Shift2Rail
Innovation Programme 3
Cost Efficient and Reliable High Capacity Infrastructure

NetIRAIL-INFRA final conference
Ljubljana, 24 May 2018
A PUBLIC-PRIVATE PARTNERSHIP R&I PLATFORM FOR RAILWAY
WORKING TOGETHER TO DRIVE INNOVATION BY 2024

S2R VISION:
To deliver through railway research & innovation the capabilities to bring about the most sustainable, cost-efficient, high-performing, time driven, digital and competitive customer-driven transport mode for Europe.
The S2R Programme Implementation
The S2R MAAP*

- is a collaborative long-term investment planning document, which contains an Executive View (Part A) providing the S2R vision and Capabilities

- translates strategic R&I priorities for the Railway sector – as per S2R Master Plan - into concrete R&I activities, milestones and deliverables

- contains the description of R&I activities worth an estimated value of about EUR 777 million
- is a living document (ongoing “maintenance” for Part B)

- enables the preparation of result-oriented Annual Work Plans and Calls for Proposals or Tenders

- grants awarded for the actions(Projects) should aim to implement part(s) of the MAAP

* multi-annual action plan
R&I for Innovation Capabilities

S2R Programme:
- Integrated
- Consistent
- Delivery Oriented

IP 1: Cost-efficient and reliable trains, including high-capacity trains and high-speed trains
IP 2: Advanced Traffic Management & Control Systems
IP 3: Cost-efficient, sustainable and reliable high-capacity infrastructure
IP 4: IT solutions for attractive railway services
IP 5: Technologies for sustainable & attractive European freight

CFM projects:
- IN2TRACK, IN2SMART, IN2STEMPO

OC complementary projects:
- S-CODE, IN2DREAMS, MOMIT, FAIR STATIONS

Lighthouse project:
- IN2RAIL

Long-term needs and socio-economic research
Smart materials and processes
System integration, safety and interoperability
Energy and sustainability
Human capital

Calls 2016-2017
From TRL0 to TRL6/7

Technology Demonstrator (TDs)
Projects specifying, developing and demonstrating a specific technology resulting in a lab tested and/or simulated prototype

Integrated Technology Demonstrators (ITDs)
Projects integrating/combining TD prototypes at system level (lab and on-site) and testing performance

System Platform Demonstrators (SPDs)
Assessment of the whole systems performance based on the results of TDs and ITDs. SPDs bring S2R innovative solutions to a technology maturity level for a new generation of railway system

RAILWAY SYSTEM OF THE FUTURE
Innovation Programme 3: Cost Efficient and Reliable High Capacity Infrastructure

IAMS = Intelligent Asset Management Solutions
RIMMS = Railway Integrated Measuring and Monitoring System
DRIMS = Dynamic Railway Information Management System
IP3: Key innovations

✓ **Intelligent asset management:** shift from current used reactive and/or preventive maintenance to condition based and/or predictive maintenance, based on intelligent monitoring/analysis of the assets. IT decision supporting tools and new processes/procedures. Lower costs and down-time

✓ **Enhanced energy management:** smart metering of energy consumption for optimised use and power supply equipment able to optimise energy use and link to smart-grid.

✓ **Enhanced track system:** new solutions to improve the life-cycle of tracks and S&C. Continuous monitoring techniques for better design solutions and automated maintenance. Noise & vibration reduction

✓ **Next gen track system:** disruptive technology applicable to both track and S&C. possible tonnage increase, maintenance increased automation. Noise & vibration reduction

✓ **Station:** design taking into account new IT techniques, crows flow and new management strategies
Programme approach, future/ current projects

- EACH PROJECT contributes to the achievement of the Master Plan and the MAAP objectives
- EACH PROJECT is part of a programme and cooperation with other projects must be ensured
  → Through the collaboration and input to the JU Members, EACH PROJECT will support the realization of long-term S2R technological demonstrations or innovative break-through
- Particular attention is given to ensure that there is no duplication of work between EACH PROJECT and current/future R&I activities
- EACH PROJECT results are taken into consideration for the next annual work plans to ensure sufficient complementarity and coherence
IN2SMART
Intelligent Innovative Smart Maintenance of Assets by integRated Technologies
S2R-CFM-IP3-02-2016 (01/09/2016 - 31/08/2019)

Relation to S2R MAAP:

- **TD3.7** Railway Information Measuring and Monitoring System (RIMMS)
- **TD3.6** Dynamic Railway Information Management System (DRIMS)
- **TD3.8** Intelligent Asset Management Strategies (IAMS)
IN2TRACK
Research into enhanced tracks, switches and structures
S2R-CFM-IP3-01-2016 (01/09/2016 – 28/02/2019)

Relation to S2R MAAP:
✓ TD3.1 Enhanced Switches & Crossings (S&C) System
✓ TD3.3 Optimized Track System
✓ TD3.5 Proactive Bridge and Tunnel Assessment, Repair and Upgrade
IN2STEMPO

Innovative Solutions in Future Stations, Energy Metering and Power Supply
S2R-CFM-IP3-01-2017 (01/09/2017 – 28/02/2022)

Relation to S2R MAAP:

✓ **TD3.9** Smart Power Supply
✓ **TD3.10** Smart Metering for Railway Distributed Energy Resource Management System
✓ **TD3.11** Future Stations
MOMIT
Multi-scale observation and monitoring of railway infrastructure threats
Complementary project to: IN2SMART

S-CODE
Switch and Crossing Optimal Design and Evaluation
S2R-OC-IP3-01-2016 (01/11/2016 – 31/10/2019)
Complementary project to: IN2TRACK

IN2DREAMS
INtelligent solutions 2ward the Development of Railway Energy and Asset Management Systems in Europe
Complementary project to: IN2SMART & IN2STEMPO

FAIR STATIONS
Fair Stations
Complementary project to: IN2STEMPO
IP3 Next Steps

IP3 On going projects

IP3 Future related projects

Market uptake

Other input, in particular from H2020 2014 call
### IP3: Planning of activities per TD

#### TD3.1 Enhanced Switch & Crossing System

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#### TD3.2 Next Generation Switch & Crossing System

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#### TD3.3 Optimised Track System

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## IP3: Planning of activities per TD

### TD3.5 Proactive Bridge and Tunnel Assessment, Repair and Upgrade

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### TD3.6 Dynamic Railway Information Management System (DRIMS)

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### TD3.7 Railway Integrated Measuring and Monitoring System (RIMMS)

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### TD3.8 Intelligent Asset Management Strategies (IAMS)

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# IP3: Planning of activities per TD

## TD3.9 Smart Power Supply

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## TD3.10 Smart Metering for Railway Distributed Energy Resource Management System

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## TD3.11 Future Stations

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Thank you for your attention

@Shift2Rail_JU
#Horizon2020

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