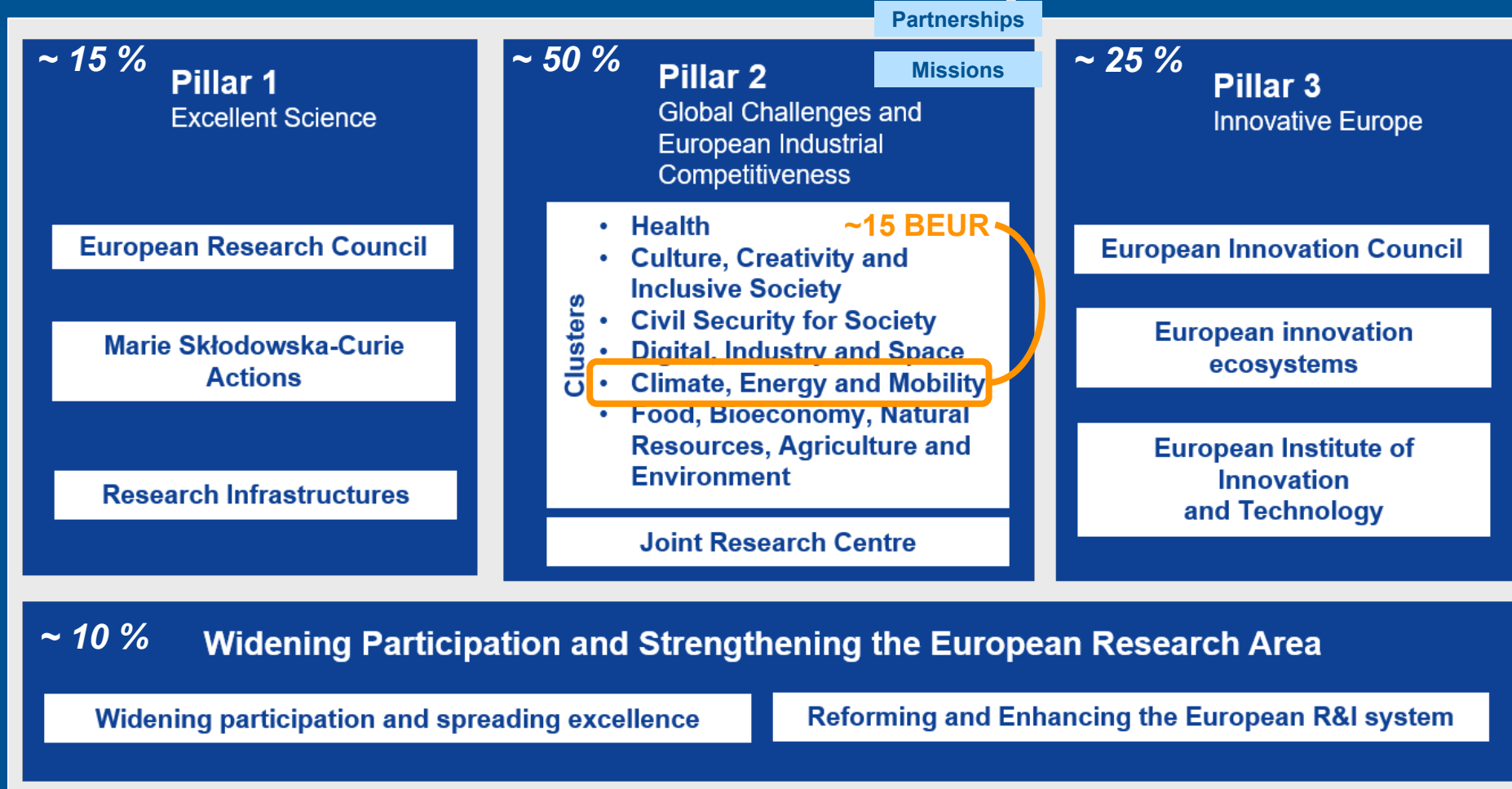


The Horizon Europe framework



Horizon Europe



95,5 billion euro

Cluster 5 Partnerships

- Focus on specific areas which need extra attention
- Develop a Strategic Research and Innovation Agenda – describing future R&I needs
- Contribute to Calls for proposals and additional activities

Institutionalised

- **Transforming Europe's rail system**
- Integrated Air Traffic Management
- Clean Aviation
- Clean Hydrogen

Co-funded

- Driving Urban Transitions to a sustainable future (DUT)
- Clean Energy Transition (CETP)

Co-programmed

- Built4People | People-centric sustainable built environment
- Towards zero-emission road transport (2ZERO)
- Batteries: Towards a competitive European industrial battery value chain for stationary applications and e-mobility
- Zero-emission waterborne transport
- **Connected, Cooperative and Automated Mobility (CCAM)**

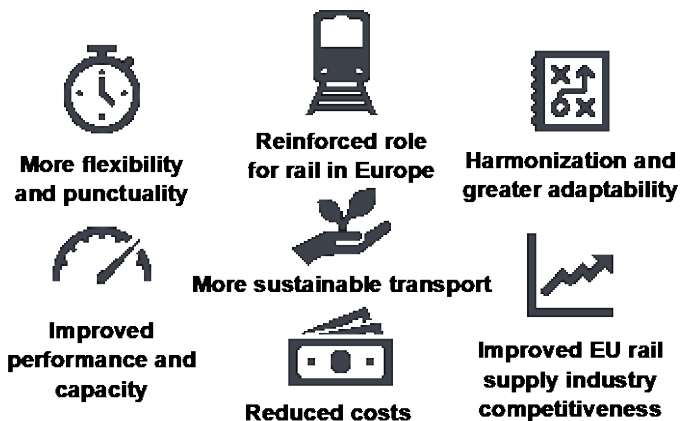
Europe's RAIL



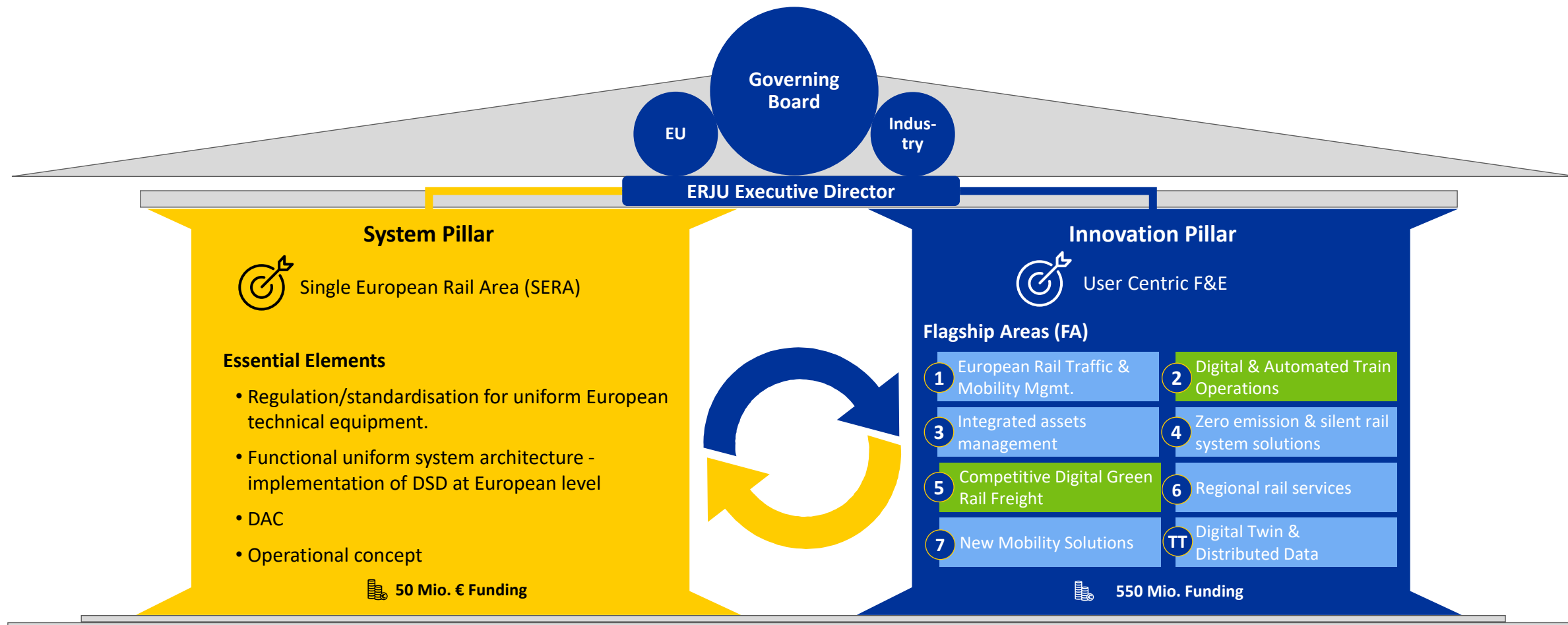
Europe's Rail: EU Funding Program for Innovations in the Rail Sector 2021-2027



- Joint Undertaking by the EU and 25 Partners
- Europe's Rail brings together European R&D in the rail sector
- Total budget: 1.2 billion euros (funding 600 million euros)
- The objectives of EU-Rail have been set to address the EU policy objectives, rail sector vision, and the challenges inherent to the transformation of the rail system.
- Specifically, this will result in:
 - Meeting evolving customer requirements
 - Improved performance and capacity
 - Reduced costs
 - More sustainable transport
 - Harmonised approach to evolution and greater adaptability
 - Reinforced role for rail in European transport and mobility
 - Improved EU rail supply industry competitiveness



Europe's Rail: Research and Development as well as Overall System Architecture and Standardisation Activities under one Roof



manual freight wagon coupling



Courtesy of ÖBB



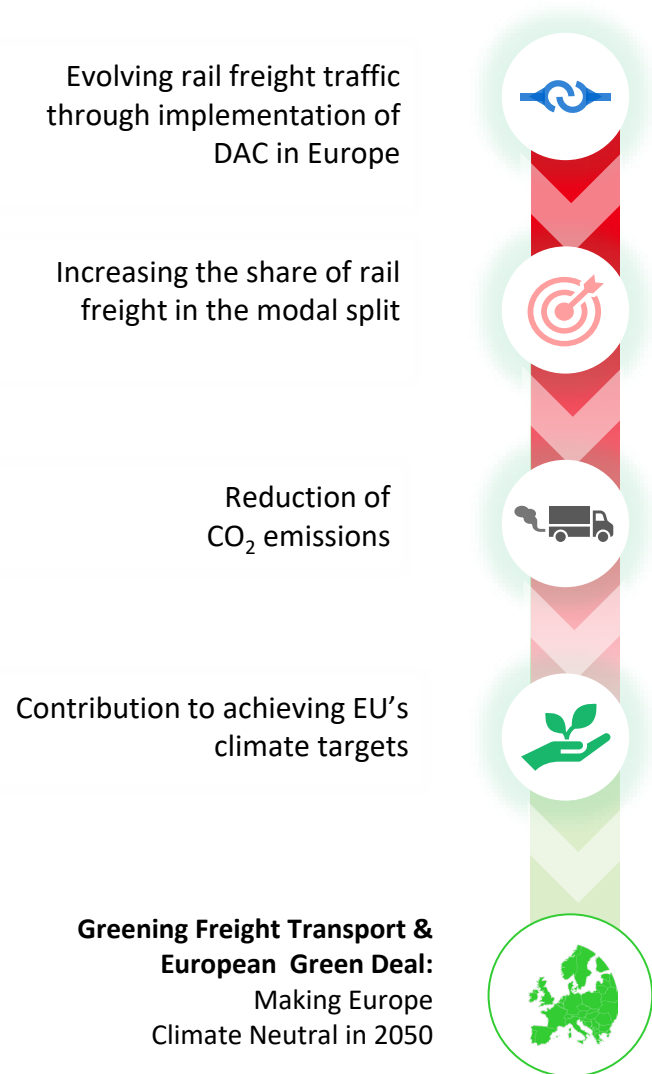
automatic freight wagon coupling



mechanical, pneumatical, energy & data coupling

Courtesy of DAC4EU consortium

Deployment of Digital Automatic Couplings (DAC) as a Game-Changer



DAC for Rail Freight....

- is THE **key enabler for automation and digitalisation** of rail freight
- will increase **productivity, capacity, quality, safety and competitiveness** of European rail freight system by significantly reducing time and efforts for shunting and train preparation and by increasing capacity during train run
- will enable **innovative customer services** by providing data and energy on wagons
- will **transform the European rail freight system** and significantly **increase the modal share** contributing to the decarbonisation goals in Europe
- **needs further development** (technology, operations, standardisation, migration,...) having in mind the window of opportunity until 2030
- **needs funding for deployment:** The DAC transformation is very beneficial from a societal perspective (30y), but for a positive business case for RU/WK (10y), public financial support is required



Railway Infrastructure Company (RIU)



Rail Traffic Company (RU)



Wagon Keeper



Shipper

Efficiency increase

Increase track capacity by longer, heavier, faster trains

Reduction shunting costs; longer, heavier, faster trains, increase system speed

Reduction of maintenance costs wheel sets / buffers

Higher payload per wagon / train; Increasing attractiveness of rail for modal shift

Enabler function for automated rail operation

Train integrity check as prerequisite for ETCS level 3

Increase wagon availability through predictive maintenance

Increase wagon availability through predictive maintenance

Increasing attractiveness of rail through telematics and automation

Safety, Energy, Noise

Increased derailment safety

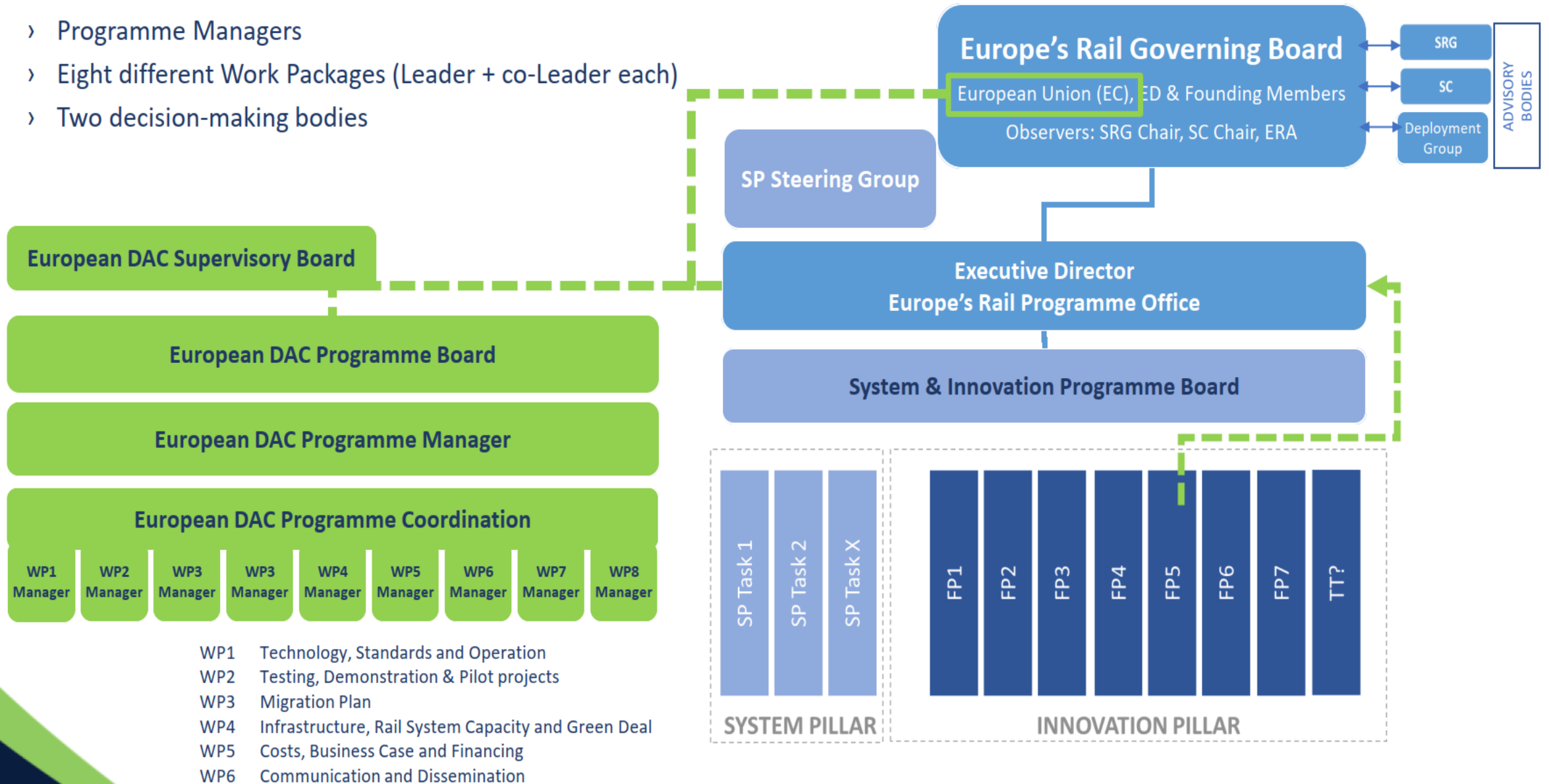
Automated rail operation, e.g. autom. brake test, wagon sequency, monitoring components

Workplace safety shunting, derailment safety, reduction of noise emissions, higher recuperation energy

Workplace safety in customer sidings

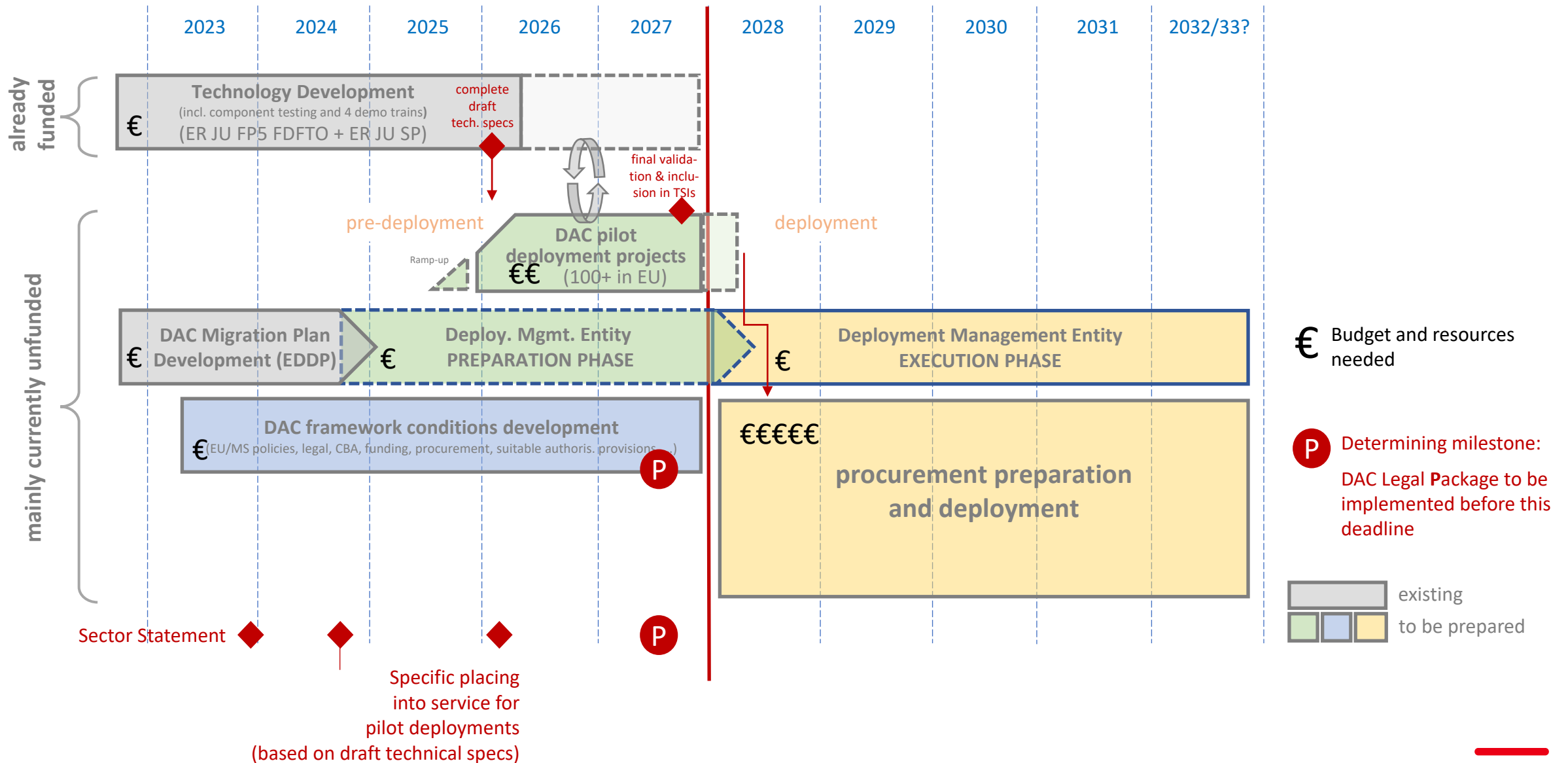
The EDDP structure

- › Programme Managers
- › Eight different Work Packages (Leader + co-Leader each)
- › Two decision-making bodies

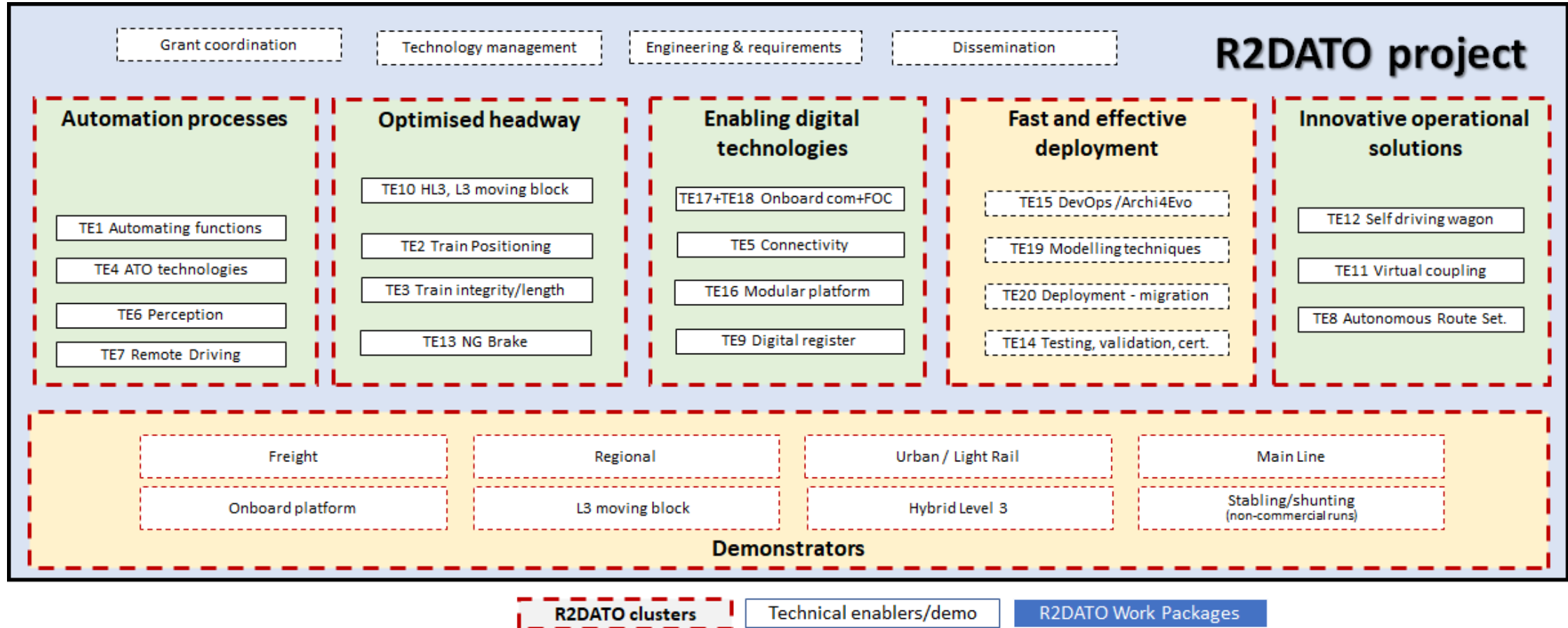


DAC General Master Plan [GMP 01]

Adopted by the EDDP PB



Technical Development for Digital Automated Train Operatios Bundled in FP2 R2DATO



R2DATO will demonstrate ATO-solutions for main line in a two step approach



Preparatory work to demonstrate ATO-solutions for main line bottlenecks

- The challenge in mixed traffic high-density networks is to
 - minimise headways between trains to increase railway capacity and
 - improve overall operational robustness
- determining the optimal operational margins for each train type
- Margins must be added to the planned timetable (“train path envelope”),
- Additionally, timing points to steer trains through network must be determined as optimal for DATO operation.
- Constraints are expected to be addressed by the TMS development in FP1 based on specification coming from R2DATO

ATO over ERTMS demo in San Donato Test Ring

- The main object is highlighting relevant advantages deriving from the synergy between the digital automatic train operation up to GoA 4 and the CCS evolution, increasing the capacity and punctuality of railway lines, by enabling ETCS L3 moving block with minimal infrastructure elements
- Demonstrator will be located at RFI’s ring circuit of San Donato in Italy, allowing the development and testing of new systems/components.
- Demonstration will be performed using the newest generation hybrid train, named “Blues”, that can travel with diesel engines, on electrified lines and with batteries, allowing a 50% reduction in fuel consumption and CO₂ compared to current diesel trains. This train will be equipped with the GoA4 components

A woman with curly hair, wearing sunglasses and a blue jacket over a colorful patterned shirt, is shown in profile from the back, looking at a smartphone. The phone screen displays a map with a red route. The background is a blurred outdoor setting with a building and a car. The text "Thank You" is overlaid in white on the image.

Thank You