Innovative Regulation

CCRCC 2019, Valenciennes

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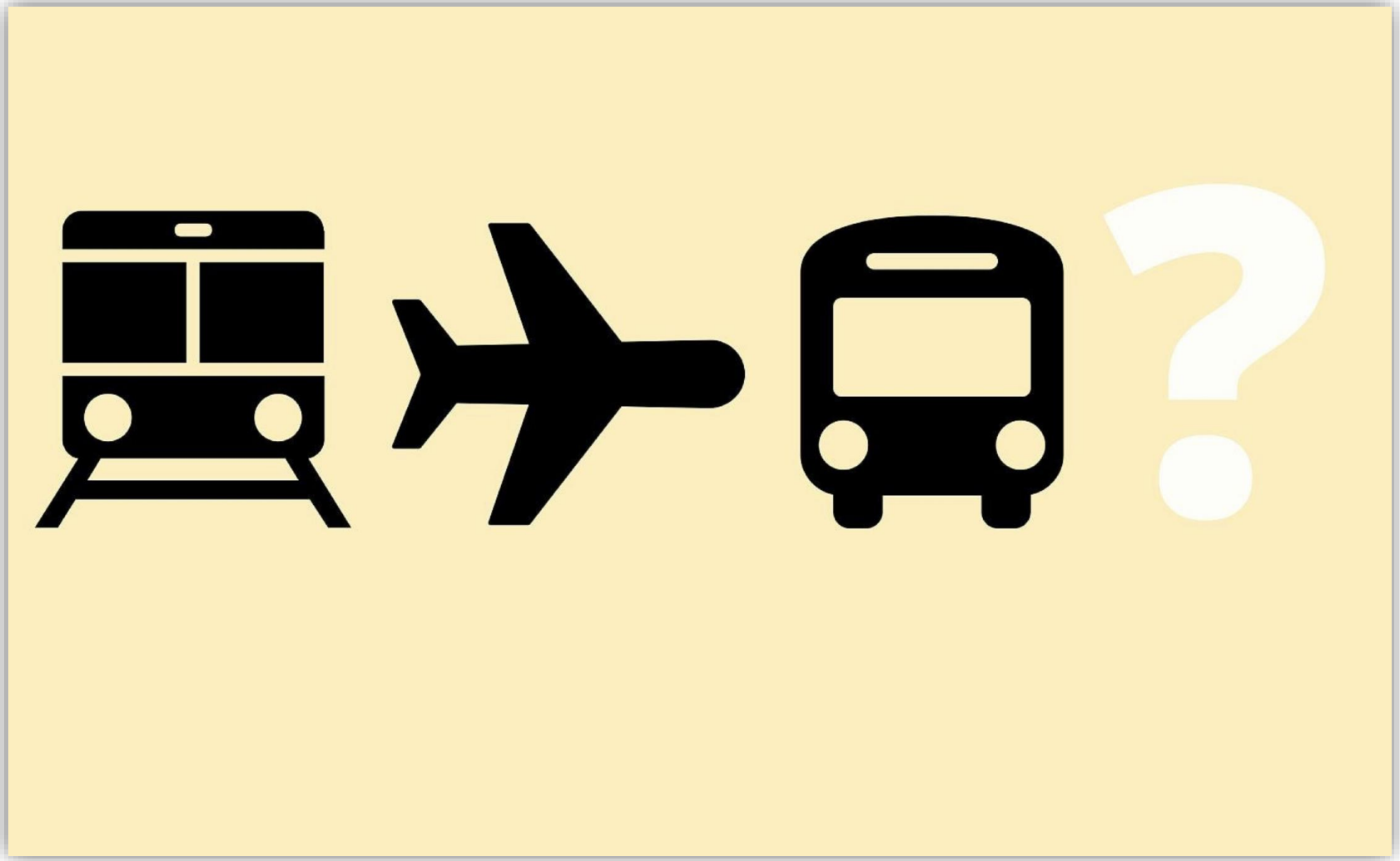
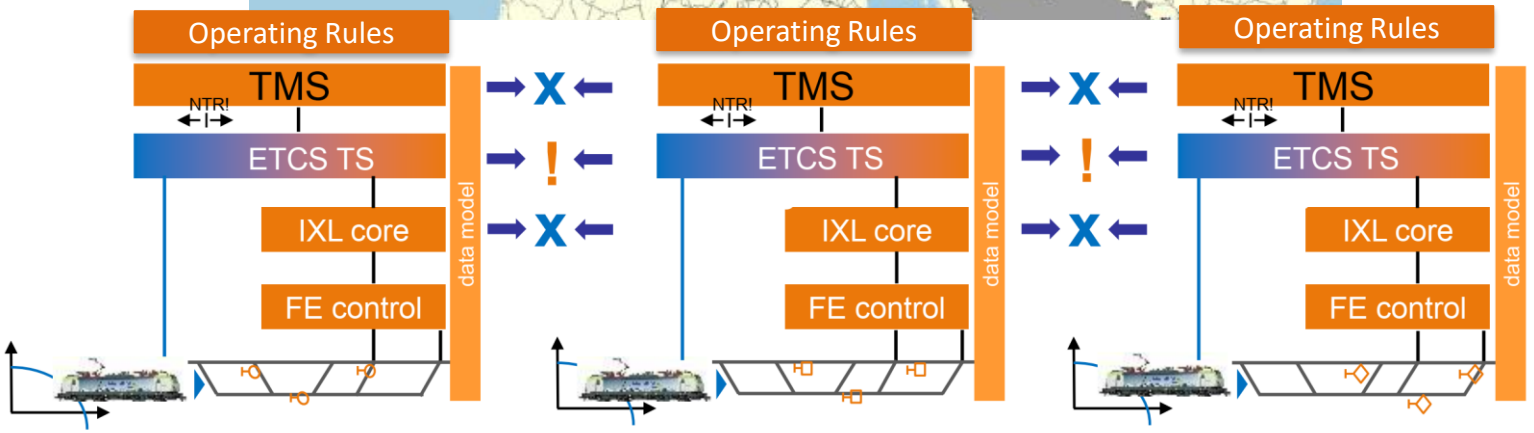


CCS Systems - a Key Driver of Fragmentation

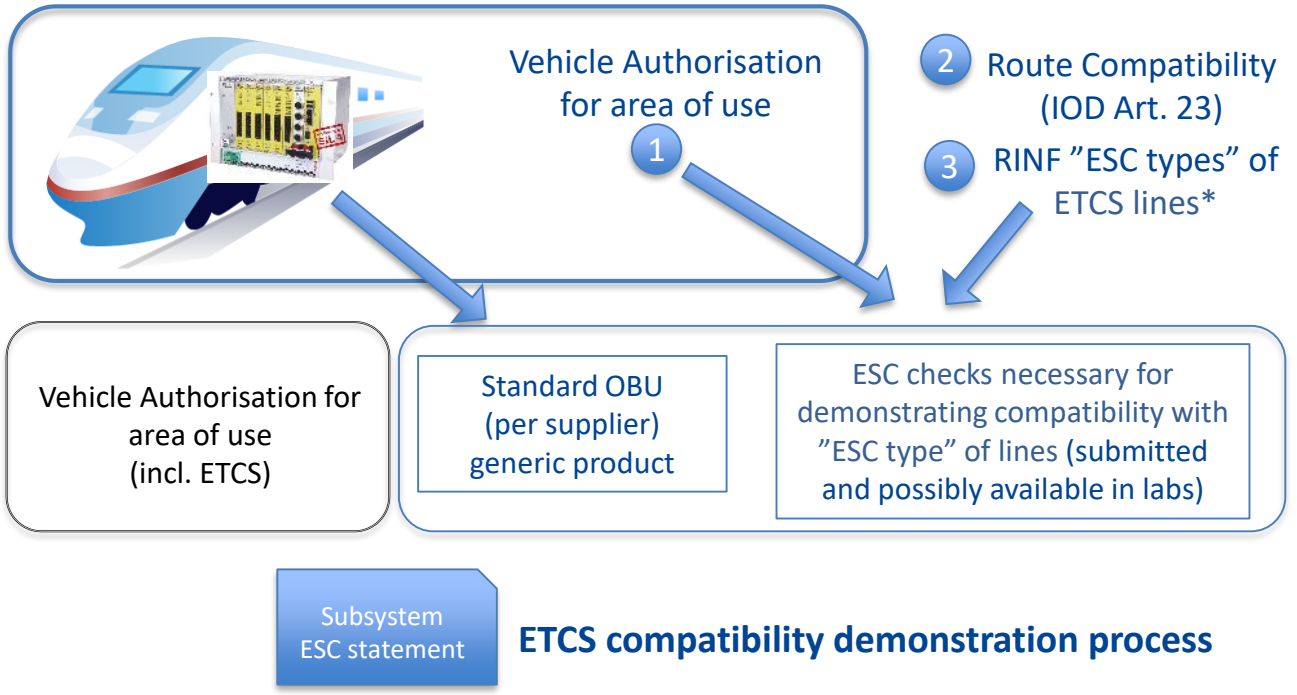
European
National
! Specific IF
X No IF defined



Regulatory Progress - the 4th Railway Package

With 4th RP, the "on-board subsystem of CCS" is part of the process of vehicle authorisation

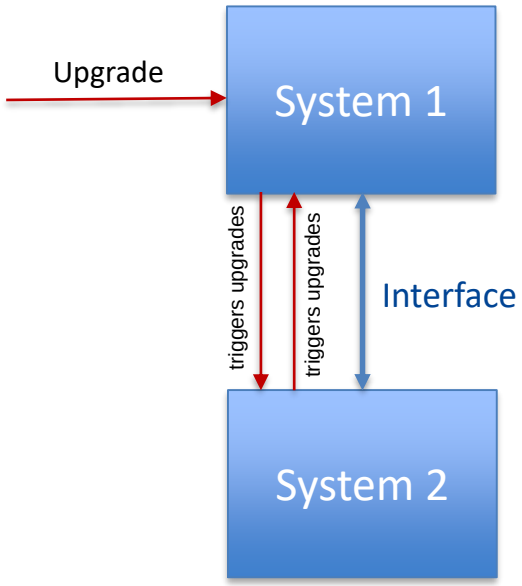
ETCS trackside is subject to ERA approval - fully compatible OBUs can be used to confirm compatibility

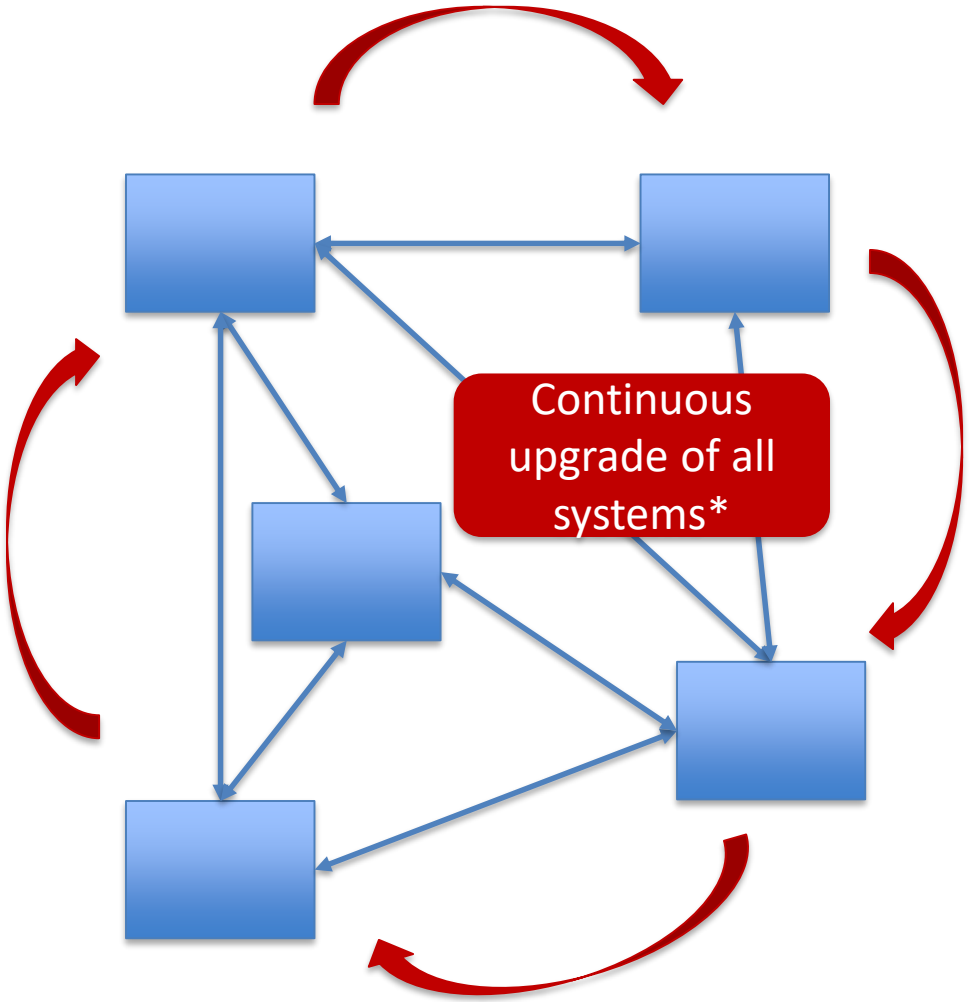


ETCS compatibility demonstration process

*) The ESC/RSC process is described in the TSI CCS

The Issue with Game Changers – the Ugrade Problem

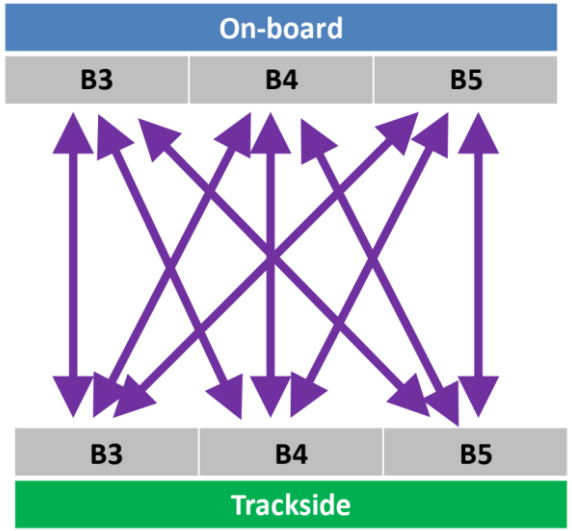




*) driving OPEX and CAPEX Protection of Investment?

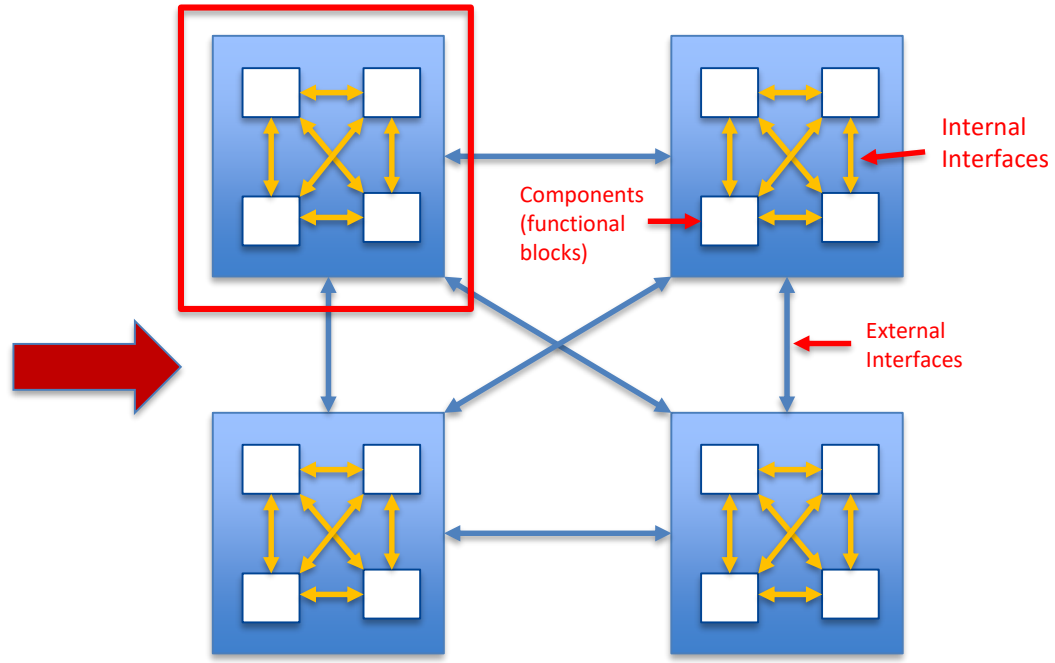
Evolution of the CCS System Framework – Consequences of Modularity in ERTMS

From



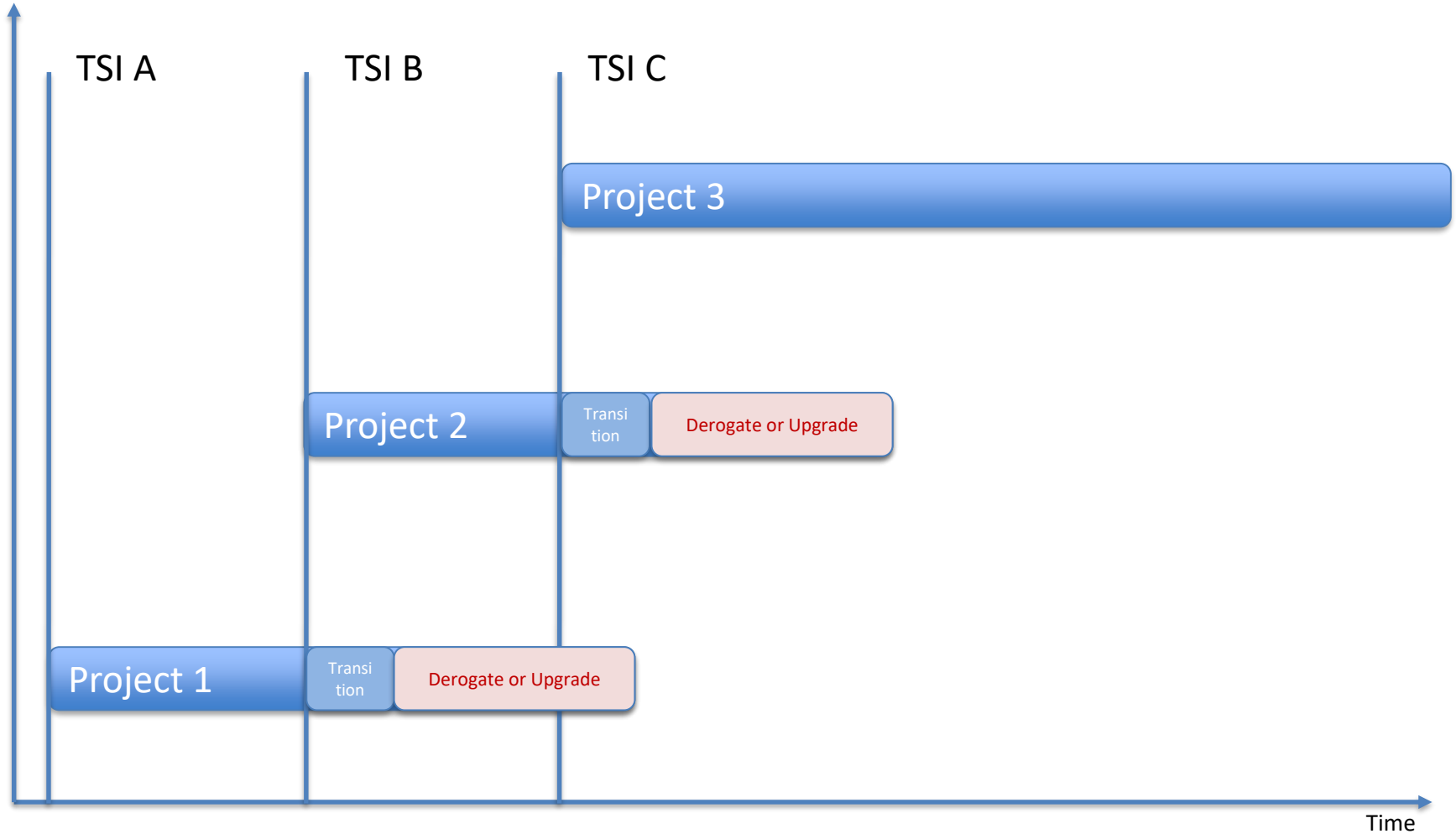
Currently, there is essentially one interface determining compatibility – the airgap

To

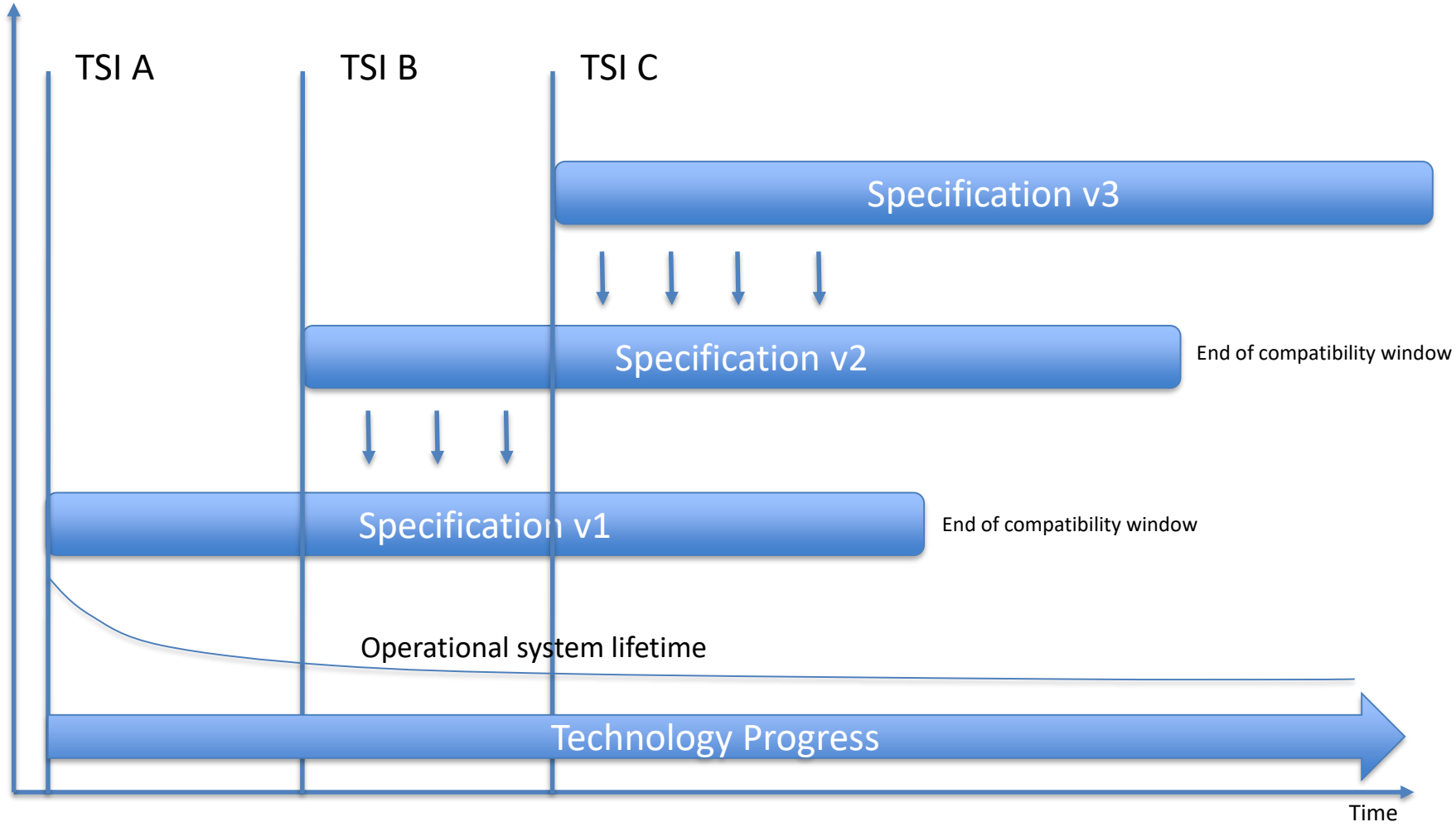


Future:
Building-block architecture, modular and upgradable (decomposition in functions/services)
Loose coupling, flexible message parameters
Modular safety

Technical Specifications for Interoperability - Current Situation

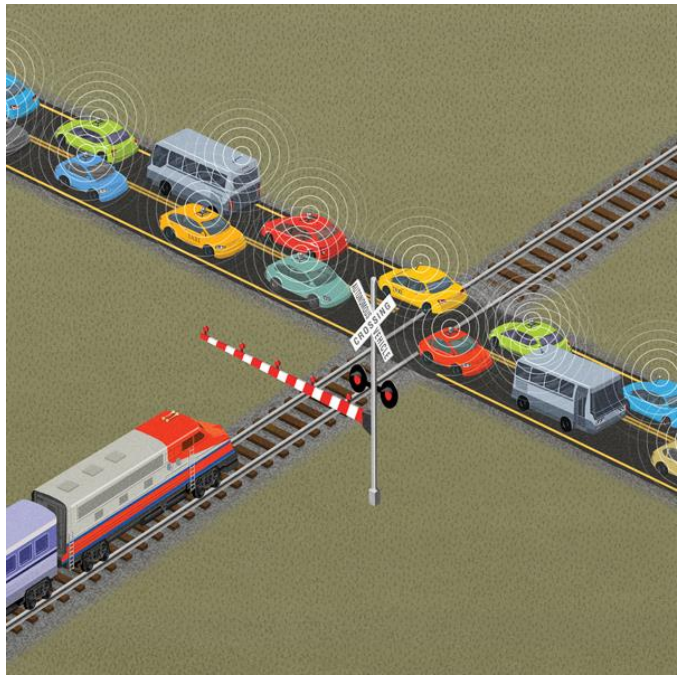


”Interoperability in Space and Time”



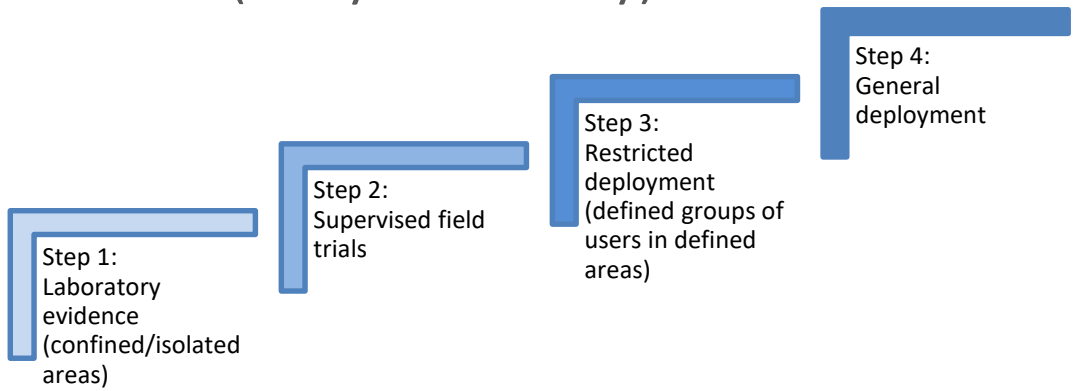
Innovation and Safety in the Multimodal Context

Innovation allows the mitigation of hazards



Innovation needs to be supported by regulation

- Rules vs risk based (TSI OPE vs SMS)
- Design Organisation Approval
- Staged (safety) authorisation (cf. Cybersecurity)



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