Our approach

MISTRAL elaborates the Technical Specification for future train-to-wayside IP Communication Systems for all railways, and analyses its Business Viability

Partners

Ardanuy

ISMB
Istituto Superiore Mario Boella

Sirti
since 1921

TECHNISCHE UNIVERSITÄT DRESDEN

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mistral

Communication systems for Next-Generation Railways

Next generation systems will leverage the broadband capacity of IP-based wireless communications to enhance signalling but also to enable innovative services both for users and railways

Shift2Rail

Our motivation

In the world of digitalisation, existing railway mobile communication systems, especially circuit switched GSM-R, must be updated both for technological and economic reasons

Technological trends

GSM-R is the international standard for mobile phone communications in railways. Obsolescence of GSM-R means higher costs for Infrastructure Managers and difficulties to provide long run maintenance

IP-based communication technologies promise to offer major economic benefits to train operators and infrastructure managers

IP-based communication technologies will improve performance and capacity of railway telecommunications

Candidate Technologies

4G

- LTE is the 4G standard worldwide
- LTE provides broadband performance
- LTE allows flexible and cost effective deployment
- LTE is open, secure, reliable and easy to operate

5G

- 5G peak data rate will reach 10 Gbit/s
- Over-the-air latency of 1 ms will be provided
- Up to 500 km/h mobility will be supported
- 5G will serve up to 1 million devices/sq km

Socio-Economic trends

The number of passengers using Railways is constantly growing so more capacity is needed

Railways need to provide new and competitive services to their passengers

Railways need to maintain and improve quality of service of their radio communications networks

Network as an Asset vs. Network as a Service

"Network as an Asset" model: today railway operators own and operate private, dedicated and non-commercial GSM-R networks

"Network as a Service" model: will allow Railways to use IP-based mobile public networks owned by Mobile Network Operators

Why shift to Network as a Service?

To increase the return on investment that Railway and Telecom sectors get from the market

A large-coverage integrated communication network provides a "seamless experience" to both passengers and railways