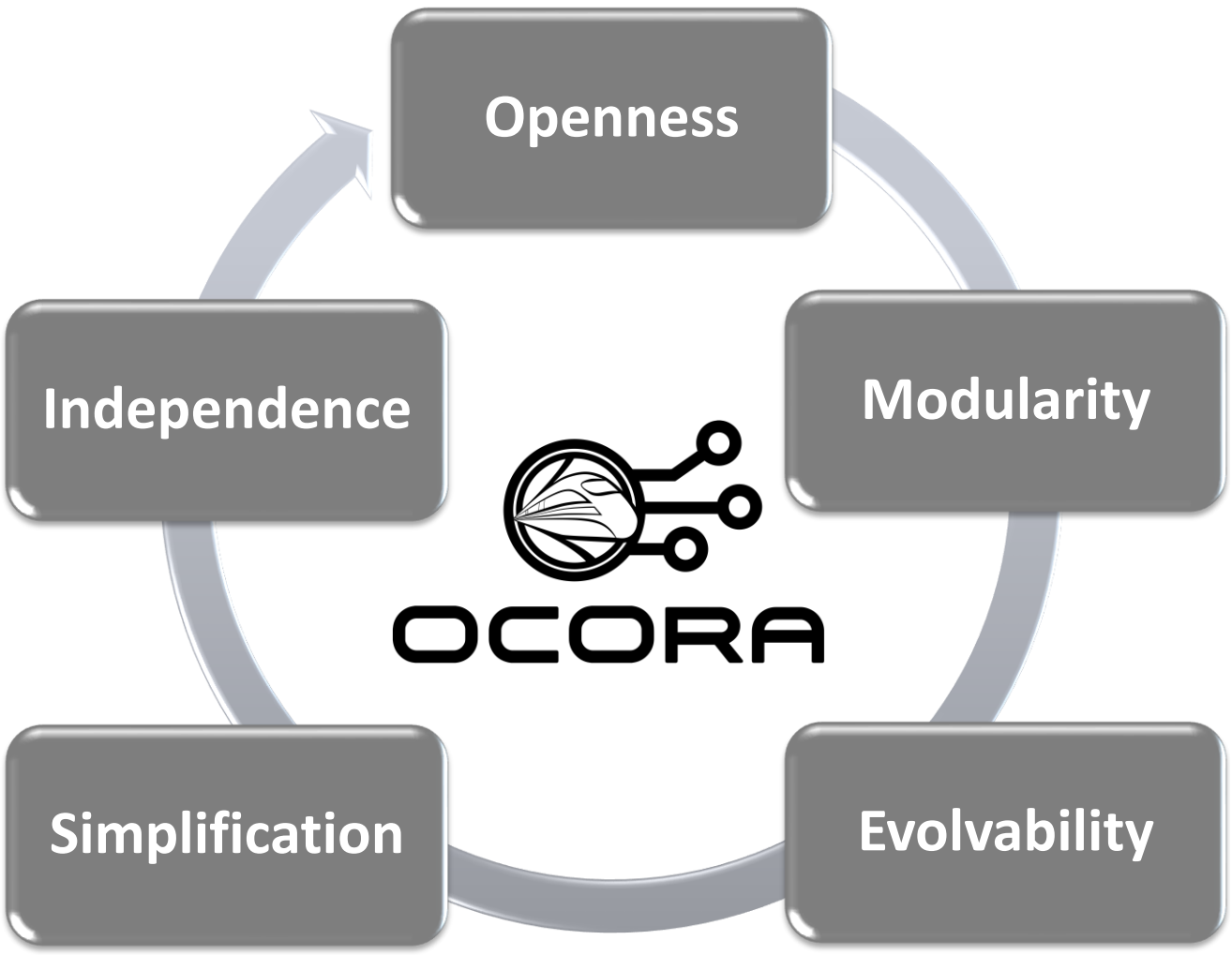
OCORA Release R1

DESIGN PRINCIPLES



OCORA is an open collaboration targeting an open and powerful **CCS On-board reference architecture**.

PROBLEM STATEMENTS

Current ETCS On-board solutions:

1. are based on the TSI specifications ensuring interoperability, but the **subset specifications are incomplete and ambiguous**. Therefore, interoperability is not a given.
2. are **more expensive than technologically justifiable**. This seems to be a result of high integration engineering and certification efforts, as well as small batch sizes and high project risks.
3. are **difficult to be integrated into existing vehicles**.
4. are **difficult and time consuming to adapt/change/update/upgrade**:
   - In the case of patching in non SIL area (e.g. cyber- security patching)
   - In the case of error correction in SIL area
   - In the case of baseline upgrade (e.g. ETCS baseline 2 to 3)
   - In the case of functional enrichment (ex. base for game changer introduction is not a given)
5. do **not respect different, non-overlapping life cycles** (e.g. vehicle vs. CCS vs. connectivity)
6. are **difficult to maintain** (e.g. maintenance, monitoring, diagnose possibilities very limited)
7. are **lacking built-in cyber security**, since this is a newer topic, especially in combination with 4 + 6.
8. are **performing below expected availability and reliability** (from overall ETCS system perspective).

In addition:

- The benefit of ETCS On-board only pays off, if the ERTMS rollout progresses in Europe on large scale.
- The ETCS On-board functions as such also need some improvements (e.g. braking curve, odometry accuracy, etc.) to serve current operational needs.
- Difficult, expensive and time consuming ETCS On-board fitments in general, are delaying national deployment plans, impacting trackside investments, and postponing ERTMS rollouts.

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RELEASE CONTENT

Release Information

- OCORA-BWS01-010 – Release Notes
- OCORA-BWS01-020 – Glossary
- OCORA-BWS01-030 – Question and Answers
- OCORA-BWS01-040 – Feedback Form

Communication Material

- OCORA-BWS02-010 – Executive Summary Slide Deck
- OCORA-BWS02-020 – Program Slide Deck
- OCORA-BWS02-030 – Technical Slide Deck
- OCORA-BWS02-040 – Program Posters
- OCORA-BWS02-050 – Technical Posters

Program Documentation

- OCORA-BWS03-010 – Introduction to OCORA
- OCORA-BWS03-020 – Guiding Principles
- OCORA-BWS04-010 – Problem Statements
- OCORA-BWS05-010 – Road Map
- OCORA-BWS05-020 – Minimal Viable Product
- OCORA-BWS06-010 – Economic Model – Guiding Principles - Assumptions - Assessment Criteria
- OCORA-BWS06-020 – Economic Model
- OCORA-BWS06-030 – Economic Model – Model Description
- OCORA-BWS06-040 – Economic Model – User Manual
- OCORA-BWS06-050 – Economic Model – CCS System Life Cycle Costing Scenario Studies
- OCORA-BWS07-010 – Alliances
- OCORA-BWS07-020 – CCS On-board for Europe's Rail Joint Undertaking
- OCORA-BWS08-010 – Methodology
- OCORA-BWS08-020 – Tooling
- OCORA-BWS09-010 – Acceptance of Global Standards – Overniew
- OCORA-BWS09-020 – Acceptance of Global Standards – Focus on Safety in CCS
- OCORA-BWS09-030 – Acceptance of Global Standards – Cartography of Standards

Technical Documentation

- OCORA-TWS01-010 – Design Requirements
- OCORA-TWS01-020 – System Capabilities
- OCORA-TWS01-030 – System Architecture
- OCORA-TWS01-040 – Capella Modelling
- OCORA-TWS01-050 – Capella Model Export
- OCORA-TWS01-100 – Localisation On-Board (LOC-OB) – Introduction
- OCORA-TWS01-101 – Localisation On-Board (LOC-OB) – Requirements
- OCORA-TWS01-112 – Automatic Train Protection On-Board (ATP-OB) – MLM Interface Analysis
- OCORA-TWS02-010 – CCS Communication Network – Evaluation
- OCORA-TWS02-020 – CCS Communication Network – Proof of Concept (PoC)
- OCORA-TWS03-010 – SCP – Whitepaper Computing Platform for Railway Applications
- OCORA-TWS03-020 – SCP – High-Level Requirements
- OCORA-TWS03-030 – SCP – Draft Initial Specification of the PI API between Application and Platform
- OCORA-TWS04-010 – Functional Vehicle Adapter – Introduction
- OCORA-TWS04-011 – Functional Vehicle Adapter – Requirements
- OCORA-TWS04-012 – Functional Vehicle Adapter – Standard Communication Interface Specification
- OCORA-TWS04-013 – Functional Vehicle Adapter – Design Guideline
- OCORA-TWS05-010 – Requirements – Management Guideline
- OCORA-TWS05-020 – Stakeholder Requirements
- OCORA-TWS05-021 – Program Requirements
- OCORA-TWS06-010 – (Cyber-) Security – Project Security Management Plan
- OCORA-TWS06-020 – (Cyber-) Security – Guideline
- OCORA-TWS07-010 – Modular Safety – Strategy
- OCORA-TWS07-020 – Modular Safety – Evolution Management
- OCORA-TWS07-030 – Modular Safety – SRAC Management
- OCORA-TWS09-010 – Testing – Strategy
- OCORA-TWS09-020 – Testing – Benchmarking Report Modular Testing
- OCORA-TWS09-030 – Testing – Software Test and Integration Engineering acc. EN 50657 or EN 50128
- OCORA-TWS10-010 – CENELEC Phase 1 – Concept

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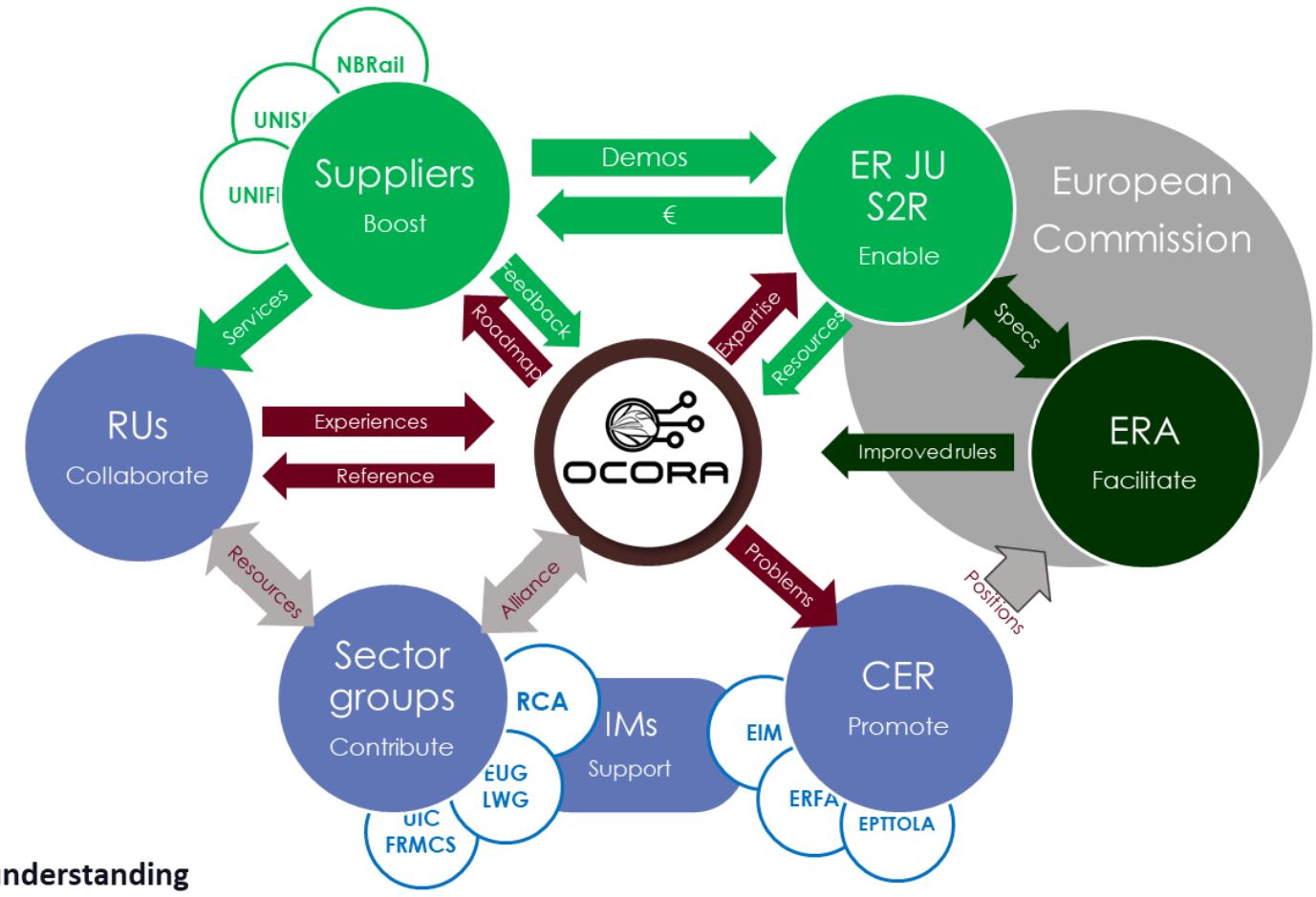
SECTOR STAKEHOLDER MAP

OCORA collaboration is open to support:

- ➔ ER JU / S2R: financing and an agile frame for industry partnering
- ➔ Suppliers : joined activities (e.g. models, PoC, prototype, MVP…)
- ➔ ERA : optimised acceptance based on just rules

Other fleet owners and any expert or EU citizen are welcome to join as supporter or contributors.



OCORA liaisons and alliances allow to find common understanding and complementarity at expert, corporate and institutional level.

ROADMAP