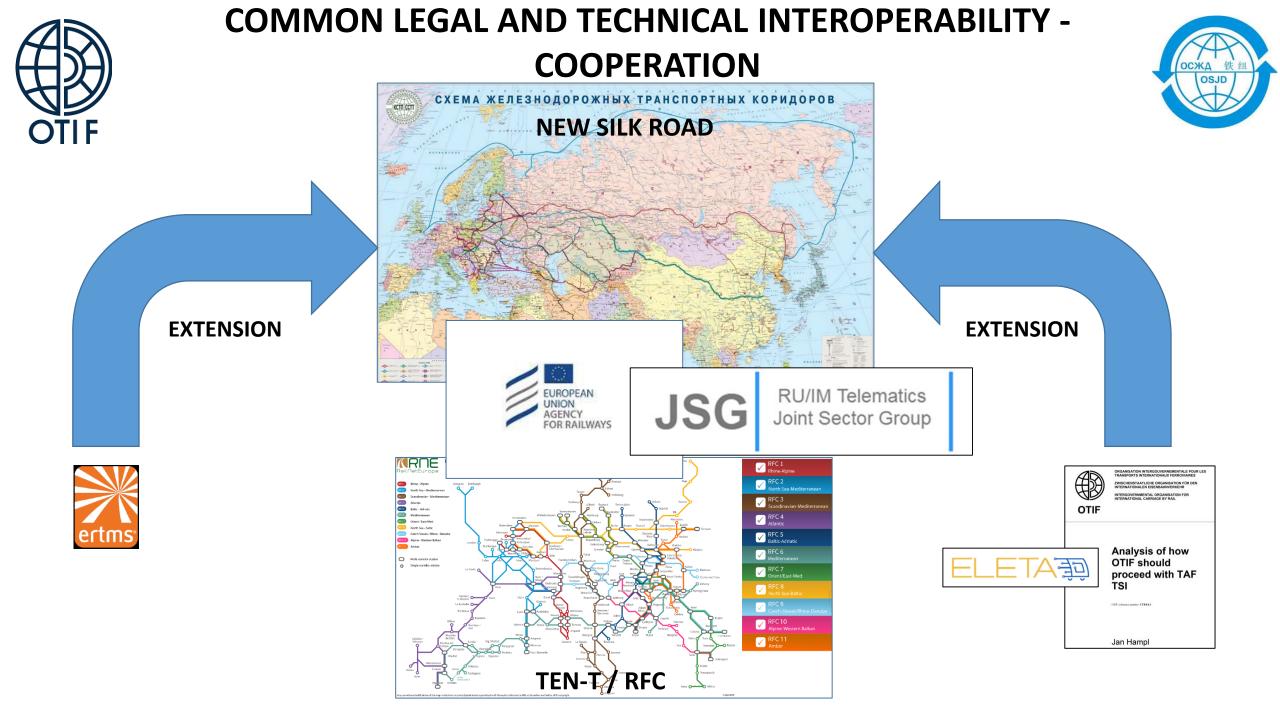
Development of interoperable digital solutions on TEN-T and Silk Road from the European R&I perspective

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#Horizon2020







CSIRT (Computer Security Incident Response Team) is a multi-layered model (Organisational, Operational, Technical Platform)

€YRAIL

cyber-protection and cyber- defence tools & practices; threats known in the IoT; ICT trusted for critical applications.



blockchain-based solution for the attribution of data costs across organisational boundaries,



**GNSS-based ERTMS Applications** scenarios

## **New Automatic Couplers (DAC)**

FR8RAIL

### Telematics and Electrification Condition Based

Maintenance (CBM) Cargo Monitoring System (CMS). service transponder for freight, wagon On-Board Unit (wOBU)

# Improved methods for annual and short-term timetable planning

FR8RAIL

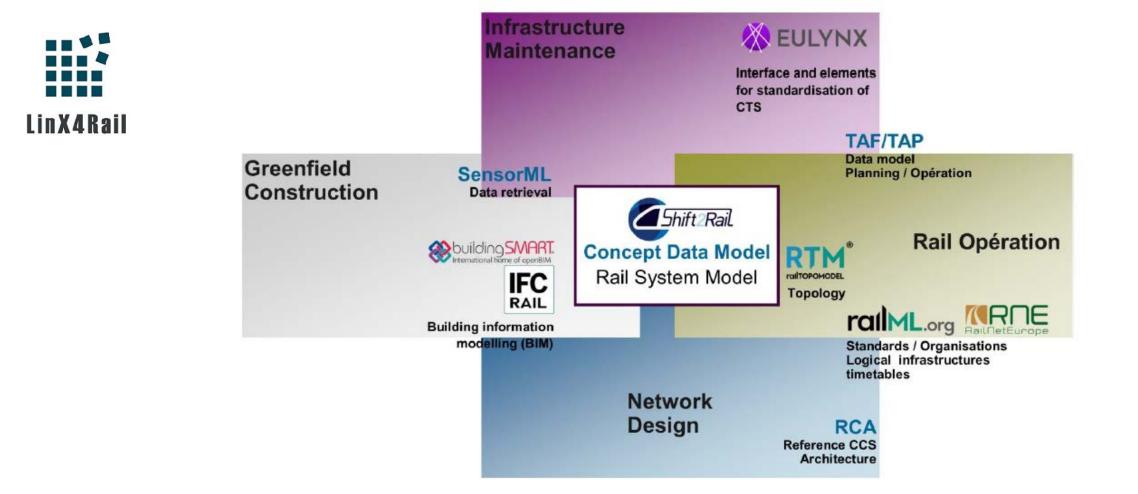
FR8RAIL II

Improved short term planning for freight traffic including improved interaction between yards and the network.



**Real-time network management** 

Freight wagon design



A common Functional Rail System Architecture Shift2Rail Conceptual Data Model (CDM) the standard for interactions between legacy and new systems ensuring sustainable interoperability between systems.



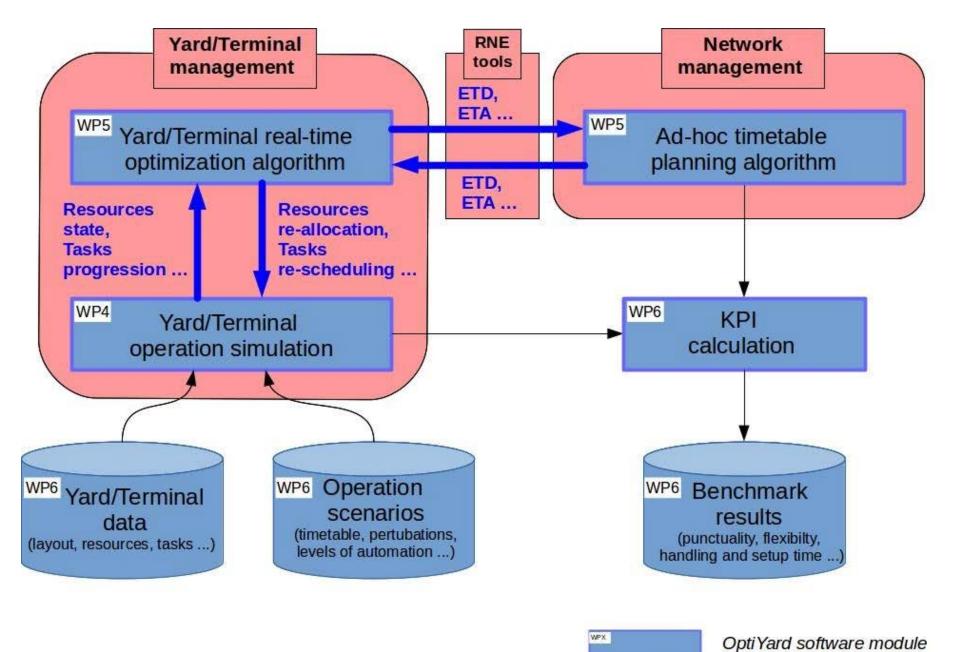
#### Operational procedures for Moving Block and Virtual Coupling signalling - identification operational differences from traditional signalling to provide recommendations for easier implementation of Moving Block.

#### **Radio-based communication**

# Automated Vehicle communication for fast-tracking Virtual Coupling development.

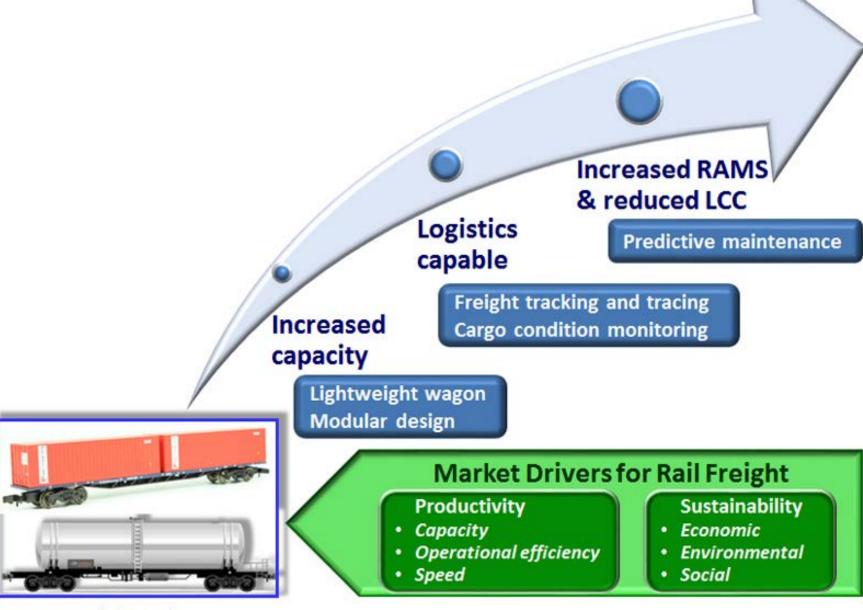
**Virtual Coupling** including impacts on different railway market segments in terms of costs, performance and operator needs.





Information/decision flow





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