

Executive summary

Several Architecture initiatives for the Railway system are currently in progress in Shift2Rail projects. However, these projects mostly address the architecture in a fragmented and isolated way, focusing on their own needs while an overarching architecture is required to support an evolution of the railway system towards digitized systems, migration of the legacy systems and significant breakthroughs introduction.

Within the project's work package 5, a collaborative platform is set up involving the project partners along with actors of already existing initiatives external to Shift2Rail (RCA, EULYNX, OCORA) and invited organisations or experts having developed in their respective sectors an Architecture approach. The Linx4Rail platform aims at developing, in a collaborative way, a European Railway System Architecture, federating the already existing initiatives and capitalising on lessons learned from other sectors. This document sets up the very first basics of the European Railway Architecture, developed within the LinX4Rail Project WP5.

The architecture approach is now stabilised and should allow for iterative releases, enabling to progressively refine the architecture.

A first iteration of LinX4Rail architecture views is proposed, establishing first relations between services, operations and resources involved in the railway system.

Constraints and opportunities for the architecture design are captured. The objectives of the Architecture are introduced, from which main design criteria are developed. The Architecture must support more performance and coherence in a service-oriented approach. It should allow for modularity, decoupling, upgradability, ability to migrate, interoperability...

A layered structure is then proposed, along with its very first characteristics: Layers are seen as a tool for simple architecture description. The architecture should describe services, operation and resources/assets and manage their interactions.

Some basic Architecture requirements as well as scoping properties and building principles are identified. The architecture must consider business and innovation dimensions: migrations as technical breakthrough must be embedded in the architecture.

Finally, the next steps to the further releases of the Architecture, due end of November 2021 and in 2022, are outlined.