Presentation of Shift2Rail innovations: Mobility as a Service (MaaS); Autonomous train operations; Logistics as a service

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S2R Joint Undertaking
USER FIRST
AN OPEN and ACTIVE ORGANISATION

...opening up new Capabilities coming from emerging technologies or concepts!
Towards autonomous train operations

First step: two trams virtually coupled

A world-premiere proof of concept (InnoTrans 2018)
Technologies for Sustainable & Attractive European Rail Freight

✓ Fleet Digitalisation and Automation: Digitisation of Rolling Stock leads to smart, connected assets that offer the necessary information for **improved services** and also is a pre-condition for efficient and reliable **automated freight trains**.

✓ Digital Transport Management: Optimise **service planning and operation** and support better utilisation of available capacity.
Integrating mobility as a service in a wider ecosystem

Across Europe
Door to Door
Across Modes
Across Services
IPx: looking beyond S2R currently planned technology applications and integrating them with disruptive innovations

Activities just started or to be started

1. Concepts for the autonomous railway vehicles “train-centric”
2. Disruptive technologies impacting automation systems and maintenance
3. Full system and life-cycle analysis on mobility as a service (MaaS), industry 4.0 (automated industry and industry as a service), railway clouds and decentralised ownership
4. A.I. for railways Digital solutions (breaking language barriers)

✓ S2R System Architecture and Conceptual Data Model:
   1. aligning all ongoing modelling initiatives in terms of modelling principles and digital data exchange format
   2. comprehensive model/architecture, technologies and strategy for implementation of a new encompassing railway system approach

NEXT STEP?

maybe overall mobility on demand? Not only allocation of resources within given services but moving more with less (allocation within given spaces) ... to be continued
Results achieved so far in the Shift2Rail R&I programme
MaaS – Mobility as a Service

Dirk Esters
Head of HAFAS research and development and COO of HAFAS
HaCon
MaaS Projects – Postauto Switzerland

Route Des Batailleux 3
1218 Le Grand-Saconnex

Parkplätze an diesem Standort können nicht gebucht werden.

Öffnungszeiten: Mon-Sun: 24 Hours
Zahlungsmethoden: Bar, Kreditkarte
Höhenbegrenzung: 2.43 m
Telefonnummer: +41 22 717 70 99

Überdacht

Gebühren

2,00 CHF pro Stunde
29,00 CHF pro Tag

pro Woche
pro Monat

00:22h → 9,4 km  │  CHF 13.36
Park & Ride
Ticket/Preisstufe  │  CHF 2.00
ParkU (Preis pro Stunde)
MaaS Projects - Rejseplanen
MaaS Projects – Dubai S’Hail
Integrated Mobility Provider

Car

Bike / Scooter

Parking, Charging, Traffic, Weather

Taxi&Co
MaaS in Rural Areas
Urban mobility

Source: Hamburger Hochbahn AG
Computing Load of MaaS-Platforms

- Public Transport (Door to Door)
- Multi Mobility Platform (Every Routing Possibility)
- Multi Mobility Platform (Smart Intermodal Routing results)
One challenge of MaaS: meet the criterias

- Environment
- Travel Time
- Stability
- Comfort
- Price
But.....

- This happens in the „HaCon“ world
- In most cases regional/national coverage
- We are on the level of information, in most cases only booking/payment for public transport
- Partly missing real time information from third parties
S2R IP4 goals = foster MaaS

• Provide **pan-European** door-to-door journeys (One-stop-shop)
• Multimodal journeys (Rail, Urban, Coach, Air, Shared- and Private modes, Toll, Parking, etc.)
• Provide a **multimodal framework** that enable the deployment of a MaaS environment
• **Facilitate the inclusion of transport service providers in the ecosystem**
• Promote IP4 technical demonstrators through a set of pilots
• **Allow third-parties to use the framework**, to provide enhanced services
• Foster rail as the backbone for mobility in Europe
IP4 Overview

Traveller services

- Dialogues with each provider
- Integration of data
- Logic for added value services

Travel Companion

- Unique ID
- Tickets stored in Virtual Wallet
- Services tailored to preferences
- Real time notifications
- Location Based Experiences

IP4 ecosystem

- Logic and orchestration
- Transport providers' functionalities

Interoperability framework to interact with different interfaces and data models

- Clearing & Settlement
- Configuration of multimodal agreements
- Business Analytics
IP4 Solutions so far:

• Seamless Multimodal Travel: Pan-European Door-to-Door Functionalities for
  ▪ Planning
  ▪ Booking
  ▪ Trip tracking

• Travel Companion-Personal Application
  ▪ Access to all Services
  ▪ One-Stop-Shop = One face to the customer
  ▪ Hide the complexity

• Interoperability Framework
  ▪ Allow easy integration of the TSP capabilities
The seamless multimodal travel experience solution provides an eco-system which allows one-stop-shops for pan-European door-to-door itineraries including multimodal travel planning, booking, ticketing and payment, trip tracking and additional services.
Travel Companion

The travel companion-personal application provides access to European door-to-door multimodal transport services through a unique user interface. It will enable the user to access information related to travel services and real-time information.
The Interoperability Framework (IF) solutions will foster the digital transformation of the transport ecosystem and facilitate interoperability among heterogeneous system to make possible the provision of multimodal services that combine information/services from different TSPs.
Next in „MaaSive“

• Integration of additional modes, like DRT
• handling of MaaS-Tariffs, incl.
  ▪ configuration
  ▪ calculation and clearing schemas
  ▪ Easy inspections and validation
  ▪ Introduction of Best Price Guaranties
• Allow claiming of Passenger Rights
• Allowing MUC (MultiUserCapabilities)
Save the date

• ATTRACKTIVE +CoActive Final Event:
  ▪ 5\textsuperscript{th} November in Brussels

• TRA2020 (April 2020 in Helsinki)
  ▪ 2\textsuperscript{nd} joint Demonstration of IP4 results

• InnoTrans (September 2020 in Berlin)
  ▪ 3\textsuperscript{rd} joint Demonstration of IP4 results