

Release notes

RCA Baseline set 0, Release 4

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1. RCA Baseline set 0, Release 4

RCA BL0 R4 is an internal release (after Alpha, Beta and Gamma, BL0 R1, BL0 R2, BL0 R3) of the documents prepared by the RCA initiative.

- This release includes updates to previously released documents and several new documents. Content which belongs to the specification in strict sense is being prepared in a MBSE (model-based systems engineering) approach.
- The documentation structure is described in “RCA Documentation Plan” [RCA.Doc.6].
- Access: RCA public releases are made directly available here: <https://public.3.basecamp.com/p/Kee-hzqFmXv5R2N7tGDjaEokq> or through links on the EUG or EULYNX websites.
- This release is not yet a complete or precise specification of RCA. It is likely that the architecture will change/evolve, based on feedback we expect from within and outside of the RCA group.

2. Note on model-based content

The documents RCA.Doc.14 and RCA.Doc.35 are automatically generated from a Capella model. This model is developed incrementally and intentionally only contains a subset of the future RCA scope. This functional scope is defined by the following system capabilities:

- 01: Set point to position required by mission
- 09: Move one train unit
- 11: Prepare departure of train unit
- 15: Respond autonomously to object on or near the line 4.3.5 65.1: Create warning area
- 66.1: Start warning authorised trackside persons of approaching train unit
- 66.2: Stop warning authorised trackside persons of approaching train unit
- 85: Provide navigation data of train unit
- 87: Activate map data

In consequence, the model only contains artefacts (e.g. actors, interfaces to the environment, system functions) that are necessary to realise these system capabilities. Other functionality is **not yet** included in the model and hence not exported to aforementioned documents.

Furthermore, these system capabilities are also limited to certain features (e.g. capability “85: Provide navigation data of train unit” only takes ETCS-based localisation into account). However, a complete documentation of the limitations could not be delivered for this release and will be added for the next version. Hence, the model-based content is currently to be understood as a showcase on how to generate documents from model-based engineering content.

3. Imprint

- Publisher: RCA (an initiative of the ERTMS Users Group and EULYNX Consortium)
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4. New or updated content of RCA Baseline set 0, Release 4

The complete documentation plan can be found in [RCA.Doc.6]

Id	Name	Short description	Update BLO R4
RCA.Doc.1	RCA White Paper	The rationale for starting RCA. Foundation for MoU between EUG and EULYNX.	Unchanged
RCA.Doc.3	RCA Process Overview	How the RCA group works to prepare, maintain and bring the RCA specification to the sector.	Unchanged
RCA.Doc.5	RCA Release Notes	Description of current release of RCA deliverables.	Update 04/2022
RCA.Doc.6	RCA Documentation Plan	Overview of the documentation set of RCA	Update 04/2022
RCA.Doc.7	RCA FAQ	Frequently asked questions and answers regarding RCA. Useful for a quick overview.	Unchanged
RCA.Doc.8	Concept: Modular Safety	A modular architecture requires and enables concepts to reduce the safety workload.	Unchanged
RCA.Doc.10	Concept: RCA Effects - Business Case	The economic effects (savings) of an RCA-based implementation, based on smartrail 4.0 and extrapolated to other IMs.	Unchanged
RCA.Doc.11	Concept: Plattform Independence	The need to achieve more modularity between applications and the platforms.	Unchanged
RCA.Doc.12	Concept: RCA Effects - Capacity	The effects on traffic capacity for an RCA-based system.	Unchanged
RCA.Doc.13	Concept: Architectural approach / System-of-systems perspective	Architectural principles for the RCA.	Unchanged
RCA.Doc.14	RCA Terms and Abstract Concepts	Definition of used terms.	Update 04/2022
RCA.Doc.15	RCA System Concept	A high-level description of the goals and fundamental concepts of RCA:	Unchanged
RCA.Doc.28	Migration	Illustrates how migration towards an RCA-based system can be planned, including examples of different IMs. Includes a summary of results in presentation format (Migration Results v0.9).	Unchanged
RCA.Doc.29	Concept: LSL - Enhanced L3, Supervision, Localisation	Evolution of ETCS, rationale for submitted TSI CRs.	Unchanged
RCA.Doc.30	Concept: Principles of the safety logic	Geometric-based interlocking for more capacity and flexibility.	Unchanged

RCA.Doc.31	Concept: Operational plan	Concept for the standardized interface between RCA and a TMS.	Unchanged
RCA.Doc.32	Concept: Degraded modes	The role of degraded modes in specifying RCA.	Unchanged
RCA.Doc.33	Methods and Tooling : Arch Process	Describes the methods and tools used for developing the RCA specification.	Update 04/2022
RCA.Doc.34	RCA Roadmap	Overview planned development for RCA.	Unchanged
RCA.Doc.35	RCA System Definition	Definition of the RCA System architecture	New 04/2022
RCA.Doc.36	RCA Documentation plan - Annex	Visualization of the documentation plan.	Unchanged
RCA.Doc.37	Concept: RCA effects overview	Overview of potential the effects / benefits of an RCA-based system.	Unchanged
RCA.Doc.40	RCA Architecture Poster	Diagram of the interface architecture of RCA.	Update 04/2022
	LWG: Railways Localisation System HL Users' Requirements	Provided by the Localisation Working Group of the EUG.	Unchanged
RCA.Doc.43	Concept: Informal Architecture Overview	Provides an informal overview, until the MBSE-generated documents are officially published.	Unchanged
RCA.Doc.45	(Cyber) Security Guideline	A guideline to and definition of a harmonized Security Risk Assessment for System Design process	Unchanged
RCA.Doc.46	Concept : Digital Map	Concept for provision of track and trackside infrastructure information in the form of structured map data.	Unchanged
RCA.Doc.47	Concept : Plan Execution	Overview and the principles of plan execution.	Unchanged
RCA.Doc.48	Realization of RCA goals	Description of the goals and objectives of RCA	Unchanged
RCA.Doc.49	Concept: Architectural Design for Plan Execution	Description for the architectural design related to plan execution.	Unchanged
RCA.Doc.50	A.P.M business targets and strategy	Describes the strategy of the A.P.M. part of RCA and business requirements	Update 04/2022
RCA.Doc.51	Concept: APS	Solution principles, objectives and requirements	New 04/2022
RCA.Doc.53	A.P.M objectives	Objectives (high level requirements) list for APS	Unchanged
RCA.Doc.54	RCA Concept: MAP (Overall Solution Concept)	Concept for Data Preparation	New 04/2022
RCA.Doc.55	Digital Map Business Case	Business Case for Digital Map	Unchanged
RCA.Doc.56	Digital Map Evaluation Onboard Map	Solution evaluation for Onboard Map	Unchanged
RCA.Doc.57	Digital Map Evaluation Reference Model	Reference Model for evaluation	Unchanged
RCA.Doc.58	RCA Digital Map PHA	PHA for Digital Map	New 04/2022
RCA.Doc.59	Digital Map System Definition	System Definition of Digital Map	New 04/2022
RCA.Doc.60	Explanation of ARCH Processe, Methods and Rules	Explanation of the architecture process applied in RCA	Update 04/2022
RCA.Doc.69	MAP Object Catalogue	Definition of MAP Object Catalogue	New 04/2022

	White paper: An Approach for a Generic Safe Computing Platform for Railway Application	Definition of Computing Platform API	Unchanged
	Generic Safe Computing Platform High-Level Requirements	Requirements for Computing Platform	Unchanged
	Draft Initial Specification of the PI API between Application and Platform	Whitepaper for Computing Platform	

Related documents:

- RCA white paper: the rationale for starting RCA, accessible here https://ertms.be/workgroups/ccs_architecture and here <https://www.eulynx.eu/index.php/home2/37-reference-ccs-architecture-white-paper>.
- Command and Control 4.0 by Josef Doppelbauer (ERA): https://www.era.europa.eu/sites/default/files/library/docs/command_and_control_en.pdf

5. Feedback for RCA

Feedback for RCA is welcome! If you would like to attend a workshop or give feedback, please contact rca@eulynx.eu.

RCA will inform if and how feedback is integrated in future work. RCA will continue to provide regular updates in the form of new releases.

6. Authors and Reviewers of RCA

The RCA initiative is initiated and supported by EUG and EULYNX.