

This declaration was signed by representatives of DB, Network Rail and SBB. It complements and reinforces the MoU for RCA between EUG and EULYNX.

Commitment to RCA (reference CCS architecture) for future ERTMS rollout.

Joint declaration of DB, Network Rail and SBB

High Level European Rail Infrastructure Forum

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Introduction

In July 2018, the EULYNX Consortium and the EEIG ERTMS Users Group (EUG) signed a memorandum of understanding to start the development of a future reference CCS¹ architecture (RCA). The members of EUG and EULYNX are ADIF, Banedanmark, Banenor, CFL, DB, Infrabel, Network Rail, ProRail, RFI, SBB, SNCF, SŽ, TRV and Västtrafik.

RCA is closely linked with the EULYNX initiative, in which railways have jointly defined important interfaces for CCS. These interface specifications are already applied in several projects and are re-used in RCA. Moreover, RCA is based on radio-based ERTMS, for which the EUG consolidates the views of the railways in the Change Control Management process of the EU Agency for Railways.

Scope of RCA

RCA defines important interfaces needed to increase the modularity of CCS systems to facilitate lifecycle management and the inclusion of innovative technology. RCA creates a harmonized archi-

¹ CCS = Command, Control and Signalling

itecture for CCS, reducing country-specific implementations and thus contributes to the Single European Rail Area. RCA is founded on radio-based ERTMS and endorses interoperability. RCA therefore complements ERTMS while offering a coherent architecture for the migration to currently known and potential future game changers. RCA includes EULYNX as a building block towards the trackside. EULYNX and RCA form a single development stream for CCS evolution and ensure long term compatibility.

In August 2018, work on the architecture was initiated. On February 15th 2019, a first version called “RCA Alpha” was published². Workshops and discussions within Infrastructure Managers, Shift2Rail and supplier organizations were held to get feedback for RCA. By the end of 2019, the first RCA draft specifications will be available.

Goals of RCA

RCA contributes to the achievement of the following goals:

- Business case: Substantial reduction of cost (TCO³) through automation, reduction of track-side assets and better upgradeability.
- Increase of capacity by enabling a transition to moving block, combined with more precise train control.
- Increase of safety by providing stronger supervision of shunting and better support for track-workers.
- Increase of reliability through simplification of the central systems and reduction of track-side assets.
- Fast and efficient migration by facilitating a number of specific migration mechanisms.

While RCA focuses on the Infrastructure, it is clear that ERTMS equipment of the vehicles also needs substantial progress with respect to cost and upgradeability. The initiative OCORA (Open CCS On-Board Reference Architecture) addresses this, complements RCA and was launched in March 2019.

Commitment to RCA

The signatories declare their commitment to contribute to the development of RCA, to apply RCA in future ERTMS rollout while following an open and inclusive process.

- **Contribution to the development of RCA:** We contribute to the elaboration of RCA by having our respective national programs working closely with RCA, submitting our results for inclusion in RCA and reviewing RCA continually.

² Links to RCA material (openly published): https://ertms.be/workgroups/ccs_architecture

³ TCO = Total Cost of Ownership

- **Application of RCA in future ERTMS rollouts:** We intend to use the RCA framework to structure the architecture of our national programs and we strive to apply RCA specifications in our future procurements.
- **Follow an open and inclusive process:** RCA results were and will be published under the European Union Public Licence (EUPL) and are consequently available for all stakeholders. We will continue to follow this process in an open and transparent manner with all relevant sector organizations and European Research and Development (R&D) initiatives. This applies in particular to the Shift²Rail Joint Undertaking and possible future EU R&D initiatives in the rail sector as well as relevant European organizations representing the interests of CCS suppliers. We will help align on-going and future activities by fostering regular exchange and feedback on RCA.

Next steps

Short-term:

- Continue the development of the RCA specification with the publication of a version V1.0 by the end of 2019.
- Continue dissemination RCA concepts and organizing opportunities for feedback to all interested stakeholders.
- The signatories plan a series of prototypes, technical demonstrators and tests related to the RCA, starting in 2020.

Medium-term: the signatories have established programs to prepare rollouts based on RCA:

- **DB: Program “Digitale Schiene Deutschland”.**
In Germany, the program „Digitale Schiene Deutschland” (DSD) / “Digital Rail for Germany” is setting the base for the digitalization of the whole railway system. In a first step, a roll out of ETCS and digital interlockings, including the vehicle onboard equipment, will serve as technical foundation for digitization. In a second step, digital rail operation and traffic management will be in the focus. Both steps are needed for the digitization of the whole system. New technologies will serve as game changers and enablers for new opportunities in the railway sector. A joint industry and operator initiative, interoperability and the definition of reliable European standards are essential for the success of the new, fully automated and digitized rail system.
- **NR: Program «Target190+».**
In Great Britain, Network Rail’s Future Command Control and Signalling strategy is to move towards digital technologies to meet increased passenger and business demand whilst addressing the need for a sustainable signalling system. Today we are in an environment where it is no longer sustainable to maintain and renew existing signalling using conventional processes and technology on the GB network. This has provided a business case to

look at doing things differently. Our intent is to take advantage of the new technological solutions available in the market place to not only solve our signalling sustainability problem but to provide a platform to enable cost effective future enhancement.

Target 190+ is our development program to address this challenge. It will focus on providing solutions to these business needs based around the use of radio based ETCS with an intent to deploy these on our network from 2024.

- SBB: Program “smartrail 4.0”.

With the smartrail 4.0 programme, the Swiss railways are harnessing digitalisation and the potential of new technologies to further increase capacity and safety, make more efficient use of railway infrastructure, save costs and thus maintain the railway's competitiveness in the longer term. Smartrail 4.0 targets complete modernization of TMS and CCS, including ATO GoA2, FRMCS, Moving Block. First trial rollouts starting in 2025, industrialized rollout starting 2028.