UIC Railway Asset Management
Global Conference 2017

4 - 6 October 2017
UIC Headquarters, Paris

Digital revolution : the new challenge of the Railway industry

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"Share, Open, Connect!"

The today main railways challenges

→ Reduction of 30% → cost of operation and maintenance with identical traffic

→ Doubling the traffic capacity the an existing network or tracks at the same operation costs

→ No possibility to use massive modernisation or renewal investment with acceptable founding rate

→ Possibility to use "digital improvement" to create the move: digital to improve the railway performances
NB : Moving digital isn't a technical issue but a human capital issue!

How to reach theses goals ?

→ An adapted **Asset management** politic on the all network → the railways objectives are shared and targeted

→ Asset management, **Security and Safety** teams have to contribute together from the early stage of the system definition

→ In both cases : the battle is won or lose at the first stage of the design (has to be confirmed) → especially for critical computerized system

Asset Management in practice

Main goals:

- Develop specific methods and tools for the lowest whole life, whole system cost.
- Develop specification and procurement methods to minimize the future for the lowest whole life, whole system cost
- Asset management is the art of striving for high performance in a context of "shortages" – individual resource managers are not aware of overall shortages

This needs a "Governance" → necessary conditions but not sufficient for asset managers to operate effectively

Digital trends worldwide

- Ubiquitous internet
- Internet of Things
- Industry 4.0

Railway

- Interoperability
- Reliability and Capacity
- High-speed rail transport
- Digital signalling
- Predictive maintenance
- Location Based Services

Railway can be an actor and a vector of development of the 21st century

Cyber security

- Safety is key
- Digital ⟹ new vulnerabilities

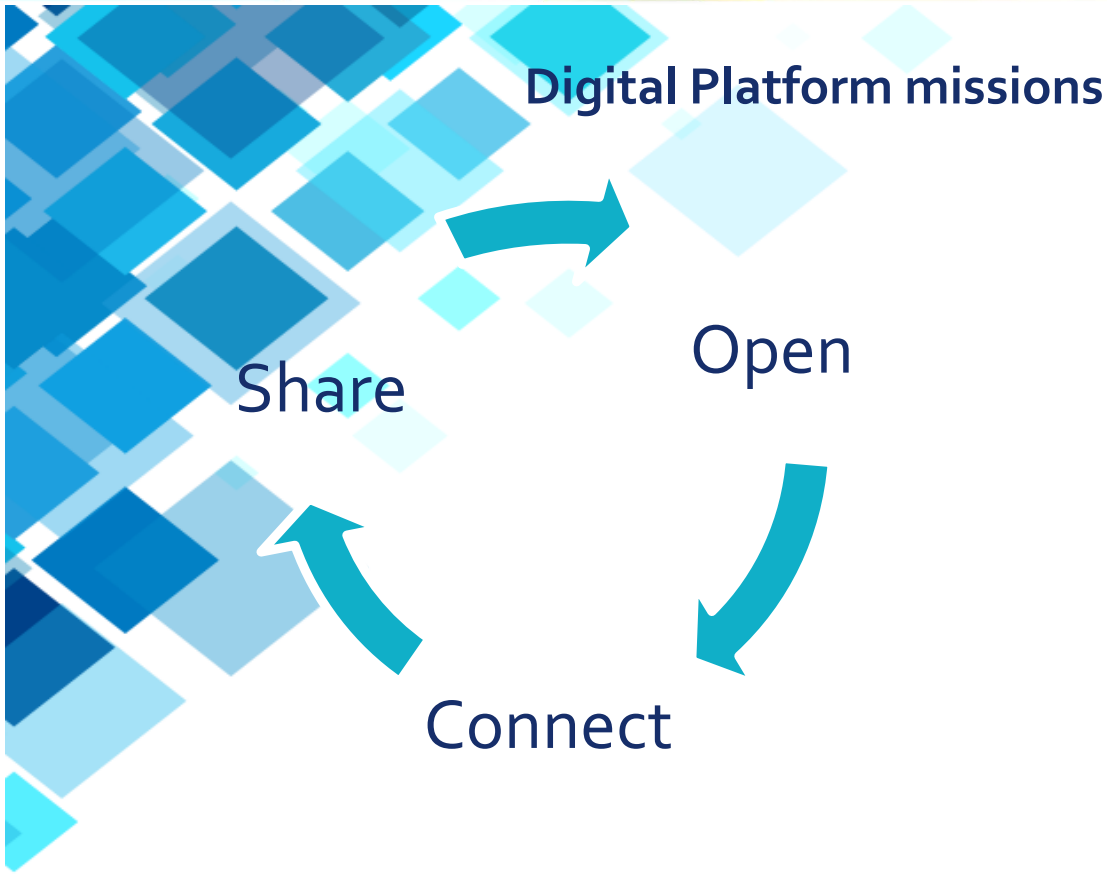
Risk is real! Must be a priority

Awareness is a pre-condition

Social and societal changes

- Ubiquitous computing
- Blurring
- Automation
- Smart cities

Digital Platform missions



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UIC Digital Platform
Share, Open, Connect!

We are actually living what Jeremy RIFKIN, the American economist, has named the third industrial revolution which is based on Internet and the use of new energies

Created in November 2015, The UIC worldwide digital platform is there to support the Railway in this new challenge

The Digital Platform aims at supporting the digital strategy and activities of its members.

Our ambition is to facilitate the interactions between two worlds: the railway world and the digital eco-system

Proof of Concept

Digital is not only communication and strategy
But also concrete project
UIC Digital Platform actively supports
Rail system department realization of POC
(Proof of Concept)

Concept

RSD has launched several POC's

Maintenance

Intelligent remote monitoring Switch or Level crossing engine...

Software

Formal method for computerized distributed systems…

Safety

Broken rail localization - Shunt accelerator for track circuits…

Services

Apps for intelligent guidance of blind customers ...

Why ? Guaranty the safety with existing track circuits:

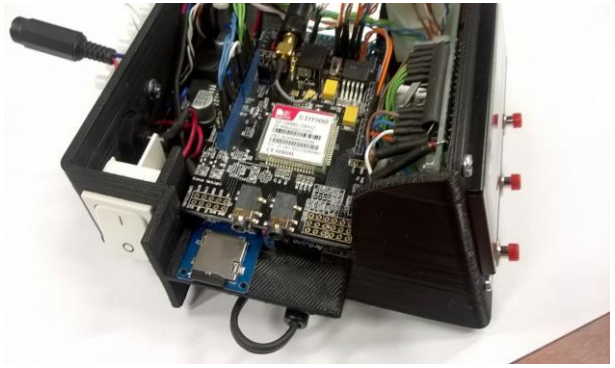
- Traffic reduction
- Modern rolling stock
- Pollution of the rail surface

How ? Saving the investments:

- A generic artificial intelligent additional digital unit
- An open HW et open SW solution → IRS

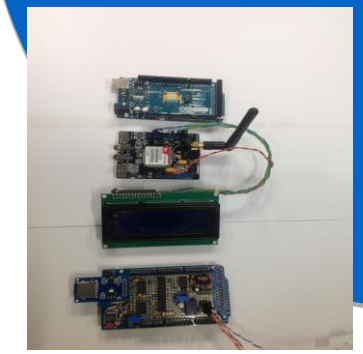
Shunt accelerator for track circuits…

Shunt accelerator for track circuits…



Principles?

- A "digital technological slice" between track and receiver
  - analysing the stationary characteristics of the signal
  - controlling the TC relay



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"Imagination is more important than knowledge"

Albert Einstein

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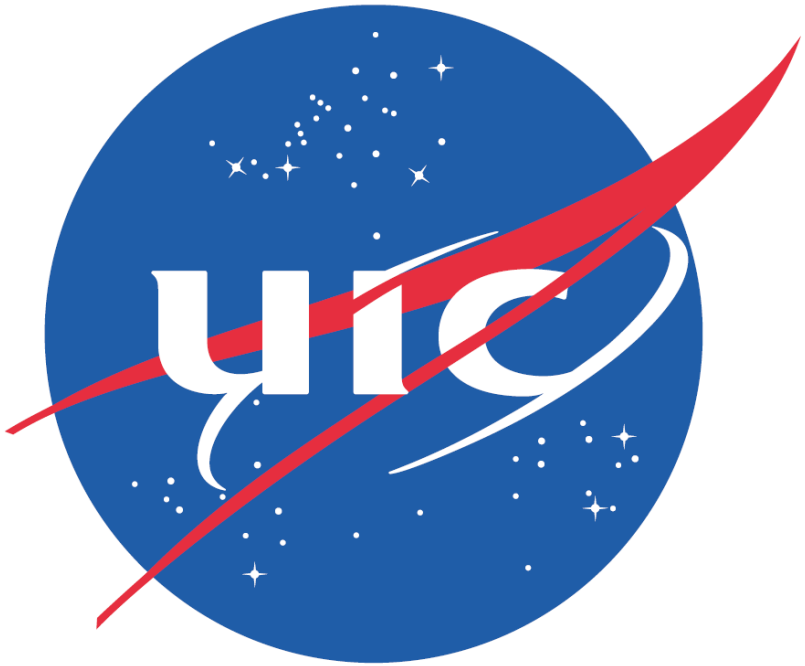

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