



Project “East West Transport Corridor II” (EWTC II) WP 4 – Business Opportunities in Railway Transport Task 4F – Railway Interoperability Improvements in Lithuanian rail network

DRAFT REPORT

on Implementation Telematic Application for Freight Technical
Specification Interoperability (TAF TSI) in Lithuanian rail network

Vilnius, 25-04-2012

REPORT

on Implementation Telematic Application for Freight Technical Specification Interoperability (TAF TSI) in Lithuanian rail network

Vilnius, 20-04-2012

Work Package 4 and the 4F task Leader:

JSC “Lithuanian railways”, Vilnius, Lithuania

Authors:

Darius Pranka, Head of department of Informatics division of Freight Directorate of JSC “Lithuanian railways”

Stasys Zurba, Chief specialist of Development department of JSC “Lithuanian railways”

Contents

1. Summary
2. Background to the project
3. Aim of the task
4. Methodological presumptions
5. Study on harmonization requirements of technical specifications of interoperability (COMMISSION REGULATION (EC) No 62/2006) for Lithuanian railway network
 - 5.1. Brief description of designed IT system
 - 5.2. Actors involved into operations
 - 5.3. Objects of operation
 - 5.4. TAF TSI messages
 - 5.5. Using the LR TAF TSI system
6. Software for Telematic Application for Freight Technical Specification Interoperability (TAF TSI) in Lithuanian rail network
7. Conclusions
8. References

1. Summary

The country-oriented approach is still very strong in the railway business, particularly in the Eastern EWTC. Rail transport is used for various railway operating rules and incompatible IT systems. Conditions for achieving interoperability of the trans-European conventional rail system concern the design, construction, upgrading, renewal and operation of the infrastructures and rolling stock contributing to the functioning of the system to be put into service after the date of entry into force of the Directive 2001/16/EC. The efficient interconnection of the information and communication systems of the different actors of rail business is considered to be important. For railway mode of transport one of basic EU decision for interaction in European rail network is to implement Technical Specification Interoperability of Telematic Application for Freight. TAF TSI – Became a Regulation on 18th of January 2006 (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.

The operation of trains, wagons and intermodal units throughout the European rail network requires efficient interchange of information between the different infrastructure managers, railway undertakings, intermodal operators and actual customers. Performance levels, quality of service and cost depend on this data interchange capability. The benefit of interoperability of the rail system can also bring about the conditions for greater interoperability between modes of transport, in particular between rail transport and combined rail/road/air/waterborne transport.

Legacy information systems of JSC “Lithuanian railways” are not compatible with the planned to install Information Broker System. Unified normative database for ensure the necessary data for Information Broker System does not exist on legacy IT systems of JSC “Lithuanian railways”. New Traffic management system of Lithuanian railways is under development – on the stage of design. These problems prevented the JSC “Lithuanian railways” to implement the tasks related to the Information Broker System test. Implementation of TAF TSI is key for use IT systems as Information Broker. Therefore TAF TSI system creates the preconditions for improving the interaction, which is important for development the EWTC Joint Railway Concept and the idea of Green Transport Corridor also.

Implementation Telematic Application for Freight Technical Specification Interoperability (TAF TSI) for Lithuanian rail network is an essential step for interoperability in the conventional European rail network and in East West transport corridor, including the interaction between modes of transport also. Developed subsystem for JSC “Lithuanian railways” (subsystem LR TAF TSI) – is for accomplishment and completion messages: sending and receiving messages to other subsystems in the European Union established by the TAF TSI requirements through the EU TAF TSI Common Interface.

The main objectives of the development of LR TAF TSI system:

- Formation of messages described in the TAF TSI requirements and adaptation the to the 1520 mm width rail network;
- Delivery formed and filled messages through the EU common interface of TAF TSI;
- Receiving through the EU Common TAF TSI interface messages which sent from other European Union countries belonging to the TAF TSI subsystems;
- Enabling the railway company to find out where the cargo is responsible for the transportation of the railway company.

The TAF TSI system was applied to 1520 mm gauge width railway network first. This was a serious challenge from metrological positions, since another interoperability rules are used in the 1520 mm gauge width railway network.

Implementation of LR TAF TSI subsystem was carried out in three stages:

1. Study on harmonization requirements of technical specifications of interoperability (COMMISSION REGULATION (EC) No 62/2006) for railway 1520 mm gauge network was prepared. It was examined all TAF TSI messages and they relations with railways information systems of JSC "Lithuanian railways".
2. Necessary software (IT system) for implementation Technical Specification Interoperability of Telematic Application for Freight was developed.
3. The software testing is now in process.

Data for messages in the Subsystem, based on the TAF TSI requirements, will be partially filled with the information stored in current JSC "Lithuanian Railways" information systems. This data will reach LR TAF TSI subsystem on one-sided link. The information will go only to the LR TAF TSI subsystem from JSC "Lithuanian Railways" information systems:

- OPKIS - computerized information system for transportation operations.
- "Kroviny" – IT system for accompanying of rail freight document management and accounting control.
- Now being developed traffic management system of JSC "Lithuanian railways".

Messages formed in LR TAF TSI subsystem will be sent to other subsystems European Union countries through the Common Interface, developed also by the TAF TSI requirements, to which these subsystems will be connected by duplex communication. Messages received through common interface from sub-systems of European Union countries will be saved in subsystem LR TAF TSI.

The Software of LR TAF TSI subsystem is implemented using Windows Server 2008 operating system and SQL database management system. The system installed in the central server. Users will connect to it remotely. Each user will be empowered by his assigned role.

The Software of LR TAF TSI subsystem realized creation of messages according framework of the TAF TSI, its filling and adjustment, exchange of data with other information systems, mechanisms of import normative data. The system designed by modular principle.

The modules of LR TAF TSI system are grouped according messages group:

1. Wagon orders;
2. Path request;
3. Train preparation;
4. Train running forecast;
5. Service disruption information;
6. Train location;
7. Shipment ETI/ETA (estimated time of arrival);
8. Wagon movement;
9. Wagon transmission;
10. Data exchange for quality improvement

The way map of interaction of modules of LR TAF TSI system and detailed description of each module are presented in the study. Data flow diagrams of the each module are presented.

Compliance of normative data EU and used in Lithuanian rail network is designed. Structure of content of each message, data tables and data pathways are described in the study.

The study describes user rights, diagram of common use LR TAF TSI system, access to the system and working scenarios.

The study describes diagrams of all functions LR TAF TSI system, the main and alternative scenarios using of the all modules of LR TAF TSI system.

A functional and operational description of administrative module presented.

Processes for each message of all messages groups of LR TAF TSI system described in the study.

Study provides a user interface and operator window's templates with descriptions of fields, functions and buttons.

All messages are described in state diagrams.

At the end of study requirements for IT systems, data quality and data protection, personal qualification presented.

2. Background to the project

According to Article 1 of Directive 2001/16/EC, the conditions for achieving interoperability of the trans-European conventional rail system concern the design, construction, upgrading, renewal and operation of the infrastructures and rolling stock contributing to the functioning of the system to be put into service after the date of entry into force of the Directive. In addition to this, the efficient interconnection of the information and communication systems of the different infrastructure managers and operators is considered to be important.¹

The railway network has been created according country's strategic needs of each country, under their existing legal norms, standards and so on. The country-oriented approach is still very strong in the railway business, particularly in the Eastern EWTC. Rail transport is used for various railway operating rules and IT systems that are incompatible especially in the western and eastern parts of the corridor. Therefore, to design EWTC Joint Rail Concept, select the corridor management model and harmonize interfaces between various IT systems is quite complex.

It appeared that legacy information systems of JSC “Lithuanian railways” are not compatible with the planned to install Information Broker System of the EWTC II project. Even more, a unified normative database for ensure the necessary data for Information Broker System does not exist on legacy IT systems of JSC “Lithuanian railways”. New Traffic management system of Lithuanian railways is under development – on the stage of design. These problems prevented the JSC “Lithuanian railways” to implement the tasks related to the Information Broker System test.

Implementation Telematic Application for Freight Technical Specification Interoperability (TAF TSI) in Lithuanian rail network is an essential step for interoperability in the conventional European rail network and in East West transport corridor, including the interaction between modes of transport also.

Creating the EWTC joint railway concept is to offer solutions to enable improvement in quality and competitiveness of railway services and smooth movement of cargo via rail. Implementation of TAF TSI is key for use IT systems as Information Broker. Therefore TAF TSI system creates the preconditions for improving the interaction, which is important for development the EWTC Joint Railway Concept and the idea of Green Transport Corridor also.

¹ 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.

3. Aim of the task

The commercial operation of trains, wagons and intermodal units throughout the European rail network requires efficient interchange of information between the different infrastructure managers, railway undertakings and other service providers. Performance levels, quality of service and cost depend on this data interchange capability. Data interoperability also has an impact on the conditions of use of rail transport by infrastructure managers, railway undertakings and all other service providers such as wagon companies, intermodal operators and actual customers. The benefit of interoperability of the rail system can also bring about the conditions for greater interoperability between modes of transport, in particular between rail transport and combined rail/road/air/waterborne transport.

The purpose of the TAF TSI is to ensure that efficient interchange of information is adapted to user requirements so that the transport process may become as economically viable as possible and that freight transport on rail can more efficiently address the intense competition it has to face.

The TAF TSI covers the applications required for the interoperability of information regarding freight services and the management of connections with other modes of transport. It concentrates on the transport services of railway undertakings in addition to the pure operation of trains.

The main objectives of the development of LR TAF TSI system:

- Formation of messages described in the TAF TSI requirements and adaptation the to the 1520 mm width rail network;
- Delivery formed and filled messages through the EU common interface of TAF TSI;
- Receiving through the EU Common TAF TSI interface messages which sent from other European Union countries belonging to the TAF TSI subsystems;
- Enabling the railway company to find out where the cargo is responsible for the transportation of the railway company.

4. Methodological presumptions

The East-West transport corridor includes EU and non EU countries in the transport infrastructure (road, railway, and fairway), hubs (ports, logistics terminals), transport equipment and machinery, IT and communications systems, operating and administrative procedures. On viewpoint of methodology of management for an effective network services, at the same time seeking to reduce the negative impact of transport on the environment and social costs, it is important to ensure optimal use of all elements of the transport corridor network in isolation and harmonious interaction with each other. It means the necessity to improve performance of each element of logistics chain and integrate interaction of all elements that the EW transport corridor to function as a coherent system.

Therefore, it is a special emphasis on "soft Infrastructure" development, including the processes of information integration of the freight corridor in EU transport policy. For railway mode of transport one of basic EU decision for interaction in European rail network is to implement Technical Specification Interoperability of Telematic Application for Freight. TAF TSI – Became a Regulation on 18th of January 2006 (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.

The TAF TSI system was applied to 1520 mm gauge width railway network first. This was a serious challenge from metrological positions, since another interoperability rules are used in the 1520 mm gauge width railway network.

Implementation of LR TAF TSI subsystem was carried out in three stages:

1. Study on harmonization requirements of technical specifications of interoperability (COMMISSION REGULATION (EC) No 62/2006) for railway 1520 mm gauge network was prepared. It was examined all TAF TSI messages and they relations with railways information systems of JSC "Lithuanian railways".
2. Necessary software (IT system) for implementation Technical Specification Interoperability of Telematic Application for Freight was developed.
3. The software testing is now in process

5. Study on harmonization requirements of technical specifications of interoperability (COMMISSION REGULATION (EC) No 62/2006) for Lithuanian railway network

5.1. Brief description of designed IT system

Common Interface under the TAF TSI requirements implemented for communication among messaging subsystems in European Union. Main goal of the EU TAF TSI Common Interface is to exchange of information to manage freight. The system, covering the whole Europe, will be implemented to reach a message forwarding them to the recipients referred.

Messages through the Common Interface will be sent to the European Union countries within the subsystems developed by the TAF TSI requirements. These subsystems are two-way connecting to the EU via the TAF TSI common interface, as messages will be sent to the subsystem, and received from him. Infrastructure managers (IMs) and Railway Undertaking (RU) for each of the countries will be basic message exchange participants.

According to the Telematic Application for Freight Technical Specifications for Interoperability requirements developed subsystem for JSC "Lithuanian railways" (subsystem LR TAF TSI) – is for accomplishment and completion messages: sending and receiving messages to other subsystems in the European Union established by the TAF TSI requirements through the EU TAF TSI Common Interface.

LR TAF TSI subsystem is dedicated to the company "Lithuanian Railways". The purpose of the project - to facilitate staff working in JSC "Lithuanian Railways" to carry out effectively the process of shipment of goods to EU countries and conversely. LR TAF TSI subsystem form, fill, send and receive messages, which stores information needed to transport goods from one European Union member country to another. Legacy IT systems of JSC "Lithuanian Railways" are used for preparing of messages, missing data is entered by the user who has the power to order it.

Data for messages in the Subsystem, based on the TAF TSI requirements, will be partially filled with the information stored in current JSC "Lithuanian Railways" information systems. This data will reach LR TAF TSI subsystem on one-sided link. The information will go only to the LR TAF TSI subsystem from JSC "Lithuanian Railways" information systems:

- OPKIS - computerized information system for transportation operations.
- "Kroviny" – IT system for accompanying of rail freight document management and accounting control.
- Now being developed traffic management system of JSC "Lithuanian railways".

Messages formed in LR TAF TSI subsystem will be sent to other subsystems European Union countries through the Common Interface, developed also by the TAF TSI

requirements, to which these subsystems will be connected by duplex communication. Messages received through common interface from sub-systems of European Union countries will be saved in subsystem LR TAF TSI.

The Software of LR TAF TSI subsystem is implemented using Windows Server 2008 operating system and SQL database management system. The system installed in the central server. Users will connect to it remotely. Each user will be empowered by his assigned role.

The Software of LR TAF TSI subsystem realized creation of messages according framework of the TAF TSI, its filling and adjustment, exchange of data with other information systems, mechanisms of import normative data. The system designed by modular principle.

5.2. Actors involved into operations

The functions of actors which use the LR TAF TSI system providing rail transport services are identified in study.

The **internal user** of LR TAF TSI system is JSC “Lithuanian railways”.

The **external participants** of the process interoperability through LR TAF TSI system would be:

- Clients (Shippers);
- Other Railway undertakings (RU);
- Other Infrastructure managers (IM).

5.3. Objects of operation

Objects are related with information which is relevant to the processes of interoperability. All objects are described in LR TAF TSI system:

- **Railway undertaking** (RU) - *sender, recipient, exporting RU, importing RU, transit RU or delivery RU.*
- **Client** of RU's - *Consignor or Consignee.*
- **Infrastructure manager** (IM) - *sender of message, recipient of message.*
- **Wagon** – *WagonInformation (WagonNumberFreight, TransportationUnit, UnitCapacityUsed, TotalWeightDim, WagonTechData, WagonPreviousNumberFreight); WagonInstruction (AdditionalInstructions, HandlingInstruction, TransportInstruction); TrainWagonOrder (Train Composition) (WagonNumberFreight, WagonTrainPosition, WagonData).*
- **Cargo** – *ConsignmentDescription (GoodsDescription, LoadType, GrossWeight, Volume, DangerousGoodsIndication).*
- **Rail path** – *PathIdentity (PathDeparturePoint, PathDepartureTime, PathDestinationPoint, PathDestinationTime, TrainNumberFreight, PathIdent)*

- **Train** – *TrainComposition (Locoldent, TrainRunningData, TrainWeight, TrainLength, TractionType, TrainCCSystem, TrainRadioSystem, TrainMaxSpeed, MaxAxleWeight, BrakingSystem, BrakingWeight, ExceptionalGaugingInd, DangerousGoodsIndication, ActivityCode)*

5.4. TAF TSI messages

The modules of LR TAF TSI system are grouped according messages group:

1. Wagon orders;
2. Path request;
3. Train preparation;
4. Train running forecast;
5. Service disruption information;
6. Train location;
7. Shipment ETI/ETA (estimated time of arrival);
8. Wagon movement;
9. Wagon transmission;
10. Data exchange for quality improvement

The way map of interaction of modules of LR TAF TSI system and detailed description of each module are presented in the study. Data flow diagrams of the each module are presented.

Compliance of normative data EU and used in Lithuanian rail network is designed. But part of normative data is not standardized in EU. Therefore the normative data is designed so that standard applications would be implemented after its publication.

Structure of content of each message, data tables and data pathways are described in the study.

5.5. Using the LR TAF TSI system

The study describes user rights, diagram of common use LR TAF TSI system, access to the system and working scenarios. Using module of messaging includes formation of message, it review, data import from JSC “Lithuanian railways” legacy IT systems, data exchange via the EU TAF TSI Common Interface and other cases of using LR TAF TSI system.

The study describes diagrams of all functions LR TAF TSI system, the main and alternative scenarios using of the all modules of LR TAF TSI system. A functional and operational description of administrative module presented. Processes for each message of all messages groups of LR TAF TSI system described in the study.

Study provides a user interface and operator window's templates with descriptions of fields, functions and buttons. All messages are described in state diagrams.

At the end of study requirements for IT systems, data quality and data protection, personal qualification presented.

6. Software for Telematic Application for Freight Technical Specification Interoperability (TAF TSI) in Lithuanian rail network

The Software of LR TAF TSI is designed by modular principle according requirements of the prepared study. The Software of LR TAF TSI system realized creation of messages according framework of the TAF TSI, its filling and adjustment, exchange of data with other information systems, mechanisms of import normative data.

The implemented Software use Windows Server 2008 operating system and SQL database management system. The system installed in the central server. Users will connect to it remotely. Each user will be empowered by his assigned role.

The LG TAF TSI system is currently under testing stage.

7. Conclusions

Rail transport is used for various IT systems that are incompatible especially in the western and eastern parts of the corridor. Therefore, to design EWTC Joint Rail Concept, select the corridor management model and harmonize interfaces between various IT systems is quite complex. The conditions for achieving interoperability of the trans-European conventional rail system concern the design, construction, upgrading, renewal and operation of the infrastructures and rolling stock contributing to the functioning of the system to be put into service after the date of entry into force of the Directive 2001/16/EC. For railway mode of transport one of basic EU decision for interaction in European rail network is to implement Technical Specification Interoperability of Telematic Application for Freight. TAF TSI – Became a Regulation on 18th of January 2006 (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.

It appeared that legacy information systems of JSC “Lithuanian railways” are not compatible with the planned to install Information Broker System of the EWTC II project. Even more, a unified normative database for ensure the necessary data of Information Broker System does not exist on legacy IT systems of JSC “Lithuanian railways”. New Traffic management system of Lithuanian railways is under development – on the stage of design. These problems prevented the JSC “Lithuanian railways” to implement the tasks related to the Information Broker System test.

Railway Interoperability improvements in Lithuanian rail network is key for use IT systems as Information Broker, is important for development the EWTC Joint Railway Concept and the idea of Green Transport Corridor also.

The commercial operation of trains, wagons and intermodal units throughout the European rail network requires efficient interchange of information between the different infrastructure managers, railway undertakings and other service providers. Performance levels, quality of service and cost depend on this data interchange capability. Data interoperability also has an impact on the conditions of use of rail transport by infrastructure managers, railway undertakings and all other service providers such as wagon companies, intermodal operators and actual customers. The benefit of interoperability of the rail system can also bring about the conditions for greater interoperability between modes of transport, in particular between rail transport and combined rail/road/air/waterborne transport.

On viewpoint of methodology of management for an effective network services, at the same time seeking to reduce the negative impact of transport on the environment and social costs, it is important to ensure optimal use of all elements of the transport corridor network in isolation and harmonious interaction with each other.

The purpose of the TAF TSI is to ensure that efficient interchange of information is adapted to user requirements so that the transport process may become as economically viable as possible and that freight transport on rail can more efficiently address the intense competition it has to face.

The main objectives of the development of systems:

- Formation of messages described in the TAF TSI requirements and adaptation the to the 1520 mm width rail network;
- Delivery formed and filled messages through the EU common interface of TAF TSI;
- Receiving through the EU Common TAF TSI interface messages which sent from other European Union countries belonging to the TAF TSI subsystems;
- Enabling the railway company to find out where the cargo is responsible for the transportation of the railway company.

Common Interface under the TAF TSI requirements implemented for communication among messaging subsystems in European Union. Main goal of the EU TAF TSI Common Interface is to exchange of information to manage freight. The system, covering the whole Europe, will be implemented to reach a message forwarding them to the recipients referred.

According to the Telematic Application for Freight Technical Specifications for Interoperability requirements developed subsystem for JSC "Lithuanian railways" (subsystem LR TAF TSI) – is for accomplishment and completion messages: sending and receiving messages to other subsystems in the European Union established by the TAF TSI requirements through the EU TAF TSI Common Interface

Data for messages in the Subsystem, based on the TAF TSI requirements, will be partially filled with the information stored in current JSC "Lithuanian Railways" information systems. This data will reach LR TAF TSI subsystem on one-sided link. The information will go only to the LR TAF TSI subsystem from JSC "Lithuanian Railways" information systems:

- OPKIS - computerized information system for transportation operations.
- "Kroviny" – IT system accompanying documents for rail freight management and accounting control.
- Now being developed traffic management system of JSC "Lithuanian railways".

Messages formed in LR TAF TSI subsystem will be sent to other subsystems European Union countries developed also by the TAF TSI requirements through the Common Interface to which these subsystems will be connected by duplex communication. Messages received through common interface from sub-systems of European Union countries will be saved in subsystem LR TAF TSI.

The modules of LR TAF TSI system are grouped according messages group:

1. Wagon orders;
2. Path request;
3. Train preparation;

4. Train running forecast;
5. Service disruption information;
6. Train location;
7. Shipment ETI/ETA (estimated time of arrival);
8. Wagon movement;
9. Wagon transmission;
10. Data exchange for quality improvement

The study describes user rights, diagram of common use LR TAF TSI system, access to the system and working scenarios. Using module of messaging includes formation of message, its review, data import from JSC “Lithuanian railways” legacy IT systems, data exchange via the EU TAF TSI Common Interface and other cases of using LR TAF TSI system.

The study describes diagrams of all functions LR TAF TSI system, the main and alternative scenarios using of the all modules of LR TAF TSI system. A functional and operational description of administrative module presented. Processes for each message of all messages groups of LR TAF TSI system described in the study.

Study provides a user interface and operator window’s templates with descriptions of fields, functions and buttons. All messages are described in state diagrams.

At the end of study requirements for IT systems, data quality and data protection, personal qualification presented.

The Software of LR TAF TSI is designed by modular principle according requirements of the prepared study. The Software of LR TAF TSI system realized creation of messages according framework of the TAF TSI, its filling and adjustment, exchange of data with other information systems, mechanisms of import normative data.

The implemented Software use Windows Server 2008 operating system and SQL database management system. The system installed in the central server. Users will connect to it remotely. Each user will be empowered by his assigned role.

The LG TAF TSI system is currently under testing stage.

References

1. DIRECTIVE 2001/16/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 March 2001. On the interoperability of the trans-European conventional rail system.
2. 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.
3. Commission Decision 2004/446/EC of 29 April 2004 specifying the basic parameters of the Noise, Freight Wagons and Telematic applications for freight Technical Specifications for Interoperability referred to in Directive 2001/16/EC [Official Journal L 155 of 30.4.2004].
4. Commission Decision 2004/447/EC of 29 April 2004 modifying Annex A to Decision 2002/731/EC of 30 May 2002 and establishing the main characteristics of Class A system (ERTMS) of the control-command and signaling subsystem of the trans-European conventional rail system referred to in Directive 2001/16/EC [Official Journal L 155 of 30.4.2004].
5. Commission Decision 2006/679/EC of 28 March 2006 concerning the technical specification for interoperability relating to the control-command and signaling subsystem of the trans-European conventional rail system (notified under document number C(2006) 964) (Text with EEA relevance) [Official Journal L 284 of 16.10.2006].
6. Commission Decision 2006/861/EC of 28 July 2006 concerning the technical specification of interoperability relating to the subsystem rolling stock – freight wagons of the trans-European conventional rail system (notified under document number C(2006) 3345) Text with EEA relevance [Official Journal L 344 of 8.12.2006].
7. Commission Decision 2006/920/EC of 11 August 2006 concerning the technical specification of interoperability relating to the subsystem Traffic Operation and Management of the trans-European conventional rail system (notified under document number C(2006) 3593) (Text with EEA relevance) [Official Journal L 359 of 18.12.2006].