

ITUWORKSHOPS

1st ITU Inter-regional Workshop on WRC-19 Preparation

21 - 22 November 2017

Geneva, Switzerland

www.itu.int/go/ITU-R/wrc-19-irwsp-17



1st ITU INTER-REGIONAL WORKSHOP ON WRC-19 PREPARATION (Geneva, 21-22 November 2017)

Session 2 – Terrestrial WRC-19 agenda item 1.11 Railway radiocommunication

*Thomas Chatelet
European Union
Agency for Railways*



90th Anniversary
CCIR - ITU-R Study Groups
(1927-2017)

Organized by:





What is the EU Agency for Railways?

“Making the railway system work better for society.”

ERA Activities

- 1 Harmonised Safety Regulatory Framework
- 2 Remove Technical Barriers
- 3 Single EU train control and communication system (ERTMS)
- 4 Simplified access for customers

ERA tasks

- Developing**
EU wide technical standards for Interoperability*
Common EU Safety Methods
Databases and registers
- Developing a Common Safety Culture in Europe**
- Monitoring/Reporting**
- Facilitating/Dissemination**

Customers/stakeholders

- European Commission
EU Member States
EU Parliament
(EU railway customers)
- Railway Undertakings
Infrastructure Managers
Manufacturers
- National Safety Authorities
National Investigation Bodies



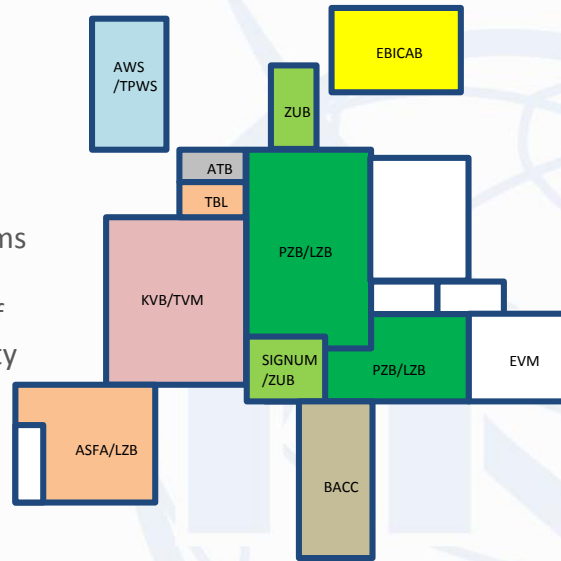
Valenciennes (F)
approx. 150 staff



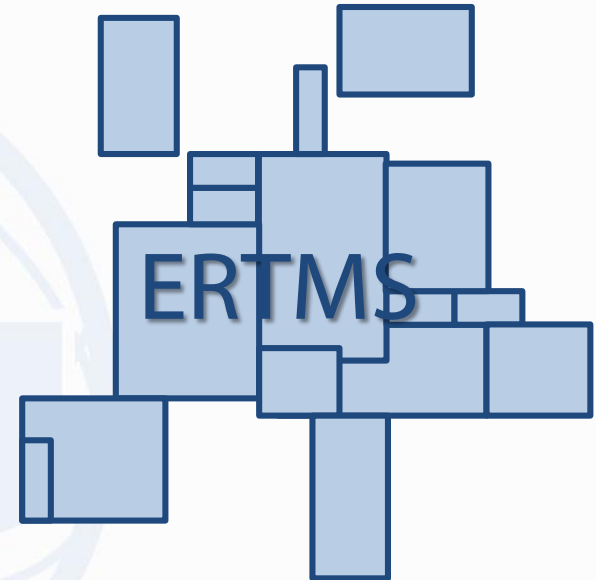
The interoperability vision

Fragmented national railway systems

- National supplier oligopolies (captive)
 - obsolescence
- Cross-border:
 - change of locomotive
 - multiple systems fitted
- Limitations in terms of functionality and safety



Single European Railway Area



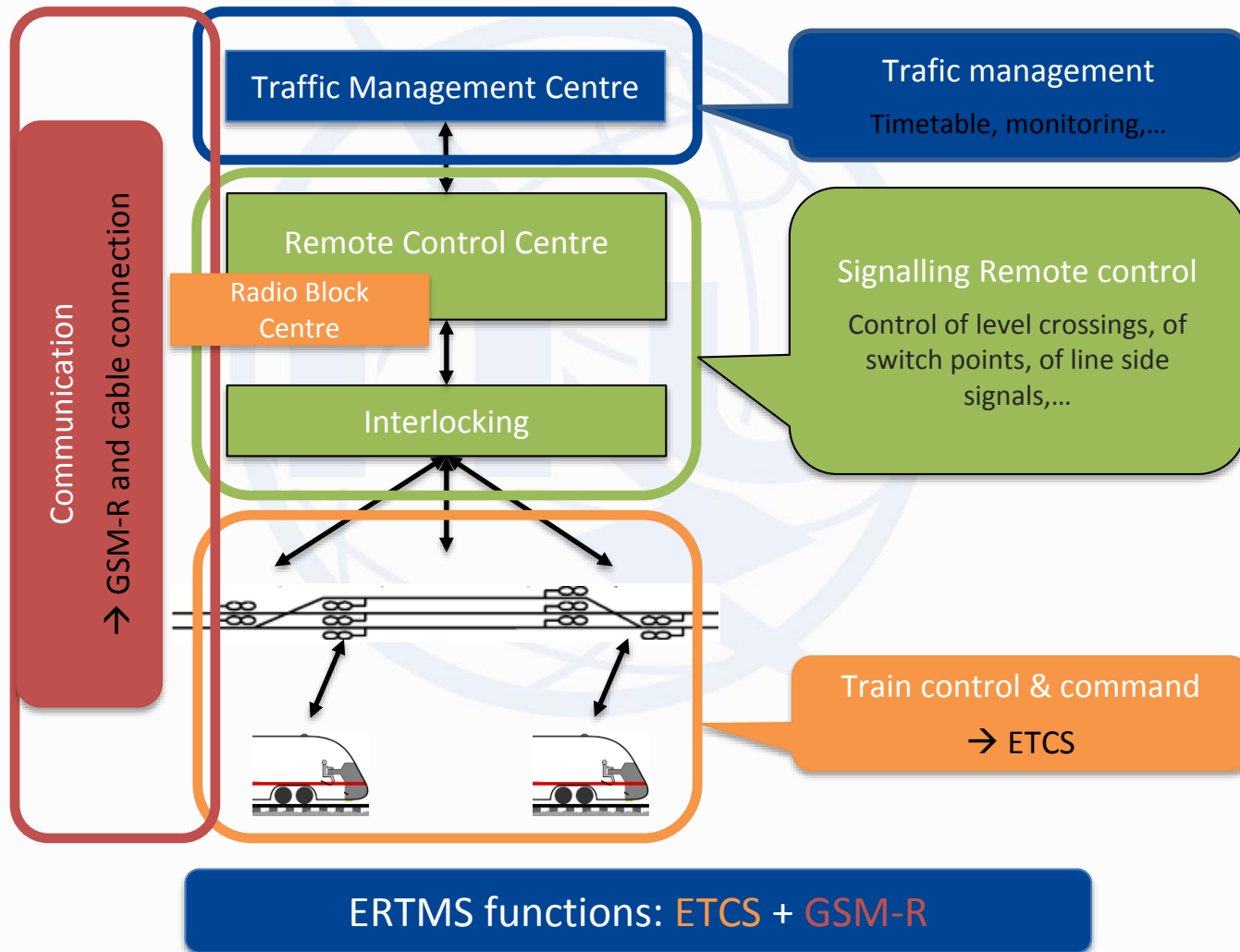
Clarity on goals is needed

"Seamless train operation without borders (caused by signalling) at best economic conditions"

Need to define the **target state** and intermediate states

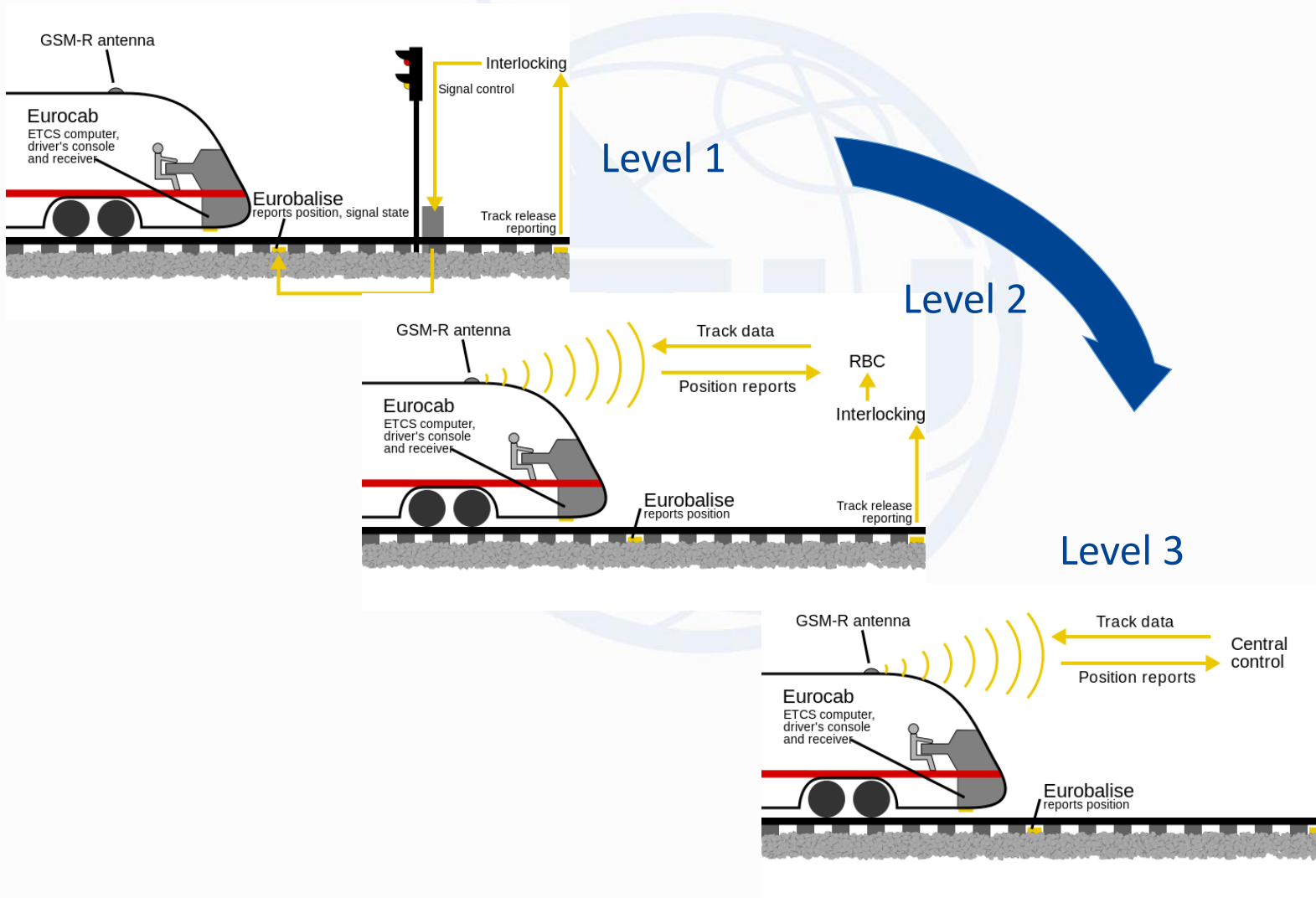
- **European Railway Traffic Management System**
 - Major industrial project being implemented by Europe
 - Project making rail transport safer and more competitive
- **Fundamental objective of ERTMS**
 - To develop and to deploy a single harmonised Control/Command, Signalling and Communication system, fully interoperable across borders sourced from a broad supply base, enabling compatible evolutions through open standards
- **Benefits**
 - Interoperability, increase of capacity, safety, reliability and punctuality
- **Why**
 - Mobility contributes to growth
 - Rail is an essential transport mode
 - European leadership in transport needs to be maintained

Why is the Agency interested in Wireless Communications?





ETCS Levels and Wireless Communications



- Dedicated radio communication system for voice and data services supporting railway operations
 - Harmonised spectrum in EU: R-GSM band
 - Voice services: point-to-point and group calls, Railway Emergency Call
 - Data services supports ETCS level 2 and 3
 - Location dependent and functional addressing
 - Priority control and preemption
- GSM-R equipment
 - On-board: handhelds, cabradios and ETCS Data Only Radios (EDOR)
 - Trackside: Radio access (Base Stations) and core network
 - Dispatchers (controllers)
- GSM-R continuously integrated new functionalities since 90's, and evolving towards all-IP interfaces

GSM-R is today the only rail radiocommunication system as per EU regulation

- GSM-R will be in operation up to 2030 and beyond
 - Successful system: packet switching for ETCS, interferences can be managed
 - Does this situation create long term stability or does this block innovation and/or cost reduction?

The Agency investigates current and future needs

- Definition of GSM-R successor, introduction and migration has to be planned
 - Functionality, performance, technology, radio spectrum
 - Balance between sustainability and flexibility while maintaining interoperability
 - Potential migration scenarios and the economic impact

The Agency leads the coordination with users





The Agency program Evolution of Railway Radio

- **High level planning for the development activities:**
 - 2015 – 2018: studies to identify the main requirements and strategy
 - 2016 – 2020: identification and preparation of changes for the CCS TSI (basic parameters, authorization, implementation and Annex documents)
 - 2019 – 2022: further development and Proof of Concept
- **Inputs:**
 - CCS TSI release planning (e.g. ETCS related baselines/releases)
 - MS/IM and RU investment (replacement/LCM) plans
 - External activities, e.g. evolution of standards (e.g. 3GPP)
 - MS decision on availability of spectrum
- **Involved organisations**
 - System definition: ETSI, UIC, UNISIG, Shift²Rail, railway stakeholders
 - Implementation strategy: transport administrations, spectrum regulator

<http://www.era.europa.eu/Core-Activities/ERTMS/Pages/The-Project-Evolution-of-Railway-Radio.aspx>

Main challenges

Today	Future situation
Single radio access technology	Multiple radio access technologies
Dedicated networks	Dedicated/shared/public networks
Dedicated radio spectrum for railways	Dedicated/shared radio spectrum
Simple/static on-board devices and interfaces	More complex and flexible on-board architecture
Clear implementation objective	Challenging transition phase: continuous evolution

Main challenge:

what has to be included in the legal framework in order to

- Keep **interoperability** during the transition: GSM-R will be operational until at least 2030...
- Find an **balance** between natural updates and/or exchanges of Subsystems/IC's of the stakeholders, and the planned introduction of FRMCS (RU's vs IM's)
- Offer sufficient **flexibility** for future developments : minimize the impact of technical evolution in the overall system





Next steps until 2018

- **Agency's draft conclusions**
 - On functionality, technology, spectrum, migration
 - High level, no details
 - Identification of specific topics
- **Consultation on the draft conclusions**
 - Consultation of the Sector Organisations
- **First Report to the Commission**
 - Draft conclusions including consultation result
 - Identification of specific topics
 - Foreseen end of 2018

The Agency continue monitoring R&D initiatives