Common technical standards

The European rail system must meet the Essential Requirements in relation to 5 categories:

- Safety
- Reliability and availability
- Health
- Environmental protection
- Technical compatibility

The manner in which these essential requirements are to be met by each subsystem is specified within technical requirements for each subsystem. These requirements are described within TSIs. Railway interoperability will be achieved across Europe by the application of these specifications as railway assets are renewed or upgraded and new assets are built.

The Technical Specifications for Interoperability (TSIs) prescribe, for each given subsystem, how that subsystem is to meet the Essential Requirements of interoperability and how its compliance is to be assessed and verified.

This page explains the origins, role, and status of TSIs and Notified National Technical Rules (NNTRs).

Subsystems

For convenience, the rail system is broken up into units called ’subsystems’, and further into ’structural subsystems’ and ’functional subsystems’.

Structural subsystems are:

- Rolling stock
- Infrastructure
- Energy
- Control and command and signalling
- Traffic operation and management

Functional subsystems are:

- Maintenance
- Telematics applications for passenger and freight services.

The verification and authorisation requirements of the Regulations relate only to structural subsystems.

Essential Requirements

Subsystems, including their interfaces, of the High Speed and Conventional rail systems must meet the âEssential Requirementsâ which are grouped in five categories under âGeneral requirementsâ, as:

- Safety
- Reliability and availability
- Health
- Environmental protection
- Technical compatibility

Schedules 5 and 6 to the Regulations (PDF, 56KB) respectively reproduce Annex III to the High Speed and the Conventional Directives. They set out, for the High Speed and Conventional TEN rail systems respectively, the high level Essential Requirements for each subsystem which, when met, will result in the achievement of an interoperable railway.

Role of TSIs

The obligation upon the Contracting Entity, in relation to any project for new railway assets, or where applicable to the renewal or upgrading of existing railway assets, is to see that the Essential Requirements are met.

A TSI is a device which satisfies two objectives of the interoperability regime. It removes the need for the Contracting Entity to decide how to meet the Essential Requirements by setting out means whereby, for the specific situations within its scope, the Essential Requirements can be met; and by mandating the interfaces and assessment methodologies, it drives the standardisation which will deliver economies of scale.

The TSI framework is supplemented by NNTRs which in respect of open (unresolved) points in the TSI, fulfil the role of defining how the Essential Requirements will be met.

Relationship between TSIs and Subsystems

There is not a direct 1:1 relationship between subsystems and TSIs - so that not every requirement in relation, for example, to a locomotive, will be found in the rolling stock TSI. Contracting Entities, with the advice and support of their NoBo, will need to identify all the TSIs that are relevant to the scope of their specific project.

For example, new build of, or major work on a locomotive might well invoke a rolling stock TSI, a CoCoSig TSI, and the Safety in Railway Tunnels TSI.

What is in a TSI?

The structure and content of a TSI is prescribed in the Directives, and can be summarised as follows:

- Chapter 2 establishes the scope of the TSI;
- Chapter 3 specifies the Essential Requirements for the subsystem concerned;
- Chapter 4 lists the subsystemâs basic parameters necessary to meet the Essential Requirements and its interfaces with other subsystems. It also specifies the functional and technical specifications to be met by the subsystem and its interfaces to achieve specified performance;
- Chapter 5 determines the Interoperability Constituents and their interfaces necessary to achieve interoperability;
- Chapter 6 describes the procedures for assessing the conformity or suitability for use of Interoperability Constituents and for performing the EC Verification of the subsystem;
- Chapter 7 describes the implementing provisions in certain specific cases, including recommendations regarding the time objectives for the transition from the existing to the final situation where full compliance with the TSIs will be the norm. This chapter frequently contains the answers sought by Contracting Entities and NoBos to difficult compliance questions.

Status of a TSI

A TSI as made by the European Commission has effect under European Community Law, comparable to UK Regulations. As such, it is binding on Member States, and, because the Railways (Interoperability) Regulations 2006 specifically refer to TSIs and apply them for domestic purposes, their requirements are binding on the UK rail industry.

How are TSIs drafted?

TSI drafting is managed by the European Railway Agency (see Who's Who in Interoperability) in accordance with its mandates from the European Commission, and the work programme that has been agreed for it by the Commission, taking into account the opinion of A21C.

The ERA sets up a Drafting Group. Each national Safety Authority has a seat on the drafting group, as do representatives of a number of relevant European Railway organisations â of which some may happen to be UK rail industry experts, but even where this is the case, they are representing the pan-European interests of the members of their organisation and not the UK rail industry.

The Drafting Group must prepare a document that matches the standard framework and content of a TSI.

Once the Drafting Group has completed its task, the ERA sends the final draft to the European Commission, for consideration, amendment, and acceptance by the A21C. Once ratified by a vote of A21C, the Commission issues the TSI as a Decision, and as such it is binding upon Member States.

This process normally takes around three years.

About Functional TSI's

Functional TSIs govern the Telematics and Maintenance requirements for subsystems. As such, the authorisation process is not concerned with the requirements of functional TSIs. However, anyone operating a subsystem that has been authorised under the Railways (Interoperability) Regulations 2006 is required by those Regulations to operate and maintain it in accordance with any relevant functional TSIs. The enforcing authorities for the Regulations, including this obligation on operators, are the ORR in Great Britain, and the Health and Safety Executive (NI) in Northern Ireland.

The Functional TSIs deal with:

- Maintenance
- Telematics applications for passenger and freight services

NNTRs

At present, the diversity of the European network means that it is not always possible to define and implement the specifications to deliver full interoperability. In addition, there are some parts of the rail system for which no TSI has yet been made. Therefore where necessary, and in order to ensure that the Essential Requirements are met, each Member State augments the TSIs with a suite of national technical rules. The Member State is required to notify the EC of its rules, and once notified, these are referred to as Notified National Technical Rules (NNTRs).

The Railways (Interoperability) Regulations 2006 require that in order to certify compliance, the NoBo must be satisfied that the design specification for, and the manufacture of, a project subsystem meets the relevant TSIs and the NNTRs where applicable to that subsystem and thus satisfies the Essential Requirements.

Industry engagement with the TSI drafting process

Whilst Government sets the high level strategy for rail transport in the UK, the delivery of that strategy is a partnership between the privatised rail industry and its suppliers and contractors, and Government bodies. It is essential that industry engages actively and effectively in the development of TSIs if only because, once they have been voted upon by A21C, they are very very difficult to change. The UK relies upon the industry to invest in TSI development to an extent which ensures that the UK rail strategy is deliverable and the industry itself remains viable.

The ORR has a seat on every TSI drafting group, and it draws extensively on industry expertise to support it in the drafting process.

Catalogue of Notified National Technical Rules (NNTRs)

Notified National Technical Rules (NNTRs) address the residual open points in TSIs, and also enable Contracting Entities to fulfil the Essential Requirements where the relevant TSI is not yet in force. Links to to view and download the tables of NNTRs.

Catalogue of TSIs

The TSIs now in place for the High Speed and for the Conventional rail systems, with their dates of coming into force in the UK.

For related documents, pages and internet links, see the column on the right.