



Europe's Rail JU

System Pillar: Why? (A reminder)



- Mirroring developments in other modes and sectors, there is a need for an overall coordinated approach to the evolution of the railway system.
- Success would underpin the Single European Rail Area and create a functioning European market for rail – improving performance and services, and reducing costs.
- A number of valuable sector initiatives move already in this direction (RCA, Linx4rail, OCORA, EULynx etc)
- The aim is to have through the System Pillar:
 - a single coordinated approach for the sector to define the operational concept and functional system architecture, and associated standards and specifications.
 - a process that makes the most efficient use of scarce resource (EU, MS and industry; financial and human capital), coordinating current initiatives under one umbrella.
 - clarity of roles and resource with the aim of speeding up and making more systematic the development of products, standards, and specifications.
 - alignment with the Unions' Research and Investment with a long-term vision i.e. R&I is focussed on developing common European solutions, not a basket of potential solutions.

⇒ System Pillar is a tool for the sector (governance, budget, regulatory output) to converge on the evolution of the system

CCS System Framework



CCS System Framework agreed with the sector through the ERTMS Platform.

The System Pillar will build on the vision and scope defined in the CCS System Framework

One European CCS system

- There should be a genuine integrated European CCS system, beyond the current specifications in the CCS TSI, with much greater standardisation and much less variation than at present. This integrated CCS system shall on the one hand deliver unrestricted movement of trains, on the other hand, it shall create a larger market for components.

A flexible and adaptable CCS system

- CCS – both on-board and trackside - shall be based on a functional modular architecture using standardised interfaces, moving beyond the current system with proprietary interfaces.
- The software and hardware installed on board or trackside are operated and maintained following principles and standards as used in the IT domain: regular, scheduled updates with pre-tested configurations ensure errors and shortcomings are eliminated, maintaining all the products and system throughout EU in line with the interoperability specifications, with manageable upgrade mechanisms.

Harmonisation of operations

- Radio based ERTMS significantly reduces the complexity and network specificities of classic approach ETCS L1 and class B lineside signalling. A focus on ERTMS Level 2 and 3 implementation provides the opportunity to streamline the operational principles and rules for ERTMS and other CCS components.
- On this basis, a converging shared vision on future rail operations based on ERTMS-alone Level 2 and Level 3 networks is targeted.

Optimised traffic management

- An optimised TMS improves traffic management operations with automated processes for data integration and exchange with other rail business services.
- The backbone of the new functional system architecture will be scalable, interoperable and standardised, applicable within an integrated rail management system. Ultimately, technology evolution will allow for real-time decision making, using digital twins.

The Single Basic Act



- Council Regulation establishing the Joint Undertakings under Horizon Europe
- Proposal adopted by the Commission on 19 February
- Proposal to be negotiated with the Council
- Consultation of the European Parliament
- It consists in a part with common provisions for all JUs and one specific part per JU
- Within the SBA: ERJU has the objectives to (*inter alia*):
 - develop through its System Pillar a unified operational concept and a functional system architecture for integrated European rail traffic management, command, control and signalling systems, including automated train operation which shall ensure that research and innovation is targeted on commonly agreed and shared customer requirements and operational needs is open to evolution

System Pillar within the SBA



Article 84(5)a

develop in its System Pillar a system view that brings together the rail manufacturing industry, the rail operating community and other rail private and public stakeholders, including bodies representing customers, such as passengers and freight and staff, as well as relevant actors outside the traditional rail sector. The “system view” shall encompass:

- i. the development of the operational concept and system architecture, including the definition of the services, functional blocks, and interfaces which form the basis of rail system operations;
- ii. the development of associated specifications including interfaces, functional requirement specifications and system requirement specifications to feed into Technical Specifications for Interoperability (TSI) established pursuant to Directive (EU) 2016/797 of the European Parliament and of the Council or standardisation processes to lead to higher levels of digitalisation and automation;
- iii. ensuring the system is maintained, error-corrected and able to adapt over time and ensure migration considerations from current architectures;
- iv. ensuring that the necessary interfaces with other modes are assessed and validated, in particular for freight and passenger flows.

Article 86

The Union financial contribution from the Horizon Europe Programme to the Europe’s Rail Joint Undertaking, including EFTA appropriations, to cover administrative costs and operational costs shall be up to EUR 600 000 000, including at least EUR 50 000 000 for the System Pillar , and up to EUR 24 000 000 for administrative costs. The Union contribution may be increased with contributions from third countries if the latter are available.

System Pillar within the SBA



Article 93: The System Pillar Steering Group

The System Pillar Steering Group shall be composed of representatives of the Commission, representatives of the rail and mobility sector and of relevant organisations, the Executive Director of the Europe's Rail Joint Undertaking and representatives of the European Union Agency for Railways. The Commission shall take the final decision on the composition of the Group. When justified, the Commission may invite additional relevant experts and stakeholders to attend the meetings of the System Pillar Steering Group as observers.

- The System Pillar Steering Group shall be chaired by the Commission.
- The recommendations of the System Pillar Steering Group shall be adopted by consensus. Where no consensus is reached, the Executive Director of the Europe's Rail Joint Undertaking shall prepare a report for the Governing Board, outlining the key common points and diverging views.
- The System Pillar Steering Group shall adopt its own rules of procedure.
- The System Pillar Steering Group shall be responsible, for providing advice to the Executive Director and Governing Board on any of the following:
 - the approach to operational harmonisation and the development of system architecture, including on the relevant part of the Master Plan;
 - delivering on the specific objective set out in point (c) of Article 83(2);
 - carrying out the task set out in point (a) of Article 84(5);
 - the detailed annual implementation plan for the System Pillar in line with the work programmes adopted by the Governing Board in accordance with point (b) of Article 92.

Article 91 (3): Functioning of the governing board

Notwithstanding Article 15(1) with regard to activities to be performed under the System Pillar, a decision shall be deemed adopted by a majority of at least 55% of the votes including the votes of representatives who are absent.

System Pillar – set up approach



- **Scope**
 - “CCS+”
 - To develop a detailed scope based on a defined system terminology (cf. ISO 42010), including programming and resourcing estimates, of the work to be carried out based on the objectives assigned to the System Pillar within the Single Basic Act.
- **Governance**
 - To propose the composition, rules of procedure, and working arrangements to ensure the broad participation of the sector and other expertise, geographical balance and reaching a timely agreement on the outcomes, including the working of the System Pillar Steering Group
- **Working Arrangements**
 - EC: To develop the way in which System Pillar will interact with DG MOVE, as chair of System Pillar Steering Group
 - ERA: To develop the way in which the System Pillar will interact with ERA as System Authority.
 - ERJU: To develop the process by which the work of the System Pillar will be integrated and the interactions with the rest of the work of ERJU
 - Sector: To propose the structure and process by which the scope will be delivered and maintained in conjunction with sector resources,
- **Outputs and regulatory arrangements**
 - To establish the process through which the System Pillar will be the primary route to validated and harmonized solutions based on comprehensive cost-benefit analysis that can be considered in the TSIs and other Standards (like ISO/CEN/CENELEC), in line with the policy objectives of the Commission.
 - To recommend the most appropriate ways to communicate to the sector as a whole the scope and ambition to be achieved.

What is expected from the sector



- Sector input and agreement is vital to making sure the System Pillar works; all sides need to buy in and trust the process
- For efficiency, the core group will:
 - introduce a proposal for the identified elements of the System Pillar at a System Pillar group meeting
 - following the meeting, a reasonable period of time will be provided for sector comments
 - the proposal will then be reviewed and finalised for the following meeting