INTERNATIONAL UNION
OF RAILWAYS

UIC perspective on AI in railways

Moscow, 28th September 2019

Rail as the smart backbone for mobility

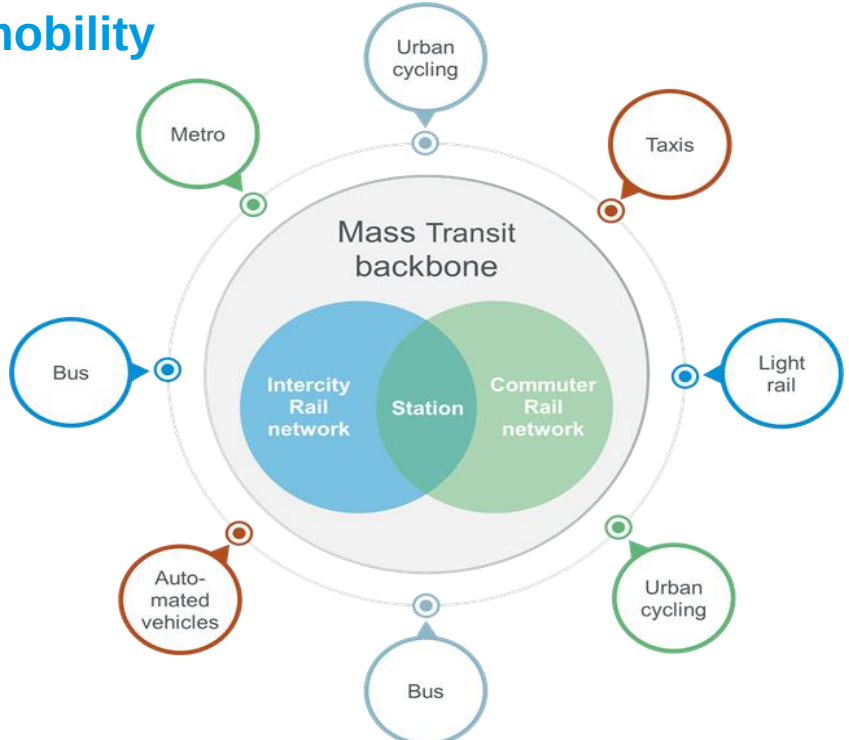
Internal regulation

1. Minimise the internal complexity of the rail system
2. Create interoperable train paths
3. Connect different railway systems
4. Insuring Safety/Security in the digital age

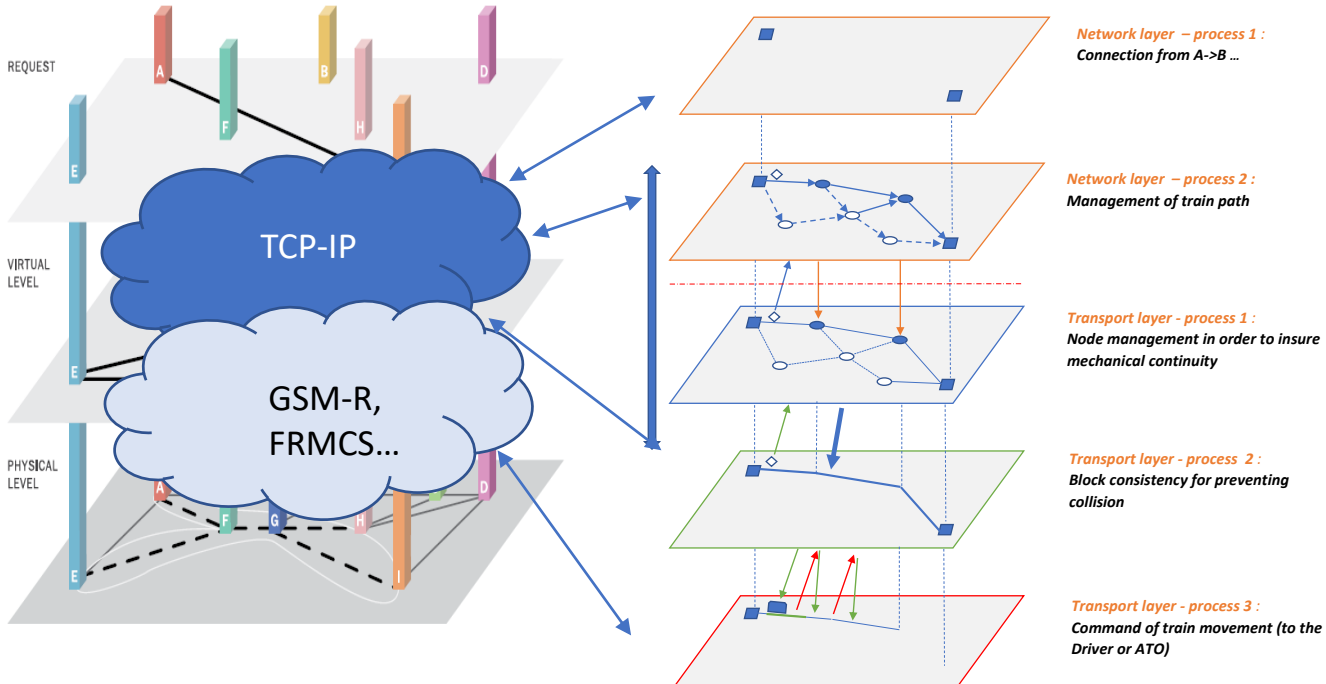
External interfaces

1. Multimodality : MaaS and Logistic chain management
2. Interfacing with other regulations: customs, public transport.
3. Creating and securing common data models and exchange protocols

The path to door to door mobility



Seamless connections: an analogy between IP and Railway



Network layer – process 1 :
Connection from A->B …

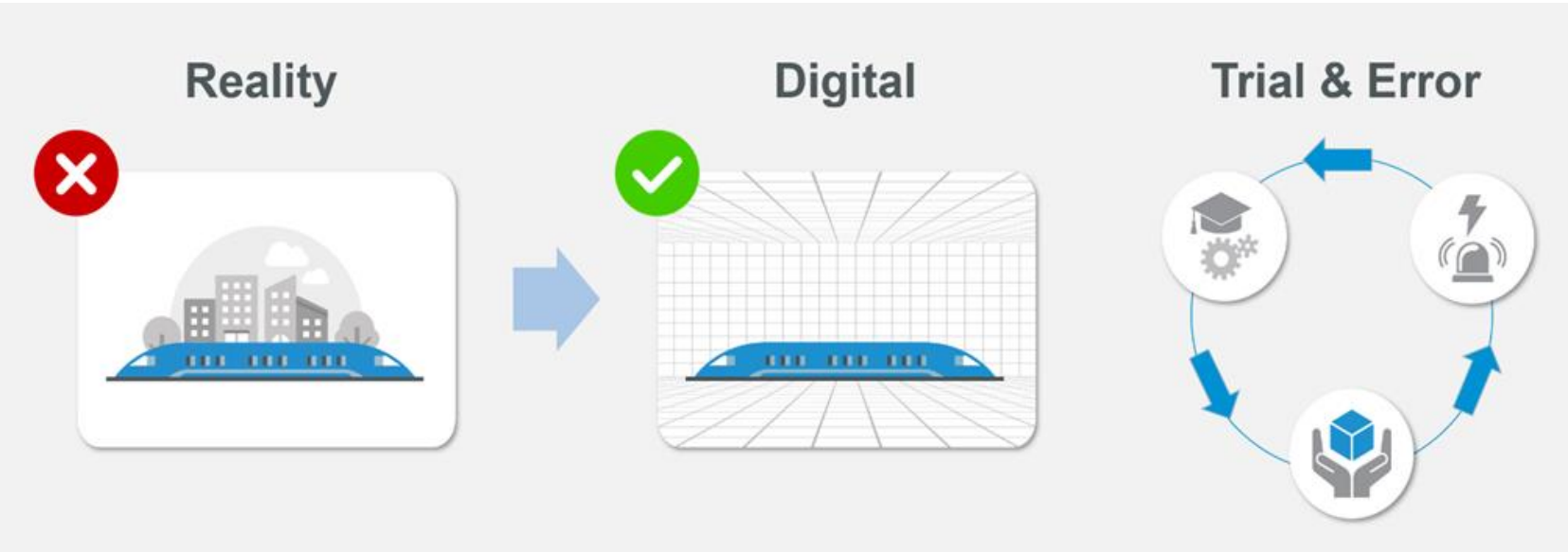
Network layer – process 2 :
Management of train path

Transport layer - process 1 :
Node management in order to insure mechanical continuity

Transport layer - process 2 :
Block consistency for preventing collision

Transport layer - process 3 :
Command of train movement (to the Driver or ATO)

Governance by algorythm: common vision on digital twins



Slide by courtesy of SBB (M. Kunz)

3 key processes

Services to the end user:	• MaaS • Stations / Freight hubs • Blockchain
Safety and Security:	• Cyber Security • Safety level of ATO
Network Productivity:	• Capacity increase (FRMCS) • Modelling and asset management (RTM) • TMS

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