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SINTEF ICT Address: NO-7465 Trondheim Norway Location: S.P. Andersens v 15B Telephone: +47 - 73 59 30 00 Telefax: +47 - 73 59 43 02 Enterprise number: NO 948 007 029 MVA		DISTRIBUTION Customers of SINTEF		X			
FILE CODE	CLASSIFICATION						
NOT-2011-12	open						
ELECTRONIC FILE CODE							
90513021-NOT-2011-12 ERTMS User Guide v1 0							
ISSUE/REVISION	PREVIOUS FILE CODE	PERSON RESPONSIBLE / AUTHOR		DATE			
1.0		Ola Løkberg / Narve Lyngby <i>Kau hly</i>		2011-12-02			
PROJECT NO.	NUMBER OF PAGES	CHECKED BY		DATE			
	26	Odd Nordland <i>Odd Nordland</i>		2011-12-02			
PROJECT NAME	NUMBER OF ANNEXES	APPROVED BY		DATE			
SJS		Thor Myklebust <i>Thor Myklebust</i>		2011-12-05			

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1 History

Version	Date	Description	Signature
1.0	2011-12-02	First issue	Narve Lyngby

2 Introduction

The main purpose of this ERTMS User Guide is to be a single document organizing in a structured way everything which must/should be considered when doing interoperability assessments.

Reference to the CCS TSIs. Currently, there exist separate *Control-command and signalling* (CCS) TSIs for the High-Speed (HS) and Conventional Rail (CR) rail system. These two TSI documents are for most (but not all) issues identical. For simplicity, this User Guide therefore only makes references to the conventional rail CCS TSI if the contents of the two TSIs are identical with respect to the referenced issue.

3 Abbreviations & links

AEIF	European Association for Railway Interoperability
CCS	Control-command and signalling
CR	Conventional Rail
EC	European Commission
ECSAG	ERTMS Core SRS Assessment Group, formed with the purpose of managing the acceptance process of the UNISIG specifications. The group consists of one member of the six EEIG countries (France, Germany, Italy, Spain, Netherlands and England) plus Switzerland.
EEIG	Organizing user groups, e.g. EEIG ERTMS User Group (http://www.ertms.be/)
ERA	European Railway Agency (http://www.era.europa.eu/). ERA Extranet (http://extranet.era.europa.eu)
GSM-R	Global System for Mobile communication - Railway http://gsm-r.uic.asso.fr/
HS	High Speed
IC	Interoperability Constituent
IRIS	International Railway Industry Standard, a standard unique to the railway industry for the evaluation of management systems. http://www.iris-rail.org/
MS	Member State(s)
NB-RAIL	(see NB-RAIL home page as well as NB-RAIL group on CIRCA website http://circa.europa.eu/Public/irc/nbg/Home/main)
OJ	Official Journal of the European Union (Official Journal) (EUR Lex - Official Journal)
NTR	National Technical Rules
RFU	Recommendation For Use
RISC	Railway Interoperability and Safety Committee
TO	Technical Opinion. ERA statement, according to DV22 EN05 to be

	followed by NoBos when approved by RISC.
TSI	Technical Specification for Interoperability
UIC	International Union of Railways (http://www.uic.asso.fr/)
UITP	International Union of Public Transport (http://www.uitp.com/home/index.cfm)
UNIFE	Union of European Railway Industries (http://www.unife.org/)
UNISIG	Group of European manufacturers of railway signalling systems: Adtranz (now Bombardier Transportation), Alcatel, Alstom, Ansaldo STS, Siemens and Westinghouse (Invensys Rail), originally founded to ensure interoperability in conjunction with the first ERTMS specifications in 1998.
Q&C	Question and Clarification
WKD	WorkInG Document

4 Glossary

Assembly	a collection of constituents. The CCS subsystem consists of two assemblies: the <i>on-board</i> assembly and the <i>track-side</i> assembly.
Certification	the process of confirming compliance with the requirements of the interoperability directives, TSIs and the referenced specifications.
Conformity verification	the process of verifying compliance with the requirements of the TSI and the referenced specifications.
Contracting entity	<i>any entity, whether public or private, which orders the design and/or construction or the renewal or upgrading of a subsystem. This entity may be a railway undertaking, an infrastructure manager or a keeper, or the concession holder responsible for carrying out a project (from 2008/57/EC).</i>
Interoperable Constituent	<p>According to section 5.1 of the CCS CR TSI: <i>Control-command interoperability constituents are any elementary component, group of components or subassembly of equipment incorporated or intended to be incorporated into the track-side assembly or into the on-board assembly, and upon which the interoperability of the trans-European conventional rail system depends directly or indirectly. The concept of a constituent covers both tangible objects and intangible objects such as software.</i></p> <p>An important property of Interoperable Constituents is that they (at least in theory) can be interchanged by corresponding constituents from other manufacturers without affecting interoperability. The TSIs of each subsystem define its constituents.</p>
Manufacturer	<i>the organisation responsible for the design and construction of an interoperability constituent covered by Directive 96/48/EC and the related TSIs, with a view to placing it on the market on the Community territory on his own behalf (source: Guide for the application of the high-speed TSIs of Council Directive 96/48/EC, 2003 edition. Not defined in the 2008/57 directive).</i>
Subsystem	the total railway system is from an interoperability point of view divided into a number of <i>subsystems</i> . The CCS subsystem is defined as the “ <i>set of functions and their implementation, which allow the safe movement of trains</i> ” (section 2.1 in the CCS CR TSI).

5 Conformity verification

This chapter aims to describe the procedures involved in conformity verification of Control-command and signalling (CCS) subsystems and Interoperability Constituents (IC).

5.1 Introduction

With respect to certification, the interoperability directive 2008/57/EC defines the following declarations to be worked out by the constituent manufacturer and/or the subsystem contracting entity in cooperation with a Notified Body:

- *EC declaration of conformity, EC declaration of suitability for use* (Interoperability Constituent)
- *EC declaration of verification* (subsystem)

With respect to providing the necessary verification evidence, this may in general either be provided by the contracting entity, the notified body or (in this context) a third party (see RFU 0-000-14, a link is provided in Section 9 below).

In particular, test results may be obtained from bodies other than notified bodies (e.g. from manufacturer test laboratories). RFU-STR-022 presents guidelines for how to accept test results from such bodies; a link to the RFUs is provided in Section 9 below.

5.1.1 The essential requirements

An integral part of the conformity assessment, on the constituent as well as the subsystem level, is the assessment of the *essential requirements* (see Annex III of the 2008/57/EC directive). The essential requirements are (i) *Safety*, (ii) *Reliability and Availability*, (iii) *Health*, (iv) *Environmental Protection*, and (v) *Technical Compatibility*.

5.1.1.1 Safety

The basis for the verification of fulfilment of the safety essential requirement is a safety assessment performed by an Independent Safety Assessor (ISA). The ISA may or may not be a notified body itself (see RFU 2-000-16, a link is provided in Section 9), and the same notified body may perform conformity verification with respect to safety as well as to the other essential requirements.

For **Class A** systems (as defined in section 2.2.2 in the CCS CR TSI), the global safety objective for the Control-command and signalling subsystem is to be apportioned between the on-board and track-side assemblies according to the detailed requirements of section 4.2.1 of the CCS CR TSI.

For **Class B** systems (as defined in section 2.2.2 in the CCS CR TSI), it is the responsibility of the Member State to

- ensure that the Class B system design meets National Safety targets
- ensure that the application of the Class B system meets National Safety targets
- define the safe operating parameters of the use of the Class B system

See last bullet of section 5.2.2 with respect to how the STM constituent having an interface towards a Class B system shall be handled.

5.1.1.2 Reliability and Availability

For Class A systems, section 4.2.1 of the CCS CR TSI says that the *reliability and availability requirements of Annex A, Index 28 shall be respected*. However, Index 28 is still *Reserved* in the latest version of the Annex A (2010/79/EC).

In addition, the quality of the maintenance organization shall be assessed to ensure that the level of risk is controlled as constituents age and wear.

5.1.1.3 Health

General requirements to Health are expressed in Annex III, section 1.3 of the 2008/57/EC directive:

- *Materials likely, by virtue of the way they are used, to constitute a health hazard to those having access to them must not be used in trains and railway infrastructures*
- *Those materials must be selected, deployed and used in such a way as to restrict the emission of harmful and dangerous fumes or gases, particularly in the event of fire.*

5.1.1.4 Environmental Protection

General requirements to Environmental Protection are expressed in Annex III, section 1.4 of the 2008/57/EC directive:

- *The environmental impact of establishment and operation of the rail system must be assessed and taken into account at the design stage of the system in accordance with the Community provisions in force.*
- *The materials used in the trains and infrastructures must prevent the emission of fumes or gases which are harmful and dangerous to the environment, particularly in the event of fire.*
- *The rolling stock and energy-supply systems must be designed and manufactured in such a way as to be electromagnetically compatible with the installations, equipment and public or private networks with which they might interfere.*
- *Operation of the rail system must respect existing regulations on noise pollution.*
- *Operation of the rail system must not give rise to an inadmissible level of ground vibrations for the activities and areas close to the infrastructure and in a normal state of maintenance.*

5.1.1.5 Technical Compatibility

Technical compatibility includes the functions, interfaces and performances required to achieve interoperability.

The requirements of technical compatibility are subdivided into the following three categories:

- *General engineering requirements for interoperability*: Environmental conditions, internal electromagnetic compatibility (EMC) within the railway boundaries, installation (see section 3.2.5.1 of the CCS CR TSI)
- How the CCS subsystem has *to be applied and what functions it has to perform* in order to achieve interoperability (see section 4 of the CCS CR TSI).
- How the CCS subsystem has *to be operated* in order to achieve interoperability (see section 4 of the CCS CR TSI).

5.2 How the CCS subsystem has *to be operated* in order to achieve interoperability (see section 4 of the CCS CR TSI). Interoperability Constituent assessment procedures

Before an interoperability constituent is allowed to enter the market, the constituent must have the following documentation:

- *"EC declaration of conformity"*
- *"EC declaration of suitability for use"*

These documents often exist before the subsystem is assembled/installed and may or may not be issued in conjunction with a specific project (i.e. a constituent may have been developed as a generic component and certified regardless of the system(s) in which it will be used).

A constituent having an *EC declaration of conformity* can be incorporated into a subsystem without further verification of its conformity. Its *suitability for use* (in context of the actual subsystem) must however be assessed by the notified body of the subsystem.

5.2.1 The manufacturer

An *EC declaration of conformity* is required if the constituent is new, or if it is modified to the extent that the modification may have an influence on the properties of the basic parameters applicable to the constituent.

The *EC declaration of conformity* shall be worked out by the manufacturer of the constituent or group of constituents according to the Article 13.1 and the Annex IV of the 2008/57/EC directive.

An *EC declaration of suitability for use* is in general (in addition to an "EC declaration of conformity") required if the constituent is to be applied in a new field of application.

An *EC declaration of suitability for use* is, however, not required for CCS constituents (see section 6.1.1.2 of the CCS CR TSI).

5.2.2 The notified body

Conformity assessment of interoperable constituents is to be performed by a notified body according to procedures defined in chapter 5 of the CCS CR TSI by applying the appropriate modules/module combinations.

The purpose of the conformity assessment of a CCS constituent is to verify:

- that all **mandatory** functions applicable to the interoperability of the constituent have been implemented,
- which **optional** functions applicable to the interoperability of the constituent have been implemented,
- that any **additional** functions implemented are not in conflict with either the mandatory or optional functions applicable to the interoperability of the constituent
- that any part of the constituent covered by the **National Rules** (e.g. national functions in STMs) have been assessed and approved by the Member State. The assessment being the basis of the approval is to be performed by a *Designated Body* on behalf of the Member State.

In case of a positive verification, the notified body will issue a certificate according to the modules applied for the conformity assessment (see RFU-STR-001, a link is provided in Section 9).

5.3 Subsystem assessment procedures

5.3.1 The contracting entity

Before a contracting entity (the organization responsible for design, implementation, and putting the subsystem into operation) requests permission from the Member State's railway safety authority to put the subsystem into operation, the contracting entity must:

- engage a notified body to perform an *EC verification* of the subsystem,
- based upon this EC verification from the notified body, issue an ***EC declaration of verification***.

The Control-command and signalling (CCS) subsystem consists of two “assemblies”:

- On-board assembly
- Track-side assembly

For each assembly, the respective contracting entity (it will normally not be the same) shall issue an *EC declaration of verification* according to Article 18(1) and Annex V of the 2008/57/EC directive. The declaration shall contain verification evidence of all constituents being part of the assembly, the tables 6.1 (Verification requirements for CCS on-board assemblies) and 6.2 (Verification requirements for CCS track-side assemblies) define the properties which shall be verified and the mandatory specifications which shall be used for the verification.

The *EC declaration of verification* of the on-board and track-side assemblies are in addition to the appropriate certificates on the constituent and subsystem level sufficient documentation of interoperability on the subsystem level; see RFU-STR-001, a link is provided in Section 9.

5.3.2 The notified body

EC verification of a CCS subsystem is to be performed by a notified body according to Annex VI of the 2008/57/EC directive, applying procedures defined in chapter 6.2 of CCS CR TSI

by using the appropriate modules/module combinations. The work of the notified body includes:

- Assembling a Technical File containing all evidence of conformity with the TSIs including any constituent certificates. *A prerequisite for cross accepting a (constituent) certificate is that the cross accepting Notified Body has direct and unlimited access to the certificate's Technical File.* See RFU-STR-011 and RFU 0-000-18; a link to RFUs is provided in Section 9.
- If successfully verified, issue an *EC verification* certificate for the assembly of the subsystem. If compliance to only a part of the TSI can be verified, the notified body can issue an *Interim Statement of Conformity* for the part of the subsystem which is compliant to the TSI (see RFU 0-000-17), which at a later stage can be used as evidence in order to issue a (full) *EC verification* certificate. A notified body may according to Annex VI of the 2008/57/EC directive be appointed to perform the EC verification for only the design and/or production phases of the subsystem, with a corresponding special type of certificate called “Interim Statement of Verification” (ISV). The ISV may later be part of the evidence for a full EC verification of the subsystem.
- If the work with the subsystem was started prior to the publication of the CCS TSI, evidence of how the work (e.g. design, development) has been performed may have been lost. The notified body has then the possibility to issue an *Intermediate Statement of Verification* (applicable to design and production phases only, see Annex VI of the 2008/57/EC directive) if it is not clear that conformity is achieved or is guaranteed to be maintained so that an ordinary certificate cannot be issued (see RFU 0-000-18).
- **Note:** The assessment of Operational Rules is not within the scope of the Notified Body.

The purpose of the subsystem EC verification is to verify:

- that all **mandatory** functions applicable to the assembly (on-board or track-side) have been implemented (chapter 6.2 of the CCS CR TSI),
- that all **optional** functions required by the assembly's (on-board or track-side) specific implementation have been implemented (chapter 6.2 of the CCS CR TSI),
- that any **additional** functions implemented in the assembly are not in conflict with the mandatory/optional functions applicable to the interoperability of the constituent (chapter 6.2 of the CCS CR TSI)
- that the interoperability constituents of the subsystem are provided with the *EC Declaration of conformity* in accordance with Article 13 of the 2008/57/EC directive (cfr. RFU 0-000-04)
- that the subsystem complies with any other applicable regulations, i.e. that the subsystem has whatever EC declarations as required by any applicable directives (see see RFU 0-PLG-13)

Note 1: Application of the SH2 module in projects where the high-speed CCS TSI from 2002 applies is only permitted provided specific requirements to testing are fulfilled (see RFU 2-400-23).

Note 2: According to Article 18 of the 2008/57/EC directive, both the manufacturer and the contracting entity can make an application to a notified body to perform an EC verification procedure as described in Annex VI of the 2008/57/EC directive.

5.3.3 Publication

According to Annex VI of 2008/57/EC, each notified body must periodically publish relevant information concerning:

- requests for 'EC' verification received
- ISVs issued or refused
- certificates of verification issued or refused
- certificates of conformity refused

A catalogue for this is included in the CIRCA database (website <http://circa.europa.eu/Public/irc/nbg/Home/main>).

5.4 Expiry of constituent certificates

The expiry of constituent certificates is determined according to the following rules:

- As a starting point, a constituent certificate issued according to the superseded CCS HS TSI from 2002 is valid for three years, for certificates issued according to the CCS HS and CR TSIs from 2006 the validity period is five years.
- If the constituent is still in production when the certificate expires, the certificate must be renewed. All changes to the original specification & design must be analysed, and it is the task of a notified body to judge whether the changes have impact on the properties (e.g. interoperability, safety) on which the existing certificate is based. If so, the changes must be analysed and conformity verified.
- Renewal of certification according to module B: All changes in constituent specifications affecting the interoperability requirements must in general be communicated to the notified body by the holder of the IC certificate/the applicant immediately when the change has become effective. The notified body has however no obligations to do independent investigations during the validity period of the certificate whether the technical specifications being basis for the certification actually have changed.
- Renewal of certification according to module D: The notified body must perform annual audits of the manufacturers QA-system.
- The only possibility to forcibly withdraw products already put on the market is violation of the essential requirements.

Certificate expiry dates are also dependent on the actual type of certificate. See RFU 0-000-10 for details.

6 Regulations/Directives/Decisions/Application Guides

The documents listed below can be said to be the core collection of interoperability documents of the European railway. *Safety* is an essential requirement and an important part of conformity assessment, the safety directive 2004/49/EC is therefore also included in the table.

Directive/ Decision/ Regulation/ Appl. Guide	Contents	Date	Comment
96/48/EC	Interoperability of the trans-European high-speed rail system 96/48/EC (OJ)	1996-07-23	Replaced by 2008/57/EC
-	Guide for the application of the high-speed TSIs of Council Directive 96/48/EC Appl. guide to the HS TSIs 2003 (European Commission) Note: A new application guide to the TSIs were issued in April 2011, se Chapter 7.	2003	-
2001/16/EC	Interoperability of the European conventional rail system 2001/16/EC (OJ)	2001-03-19	Replaced by 2008/57/EC
2004/49/EC	Safety on the Community's railways 2004/49 (OJ)	2004-04-29	An amendment is to be found as Directive 2008/110/EC (see below).
2004/50/EC	Amending the 96/48/EC, and 2001/16/EC 2004/50 (OJ)	2004-04-29	Replaced by 2008/57/EC
2007/32/EC	Amending Annex VI to 96/48/EC and 2001/16/EC 2007/32/EC (OJ)	2007-06-01	Contains the definition of Intermediate Statements of Verification (ISV). Replaced by 2008/57/EC
2007/153/EC	Modifying Annex A to Decision 2006/679/EC concerning the technical specification for interoperability relating to the control-command and signaling subsystem of the trans-European conventional rail system and Annex A to Decision 2006/860/EC concerning the technical specification for interoperability relating to the control-command and signaling subsystem of the trans-European high speed rail system 2007/153/EC (OJ)	2007-03-06	-

Directive/ Decision/ Regulation/ Appl. Guide	Contents	Date	Comment
2008/57/EC	Interoperability of the rail system within the Community (recast) 2008/57/EC (OJ) Replacing directives 96/48/EC, 2001/16/EC, 2004/50/EC, 2007/32/EC.	2008-06-17	Member States shall be compliant with directive no later than 2010-07-19. Member States must re-notify its NoBos for this directive.
2008/386/EC	Modifying Annex A to Decision 2006/679/EC (conventional rail CCS TSI) and to Decision 2006/860/EC (high-speed rail CCS TSI) 2008/386/EC (OJ)	2008-04-23	Defining ETCS SRS 2.3.0.d, now replaced by 2010/79/EC
2008/110/EC	Amending Directive 2004/49/EC on safety on the Community's railways (Railway Safety Directive) 2008/110/EC (OJ)	2008-12-16	Contains definition of the responsibilities of the "entity in charge of maintenance".
2009/107/EC	Amending Decisions 2006/861/EC and 2006/920/EC concerning technical specifications of interoperability relating to subsystems of the trans-European conventional rail system. 2009/107/EC	2009-01-23	Concerning wagons
2009/131/EC	Amending Annex VII to Directive 2008/57/EC of the European Parliament and of the Council on the interoperability of the rail system within the Community 2009/131/EC	2009-10-16	Annex VII: Parameters to be checked in conjunction with the placing in service of non-TSI conform vehicles and the classification of the national rules
352/2009/EC	On the adaption of a common safety method on risk evaluation and assessment as referred to in Article 6(3)(a) of Directive 2004/49/EC of the European Parliament and of the Council. 352/2009/EC "Guide for the application of the Commission Regulation on CSM on risk assessment", ERA document ERA/GUI/01-2008/SAF . "Collection of examples of risk assessments and some possible tools supporting the CSM", ERA document ", ERA document ERA/GUI/02-2008/SAF .	2009-04-24	Will be into force 2010-07-19, for applications developed under the 2008/57/EC directive.
2009/561/EC	Amending Decisions 2006/679/EC as regards the implementation of the technical specification for interoperability relating to the control-command and signalling subsystem of the trans-European conventional rail system. 2009/561/EC	2009-07-22	Regarding deployment of ERTMS

Directive/ Decision/ Regulation/ Appl. Guide	Contents	Date	Comment
2010/79/EC	Amending Decisions 2006/679/EC and 2006/860/EC as regards technical specifications for interoperability relating to subsystems of the trans-European conventional and high-speed rail systems 2010/79/EC (OJ)	2009-10-19	Defining ETCS SRS 2.3.0.d (replacing 2008/386/EC), in force from 2010-04-01.
2010/640/EU	Amending Decisions 2006/920/EC and 2008/231/EC concerning the technical specifications of interoperability relating to the subsystem 'Traffic Operation and Management' of the trans- European conventional and high-speed rail systems 2010/640/EU	2010-10-21	-

The relationships between the interoperability directives, the Control-command and signalling TSIs and the Annex A documents are as shown in Figure 1 below.

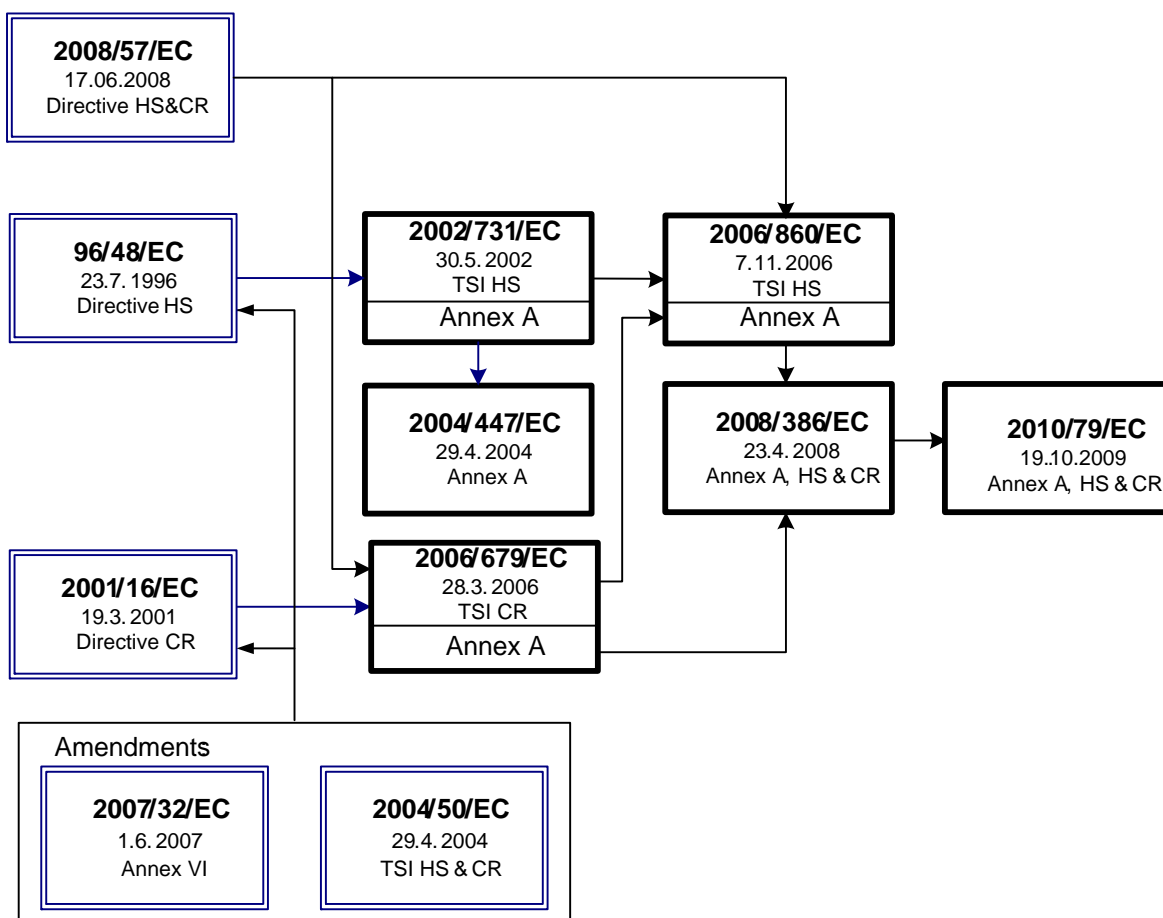


Figure 1. Directives, CCS TSIs and Annex A

7 Technical Specifications of Interoperability

As for the directives, a table of TSIs, their date/version and status/information with respect to any revisions in progress are included. The table accounts for the fact that the TSI itself (at least for the CCS) and the Annex A live their own lives. The table contains links to the TSIs.

The following application guides for the TSIs in general have been issued by ERA:

- [ERA/GUI/07-2011/INT](#) , 26. August 2011. General part of the guide explains TSI-related provisions of the Interoperability Directive and general principles applicable to all TSIs.
- [ERA/GUI/07-2011/INT Annex 2](#), 26. August 2011. Conformity assessment and EC verification explains the modules of conformity assessment, indicates the tasks of the applicant and the NoBo for different modules and compares the modules.
- [ERA/GUI/07-2011/INT Annex 3](#), 28. April 2011. The European framework gives an overview of the New Approach principles, how they are applied in the Interoperability Directive, standardization process, etc. The Annex is currently under revision (14/09/2011)
- [ERA/GUI/07-2011/INT Annex 4](#), 18. April 2011. Examples of application of TSIs at different stages give practical examples of projects: what TSIs are applicable, who does what and when.

7.1 Subsystems

The subsystem structure was harmonized during 2006 with the structure for conventional rail according to directive 2004/50/EC to be consisting of the following subsystems:

Structural subsystems¹:

- Infrastructure (INS)
- Energy (ENE)
- Control-command and signalling (CCS)
- Operation and traffic management (OPE)
- Rolling stock (RST)

Operational subsystems²:

- Maintenance
- Telematic applications for passenger and freight services (TAPF)

7.2 TSI's common to both HS and CR directives (transversal TSIs)

According to harmonization first introduced in the amendment directive 2004/50/EC, High Speed and Conventional Rail can have common TSIs, as shown in the following table:

¹ Subsystems which can be “placed into service”. See Article 15 of the 2008/57/EC directive.

² The division between Operational and Structural subsystems is not defined by the 2008/57/EC directive.

TSI	Subsystem	Scope (within subsystem)	Status
Safety in railway tunnels (SRT) (2008/163/EC)	INS, ENE, OPE, CCS, RST (CR og HS, 2004/50)	-	Commission Decision of 20. of December 2007. Put into force 1. of July 2008. TSI SRT December 2007 (OJ)
Accessibility for people with reduced mobility (PRM) (2008/164/EC)	INS, RST (CR og HS, 2004/50)	-	Commission Decision of 21. of December 2007. Put into force 1. of July 2008. TSI PRM December 2007 (OJ)
Module TSI (2010/713/EU)	All	-	Commission Decision of 9. of November 2010. Applicable to all TSI which enter into force after 1. of January 2011. TSI Modules November 2010 (OJ)
CCS TSI common to CR, HS (08/57-ST10, version EN03, 21. of June 2011)	CCS	-	-
Telematic applications for passenger service	TAPF	-	-

7.3 TSIs High Speed

TSI	Subsystem	Scope (within the subsystem)	Status
Infrastructure (2008/217/EC)	INF	-	Put into force 1. of July 2008. TSI HS INS December 2007 (OJ) Superseded: Commission Decision 30. of May 2002, published ³ 12. of September 2002 in OJ. Put into force 1. of December 2002. (2002/732/EC) TSI HS INS May 2002 (OJ)
Energy (2008/284/EC)	ENE	-	Published 6. of March 2008 in OJ. Put into force 1. of October 2008. TSI HS ENE March 2008 (OJ) Superseded: Commission Decision 30. of May 2002, published 12. of September 2002 in OJ. Put into force 1. of December 2002. (2002/733/EC) TSI HS ENE May 2002 (OJ)
Rolling stock (2008/232/EC)	RST	-	Put into force 1. of September 2008. TSI HS RST February 2008 (OJ) Superseded: Commission Decision 30. of May 2002, published 12. of September 2002 in OJ. Put into force 1. of December 2002. (2002/735/EC) TSI HS RST May 2002 (OJ)
Control-command and signalling (2006/860/EC)	CCS	-	Commission Decision 7. of November 2006, published 7. of December 2006 in OJ. Put into force 7. of November 2006. TSI HS CCS Nov 2006 (OJ) Superseded: Commission Decision 30. of May 2002, published 12. of September 2002 in OJ. Put into force 1. of December 2002. (2002/731/EC) TSI HS CCS May 2002 (OJ)

³ Publication date is important, being the key to finding the documents in the Official Journal

TSI	Subsystem	Scope (within the subsystem)	Status
Annex A (2010/79/EC)		-	<p>Update of Annex A according to ERA recommendation 38/2009. Put into force 1. of April 2010. TSI Annex A CR+HS October 2009 (OJ)</p> <p>Superseded: ERA recommendation of Annex A version 2.0. Adopted by the Commission on 23. of April 2008. Put into force 1. of June 2008. (2008/386/EC). TSI Annex A CR+HS April 2008 (OJ)</p> <p>Superseded: Commission Decision 6. of March 2007, published 7. of March 2007 in OJ, in common with CR. (2007/153/EC). TSI Annex A CR+HS March 2007 (OJ)</p>
Operation (-> Traffic Operation and Management) (2008/231/EC)	OPE	-	<p>Put into force 1. of September 2008. TSI HS OPE February 2008 (OJ).</p> <p>Amended by Commission Decision 2010/640/EU of 21. of October 2010, amending Decisions 2006/920/EC and 2008/231/EC.</p> <p>Superseded: Commission Decision 30. of May 2002, published 12. of September 2002 in OJ. Put into force 1. of December 2002. (2002/734/EC). TSI HS OPE May 2002 (OJ)</p>
Maintenance (2002/730/EC)		-	<p>Commission Decision 30. of May 2002, published 12. of September 2002 in OJ. Put into force 1. of December 2002. TSI HS MAI May 2002 (OJ)</p> <p>"Maintenance" will cease to exist as a dedicated TSI (but continue as a subsystem) after the revised HS TSIs are put into force.</p>

7.4 TSIs Conventional Rail

TSI	Subsystem	Scope (within the subsystem)	Status
Telematic applications for freight (62/2006)	TAPF	-	Commission Regulation (EC) of 23. of December 2005, published in OJ 18. of January 2006. Put into force 23. of June 2006. TSI CR TAF December 2005 (OJ)
Noise emitted by the rolling stock (2011/229/EU)	RST-NOI	Noise	Commission Decision of 4. of April 2011, published in OJ 13. of April 2011. Put into force 23. June 2006. TSI CR Noise April 2011 (OJ) ERA Application guide: ERA/GUI/07-2011/INT Annex 1 , 26. of August 2011 Repealed: Commission Decision of 23. of December 2005, published in OJ 8. of February 2006. Put into force 23. of June 2006. (2006/66/EC). TSI CR Noise December 2005 (OJ)
Wagons for freight (2006/861/EC)	RST-WAG	Freight wagons	Commission Decision of 28. of July 2006, published in OJ 8. of December 2006. Put into force 31. of January 2007. TSI CR Freight Wagons July 2006 (OJ)
Control-command and signalling (2006/679/EC)	CCS	-	Commission Decision of 28. of March 2006, published in OJ 16. of October 2006. Put into force 28. of September 2006. TSI CR CCS March 2006 (OJ)
Annex A (2010/79/EC)		-	Update of Annex A according to ERA recommendation 38/2009 TSI Annex A CR+HS October 2009 (OJ) Superseded: ERA recommendation of Annex A version 2.0. Adopted by the Commission on 23. April 2008. Put into force 1. of June 2008. (2008/386/EC) TSI Annex A CR+HS April 2008 (OJ) Superseded: Commission Decision 6. of March 2007, published 7. of March 2007 in OJ, in common with HS. (2007/153/EC). TSI Annex A CR+HS March 2007 (OJ)

TSI	Subsystem	Scope (within the subsystem)	Status
Traffic operation and management (2011/314/EU)	OPE	-	<p>Commission Decision 12. of May 2011, published in OJ 31. of May 2011. Put into force 1. of January 2012. TSI CR OPE May 2011 (OJ)</p> <p>Repealed from 1. of January 2012: Commission Decision 11. August 2006, published in OJ 18. of December 2006. Put into force 11. of February 2007. (2006/920/EC). TSI CR OPE August 2006 (OJ)</p> <p>Amended by Commission Decision 2010/640/EU of 21. of October 2010, amending Decisions 2006/920/EC and 2008/231/EC.</p> <p>ERA application guide: ERA/GUI/07-2011/INT Annex 1, 26. of August 2011.</p>
Infrastructure (2011/275/EU)	INF	-	<p>Commission Decision of 26. of April 2011, published in OJ 14. of May 2011. Put into force 1. of June 2011. TSI CR INF April 2011 (OJ)</p> <p>ERA application guide: ERA/GUI/07-2011/INT Annex 1, 26. of August 2011.</p>
Locomotives and passenger rolling stock (2011/291/EU)	RST	-	<p>Commission Decision of 26. of April 2011, published in OJ 26. of May 2011. Put into force 1. of June 2011. TSI CR LOC and PAS (OJ)</p> <p>ERA application guide: ERA/GUI/07-2011/INT Annex 1, 26. of August 2011.</p>
Energy (2011/274/EU)	ENE	-	<p>Commission Decision of 26. of April 2011, published in OJ 14. of May 2011. Put into force 1. of June 2011. TSI CR ENE (OJ)</p> <p>ERA application guide: ERA/GUI/07-2011/INT Annex 1, 26. of August 2011.</p>
3. group of conventional rail TSI's, in preparation by ERA			
The relation to track gauges of 1520 mm		-	<p>ERA recommendation concerning the convergence between 1435 and 1520 mm systems. Recommendation (ERA/REC/03-2008/INT, 17/11/2009).</p> <p>Analysis of the basic parameters of 1520 vs. 1524 mm systems (ERA, 21/05/2010)</p>

8 Annex A documents

Annex A of the CCS TSI lists the mandatory specifications by which the CCS subsystem and its constituents are going to be certified. However, given the differences in speed, effort and complexity related to revising the TSI, its Annex A and the mandatory specifications, several problems may arise:

- the current revisions of the mandatory specifications may be different from what is listed under Annex A of the appropriate CCS TSI.
- the current revisions of the mandatory specifications may be mutually inconsistent.
- a new revision of a specification is on its way, containing modifications which are known to solve (or introduce) problems, or have impact on, ongoing certifications.

If any of the issues listed above apply, they must be identified and a guideline for how to deal with them worked out.

Note: The list of Annex A documents listed below is according to the current version of Annex A, [Annex A October 2009 \(2010/79/EC – OJ\)](#).

Document (Index Annex A)	Id	Version	Title	Comment
ERA/ERTMS/00320 (Index 1)		5.0	ERTMS/ETCS Functional Requirement Specification (FRS). Mandatory Specs (ERA)	Compliant with SRS 2.3.0.
		5.05	ERTMS/ETCS Functional Requirement Specification (FRS) (no link available)	Inline with the first version of the ETCS SRS for the baseline 3 (see Index 4)
Subset-026 (Index 4)		2.3.0	System Requirements Specifications (SRS) Mandatory Specs (ERA)	Version 2.3.0.d is the SRS 2.3.0 implemented according to the list of specifications contained in the revised Annex A of 23. April 2008.
		3.2.0	System Requirements Specifications (SRS) ETCS SRS v3.2.0 (ERA)	Baseline 3 second consolidation, dated 2011-01-11
		3.1.0	System Requirements Specifications (SRS) ETCS SRS v3.1.0 (ERA)	Baseline 3 first consolidation, dated 2010-02-26
Subset-036 (Index 9)		2.4.1	FFFIS for Eurobalise Mandatory Specs (ERA)	Included in Subset-108 version 1.2.0. <i>Version 2.4.1 resolves QC-CCS-003.</i>

Document (Index Annex A)	Id	Version	Title	Comment
Subset-040 (Index 13)		2.3.0	Dimensioning and Engineering rules Mandatory Specs (ERA)	Version 2.3.0 introduced in 2010/79/EC. Brought back to version 2.0.0 from 2.1.0 by revised Annex A of 23. April 2008.
Subset-076 (Index 37 b/c/d, B9-B17, B39-B42)		2.3.1	Test Specifications Mandatory Specs (ERA)	Version 2.3.1 introduced in 2010/79/EC.
Subset-085 (Index 43)		2.2.2	Test specifications for Eurobalise FFFIS Mandatory Specs (ERA)	Included in Subset-108 version 1.2.0
Subset-091 (Index 27)		2.5.0	Safety Requirements for the Technical Interoperability of ETCS in Levels 1 & 2. Mandatory Specs (ERA)	Version 2.5.0 introduced in 2010/79/EC.
Subset-093 (Index B37)		2.3.0	GSM-R interfaces – Class 1 requirements Mandatory Specs (ERA)	Inconsistencies with O 2475. (See QC CCS-002)
Subset-094 (Index 31)		2.0.2	Functional Requirements for an On-board Reference Test Facility. Mandatory Specs (ERA)	Version 2.0.2 introduced in 2010/79/EC.
Subset-108 (Index 15)		1.2.0	Mandatory Specs (ERA)	-
Subset-110		1.1.0	UNISIG Interoperability Test Guidelines, concerning laboratory testing between On-board units and track-side.	Document not included in Annex A
Subset-111		1.1.0	Interoperability Test Environment Definition (General), concerning laboratory testing between On-board units and track-side.	Document not included in Annex A
Subset-112		?	Concerning laboratory testing between On-board units and track-side.	Document not included in Annex A
UIC O 2475 (Index B5)		1.0.0	ERTMS GSM-R QoS Test Specification O-2475 1.0.0 (ERA)	-
EIRENE FRS (Index 32)		7 (May 06)	EIRENE Functional Requirements Specification EIRENE FRS 7	-

Document (Index Annex A)	Id	Version	Title	Comment
		7.1 (June 10)	EIRENE Functional Requirements Specification EIRENE FRS 7.1	Interim version, Annex A not updated
EIRENE SRS (Index 33)		15 (May 06)	EIRENE System Requirements Specification EIRENE SRS 15	-
		15.1 (June 10)	EIRENE System Requirements Specification EIRENE SRS 15.1	Interim version, Annex A not updated
(Index 48)			Test specifications for mobile equipment GSM-R	-
ERA/ERTMS/033281 (Index 77)		1.0	Interfaces between CCS track-side and other subsystems	-

9 Status of RFUs

- A Recommendation For Use (RFU) is a document for internal use within NB Rail, recording questions, issues or concerns and the agreed answers.
- An RFU first goes through an examination stage when the proposed text is discussed and / or being drawn up and becomes finalised when the answer has been approved by the Notified Bodies Co-ordination group i.e. the "Plenary Meeting".
- Although RFU's do not require formal approval from external bodies, the regulatory committee known as the "Railway Interoperability and Safety Committee (RISC)" can comment on RFU's and take measures regarding them in accordance with the procedure provided for in Article 21 of the Directive 96/48/EC.
- The NB-Rail home page on the web contains a list of RFUs adopted by the Plenary Meeting, see web page;
<http://circa.europa.eu/irc/nbg/nbrail/info/data/en/information/nbrail/RFU.htm>.

10 Status of Q&Cs

The NB-Rail home page on the web contains a list of questions and clarifications (Q&C), see webpage; <http://circa.europa.eu/irc/nbg/nbrail/info/data/en/information/nbrail/QC.htm>. Q&C's are documents for internal use within NB Rail used to record questions, issues or concerns and the agreed answers on matters that cannot be dealt with internally from within NB Rail i.e. that requires action, approval or input from external bodies.

Q&C's begin at the examination stage when the issue raised or the proposed answer is under discussion and / or being drawn up. The Q&C is then submitted to the appropriate external body for response. This response is recorded on the Q&C and posted for future use. A Q&C may be turned into a Recommendation For Use (RFU) if appropriate (see chapter 9).

11 Technical Opinions from ERA

From DV22 EN05 section 5.2:

“As a general rule, if the deficiency undermines the fulfilment of the essential requirements set out in Directive 2008/57, the relevant sections of the TSI(s) affected by the deficiency should not be applied as soon as the deficiency has been confirmed by a Technical Opinion adopted by the RISC. Notified Bodies and National Safety Authorities should take into account this Technical Opinion.

After the adoption of a Technical Opinion by the RISC, for running projects for which:

- an EC certificate has already been delivered on the basis of a "deficient" specification, and
- an application for placing into service has already been submitted,

the EC certificate previously delivered on the basis of the "deficient" TSI(s) should remain valid for the specifications which are not affected by the deficiency in question.

For the purpose of delivering the authorisation for placing into service, the National Safety Authority could refer either to the relevant national rules or to the Technical Opinion to "fill the gap" left by the deficiency detected in the TSI(s).”

Doc. id	Date	Ed.	Title (“Technical Opinion of ERA Regarding:”)	Technical Opinion
ERA/OPI/2010-03/ERTMS	2010-01-19	1.0	Notification of derogations from Sweden (concerns installation of the Swedish ATC-2 legacy system in the Citytunnel in Malmö)	TO: Derogation is accepted, but further information concerning future installation of ETCS is requested
ERA/OPI/2011-01/INT	2011-02-07	Final	The Application of Modules SH1 for Design Examination	TO: EC Design Examination is not to be performed by estimations, tests or sampling, but by complete verification of all requirements in the relevant TSIs. Covering QC-RST-010.
ERA/OPI/2010-20/INT	2010-11-09	Final	The level of verification of interfaces.	TO: Design phase: The NoBo has to check <u>that the basic parameters and the interfaces with other subsystems/TSIs as defined in chapter 4.2</u> have been taken into account in the design of the subsystem. (italic/underline: Amendment to QC-STR-002, 2009-01-18).

12 List of deficiencies in the TSIs

Deficiencies listed in the document concern TSIs already adopted and published on the Official Journal of the European Union is published and maintained on the ERA website ([List of deficiencies in TSIs](#)).

As of date 2011-11-09 the list contains a total number of 90 entries, but no listed deficiencies with respect to the CR and HS CCS TSIs.