Europe's Rail JU: Innovation Programme 4

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Europe's Rail Joint Undertaking

Ride2Rail & IP4MaaS stakeholder workshop, 12 may 2022
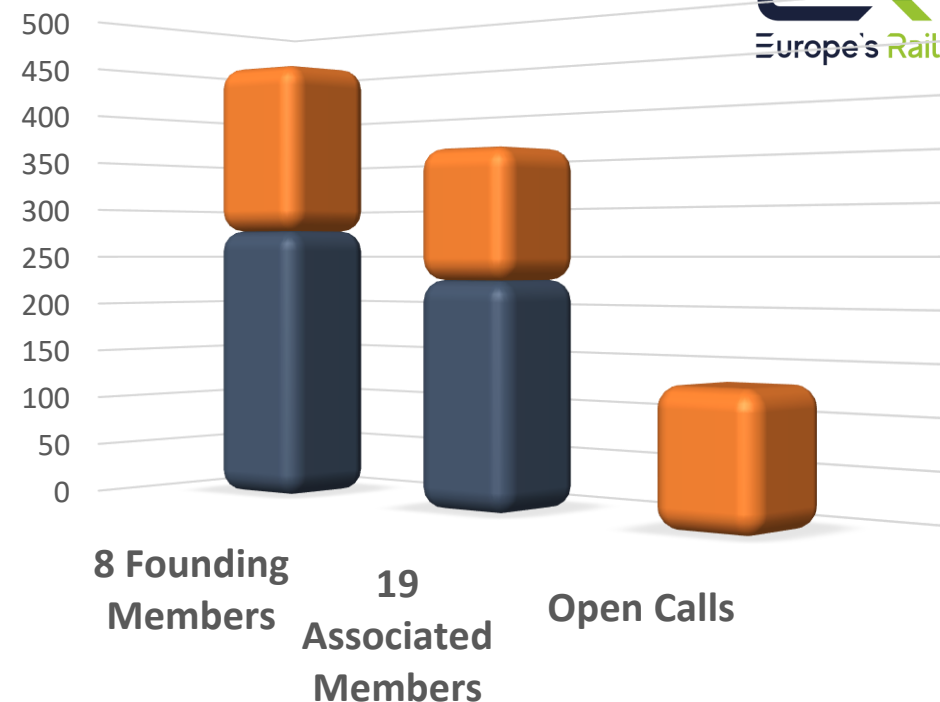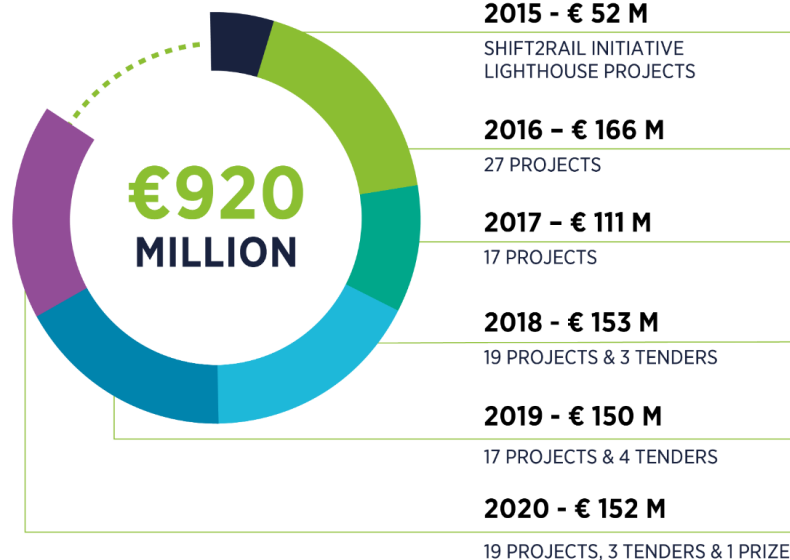
28 MEMBERS

493 PARTICIPANTS

29 COUNTRIES

127 SMEs

128 RESEARCH CENTRES AND UNIVERSITIES

'Data extracted from CORDA database in August, 2020
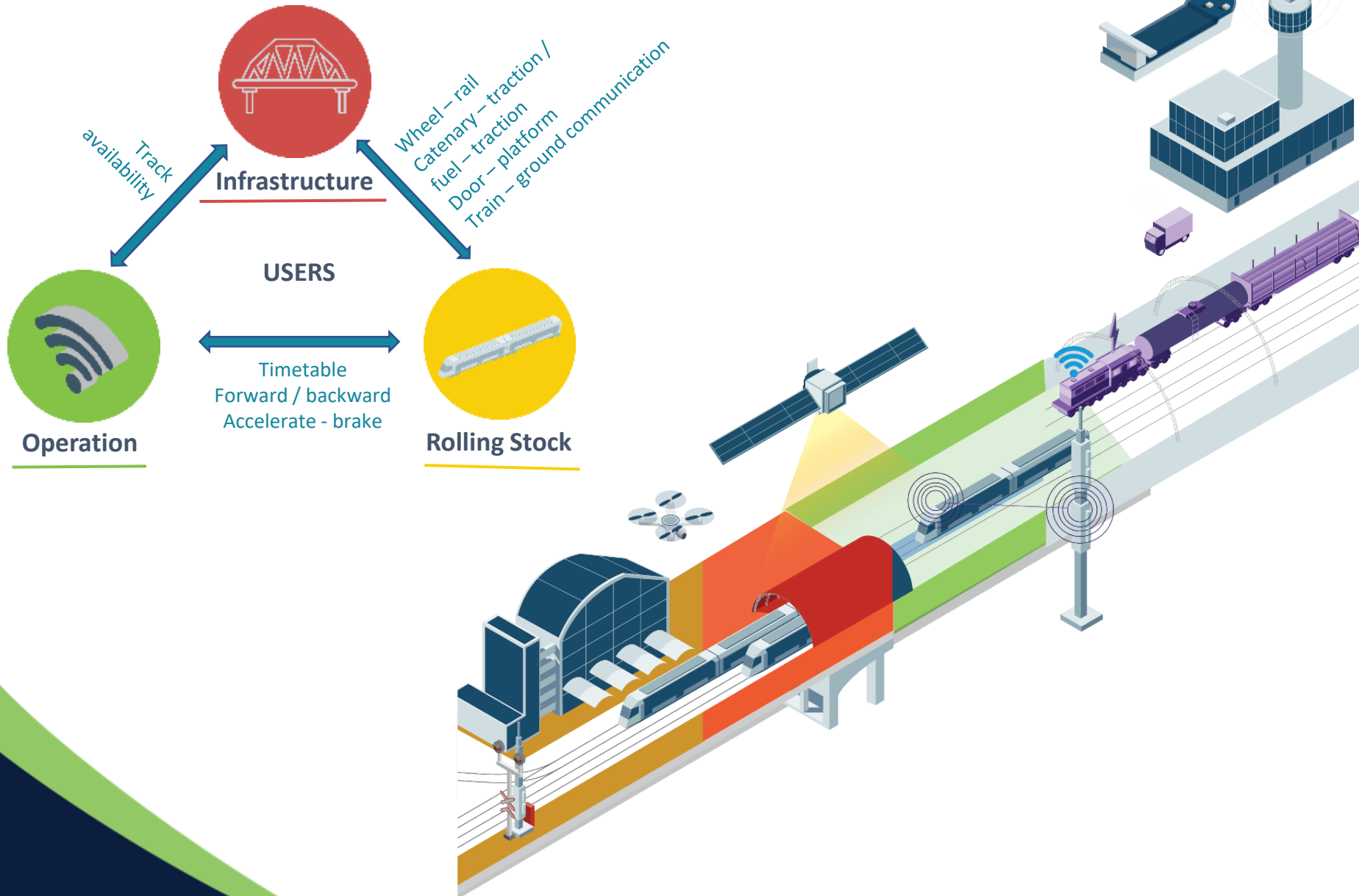
AN OPEN and ACTIVE ORGANISATION

€920 MILLION

2015 - € 52 M
SHIFT2RAIL INITIATIVE LIGHTHOUSE PROJECTS

2016 – € 166 M
27 PROJECTS

2017 – € 111 M
17 PROJECTS

2018 - € 153 M
19 PROJECTS & 3 TENDERS

2019 - € 150 M
17 PROJECTS & 4 TENDERS

2020 - € 152 M
19 PROJECTS, 3 TENDERS & 1 PRIZE

8 Founding Members

19 Associated Members

Open Calls

Europe's Rail

...opening up new Capabilities coming from emerging technologies or concepts!

Railway - System of Systems

IP1 Cost-efficient and Reliable Trains, including high-capacity trains and high speed trains

IP2 Advanced Traffic Management and Control System

IP3 Cost-efficient, Sustainable and Reliable High Capacity Infrastructure
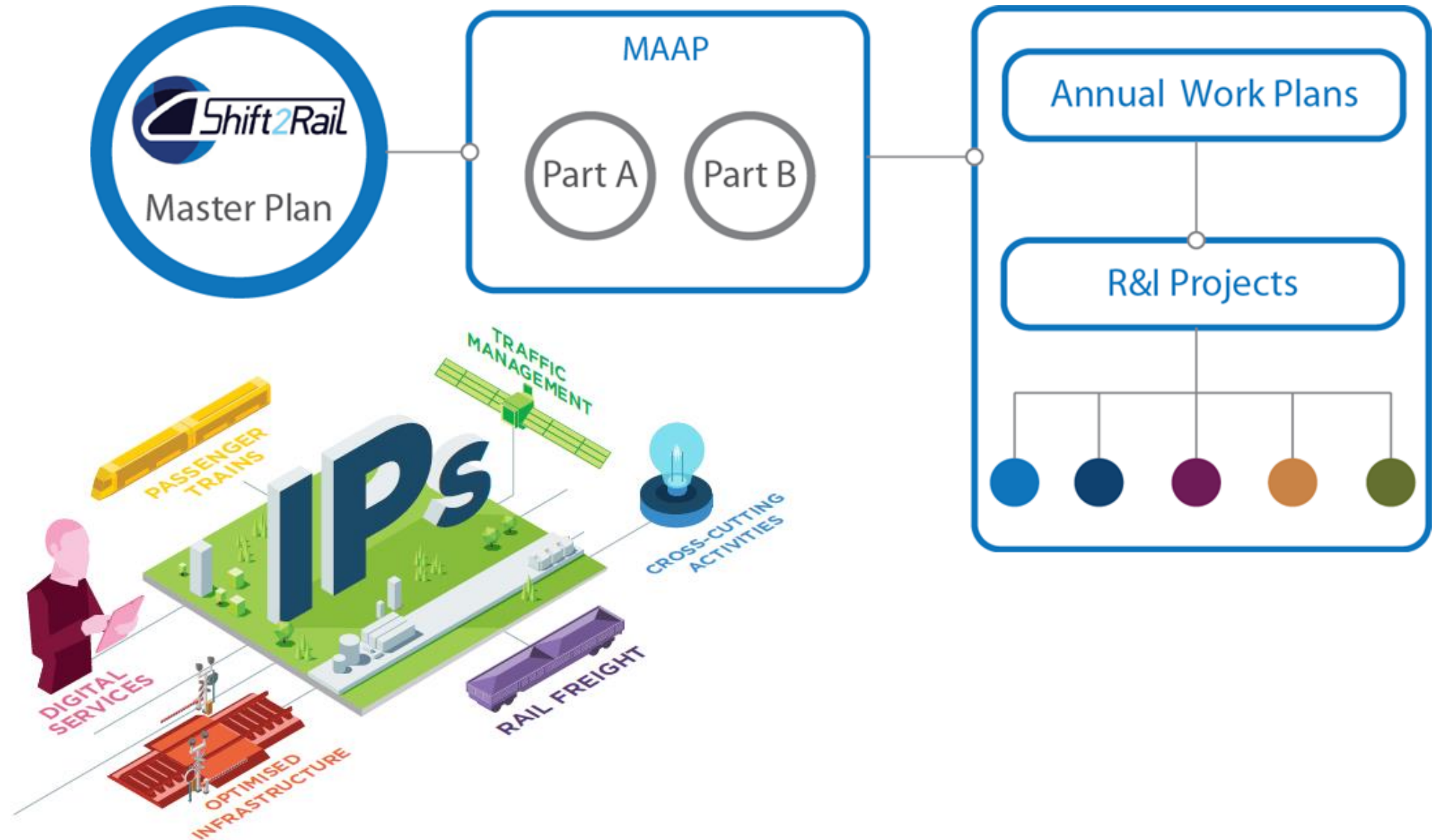
IP4 IT Solutions for Attractive Railways Services

IP5 Technology for Sustainable and Attractive European Rail Freight
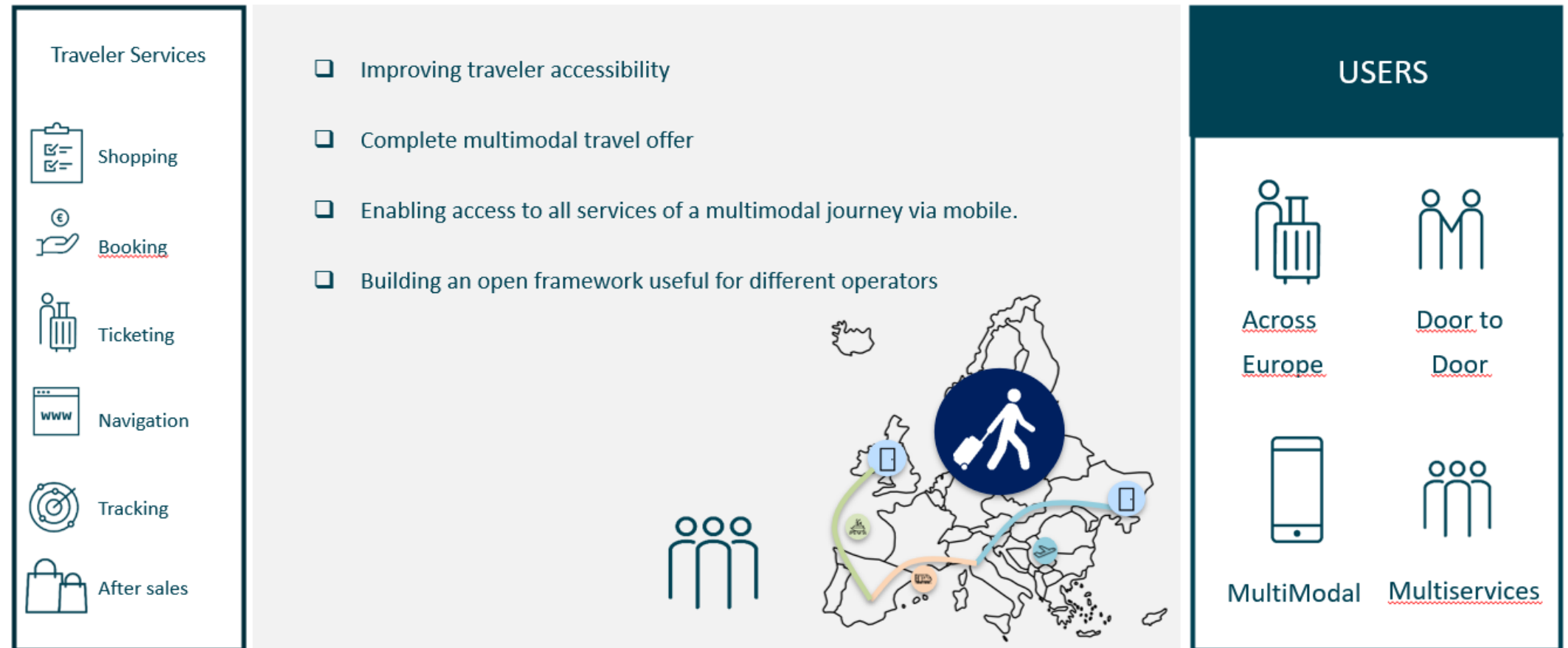
CCA Cross Cutting Activities

IPX Disruptive technologies and Exploratory research, System Architecture and Conceptual Data Model (CDM)
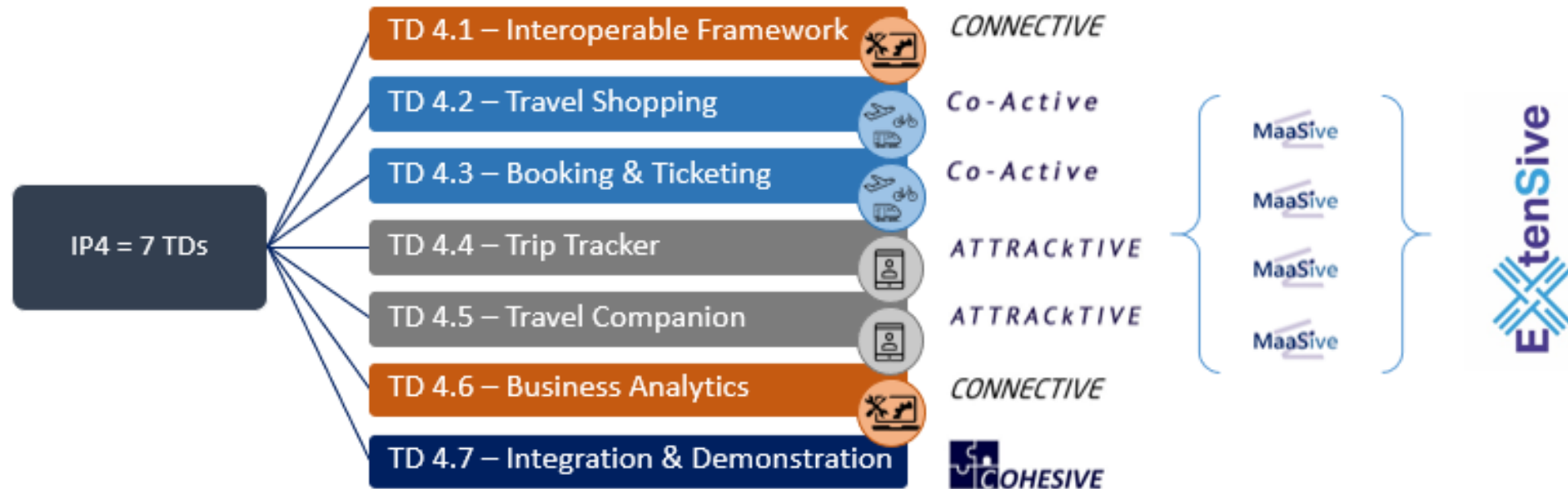
The S2R Programme implementation

IP4: IT Solutions for Attractive Railways Services

Traveler Services

- Shopping
- Booking
- Ticketing
- Navigation
- Tracking
- After sales

- ☐ Improving traveler accessibility

- ☐ Complete multimodal travel offer

- ☐ Enabling access to all services of a multimodal journey via mobile.

- ☐ Building an open framework useful for different operators
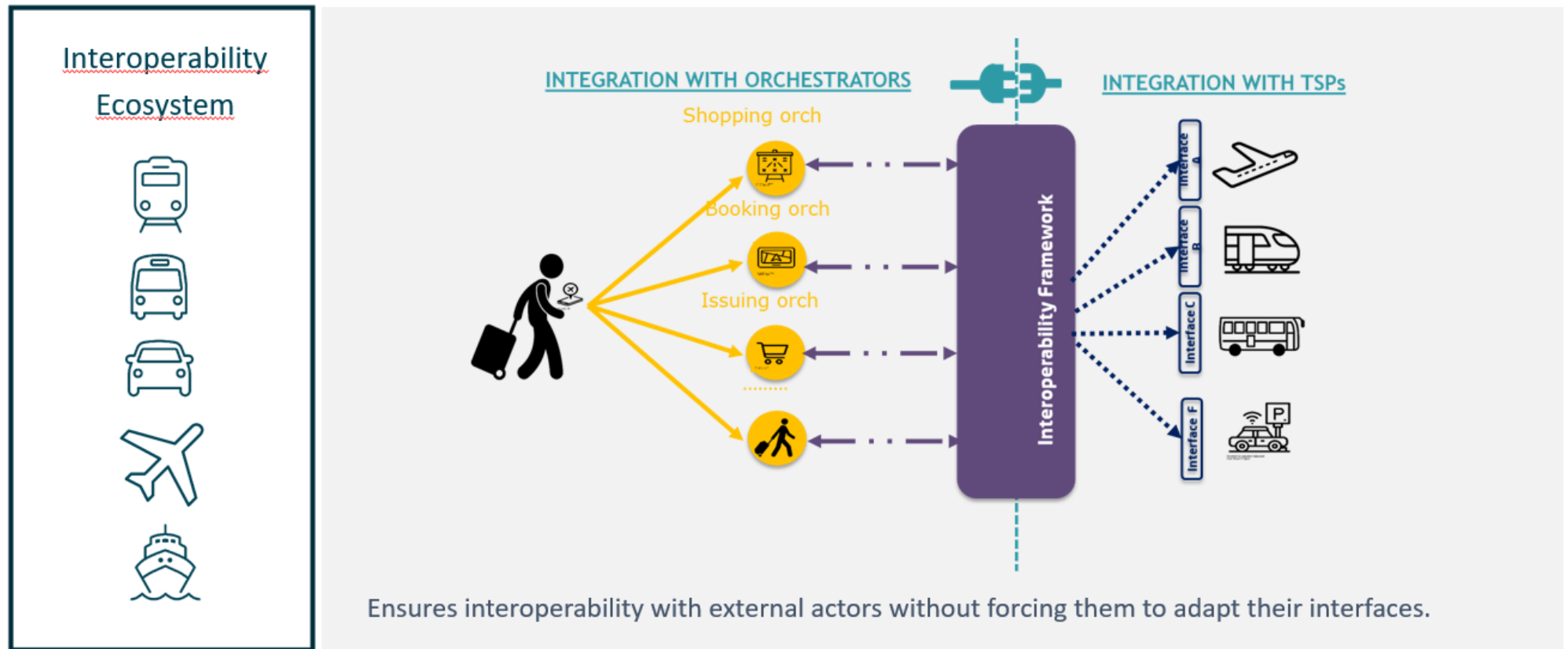
USERS

- Across Europe
- Door to Door
- MultiModal
- Multiservices

Technical Demonstrators and Projects

IP4 Architecture / Interoperability Framework

S2R-OC-IP4-01-2019: Complementary Travel Expert Services

- Research and Innovation action (RIA) call for proposals

- Budget of 3.000.000 EUR

- Awarded project: **Ride2Rail**

S2R-OC-IP4-01-2019: Complementary Travel Expert Services

CHALLENGES

- Classify complete itineraries with respect to different categories, e.g. environmental impact (e.g. energy consumption, NOx emission, carbon footprint), waiting time between legs, accessibility of the modes for disabled people, overcrowded legs in peak hours

- Facilitate access to rail transport, for example by increasing the occupancy rate of private cars when used in combination with public transport, e.g. first and last mile in rural areas

S2R-OC-IP4-01-2019: Complementary Travel Expert Services

SCOPE

- Investigate **Choice criteria** for travel planning (environment, comfort, disabled people, traffic conditions)

- **Ride Sharing** in a multi-modal journey context for incorporation in the Shift2Rail IP4 ecosystem

S2R-OC-IP4-01-2019: Complementary Travel Expert Services

IMPACT

- Increase the number of passengers using public transport.

- Improve the rail connection with the rural areas.

- Minimise environmental pollution while traveling.

- Propose additional criteria for informed decision making when planning a trip

S2R-OC-IP4-01-2020: Supporting the implementation of the IP4 ecosystem

- Innovation action (IA) call for proposals

- Budget of 2.000.000 EUR

- Awarded project: **IP4MaaS**

S2R-OC-IP4-01-2020: Supporting the implementation of the IP4 ecosystem

CHALLENGES

- IP4 demonstrations to take into account the **constraints of a real environment:**
  - Use cases
  - Real data
  - Business rules
  - Needs and expectations of future users

S2R-OC-IP4-01-2020: Supporting the implementation of the IP4 ecosystem

SCOPE

- At least three **demonstrator sites**: Urban, Rural, Public transport, shared transport, different countries, different operators …

S2R-OC-IP4-01-2020: Supporting the implementation of the IP4 ecosystem

IMPACT

- Enrich the content of the demonstrations, by using real data, real processes, and potentially real environment for the demonstration

- Demonstrate that the IP4 eco-system is versatile, able to face diverse environment, business rules, transport modes, and data standards

- By bringing various stakeholders defining adequately the use-cases, the action will ease the market acceptance

- Create the conditions of a successful deployment of the IP4 solutions.

Europe's Rail Joint Undertaking

- Successor of Shift2Rail

- Established end of November 2021

- Europe's Rail Master Plan and Multi Annual Work Programme
  - https://shift2rail.org/about-europes-rail/europes-rail-reference-documents/europes-rail-key-documents/

- 7 Flagship Areas ("Innovation programmes")

https://shift2rail.org/about-europes-rail/

EU-Rail Multi-Annual Work Programme

Europe's Rail

Network management planning and control & Mobility Management in a multimodal environment

Network management planning and control (new processes and automation for decision support) & rail management in a multimodal environment (real-time demand-driven operations, including demand from other transport modes)

Digital & Automated up to Autonomous Train Operations

Digital "Automated & Autonomous" Train Operations building upon the next gen Automatic Train Control based on ERTMS + enhancements on TCMS for integration at the on-board level

Intelligent & Integrated asset management

Knowledge from the digital transformation will feed back into the design, construction, manufacturing as well as into operation and maintenance processes.

A sustainable and green rail system

Innovative solutions and services based on leading edge technologies to minimize the overall energy consumption and environmental impact of the railway system

FA1 - TMS+

Transversal Topic

FA2 - ATO+

FA3 - Assets Mngt

Europe's Rail

+ Exploratory Research and other activities

FA4 - Green Solutions

FA5 - Freight

FA7- new approaches

FA6 - Regional services

Digital Enablers

Provide Digital Twins Design toolbox for design as well as for validation, verification and test + a Federated dataspace where all digital elements of the system can play together in a coherent and interoperable way

Innovation on new approaches for guided transport modes

Explore non-traditional and emerging flexible and/or high-speed guided transport systems, as well as to create opportunities for innovators to bring forward ideas for shaping those future systems

Regional rail services / Innovative rail services to revitalise capillary lines

Decreasing cost while offering a high quality of service and operational safety + increase customer satisfaction and attractiveness

Sustainable Competitive Digital Green Rail Freight Services

Digitalization and automation of operational functions (e.g. DAC) and processes as well as increasing the efficiency of the immaterial (information/data) layer of transport in logistic

https://rail-research.europa.eu