

Future Shift2Rail Activities

Gorazd MARINIC

Programme Manager

Shift2Rail JU

CONNECTA-2 and Safe4Rail-2
Final event, 30 June 2021



28
MEMBERS



493
PARTICIPANTS



29
COUNTRIES



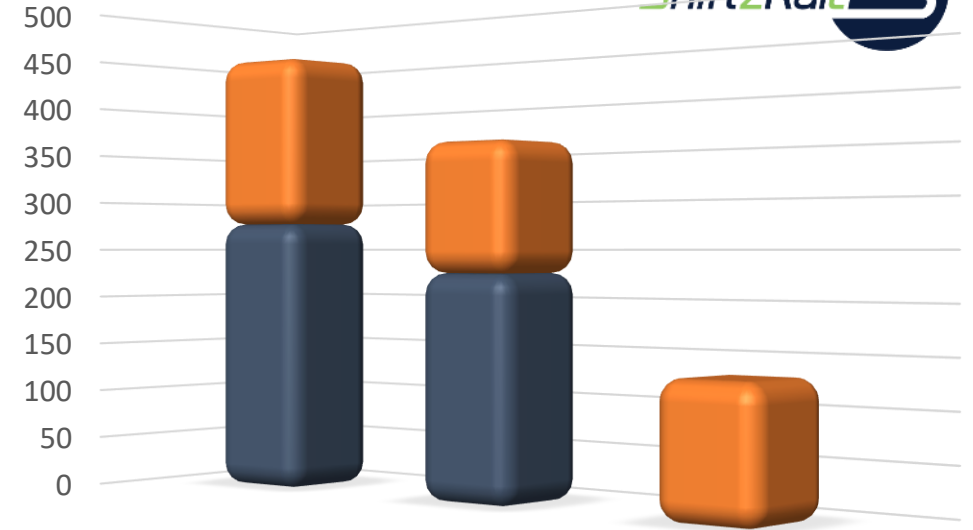
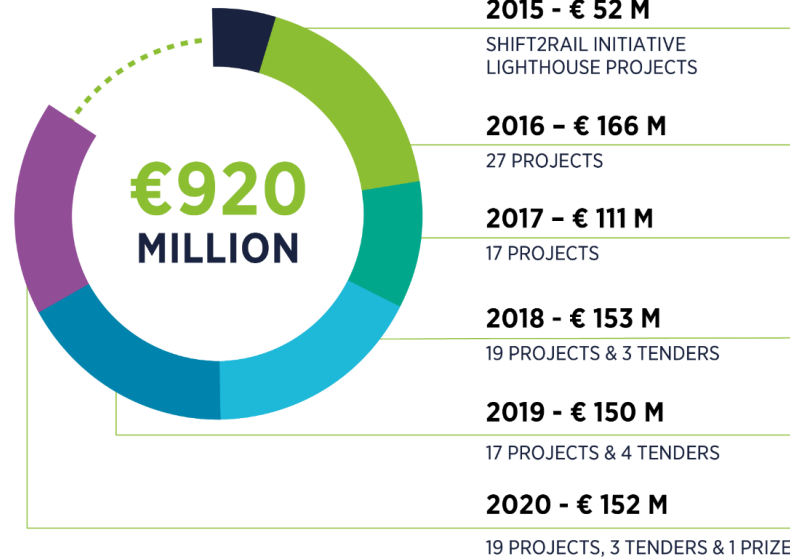
127
SMEs



128
RESEARCH CENTRES
AND UNIVERSITIES

*Data extracted from CORDA database in August, 2020

AN OPEN and ACTIVE ORGANISATION



8 Founding
Members

19
Associated
Members

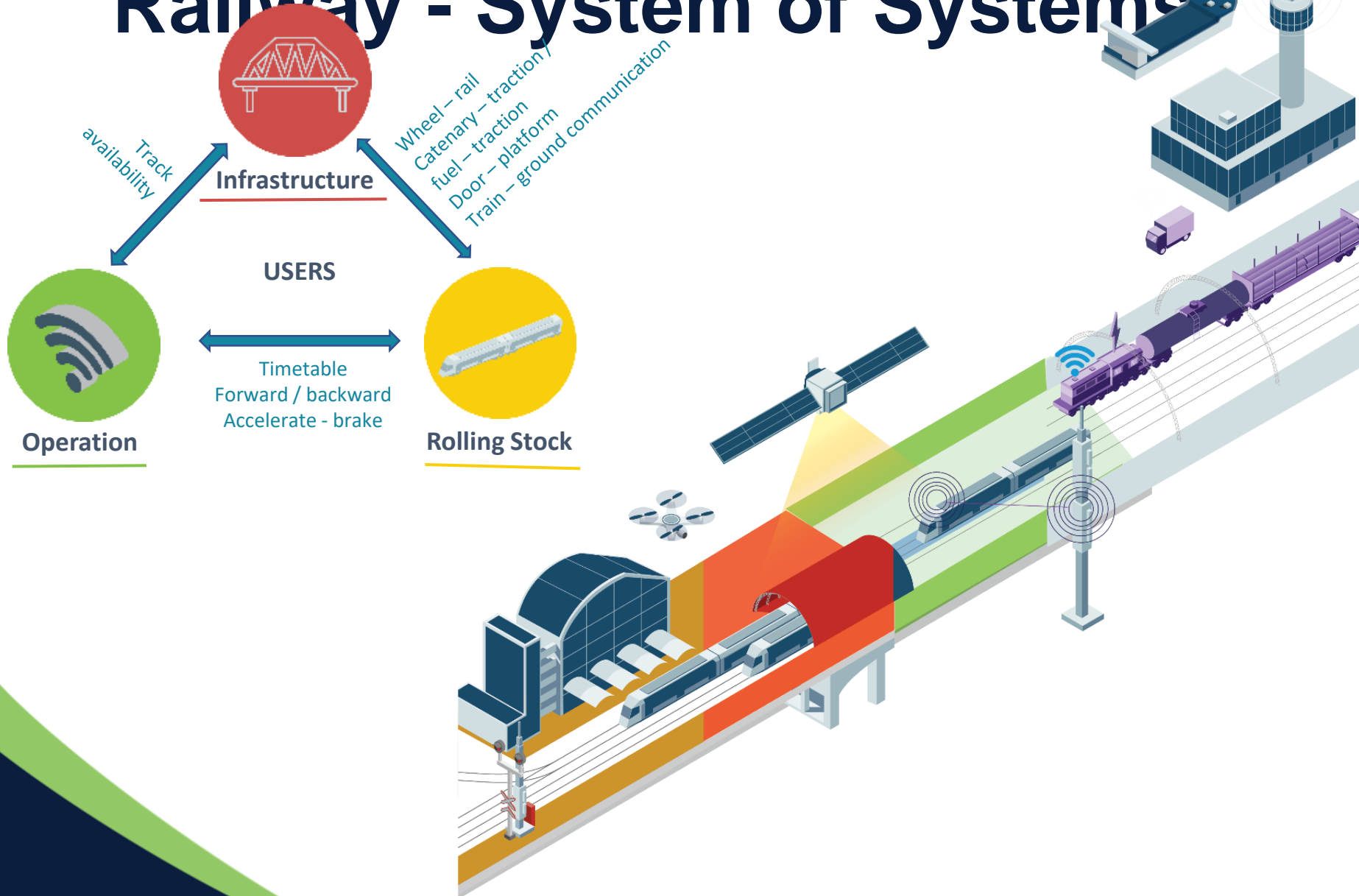
Open Calls

Values as at 1 Sept 2016 in Million EUR



...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

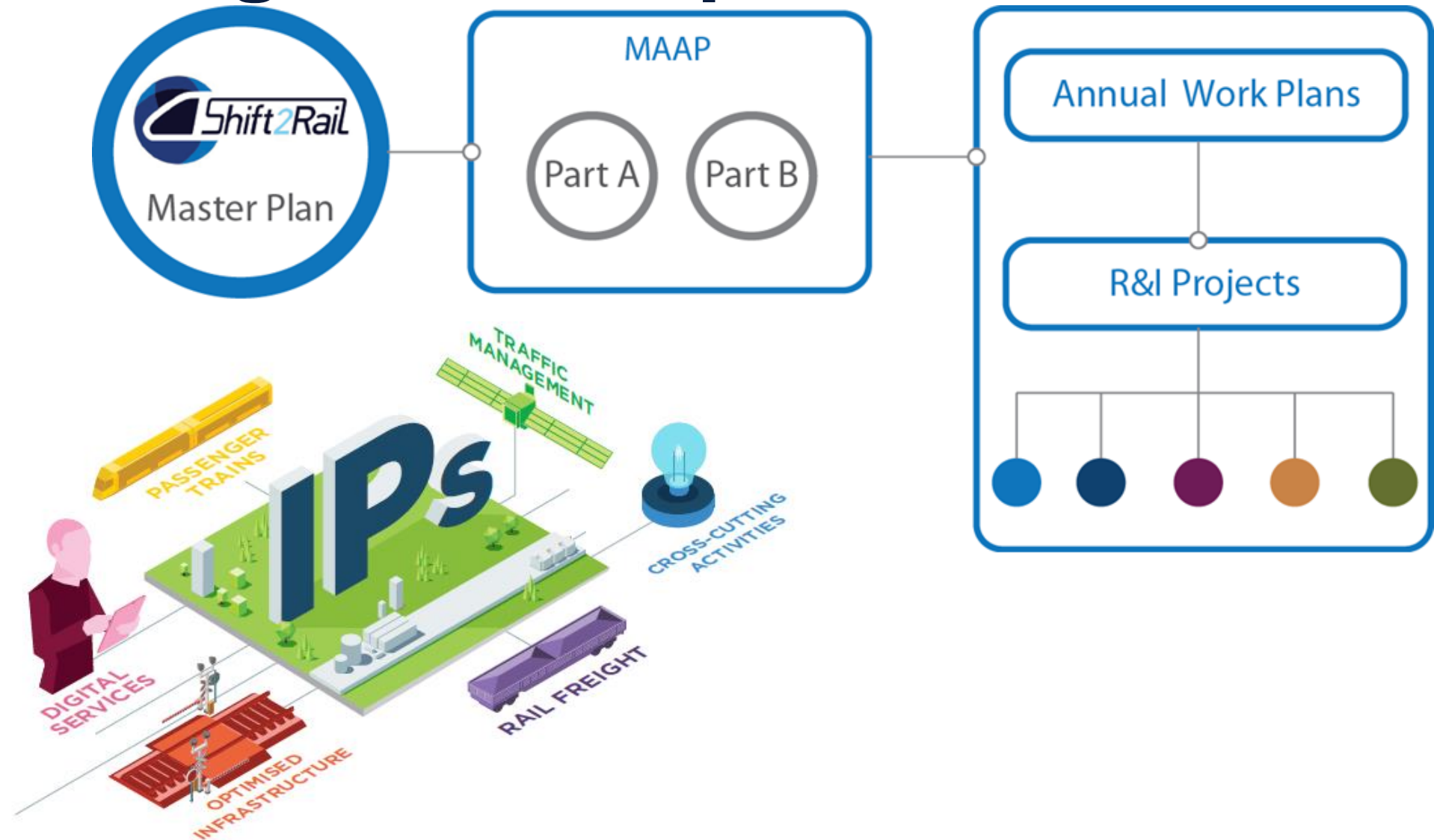
IP5 Technology for Sustainable and Attractive European Rail Freight

CCA Cross Cutting

Activities

IPX Disruptive technologies and Exploratory research, System Architecture and Conceptual Data Model (CDM)

The S2R Programme implementation



CONNECTA-2 and Safe4Rail-2

- Resulting from 2018 call for members and open call (complementarity)
- Ending in July 2021
- On the way to achieve the results set in the call text
- Achievements and lessons learned:
 - Benefits by incorporating products, technologies and knowledge from other industries
 - Development with standardised interfaces / Application profiles
 - Paving the way to **modularity** and **increased capacity**
- However:
 - Standards: not complete / mature
 - Technology adoption is complex

Next: CONNECTA-3 and Safe4Rail-3

- S2R Call 2020: complementary CFM and OC
- NG-TCMS from TRL 4/5 to TRL 6/7.
- Started in December 2020
- Until July 2023
- CONNECTA-3: 8,97/3.95m EUR
- Safe4Rail-3: 6.13/4.86m EUR



CONNECTA-3

- Low-level specification of the Application Profiles for train-level communications,
- Further studies in the Application Profile for ATO GoA3/4 functions together with X2Rail-4, continuing the work made by CONNECTA-2
- Additional function definition for the Functional Open Coupling, e.g. Traction, Braking, Lighting
- Extension of the work made by CONNECTA-2 regarding visualization of Functional Open Coupling functions in DMI, providing the definition of more functions
- Specification of additional functions for T2G communications not covered by the IEC 61375-2-6, such as the CCTV
- Specification of the full interface for the interoperability with the Adaptable Communication System
- Benchmarking activity of such activity outcome with regard the current IEC 61375 series and other upcoming standards from different industries

Safe4Rail-3

- Workstream 1:
 - Antenna installation study to optimize transmission/reception in Wireless TCMS
- WS2:
 - Subsystem functions adapted to Application Profiles with a TRL 6.
 - Support for FDF integration
 - Conformance tests of the standard Application-FDF interface defined by CONNECTA-2 and the adaptation of DbD in FDF
 - Deployment of a centralized configuration tool for Drive-by-Data (DbD) network equipment compliant to IEEE 802.1Qcc standard.

Safe4Rail-3

- WS2: DbD network equipment: ETBN-TSN (Ethernet Train Backbone for Time Sensitive Networking), CS-TSN (Consist Switch for Time Sensitive Networking), NIC-TSN (Network Interface Controller for Time Sensitive Networking) final products with a TRL 6/7:
 - FDF HW platform and development environment
 - Time Sensitive Network Configuration Tool
 - Wireless Train Backbone equipment, such as the Wireless Train Backbone Node and Antennas
 - Wireless Consist Network equipment
- WS3:
 - Independent Safety and Cyber security studies for DbD, FDF and Wireless TCMS.
 - Development of a methodology to develop SIL4 functions for FDF and tools to support a SIL4 application development provided by the complementary CFM.
 - Study on the integration of Time Sensitive Networking (TSN) transmission slots calculation (e.g. via a Centralized Network Configuration tool) and the FDF execution in order to achieve very low latencies.

R&I BEYOND 2020



HORIZON EUROPE

Fundamental research and
« blue sky »

R&I

DEMO

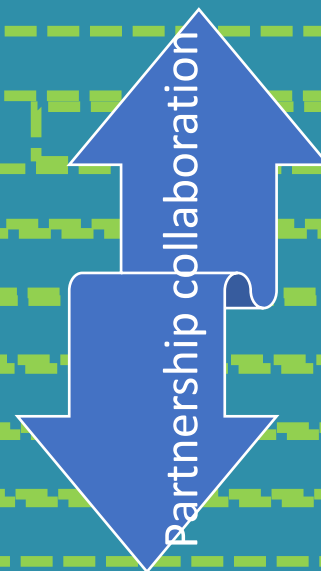
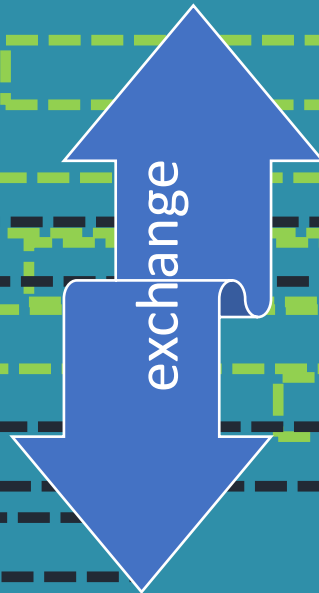
S2R solutions with S2R JU
supervision

BREAKTHROUGH IDEAS
TRL: 0 -> 2

APPLIED
RESEARCH
TRL: 3 -> 7

LARGE SCALE OPERATIONAL
DEMOS
TRL: -> 9

Transforming overarching project:
Future Railway System as a whole, with connection with other transport modes



Transforming-
Projects
reaching TRL9

DEPLOYMENT
ACTIVITIES
CEF / BLENDING /
OTHER

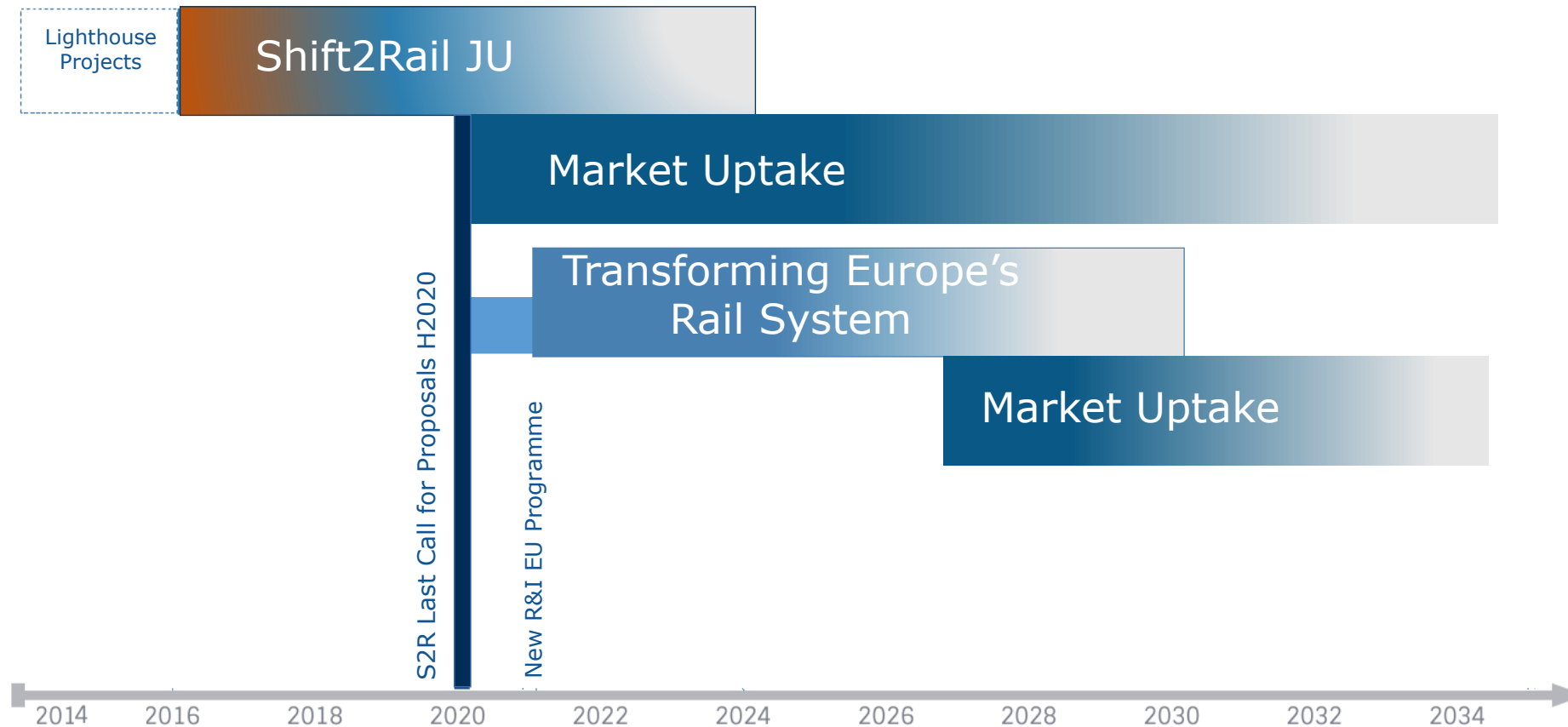
Deployment Proj

Deployment Proj

Deployment Proj

Deployment Proj

RAIL R&I BEYOND 2020



Founding Members



Associated Members



Virtual Vehicle Austria Consortium (VVAC+)



European Rail Operating community Consortium (EUROC)



Swi'Tracken Consortium



Smart DeMain(SDM) Consortium



AERFITEC



Competitive Freight Wagon Consortium(CFW)



Smart Rail Control (SmartRaCon) consortium

