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RFID in TSI – Move towards European standards

RFID In Rail, Stockholm

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TRANS-EUROPEAN RAIL NETWORK – A COMMON PLAYGROUND

Inside EU 27:

215.400 km of rail lines

Connections with our neighbouring countries:

European Commission, Mobility and Transport:

“Guidelines for transport in Europe and neighbouring regions:

...

Northern axis: ... to connect the northern EU with Norway to the north and with Belarus and Russia to the east. A connection to the Barents region linking Norway through Sweden and Finland with Russia is also foreseen;

Central axis: ... A direct connection from Ukraine to the Trans-Siberian railway and a link from the Don/Volga inland waterway to the Baltic Sea are also included ... “

KEY PLAYERS IN RULE-MAKING

- **European Commission**
- **ERA, European Railway Agency**
 - WP's, Working Parties (rep's from sector organisations and NSA's)
- **Sector organisations**
 - = associations of stakeholders (10)
- **NSA's, national safety authorities**

PLAYERS WITHIN THE EU: ASSOCIATIONS OF STAKEHOLDERS

[ALE](#) Autonomous Train Drivers' Unions of Europe

[CER](#) Community of European Railway and Infrastructure Companies

[EIM](#) European Rail Infrastructure Managers

[EPTTOLA](#) European Passenger Train and Traction Operating Lessors Association

[ERFA](#) European Rail Freight Association

[ETF](#) European Transport workers' Federation

[UNIFE](#) Association of European Railway Industries

[UIP](#) International Union of Private Wagons

[UITP](#) International Association of Public Transport

[UIRR](#) International Union of combined Road-Rail transport companies

EIM MEMBERS

ADIF, **Spain**



Banedanmark, **Denmark**



Infrabel, **Belgium**



Jernbaneverket, **Norway**



Jernbaneverket

Liikennevirasto, **Finland**



Finnish
Transport
Agency

Network Rail, **UK**



ProRail, **The Netherlands**



Refer, **Portugal**



RFF, **France**



Trafikverket, **Sweden**



Associate member: High Speed One, **UK**

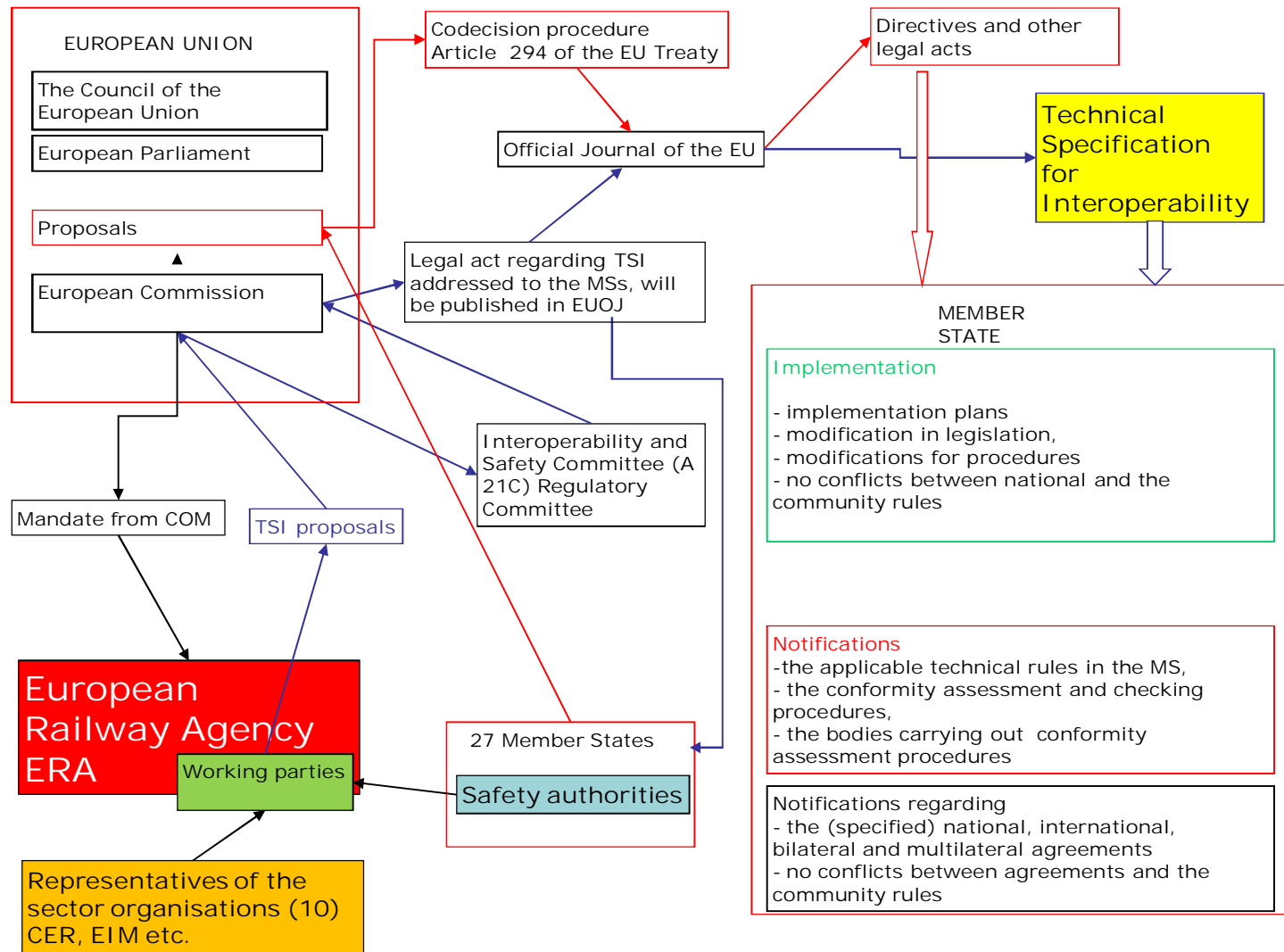
Candidate member: PKP, **Poland**



European Rail
Infrastructure Managers



MAKING OF THE RULES ...



TSI's ...

- stand for Technical Specifications for Interoperability
- specify various rules, regulations and technical solutions, also in detail
- refer often to commonly accepted standards
- after having published in the EUOJ have to be implemented in the national legislation

RULES FOR THE INTEROPERABILITY TODAY ...

TSI WAG Freight wagons (2006/861/EC)

TSI TAF Telematic Applications for Freight (62/2006/EC)

TSI OPE Operation and traffic management (2006/920/EC)

TSI CCS Control command and signalling (2006/679/EC)

TSI NOI Noise aspects of conventional rolling stock (2006/66/EC)

TSI HS OPE Operation and traffic management (2002/734/EC)

TSI HS MAINT Maintenance (2002/730/EC)

TSI HS INF Infrastructure (2002/732/EC)

TSI HS ENE Energy (2002/733/EC)

TSI HS RST Rolling stock (2002/735/EC)

TSI HS CCS Control command and signalling ERTMS (2006/860/EC)

RULES WITH REQUIREMENTS FOR RFID...

TSI WAG Freight wagons (2006/861/EC)

RULES FOR THE RFID IN THE NEAR FUTURE...

n.a.

THE ACTUAL TSI WAG AND THE RFID, 1

” 4.2.5.2. Vehicle capability to transmit information between ground and vehicle

4.2.5.2.1. General

Application of tags is not mandatory. If a wagon is fitted with radio-frequency identification devices (RFID-tag), the following specification shall be applied.

4.2.5.2.2. Functional and technical specification

Two ‘passive’ tags shall be fitted, one on each side of the wagon in the areas indicated in Annex F figure F.1,

When available, trackside devices (tag reader) shall be capable of decoding tags passing at a speed of up to 30 km/h and make this decoded information available to a ground-based data transmission system.”

THE ACTUAL TSI WAG AND THE RFID, 2

“Typical **installation constraints** are given in the Annex F figure F.2 where the reader position is defined by a cone.

The physical interactions between the reader and the tag, the protocols and the commands, and the collision arbitration schemes, **shall conform to ISO18000-6 type A.**

(List of applicable standards: ISO 18000-6 :2004 Information technology -- Radio frequency identification for item management - Part 6: Parameters for air interface communications at 860 MHz to 960 MHz)

When fitted, tag readers shall be positioned at entry and exit points of locations where train formation can be changed. --- ”

i.e.

- meant for railyard performance only
- low speed range
- an outdated standard

THE NEED FOR COMMON, UPDATED RULES?

- RFID technology has been improved significantly since publishing the present TSI WAG
- various new needs in addition to railyard use

Updated requirements for RFID and its use...

1. ... could offer substantial benefits in the near future for e.g. logistics, maintenance and operation
2. ... shall be mirrored to the present, actual needs
3. ... shall be included / referred to in a relevant TSI – e.g. TSI TAP

→ to achieve a proper compatibility between tags and their readers active discussion within and between stakeholders shall be started

EIM ACTIVITIES SO FAR:

- "Position paper on RFID standards", published December 2009 proposes changes to the following present requirements:
 - Upgrade the air protocol to **ISO 18000-6 type C**
 - **Increasing speed demands** to at least the design speed of the rolling stock
 - **Excluding demand on where to install [trackside] reader equipment**
 - **Standardized RFID message** shall be included (minimum contents)
 - **The requirement for the fixing area of the tags on the rolling stock shall remain**
- fulfilling these requirements helps to guarantee the compatibility of the readings – ignoring them may lead into difficulties

RFID IN FINLAND

- Liikennevirasto as an infrastructure manager plans to equip all its rolling stock monitoring sites with an RFID reader
 - collected data serves preventive maintenance of both track and the rolling stock
 - Interface with the (national) rolling stock database planned
 - data distribution to rolling stock owners and maintainers
- tests have shown that passive tags perform sufficiently even at a speed up to 200 km/h
- expectations:
 - exact and rapid distribution of the rolling stock monitoring data
 - benefits will exceed the costs
 - useful for both infrastructure manager and railway operator(s)

THANK YOU FOR YOUR INTEREST



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