OCORA Press Release for Beta Release – 2/7/2020:

OCORA has reached an important milestone with its Beta release

OCORA, the "Open Control Command and Signalling (CCS) On-board Reference Architecture" initiative, whose signatory founding Members are NS, SNCF, DB, SBB and ÖBB, has reached an important milestone with the Beta release of the specifications of the OCORA architecture. OCORA aims to reduce life-cycle costs and facilitate the introduction of innovation and digital technologies beyond the current proprietary interfaces, by establishing a modular, upgradeable, reliable and secure CCS on-board architecture. OCORA deliverables are published under the European Union Public License (EUPL) and are consequently available for all stakeholders on the internet (https://github.com/OCORA-Public/Publication). OCORA plans a series of prototypes, technical demonstrators and tests in the coming years. The Gamma release is planned for end of 2020 and Release 1.0 end of 2021.

Introduction

In March 2019, a group of European Railway Undertakings has signed a Memorandum of understanding, followed by a Code of Conduct in September, regarding the cooperation within OCORA, the Open CCS On-board Reference Architecture initiative. The signatory and founding members are NS, SNCF for itself and for SNCF Voyageurs and SNCF Réseau, DB, SBB and ÖBB. Other Railway Undertakings and Train Keepers are also welcome to join the MoU and sign the Code of Conduct.
OCORA work is coherent and in complementarity with RCA (an initiative of Infrastructure Managers on a reference architecture for the CCS) and other initiatives and projects aiming for game changers in the CCS domain as well as on the onboard TCMS[1]. OCORA has the focus on radio-based ERTMS and solutions for ATO. It contributes to the related European Union Agency for Railways TSI Change process via the CER organization.

Scope of OCORA

OCORA wants to establish a modular, upgradeable, interchangeable, reliable and secure system architecture. This is to reduce investment and lifecycle duration as well as maintenance costs for the onboard equipment and in particular to facilitate the integration to currently known and potential future game changers for existing and future fleets.

OCORA aims at interface definitions based on formal correct and testable specifications (in contrast to natural language ambiguous definitions), a modular bus system, a functional and technical architecture, as well as definitions for modular safety, cyber security and selection of non-functional requirements and references to well-proven and largely-applied standards. Long-term goals are upgradeability and compatibility by plug- and play principles.

[1] TCMS = Train Control and Management System

OCORA Objectives

1. To define an Open CCS on-board reference architecture by e.g.:
   - Open standardisation of the ETCS/ATP and ATO train interfaces and functions and other on-board subsystems as plug and play solutions establishing the principles and necessary requirements of the OCORA initiative.
   - Aligning initiatives and ideas already started and find synergies to align scarce resources.
   - Streamlining industrialisation processes, in particular the certification.
2. To foster and develop the open ETCS/ATP source initiative by utilizing and benefitting from the existing results of the "openETCS" initiative and sharing common understanding on this initiative.
3. Validate the viability and relevance of the OCORA approach by using e.g. demonstrators.
4. To promote the use of OCORA for the CCS on-board solutions in Europe in order to make it more cost effective, reliable, safe and secure by e.g.:
   - Ensuring consistency on a railway system scale between OCORA and other similar initiatives. This will be done in close coordination with sectoral organizations (e.g. CER, EIM, EPTTOLA, ...), and in close cooperation with joint undertakings, already in charge of defining certain aspects of the ERTMS (e.g. Shift2Rail, EuG, EULYNX, UNISIG, JPCR, UIC, RCA, etc.).
   - Building consensus and getting support from railway companies by means of regular information towards sectoral associations (e.g. members of the group of representative bodies).
   - Facilitating the industrialisation of OCORA results notably certification, through input to and discussions with associations, sectorial organizations, manufacturing companies and joint undertakings (e.g. UNIFE, UNISIG, Shift2Rail, ERL - ERTMS Reference Laboratories, etc.).

Achieving these objectives require a stepwise, incremental approach.

OCORA Design principles

1. Openness: OCORA is an open collaborative technical platform open to all railway companies. It is based on sharing and making publicly available its deliverables for the benefit of the railway sector.
2. Modularity: OCORA intends to decompose the on-board CCS subsystem into an optimal/reasonable number of standardized building blocks. System modularity is the basis for a modular safety approach and exchangeability, supporting different life cycles.
3. Simplification: OCORA plans to isolate in its architecture the functional blocks that will become obsolete in the foreseeable futures (e.g. GSM-R, class B systems, current balise technology). This is the basis to easily simplify OCORA based implementations, once the respective functions are not needed anymore.
4. Independence: OCORA intends to minimize the dependencies between different building blocks and components, such as dependencies between hardware, software and peripherals. This provides the basis for a modular product-based CCS system approach.
5. Evolvability: Recognizing that continuous updates and upgrades are paramount to the railway digitalization, OCORA intends to introduce secure upgradability and interchangeability to speed-up the integration of future innovations in a flexible manner and to provide a solid basis for introducing game changers such as FRMCS or ATO.

OCORA Releases

OCORA already published its first Alpha release in November 2019, sketching its first vision on the architecture. It is now releasing the Beta release with a more detailed description of the architecture and its modules, and the overall program including the roadmap, the OCORA Minimum Viable Product. OCORA results are published under the European Union Public License (EUPL) and are consequently available for all stakeholders on the internet (https://github.com/OCORA-Public/Publication). OCORA aims with Beta release at obtaining the feedback of interested stakeholders especially suppliers and notified bodies in the railway sector.

Next Steps

OCORA will continue dissemination OCORA concepts and organizing opportunities for feedback to all interested stakeholders. The signatories plan a series of prototypes, technical demonstrators and tests related to OCORA in the coming years. The Gamma release is planned for end of 2020 and Release 1.0 for end of 2021.