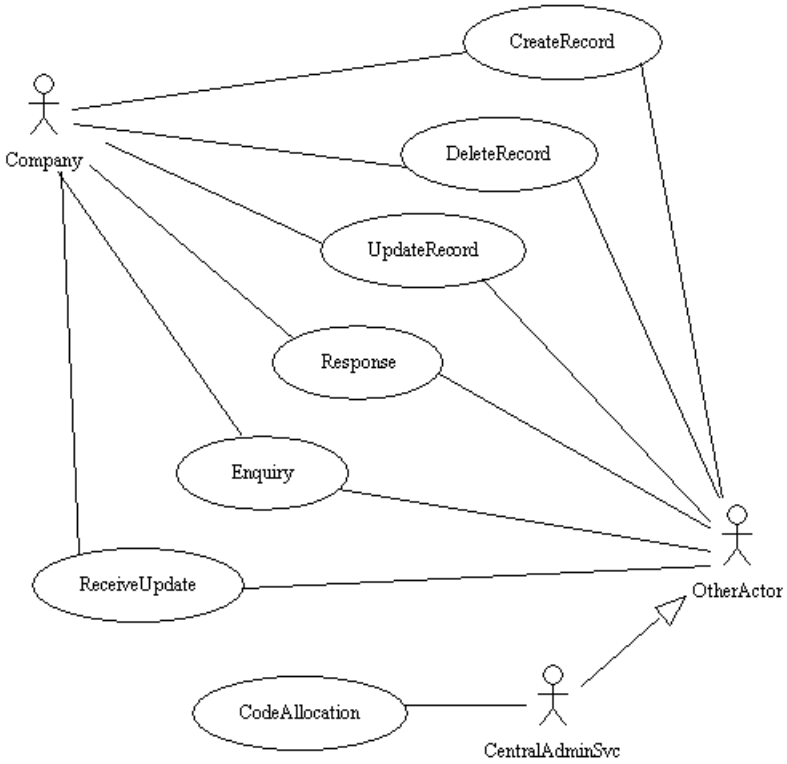

Figure 15: Diagram 2.2 Use Cases for the Company Identification functions.

2.12 ALLOCATION PROCEDURES FOR A COMPANY IDENTIFICATION

2.12.1 ENTITLED APPLICANTS

Every company (transport service provider) involved in the Rail-Transport-Chain shall be entitled to a code. This means that every company which is in or is doing business with the railway industry can apply for one or more codes.

Examples of entitled companies: Railway undertakings, infrastructure managers, forwarders, ship-owners, bus-companies operating in common transport federations (TCV, RIC, ..), wagon-owners, travel-agencies, banks and State agencies, international organisations or private companies dealing with rail business.

2.12.2 ALLOCATION PROCEDURE – RECORD CREATION AND VALIDATION

Code application forms either can be downloaded from the Web-sites of both the UIC and the OSJD[1] or submitted electronically (see chapter on Man-Machine Interface). If the form is used, it must be completed in the same language as the published form. After being completed and signed, the form is to be submitted to the address indicated on the bottom of the form[2] by mail, e-mail or fax. All relevant information is printed on the back of the application form.

A company can request to obtain one or more codes for separate entities for immediate use or could ask to block one or more codes for future use. Please note that if one company has more than one code, it is not possible to guarantee unique identification.

Application forms sent to the OSJD will be checked and submitted to the UIC for further processing. The requested code(s) will be allocated in cooperation between the UIC and OSJD. A code request must be finalised within two calendar weeks. The applicant shall receive written confirmation or rejection of the code request(s) immediately after validation. The confirmation may be via electronic or manual communication.

The UIC as the Central Administration Service will publish the allocated code(s) in the reference file and automatically distribute to all subscribers in their requested format. All company code owners must subscribe.

The following UML diagram illustrates the process:

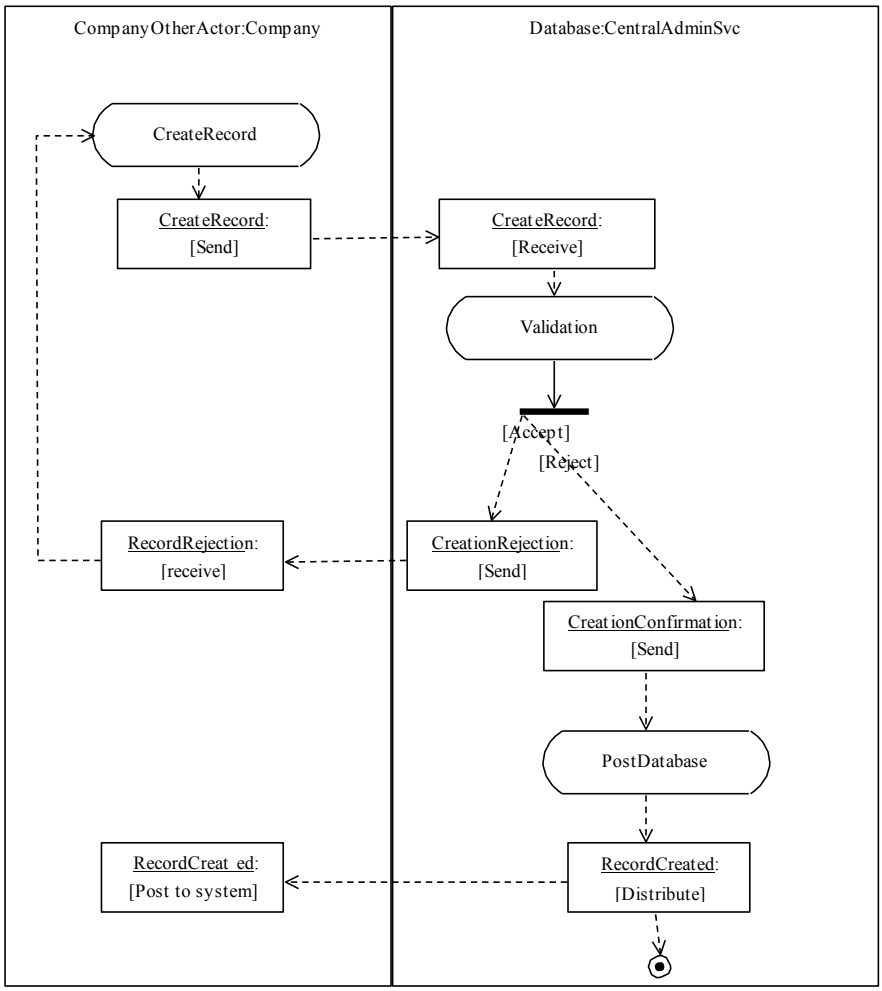

Figure 16: Diagram 2.3 Record Creation and Validation.

[1] OSJD: www.osjd.org, UIC: www.uic.asso.fr

[2] French, English and German forms to the UIC, Russian and Chinese forms to the OSJD

2.12.3 RECORD MODIFICATION, UPDATES AND VALIDATION

A code owner can request to update company data in the code administration table. "Company code update forms" can be downloaded from the Web-sites of both the UIC

and the OSJD. The form must be completed in the same language as it is published to request an amendment for restricted information.

The code owner may not modify the following restricted information on-line:

- Company
- CountryOfRegistration
- Validity Period

In the case that these restricted data need to be amended, the code owner must submit a request to the Central Administration Service for validation and processing. The CAS will then publish the amendments once approved. The applicant shall receive written confirmation or rejection of the request(s) immediately after validation. The confirmation may be via electronic or manual communication.

The code owner may change such administrative data on-line such as:

- Principal Activity
- AddressInformation
- AdministrativeContactInformation

The requested update(s) will be processed in cooperation between the UIC and OSJD. The UIC as the Central Administration Service will publish the update(s) in the reference file and automatically distribute to all subscribers in their requested format. All company code owners must subscribe.

The following UML diagram illustrates the process:

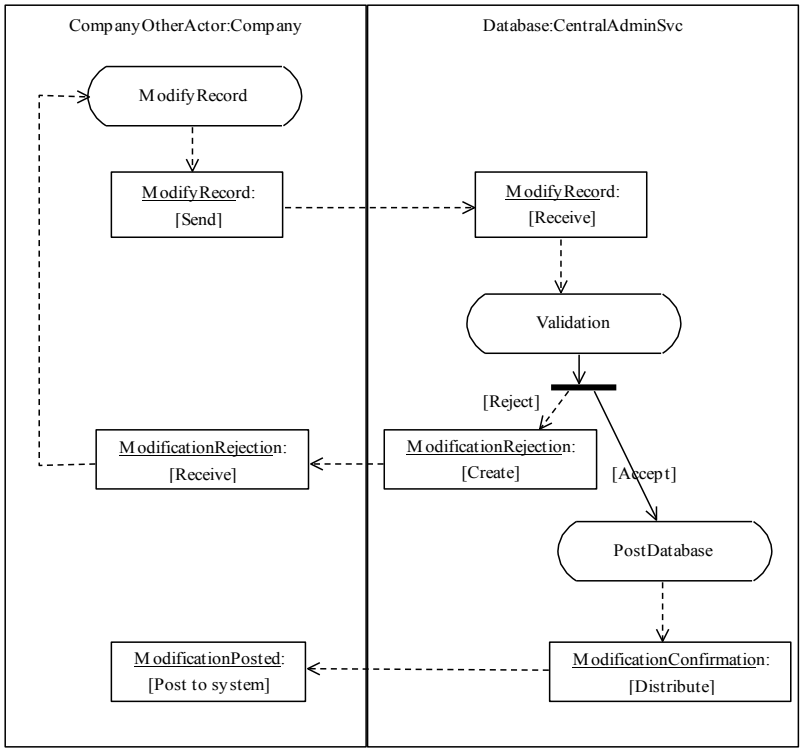
CompanyOtherActor:Company
Database:CentralAdminSvc
ModifyRecord
ModifyRecord: [Send]
ModifyRecord: [Receive]
Validation
[Reject]
ModificationRejection: [Receive]
ModificationRejection: [Create]
[Accept]
PostDatabase
ModificationPosted: [Post to system]
ModificationConfirmation: [Distribute]

Figure 17: Diagram 2.4 Record Modification, Updates and Validation.

2.12.4 RECORD DELETION AND VALIDATION

A code owner can request to withdraw one or more of his codes using the same process as above. A deleted code may not be re-allocated for two years. Archival requirements are described in chapter 3.

The CAS may initiate a deletion of a Company Identification due to administrative maintenance. In this case, the CAS must inform the code owner in writing prior to the deletion.

The applicant shall receive written confirmation or rejection of the deletion request(s) immediately after validation. The confirmation may be via electronic or manual communication.

The requested deletion(s) will be processed in cooperation between the UIC and OSJD. The UIC as the Central Administration Service will publish the deletion(s) in the reference file and automatically distribute to all subscribers in their requested format. All company code owners must subscribe.

The following UML model illustrates the process:

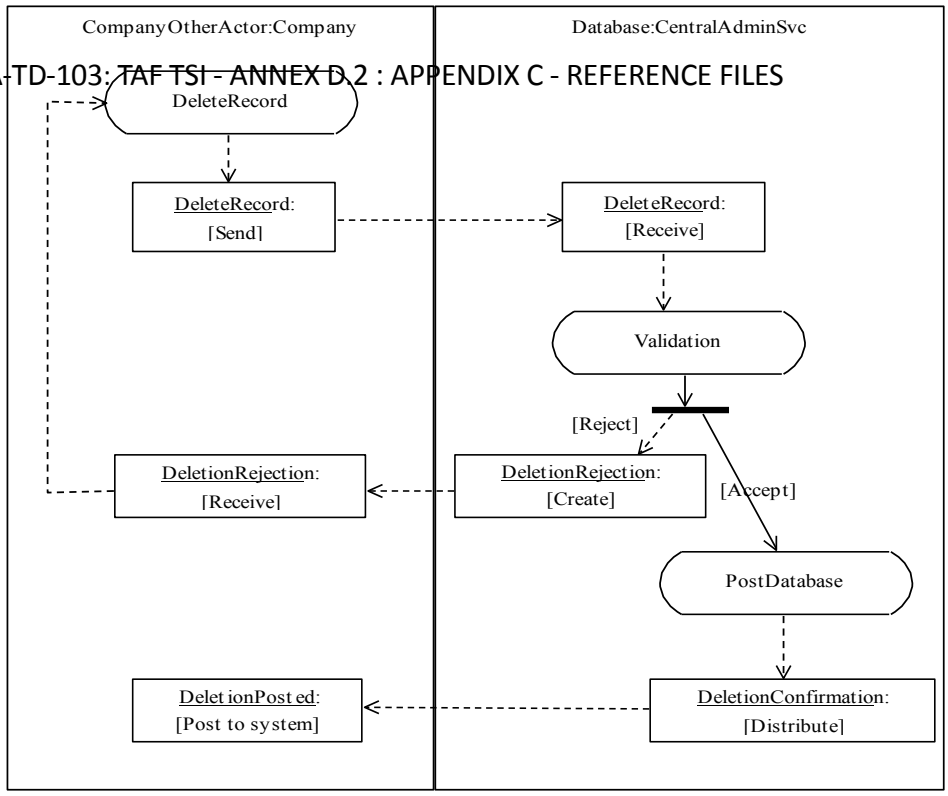

Figure 18: Diagram 2.5 Record Deletion and Validation.

2.12.5 COMPANY IDENTIFICATION FILE ENQUIRIES

- Any user may interrogate the database.

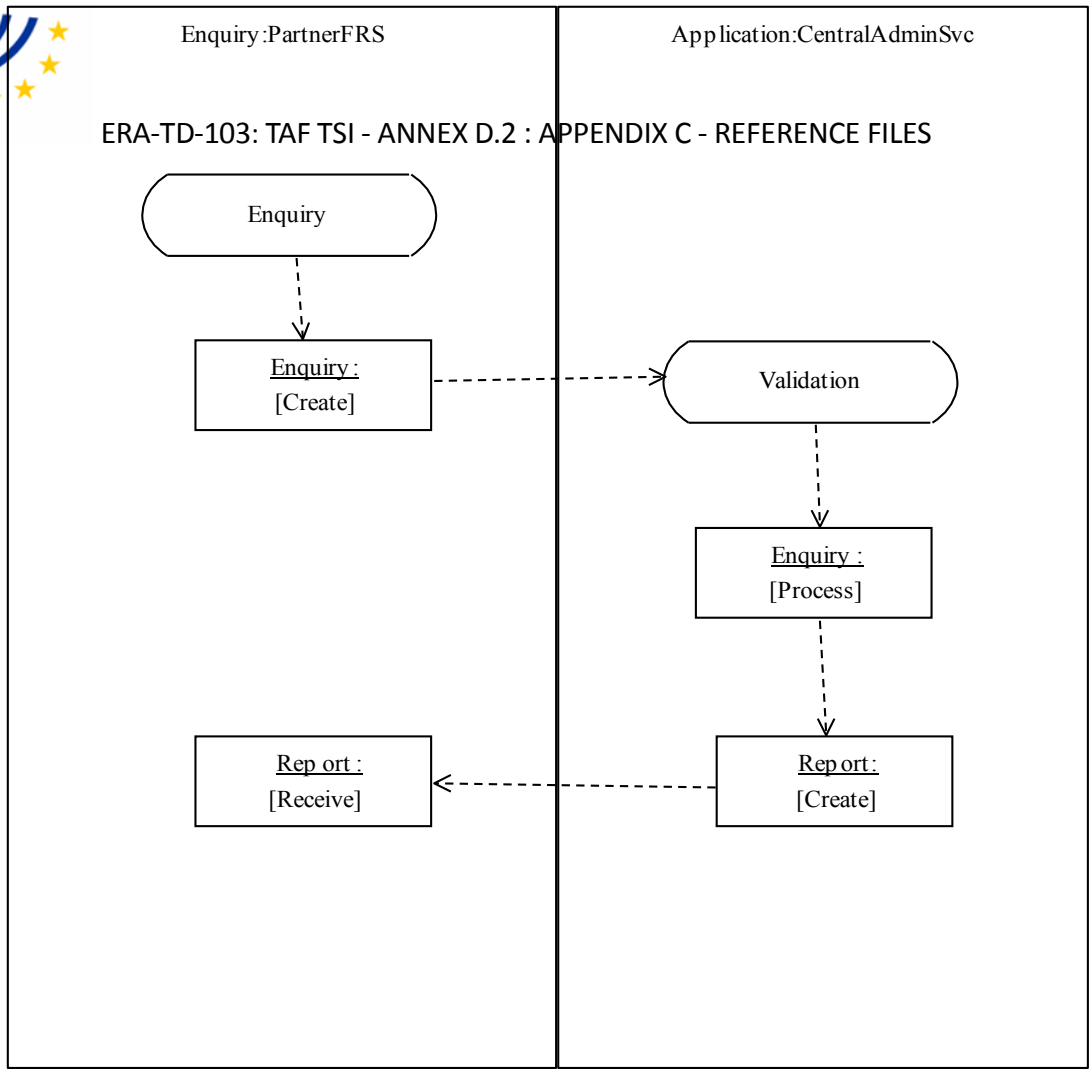

Figure 19: Diagram 2.6 Enquiries for Companies and Other Actor Codes.

2.12.6 DATA DUMP (BULK DOWNLOAD)

The data dump option is a tool by which the entire data file may be supplied to the user. This can support comparison of data against the current centralised reference file. In this case, centralised data is usually a copy of source data which is placed on local level. Making sure that data is coherent and reliable in both cases, the actor is allowed perform comparison between national and central level.

2.13 COMPANY IDENTIFICATION USER RIGHTS

User rights are part of the access control, defining rights to create, enquire, update, or delete data.

Action	Company	Other Actor	Central Admin Svc
Create Record			X
Update Record (if code owner and data is as described in chapter	X	X	X
Delete Record			X
Receive Updates	X	X	X
Enquiry	X	X	X
Data Dump	X	X	X

2.14 DATA SECURITY AND ACCESS RULES AND RIGHTS

Company Identification data is unrestricted and available to any interested party. Update functions are restricted to the code owners. (See chapter **2.13.3**). Protection of data and profiling of companies must be managed by the CAS.

Any interested party is allowed to read the data. Creation of new data and updating existing data can be performed only by the authorised users or the CAS. The policy of data security is based on user rights and access as defined in chapter **2.15**. The CAS is responsible for ensuring data security and access rules.

2.15 PROCESS REQUIREMENTS

2.15.1 ENQUIRY/RESPONSE PROCEDURE

Enquiries may be made either via the Human Computer Interface (HCI) or via other electronic means through the system interface with the CAS. The enquiry and response will be delivered through the Common Interface in the valid TAF-TSI standard format (See Chapter 3). Anyone has the right to make an enquiry to the database.

2.16 ARCHIVAL REQUIREMENTS

Archival requirements for the Company Identification must be time coordinated with all other systems of the TAF-TSI (WIMO, Wagon Technical Data, etc) in order to provide complete traceability data transformation and history.

It is necessary to have traceability of previous amendments. This history should be archived and retrievable within a period of time complying with a statute of limitation to be defined.

2.17 COMPANY IDENTIFICATION DATA REQUIREMENTS

The management of the companies' identification is done by the CAS directly in the reference file. Moreover, the companies will be registered centrally and there is no need of update message for that, as the amount of updates don't requires really an update by message.

The following view shows as example the content of Company data set:

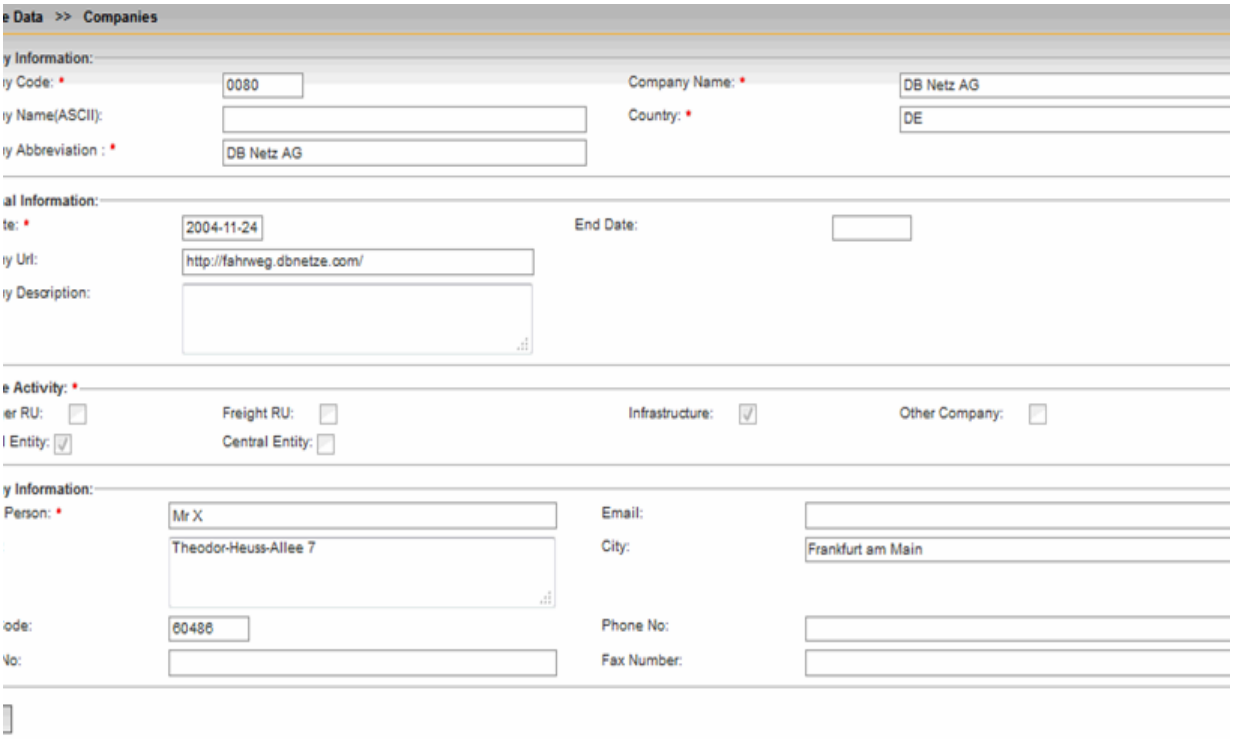

Figure 20: Diagram 2.7 Interface for entering Company data.

Maximum data requirements are listed below:

- Company_ Code
- Company_Short_Name
- Company_Name
- Company_Name_ASCII
- Company_URL
- Country_ISO_code
- Start_Validity
- End_Validity
- Free_Text
- Contact_Person
- Email
- Phone_Number
- FAX_Number
- Address

- City
- Postal_Code
- Passenger Flag
- Freight_Flag
- Infrastructure Flag
- Other Company flag
- NA Entity Flag
- CA Entity Flag
- Active Flag

3. KEEPERS' ROLLING STOCK REFERENCE DATABASES

3.1 INTRODUCTION

Normalised data are needed to support data exchange as defined in the Technical Specification for Interoperability (TSI) relating to the subsystem Telematic Applications for Freight of the Trans-European Conventional Rail System referred to in Article 6(1) of Council Directive 2008/57/EC amended by Commission Regulation (EU) No 328/2012 of 17 April 2012 and Commission Regulation (EU) No 280/2013 of 22 April 2013.. To ensure data quality, the TSI for Telematic Applications for Freight (TAF) defines the need for databases to act as a repositories for these data. The Keeper's Rolling Stock Database(s) provide for timely and accurate technical wagon data to be used to ensure safety and the efficient operation of wagons interchanged across networks.

For the efficient operation of rail freight on the European Network, the Keeper's Rolling Stock databases must be established. These databases must be available and accessible to all entitled participants subject to the data exchange specified in the TAF-TSI. The data must represent the actual status at all times (be up to date).

3.2 PURPOSE

The intention of this Functional Requirements Specification is to detail and to clarify the requirements described in the TAF-TSI concerning the Keeper's Rolling Stock Database.

This document is part of the SEDP project and an SEDP deliverable.

3.3 FUNCTIONAL OBJECTIVES

The functional objective of this FRS is to define the following:

- TAF TSI Requirements
- Benefits of the Reference File
- Users of the Reference File
- Use Cases and Process Requirements
- User Rights and Access
- Data Security and Access Rules and Rights
- External System References

3.3.1 TECHNICAL OBJECTIVES

The technical objective of this FRS is to define the following:

- Physical Security Requirements
- System Reliability and Quality Measures
- Rolling Stock File Data Requirements
- Associated messaging for reference file population and maintenance
- Data Quality Assurance
- Interfaces

3.4 INTENDED AUDIENCE

The intended audience for this Functional Requirements Specification is anyone who is involved in the rail transportation chain having the right to access wagon technical data. When the TAF TSI becomes effective for the involved parties, this document will be the specification for these parties in developing and accessing the database and maintaining the data.

3.5 EVOLUTION OF THE FUNCTIONAL REQUIREMENTS SPECIFICATION

3.5.1 DISTRIBUTION

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2	On the interoperability of the rail system within the Community (Recast)	Directive 2008/57/EC	17/06/08	EC
3	TSI OPE (repealed with effect from 01.01.2012) - Decision 2006/920/EC (as amended by 2009/107/EC and 2010/640/EU)	Decision 2011/314/EU (in force from 01.01.2012 on)	12/05/2011	EC

4	Technical Specification for Interoperability subsystem Telematic Applications for Freight	Commission Regulation (EU) No 1305/2014 of 11 December 2014 on the technical specification for interoperability relating to the telematics applications for freight subsystem of the rail system in the European Union and repealing the Regulation (EC) No 62/2006	12/12/2014	EU
4.1	TAF TSI - ANNEX A.5: Figures and Sequence Diagrams of the TAF TSI Messages	ERA_FRS_TAF_A_Index_5.doc	25/01/11	ERA
4.2	TAF TSI – ANNEX D.2 :	Version 1-0	23/03/13	ERA

Id	Title	Doc ID, Edition	Date	Author / Publisher
	APPENDIX A – (WAGON/ILU TRIP PLANNING)			
4.3	TAF TSI – ANNEX D.2 : APPENDIX C – REFERENCE FILES	Version 2-1	13/05/12	EC
4.5	TAF TSI — ANNEX D.2: APPENDIX E — COMMON INTERFACE	Version 2-0	23/03/13	ERA
4.6	TAF TSI APPENDIX F — Data and Message Model)	Version 2-1	08/08/13	ERA
5	Telematics Applications Change Control Management Guide.	Version 1-4	10/02/15	ERA

Id	Title	Doc ID, Edition	Date	Author / Publisher
7	Technical Specification for Interoperability Subsystem: Rolling Stock Scope: Freight Wagons	Directive 2001/16/EC - Interoperability of the Trans-European High Speed Rail System		
8	Convention Concerning International Carriage by Rail (COTIF)	9th May 1980 in the Version of the Protocol of Modification of 3rd June	03/06/99	OTIF
9	Railway applications – Track – Technical requirements for railbound construction and maintenance machines – Part 1: Running of railbound machines	EN 14033-1		EC
10	List of Vehicle Keeper Markings	To be defined by ERA Activity 15, and SEDP Work Groups both in co-ordination		ERA/OTIF

Id	Title	Doc ID, Edition	Date	Author / Publisher
		with OTIF		

3.7 ACRONYMNS AND DEFINITIONS

For definitions and acronyms see [4].

3.8 RESPONSIBILITIES

This Functional Requirement Specification was written under the responsibility of the SEDP project team by representatives of European IMs, RUs and others. It is to be used as the specification protocol for the implementation of the reference file. This document is a deliverable of the SEDP project for the implementation on the TAF TSI. Since 2012 this document has been handed over to the European Railway Agency and it belongs to the ERA Technical Document set for TAF TSI. Therefore, any update of this document shall be brought to the TAF TSI Change Control Management Working Party under the aegis of the European Railway Agency.

3.9 FUNCTIONAL REQUIREMENTS SPECIFICATIONS

3.9.1 REQUIREMENTS ACCORDING TO TAF TSI

The TAF TSI (*Commission Regulation (EC) No 62/2006 of 23 December 2005 concerning the technical specification for interoperability relating to the telematic applications for freight subsystem of the trans-European conventional rail system)* amended by Commission Regulation (EU) No 328/2012 of 17 April 2012, Commission Regulation (EU) No 280/2013 of 22 April 2013 and Commission Regulation (EU) No 1305/2014 of 11 December 2014 obliges wagon keepers to maintain an electronic database with wagon information. It is stated in Chapter 4.2.10.2 *The Rolling Stock Reference Databases*:

4.2.10.2. The Rolling Stock Reference Databases

The keeper of a rolling stock is responsible for the storage of the rolling stock data within a Rolling Stock Reference Database.

The Information that must be included in the individual Rolling Stock Reference Databases is described in detail in Appendix I, Appendix C. They must contain all items for:

- Identification of rolling stock,
- Assessment of the compatibility with the infrastructure,
- Assessment of relevant loading characteristics,
- Brake relevant characteristics,
- Maintenance data,
- Environmental characteristics.

The Rolling Stock Reference Databases must allow easy access (a single common access provided via the common interface) to the technical data to minimise the volume of data transmitted for each operation. Contents of the Databases must be accessible, based on structured access rights depending on privilege to all Service Providers (IMs, RUs, Logistic providers and Fleet managers) in particular for purposes of fleet management and rolling stock maintenance.

The entries in the Rolling Stock Reference Database can be grouped as follows:

- Administrative data, related to certification and registration items such as reference to the EC registration file, id of the notified body, etc.; this may include historical data related to ownership, rental, etc. Additionally, according to Commission Regulation EU 445/2011, article 5, the Wagon Keepers may store the ECM certification identification number in the individual Rolling Stock Reference Databases. The following steps have to be taken into account:

- EC certification,
- Registration in the “home” state,
- Date put into service in the state of registration,
- Registration in other countries for the use on their national network,
- Safety certification for all Rolling Stock which does not comply with the Rolling Stock TSI.

The keeper is obliged to ensure that these data are available and the processes behind have been conducted.

Design data, which shall include all constitutive (physical) elements of the rolling stock, including characteristics related to the environment, and all information that is expected to remain valid throughout the life of the rolling stock - this part may contain a history of major modifications, major maintenance, overhaul, etc.

3.9.2 BENEFITS

According to the goals of the TAF-TSI the operation and availability of rolling stock reference data, accessed electronically via a common interface, will clearly improve and facilitate the cooperation between the involved partners during the following processes:

- Operation of wagons during transportation
- Supervision by National Safety Authorities
- Providing administrative and technical wagon information for users

3.9.2.1 Direct Benefits

During the railway undertaking's production process, with its many time critical elements, quality and security relevant issues can be supported by using wagon data provided by the Keepers via the Rolling Stock Reference Database.

Thus the actual and correct data can be used by all involved partners. Moreover everybody can benefit from clearly defined data maintenance processes.

3.9.2.2 Extended Benefits (other systems, processes, etc)

Keepers are responsible for providing fundamental wagon technical and administrative data input for the RU WIMOs as described in the Data Requirements chapter. The existence of this data will offer benefits concerning the following processes:

- Wagon registration process (involving keeper and registration authorities)
- Wagon approval process (involving keeper and notified bodies)
- Wagon supervision process (involving keeper and Supervising bodies)
- Wagon rental and transport processes (involving keeper and their customers)

3.9.3 USERS OF ROLLING STOCK DATA

The following actors are specifically defined within the TSI-TAF, however this list is not all inclusive. Each of these users will require unique company coding to improve data exchange and to interpret and correctly apply the partner identification in their application system.

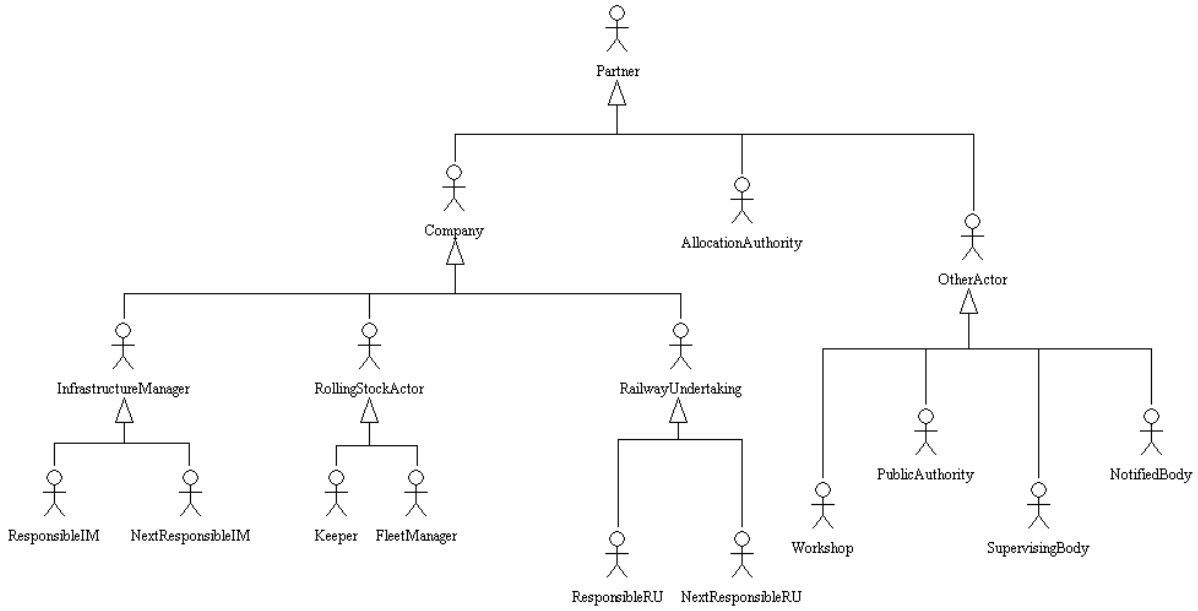

Figure 21: Diagram 3.1 Users of Rolling Stock Data.

3.9.4 "ALLOCATIONAUTHORITY" ACTOR

The organisation responsible for allocating codes within a country. It could a national or private authority or any other Actor entrusted with the responsibility of code maintenance.

It specialises the actor Partner.

It cooperates with the following use cases:

- AllocationAuthorityValidation
- CodeInputToCAS
- Amendment/Deletion to CAS
- CodeSubmission
- Enquiry

3.9.5 "CENTRALADMINSVC" ACTOR

The Central Service Administering the Reference file.

It specialises the actor OtherActor.

It cooperates with the following use cases:

- CodeAllocation

3.9.6 "COMPANY" ACTOR

This element identifies the company (RU or IM) responsible for a specific location

It specialises the actor Partner.

It cooperates with the following use cases:

- CreateRecord
- DeleteRecord
- UpdateRecord
- Response
- Enquiry
- ReceiveUpdate

3.9.7 "FLEETMANAGER" ACTOR

The fleet manager is the overall controller of a wagon fleet. Primarily a fleet manager controls the logistics of wagons (dispatching / disposition) from an operational and asset management point of view.

This role might be part of the keeper's organisation. Since it is possible for keepers to outsource certain tasks, some fleet managers might exist, who have been assigned the operational fleet management tasks by certain keepers.

It specialises the actor RollingStockActor. It

cooperates with the following use cases:

- Enquiry

3.9.8 “INFRASTRUCTUREMANAGER” ACTOR

Any body or undertaking that is responsible in particular for establishing and maintaining railway infrastructure. This may also include the management of infrastructure control and safety systems. The functions of the infrastructure manager on a corridor or part of a corridor may be allocated to different bodies or undertakings (Directive 2012/34/EU).

In the context of the TAF-TSI the Infrastructure Manager is providing infrastructure access to railway undertaking's trains consisting of the keeper's wagons.

Primarily the Infrastructure Manager is offering transportation paths / time slots for the railway undertaking's trains and assuring the secure operation of these trains.

During the normal transportation process with trains there is no interaction between Infrastructure Manager and keeper. In the case of damages or accidents the Infrastructure Manager might need direct access to the keeper's data in addition to the fact that the railway undertaking is the duty holder and therefore the primary partner for the Infrastructure Manager.

Concerning TAF-TSI reference data, an Infrastructure Manager is a partner in the transportation / train production / wagon use process and should have access to the rolling stock reference data.

According to the TAF-TSI reference data, each Infrastructure Manager is a partner and should be handled by the coding methods as pointed out in Company identification documentation.

It specialises the actor Company.

It cooperates with the following use cases:

- Enquiry

3.9.9 "KEEPER" ACTOR

The entity, who being the owner or having the right to dispose of a vehicle, exploits it economically in a permanent manner as a means of transport and is registered as such in the National Vehicle Register.A railway undertaking or other entities owning wagons equally have the role of keepers.

In the context of the TAF-TSI the keeper is managing his wagon fleet from both a technical and commercial point of view when his wagons are used by railway undertakings or transport customers.

Keepers have the right to assign the operational fleet management tasks to a specific fleet manager (e.g. a company on its own) but remain liable for the operational status and safety of their wagons.

Concerning TAF-TSI reference data, each keeper is a partner in the transportation / wagon use process concerning his own wagons and should allow access to his rolling stock reference database. According to the TAF- TSI reference data, each keeper is a partner and should be handled by the coding methods as pointed out in Company Identification documentation.

A Keeper may also appoint an ***IT Service Provider***. In the context of the keeper's rolling stock reference data an IT service provider is hosting / operating IT systems and offering IT services to the keeper. This enables the keeper to outsource his IT tasks i.e. running the keeper's rolling stock reference database etc.

It specialises the actor RollingStockActor. It

cooperates with the following use cases:

- Creation
- Modification
- Deletion

3.9.10 "NOTIFIEDBODY" ACTOR

The bodies which are responsible for assessing the conformity or suitability for use of the interoperability constituents or for utilising the EC procedure for verification of the subsystems.

It specialises the actor OtherActor.

It cooperates with the following use cases:

- Enquiry

3.9.11 "NEXTRESPONSIBLERU" ACTOR

RU responsible for the physical movement of the train after interchange. It

specialises the actor RailwayUndertaking.

It cooperates with the following use cases:

- Enquiry

3.9.12 “RAILWAYUNDERTAKING” ACTOR

A Railway Undertaking is any private or public-law company primarily involved in the provision of rail transportation services for the carriage of goods and/or persons and in all cases also provides the traction for same.

It specialises the actor Company.

It cooperates with the following use cases:

- Enquiry

3.9.13 "RESPONSIBLERU" ACTOR

RU Responsible for the physical operation of the train.

Whilst using the keeper's wagons the railway undertaking is the Duty Holder who is the legal entity responsible for the risk which he imports onto the network.

Concerning TAF-TSI reference data, a railway undertaking is a partner in the transportation / train production / wagon use process (after signing the common contract of use) and should have access to the rolling stock reference data. According to the TAF-TSI reference data, each railway undertaking is a partner and should be handled by the coding methods as pointed out in Company Identification documentation.

It specialises the actor RailwayUndertaking. It

cooperates with the following use cases:

- Enquiry

3.9.14 "ROLLINGSTOCKACTOR" ACTOR

The Keeper, Wagon Owner or Fleet Manager It

specialises the actor Company.

It cooperates with the following use cases:

- Enquiry

3.9.15 "SUPERVISINGBODY" ACTOR

Supervising/Investigating body (delegated safety authority) providing an audit role as authorised by the State.

It specialises the actor OtherActor.

It cooperates with the following use cases:

- Enquiry

3.9.16 "OTHERACTOR" ACTOR

OtherActor involved in the Rail-Transport-Chain is any company or authority, directly or indirectly involved in rail traffic or having a business relationship with one or more of such companies

It specialises the actor Partner.

It cooperates with the following use cases:

- Modification/Deletion Request
- Enquiry

3.9.17 "WORKSHOP" ACTOR

An approved organisation accredited to build, repair and/or maintainvehicles.

The workshop is offering services to the keeper, responsible body for maintenance or to the railway undertaking as part of the wagon damage detection / maintenance / repair process. Primarily the workshop is building / repairing / maintaining wagons.

Concerning TAF-TSI reference data, a workshop is a partner in the transportation / train production / wagon use process and should have access to the rolling stock reference data. According to the TAF-TSI reference data, each workshop is a partner and should be handled by the coding methods as pointed out in Company Identification documentation.

It specialises the actor OtherActor. It cooperates with the following use cases:

- Enquiry

3.10 DATA USER PROFILE

Users of the rolling stock data will have allocated the followingcharacteristics

- User Identification

- User name
- Password
- Organisation
- Contact details
- Role (defined by <*x-reference*> below)

All users of the **rolling stock data** will fall into 3 classes with the following rights

- **Administrative Users** maintaining the rolling stock reference database
- **Authorised Users** are Keepers (or their representatives) who manage rolling stock data in real time and who are authorised to submit updates
- **Casual Users** who have read access only

3.11 USE CASES FOR PROCESSES

The Use Cases for Rolling Stock Data processes are defined below and illustrate the actors involved in each process. There are two distinct use cases (processes) defined:

- Creation, Modification and Deletion Process
- Enquiry Process

3.11.1 CREATION, MODIFICATION AND DELETION PROCESSES

As seen below, the Keeper (or through its designated IT Service Provider) is the only actor allowed to physically create, modify or delete a database record. All other actors have read-only access. The creation and update procedures for maintaining a correct and useful data content involve the following roles and process steps. When the Keeper creates, modifies or deletes Rolling Stock data locally the information must be shortly available via the Common Interface.

3.11.1.1 Record Creation

A record is created by the Keeper when a vehicle is manufactured and has been authorised and registered by the AllocationAuthority in the first State of registration. The record will contain full information as defined in the TAF TSI Schemas in Appendix I, ERA-TD-105, TAF TSI — Annex D.2: Appendix F — TAF TSI Data and Message Model.. A copy of the created record is available to the authorized users via the Common Interface.

3.11.1.2 Record Modification

Any data in the database may be altered except for the Wagon Number. A new Wagon Number is linked to a new authorization and will be handled as under 3.10.1.1. A record may be modified by the Keeper in the following cases (list is not inclusive):

- As a result of regular overhaul standard maintenance/repair or reconstruction information supplied by a workshop
- As a result of changes in relevant date in the National Vehicle Registers (NVRs)

A copy of the modification data is available to authorized users via common interface.

3.11.1.3 Record Deletion

In the case that a wagon is transferred to another Keeper, the record for the wagon shall be archived after the new Keeper has been registered in the National Vehicle Register of the Authorising State.

3.11.2 ENQUIRY USE CASE FOR THE ROLLING STOCK REFERENCE DATA

3.11.2.1 Authorised Users for enquiries

The following defines the actors involved in the enquiry process and their rights controlling their access to the rolling stock reference data via the common interface:

The Message is sent by the enquirer (e.g. RU/WIMO) to the Rolling Stock Reference Databaseof the keeper. The RSRD processes the query for each wagon number included in the message as follow:

The RSRD checks the existence of the wagonnumber in the database and the authorisation of the enquirer. If the wagon number exists and if the enquirer is authorizedfor the requested wagon number, the RSRD system fills the “RollingStockDatasetMessage” with the respective wagon data.

If the wagon number is not recorded or if the enquirer is not authorized, RSRD uses the data element RefusedWagonNumbers. The element RefusedWagonNumbers includes the refused wagon number as well as the refusal reason. After all the wagon numbers have run through the loop, RSRD returns the “RollingStockDatasetMessage”.

3.11.3 DATA SECURITY, ACCESS RULES AND RIGHTS

Access to the Rolling Stock Reference Database via the Common Interface or any other access point like a web GUI requires a valid user ID and a password. The User ID is linked with profile information defining the scope of user and access rights.

The Keeper or IT System Operator of the Rolling Stock Reference Database is responsible for the maintenance of user profiles. Each information provider maintains their own users' information or forwards the information to the operative party responsible for user information updates in the RSRD.

The following actors may have read-only access to the data under the following conditions:

The Fleet Manager other than the Keeper's Own/Direct Fleet Manager

The Fleet Manager may have read only access rights, based on vehicle number enquiry only, to all wagon technical and administrative data for the period that wagons are directly consigned by or to them.

Infrastructure Manager (IM)

The responsible IM may have read only access rights to all wagon technical and administrative data, based on vehicle number enquiry only, for the period that a vehicle is either on their infrastructure or en route.

Railway Undertaking (RU)

The responsible and next responsible RU may have read only access rights, based on vehicle number enquiry only, to all wagon technical and administrative data for the period that wagons are in trains directly under their control or en route to them.

Workshop

The Workshop may have read only access rights, based on vehicle number enquiry only, to all wagon technical data for the period that wagons are directly under their control in their shops, en route to them for attention.

Notified Body

The Notified Body may have read only access rights, based on vehicle number enquiry only, to all wagon technical and administrative data for the period only that wagons are requested to be approved or assessed by them.

Allocation Authority

The Allocation Authority may have read only access rights, based on vehicle number enquiry only, to all wagon administrative, design and technical data, as specified in the TSI WAG in their own directory and other Allocation Authorities' Directories as granted by the European Railway Agency requirements for the National Vehicle Register.

Supervising Body (Investigating/delegated Safety Authority)

The Supervising Body may have read only access rights, based on vehicle number enquiry only, to all wagon administrative, design and technical data, as specified in the TSI WAG being supervised in their own State directory and other States Allocation Authorities' Directories as granted by the European Railway Agency requirements for the National Vehicle Register.

3.11.4 RollingStockDataSetQueryMessage WIMO to RSRD

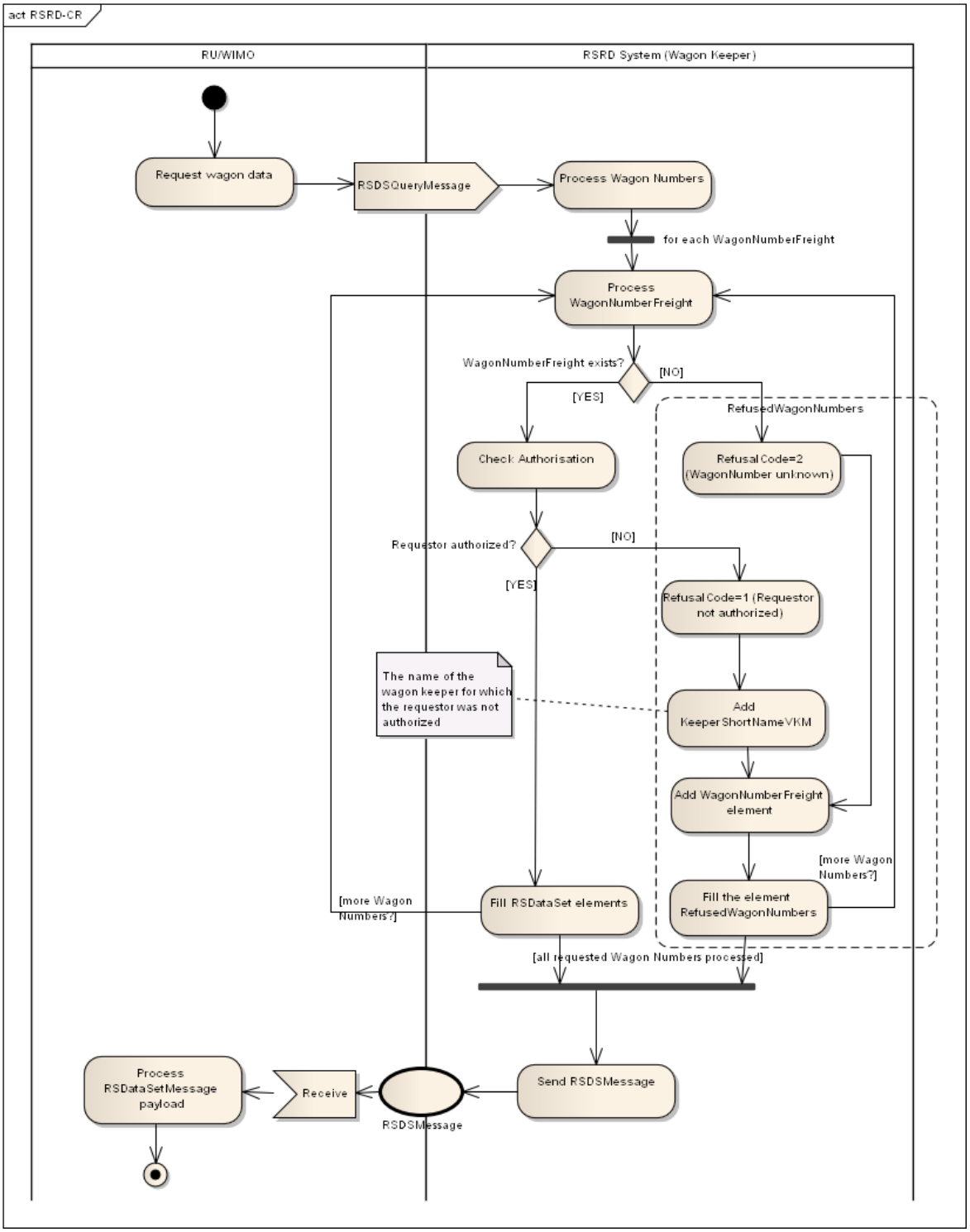

Figure 22: Diagram 3.4 Enquiry Activity - RSRD.

3.11.4.1 RollingStockDataSetQueryMessage Enquiry

The actors as defined above may make an enquiry by wagon number(s). They must create an enquiry message in the defined *RollingStockDataSetQueryMessage* format. This message is sent through the common interface to the RSRD of the keeper of the wagon.

3.11.4.2 Validation of User Access Rights by RSRD

The appropriate application within the RSRD performs a validation of the enquiring party and its rights, checked against the user specific profile.

3.11.4.3 RollingStockDatasetMessage Response from RSRD

If the user fulfils the criteria contained in the 'Access Rules and Rights' subchapter above, the RSRD will deliver a *RollingStockDatasetMessage* to the Requester. If the Requester does not fulfil the access requirements, a negative response message (RollingStockDatasetMessage with the element RefusedWagonNumbers) will be sent via the common interface.

3.12 EXTERNAL SYSTEM REFERENCES

3.12.1 NATIONAL VEHICLE REGISTER

The Interoperability Directive 2008/57/EC requires national vehicle registers to be used for the individual national registration processes.

This document describes only the keeper's rolling stock data to be registered in the Rolling Stock Reference Database.

Therefore any further descriptions concerning the data exchange between keeper and national rolling stock databases and the registration process are not part of this document.

3.12.2 OPERATIONAL DATA

The requirements for Rolling Stock as Part of the Wagon and Intermodal Operational Database (WIMO) as defined in Chapter 4.2.10.3 *The Rolling Stock Operational Data* states that:

Beside the reference data for rolling stock, the data representing the actual status of the rolling stock is the most important data for operational purposes.

This data shall include temporary data, such as restrictions, current and projected maintenance actions, km and fault counters, etc.; and all data that could be considered as "status" (temporary speed restrictions, brake isolated, needs for repair and fault description, etc.).

For use of the operational rolling stock data three different entities must be considered taking into account the different parties responsible for rolling stock during transport operation:

[redacted]taking as Duty holder during its transport control,

[redacted]

[redacted]

For all three different parties the operational rolling stock data must be accessible by the authorised user, down to his predefined authorised level, using the single key given by the wagon id (wagon

3.12.2.1 The operational rolling stock data is a part of the European wide Wagon and Intermodal Unit Operational Database as described in chapter 4.2.11.2 Other Databases.

Conclusions/Approach

In line with the existing roles and rules the railway undertaking which is using the keeper's wagon during the transport process is the legal duty holder. Thereby the railway undertaking is responsible for the operational status of the wagons, e.g. the railway undertaking, as duty holder, is responsible for the detection and documentation of damages.

According to the standard contract of use for rail freight wagons valid from 01.06.2006 the railway undertaking is responsible for sending appropriate data describing the actual wagon status to the keeper.

Therefore two obligations will exist in parallel for railway undertakings:

- As soon as a railway undertaking and a keeper have both signed the standard contract of use, the railway undertaking is obliged by the standard contract of use to send status information to the keeper.
- As soon as the relevant regulations for the use of the WIMO (not yet defined) are obligatory for a railway undertaking, the railway undertaking will have to send status information to the WIMO. The information available in the WIMO database must also be able to be accessed electronically by:
    - Registration Authorities
    - National Safety Authorities

This document describes only the keeper's rolling stock reference database.

Therefore any further descriptions concerning the data exchange between railway undertaking and the WIMO are not part of this document (see TAF TSI - ANNEX D.2 : APPENDIX B - WAGON AND INTERMODAL UNIT OPERATING DATABASE (WIMO) for details).

3.13 TECHNICAL REQUIREMENTS

The design of the RSRD should allow easy access, high performance and response time and low transaction costs.

In addition the RSRD design must be able to carry the workload of all parts and users, described in this document, even if the implementation will be released in steps.

3.13.1 SYSTEM INTEGRITY AND SECURITY ([4 & 5], CHAPTER 4.2.11.3)

Under the following points are listed the requirements which must be supported by the database(s) according [4 & 5] chapter 4.2.11.3. These are:

Authentication

The database must support the authentication of users of the systems before they can gain access to the database.

Security

The database must support the security aspects in the meaning of controlling access to the database. The possible encryption of the database contents itself is not required.

Consistency

The database selected shall support the ACID principle (**A**tomicity, **C**onsistency, **I**solation, **D**urability).

Access Control

It must be ensured that only authorised users may gain access to RSRD and that they can only gain access to the relevant parts and information of the system as defined in chapter **3.10.3**. The access control shall be supported down to a single attribute of a data record. The database shall support configurable, role based access control for insertion, update or deletion of data records.

Tracing

The database must support logging all actions applied to the database to allow for tracing the detail of the data entry (Who, What, When did the contents change).

Lock strategy

The database must implement a locking strategy which allows access to the data even when other users are currently editing records. Rolling Stock records will be locked when a wagon record is open in the RSRD.

Multiple Access

The database must support that data can be accessed simultaneously by several users and systems.

Reliability

The reliability of the database must support the required availability.

Availability

The database must have an availability on demand of at least 99,9 %.

Maintainability

A maintainability of the database must support the required availability.

Compatibility

The database must support a data manipulation language that is widely accepted, such as SQL or XQL.

Import facility

The database shall provide a facility that allows the import of formatted data that can be used to fill the database instead of manual input.

Export facility

The database shall provide a facility allowing an export of the contents of the complete database or its part as formatted data.

Mandatory Fields

The database must support mandatory fields that are required to be filled before the relevant record is accepted as input to the database.

Plausibility Checks

The database must support configurable plausibility checks before accepting the insertion, update or deletion of data records.

Response times

The database must have response times that allow users to insert, update or delete data records in a timely manner.

Performance aspects

The database shall support the queries necessary to allow the effective run of about 60.000 train runs per 24 hours. About 50% of these train runs are deemed to take place within two hours.

The number and kind of queries or updates per train are dependent on the overall process for planning and running a train.

Capacity aspects

The database shall support the storage of the relevant data for all freight wagons respectively on the network. It shall be possible to extend the capacity by simple means (i.e. by adding more storage capacity and computers). The extension of the capacity shall not require replacement of the subsystem.

Backup strategy

A backup strategy shall be in place to ensure that the complete database contents for up to a 24 hour period can be recovered.

The above requirements shall be handled by a standard Database Management System (DBMS). The usage of the database is embedded into various work flows. The general workflow is a request / response mechanism, where an interested party requests information from the database through the Common Interface (Ref. [4 & 5] chapter 4.2.12.1 and 4.2.12.6). The DBMS responds to this request either by providing the requested data or by responding that no data can be made available (no such data exists or access is refused due to access control i.e if the wagon number is not recorded or if the enquirer is not authorized, RSRD uses the data element RefusedWagonNumbers. The element RefusedWagonNumbers includes the refused wagon number as well as the refusal reason.).

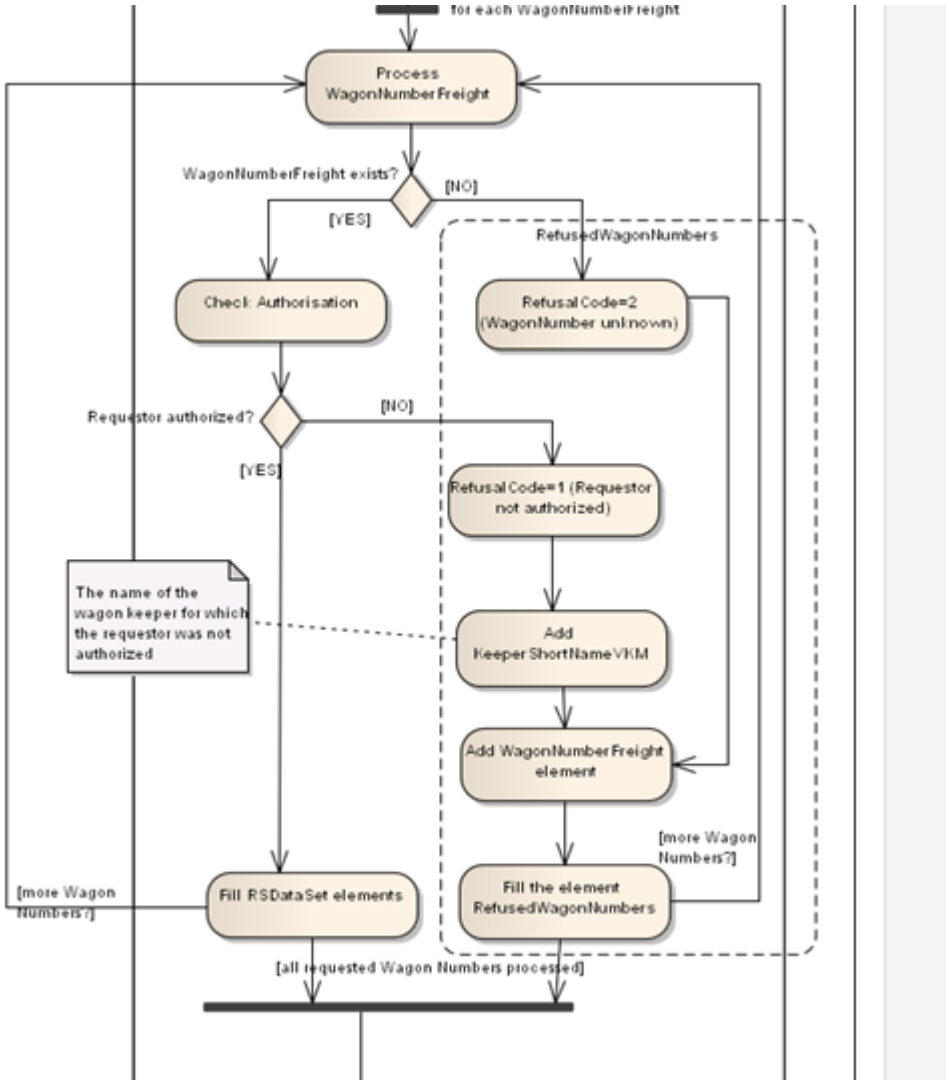

Figure 23: System Security - Access.

If the response cannot be made available within the time interval of 5 Minutes a message "Receipt Confirmation" must be sent from the RSRD module to the sender of the request.

3.14 INTERFACES SPECIFIC TO ROLLING STOCK

3.14.1 TECHNICAL INTERFACE

Access to the RSRD must be in compliance with the specifications of the TAF-TSI Common Interface.

The Common Interface is described in a separate Functional Requirements Specification and provides for connections to existing and future systems and centralized / individual databases, directories and systems.

Each access to rolling stock data in the RSRD must be possible, in accordance with the defined access rights, via the defined common interface.

3.14.2 HUMAN-COMPUTER INTERFACE (HCI)

The HCI (also known as User Interface) is the means by which a user may interact with the application. In addition to the Common Interface, as mentioned above, the application will also need to have the ability for direct input and output by the user. The Common Interface will be used to communicate standard messages while the HCI will allow a user direct access to the database.

The HCI should be able to handle the following:

Inputs	Outputs
Manual input Standard messages	**Screen** **Paper** **Electronic Media Pdf file** **Fax** **Email** **Spreadsheet** **Text File**

The manual input screens (GUI) must be menu driven for each section of related messages or groups of data. The following manual input screens shall be created for all use cases (creation, modification, deletion and enquiry).

3.15 KEEPER'S ROLLING STOCK DATA REQUIREMENTS

The Keeper is responsible for maintaining the following data in the RSRD as defined in Specification 2 – Wagon and Intermodal Unit Database.

3.16 ROLLING STOCK DATA – DETAILED DATA REQUIREMENTS

The complete definition of all the elements to be used for the Rolling Stock Data are located at TAF TSI [4] [5] [6] in Appendix I, ERA-TD-105, TAF TSI — Annex D.2: Appendix F — TAF TSI Data and Message Model, which encloses the whole xml catalogue for the implementation of TAF TSI after every Change Control Management cycle. Within this document is specified all the different elements, complex types and simplex types of the so called TAF TSI catalogue, among them the elements and messages used to implement the functionality described on this Appendix C for References Files. Consequently the corresponding xml elements from this document have been deleted.

4. COMMON REQUIREMENTS FOR ALL REFERENCE FILES

4.1 PHYSICAL SECURITY REQUIREMENTS

Physical security requirements should be fulfilled on a high level. Secure data transformation between authorised users must be guaranteed using the Common Interface.

4.2 SYSTEM RELIABILITY (TSI TAF 4.2.11.3)

Robustness is part of the reliability in order to handle component malfunction or unexpected behaviour. Requirements of the TAF-TSI production environment must support high availability. The system consists of different equipment, services and components.

The suggested system availability is 99.9% monitored over any 28-day period. The maintenance window may be up to 2 hours of downtime per month. Maintenance is permitted overnight on Sunday night for essential maintenance. This high availability requirement can be achieved through specific implementation measures, such as component and data replication, and fallback/roll-out mechanisms as well.

4.3 BACKUP/RECOVERY

Backup and recovery functions enable system and data recovery. They encompass the vital system elements (network, database, system equipments, configurations etc.) but the backup could mean staff -issues as well. The system backup/recovery functions must be performed as soon as possible after the failure situation and the maintenance staff must trained for these operations regularly.

4.4 SCHEDULED MAINTENANCE

Scheduled maintenance relates closely to data and system maintenance. There must be at least one regularly planned maintenance window in the inspection period (eg. 28d). CAS and other related administrators must have access to a help desk or maintenance unit.

4.5 MULTIPLE ACCESS AND LOCK STRATEGY

The key element of the lock strategy is that the database can be split into various independent units for updating. These units can be a field, record, file or a larger part of the database. On the database level locks are used for limiting data processing in certain type of situations. In some cases the complete database or part of the databases can be locked, if the information flow needs to be restricted for some reason. In this case information is available but not accessible. In databases, locks can be used as a means of ensuring transaction synchronicity. One of the most important functions of the database is to ensure that users are able to read and write to the database without overwriting each other's changes inadvertently or reading inconsistent data due to in-progress changes. To handle simultaneous access of the same data by several users, the database must take advantage of various types of locks. In order to guarantee data reliability, multiple access rules must be defined. Only one user can handle data on one time. Despite that, other users are allowed to search the same data at the same time

4.6 DATA QUALITY

4.6.1 PREREQUISITE

Chapter 4.4.1 of the Telematics Application for Freight Services Sub System (TAF TSI) documents the essential requirements for Data Quality. This is a prerequisite for effective data exchange and comprises the following elements:

Completeness

Accuracy

Consistency

Timeliness

The sender of each message will be responsible for the correctness of the data sent and must verify that it is in compliance with the guidelines stipulated for that message. This means that the data must not only be complete and conform to the metadata requirements (syntax-level), but must also be accurate, timely and consistent for the receiving application to effectively import the message. This requires two distinct levels of validation, as described below:

4.6.2 LEVEL 1 COMPLIANCE CHECKING

As the TAF TSI messages are defined using WC3 XSDs according to Recommendation 28, the schema contain all metadata needed for strict Level 1 compliance checking. This syntactical-level check validates the interchange, or part of it, for compliance with the schema. This checking normally happens at the translation and validation layer, before the data is treated by the API. It includes validation for field lengths, data types, codification (where enumerations exists), presence or absence of required data, valid payload entries where defined and the order of data transmitted. The schema validation is more robust and provides a higher level of compliance checking than traditional EDI.

The XSD metadata provides a perfect solution to meet the needs for Completeness and some of the Accuracy requirements as defined above. However, in order for an application to effectively utilise the information, a second set of edits must be done either within the API layer or the application itself.

Level 1 Compliance Checking shall be implemented for the validation of inbound and outbound system messages.

4.6.3 LEVEL 2 APPLICATION VALIDATION

According to the TAF TSI the originator of the message must ensure a data quality assurance check using their own resources. Data quality assurance includes comparison of data from reference file databases provided as part of the TSI plus, where applicable, logic checks to assure the timeliness and continuity of data and messages.

Data must be of high quality if they are fit for their intended uses, which means they are Error free: accessible, accurate, timely, complete, consistent with other sources, etc., and Possess desired features: relevant, comprehensive, proper level of detail, easy-to- read, easy-to-interpret, etc.

The receiving application must provide the consistency checks necessary to ensure that the information is error free and consistent with the operating rules of the reference file. This level 2 validation shall also be implemented within the application.

4.7 INTERFACES

4.7.1 TECHNICAL INTERFACE

Access to the Reference Files must be in compliance with the specifications of the TAF-TSI Common Interface, as shown below.

The Common Interface is described in a separate Functional Requirements Specification and provides for connections to existing and future systems and centralised databases, directories and systems.

The CompanyIdent will be used as an integral part of the metadata contained in the Common Interface, indicating the message queue name and trading partner identification for TAF-TSI message exchange.

4.7.2 HUMAN-COMPUTER INTERFACE (HCI)

The HCI (also known as User Interface) is the means by which a user may interact with the application. In addition to the Common Interface, as mentioned above, the application will also need to have the ability for direct input and output by the user. The Common Interface will be used to communicate standard messages while the HCI will allow a user direct access to the database.

The HCI should be able to handle the following:

Inputs	Outputs
Manual input Standard messages	Screen Paper Electronic Media Pdf file Fax Email Spreadsheet Text File Standard messages

4.7.2.1 Manual Inputs

The manual input screens must be menu driven for each section of related messages or groups of data. The following manual input screens shall be created for use in accordance with the access rights as defined in Chapter 2.6:

- Record Creation
- Record Modification and Updates
- Record Deletion
- Enquiry/Response

4.7.2.2 On-line Help Screens

Online Help on every field shall be provided by entering a (?). The MMI should provide a full explanation of the term with an example. The on-line Help should be close to what the user manuals will contain and should be available in the style of Microsoft word as shown below:

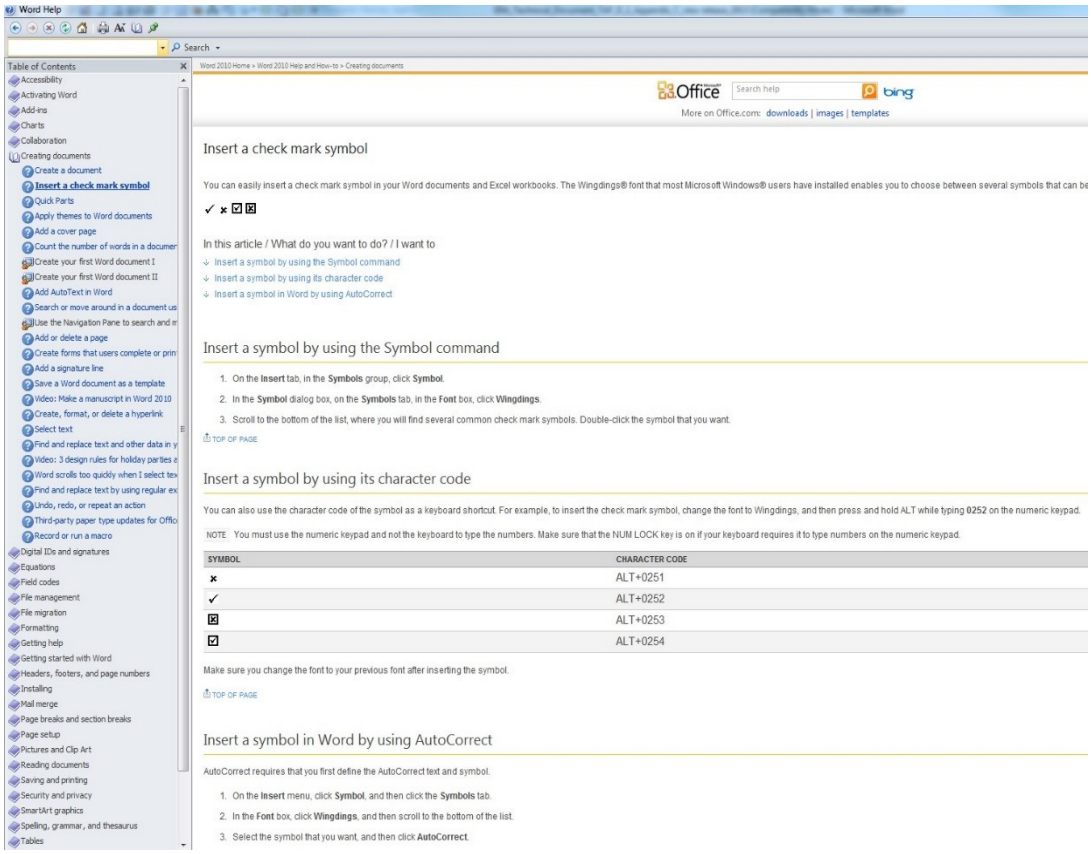

Figure 24: MMI of the Online help.

4.8 CHANGE MANAGEMENT

All change management will be in accordance with Chapter 7.2 of the TAF – TSI ("Management of Change"). The following is an extract from Chapter7.2.1:

Change management procedures shall be designed to ensure that the costs and benefits of change are properly analysed and that changes are implemented in a controlled way. These procedures shall be defined, put in place, supported and managed by the European Railway Agency and shall include:

- *the identification of the technical constraints underpinning the change;*
- *a statement of who takes responsibility for the change implementation procedures;*
- *the procedure for validating the changes to be implemented;*
- *the policy for change management, release, migration and roll-out.*
- *the definition of the responsibilities for the management of the detailed specifications and for both its quality assurance and configuration*

management.

The Change Control Board (CCB) shall be composed of the European Railway Agency, rail sector representative bodies and national safety authorities. Such an affiliation of the parties shall ensure a perspective on the changes that are to be made and an overall assessment of their implications. The Commission may add further parties to the CCB if their participation is seen to be necessary. The CCB ultimately shall be brought under the aegis of the European Railway Agency:

Any user may propose a modification to the reference file. Basically, these change requests (CR) may be due to enhancements or corrections of the system. Enhancements are meant to add value to the system and corrections are to repair errors. Serious errors are to receive priority and be fixed immediately. Minor errors (i.e. documentation, screens, etc.) are to be processed as CRs.

CRs are logged in a dedicated change management register managed by ERA. Each CR should contain the proposed change, the reason, the urgency / importance and the originator. The CAS approves or rejects CRs based on a change management procedure as shown in the diagram below. Approved CRs will be included in the CR- plan with a description of the type of the change.

There are four types of CRs:

- Functional: to add a new function to the application or to repair a small error in a system function.
- Technical: to improve the performance or to connect another device or system.
- Organisational: to modify a procedure or to repair a fault in a rule.
- Documentary: improve or update documentation, hand books, help screens.

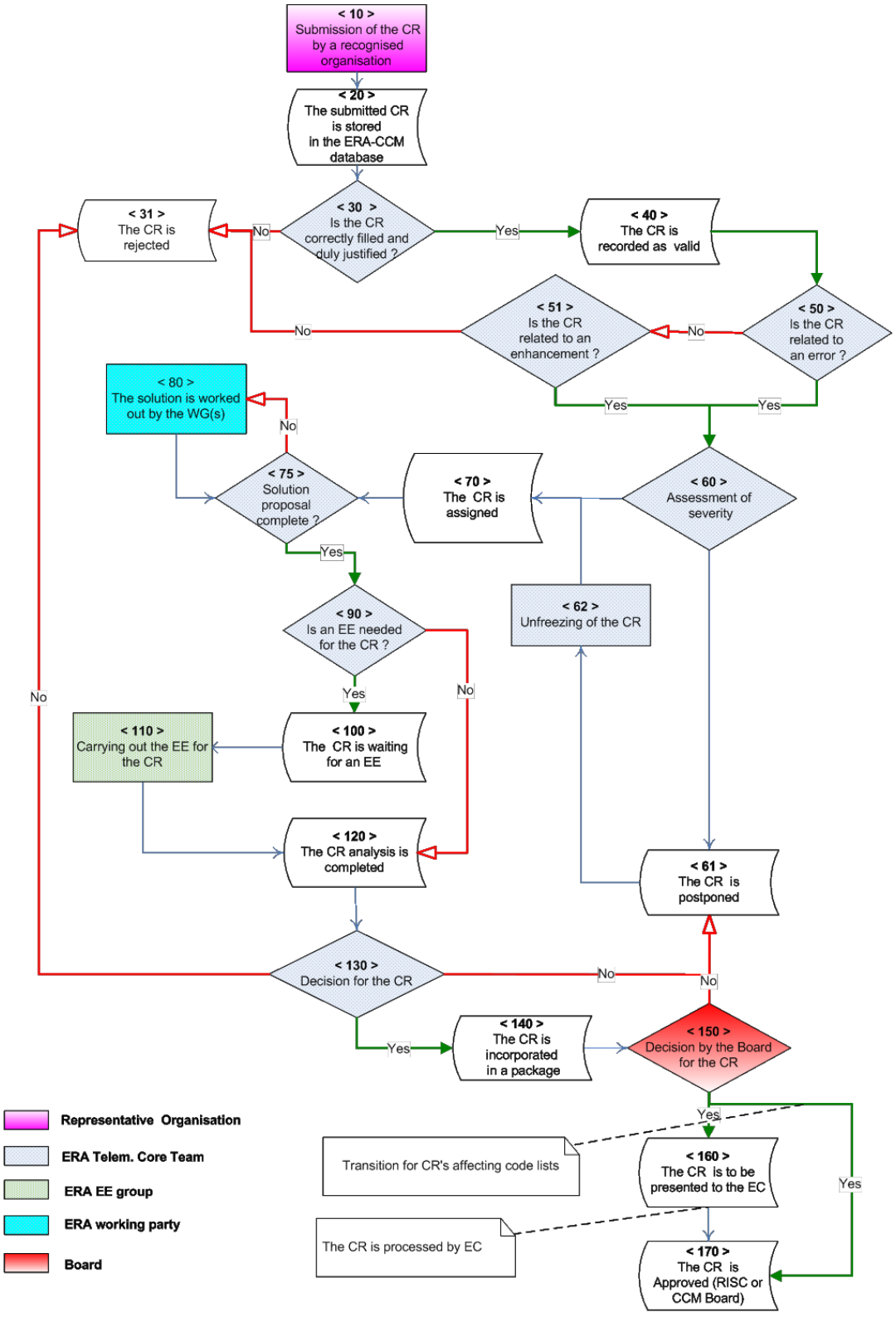
< 10 >
Submission of the CR by a recognised organisation
< 20 >
The submitted CR is stored in the ERA-CCM database
< 30 >
Is the CR correctly filled and duly justified ?
No
Yes
< 31 >
The CR is rejected
< 40 >
The CR is recorded as valid
< 51 >
Is the CR related to an enhancement ?
No
< 50 >
Is the CR related to an error ?
No
Yes
Yes
< 80 >
The solution is worked out by the WG(s)
No
< 75 >
Solution proposal complete ?
< 70 >
The CR is assigned
< 60 >
Assessment of severity
Yes
< 90 >
Is an EE needed for the CR ?
< 62 >
Unfreezing of the CR
Yes
No
No
< 110 >
Carrying out the EE for the CR
< 100 >
The CR is waiting for an EE
< 120 >
The CR analysis is completed
< 61 >
The CR is postponed
< 130 >
Decision for the CR
No
No
Yes
< 140 >
The CR is incorporated in a package
< 150 >
Decision by the Board for the CR
Yes
Transition for CR's affecting code lists
< 160 >
The CR is to be presented to the EC
Yes
The CR is processed by EC
< 170 >
The CR is Approved (RISC or CCM Board)
Representative Organisation
ERA Telem. Core Team
ERA EE group
ERA working party
Board

Figure 25: Flowchart of Change Management Process.

System updates (functional and technical) will be tested first in a test environment before they can be switched over to the production system. A system change in the test system must be validated by the CAS before it can be put into operation. The users are to be informed via the defined communication channels on planned changes (including the scheduled date).

For further information regarding the procedure for Change Control Management, please see Telematics Applications Change Control Management Guide, version 1.4 [5].

4.9 TECHNICAL REQUIREMENTS

The minimum technical requirement is that the reference file can be implemented using currently available market offerings. The critical assumptions are related to the relative amount of data processing and transfer. The future provider must be able to meet present and future technical requirements. In the case of this centralised architecture, a good DBMS product must be included. The main conclusion is that all DBMS market leaders provide suitable products for the implementation.

Total Cost of Ownership (TCO) shall be considered which can cover the following issues: cost of data, communications, system hardware depreciation, housing and deployment, system management, licenses, changes in the technical infrastructure, maintenance roadmap and expected lifetime of the system. Scalability is part of extensibility and it should include the ability to add new users with as little limitation as possible.

4.10 SYSTEM TESTING AND ACCEPTANCE

Provision must be made for a test mechanism which will enable a user to be validated against a reference set of messages. The tests shall be capable of being sent to a remote validation authority. The connection of each user is dependent on successful validation via the Common Interface.

E N D O F D O C U M E N T

Warning