Key Note Connecta event June 30th

Matthias Moritz, DB Program Manager OCORA

How came a PLC bus into this train? What the author have to do with it?

# OCORA Gamma Release – one pager

Founding Members

OCORA, the "**Open CCS On-board Reference Architecture**" initiative, whose signatory founding Members are NS, SNCF, DB, SBB and ÖBB, has reached a next important milestone with the **Gamma 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**.
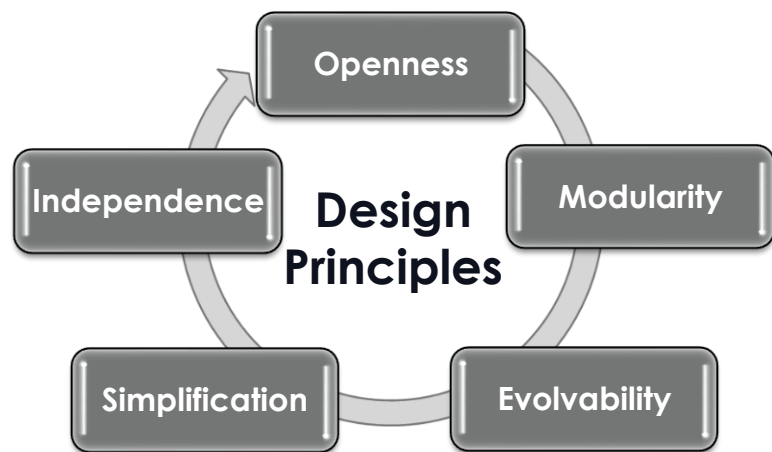
The interface to the TCMS is done via a Functional Vehicle Adapter, covering the specifics of the vehicle in a dedicated module.
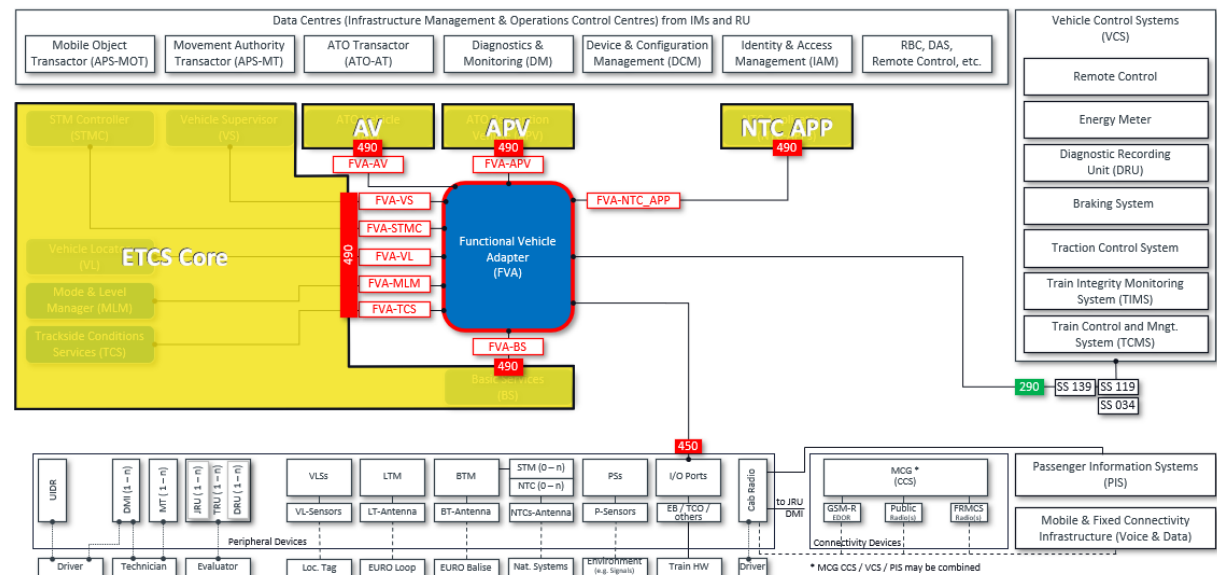
OCORA deliverables are published under the **European Union Public License** (EUPL) and are consequently available for all stakeholders.
OCORA plans a series of **prototypes**, **technical demonstrators** and **tests** in the coming years. The **Delta Release** is planned for **mid 2021** and **Release 1.0 end of 2021**.

OCORA- Key note

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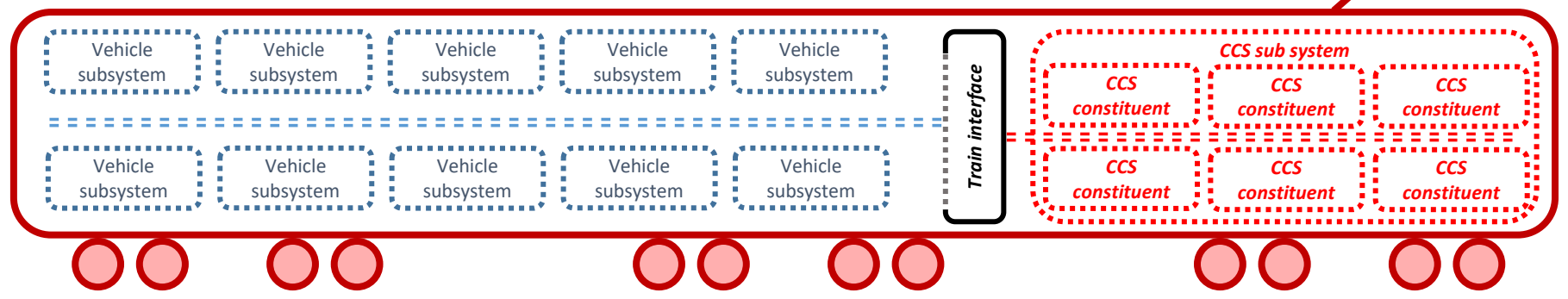**Level of Modularity 0** (current situation): the integrated proprietary CCS system is (again) fully integrated in the proprietary vehicle environment, driving costs and risks and complicating obsolescence issue

Vehicle subsystem | Vehicle subsystem | Vehicle subsystem | Vehicle subsystem | Vehicle subsystem

Train interface

CCS sub system

CCS constituent | CCS constituent | CCS constituent

Vehicle subsystem | Vehicle subsystem | Vehicle subsystem | Vehicle subsystem | Vehicle subsystem

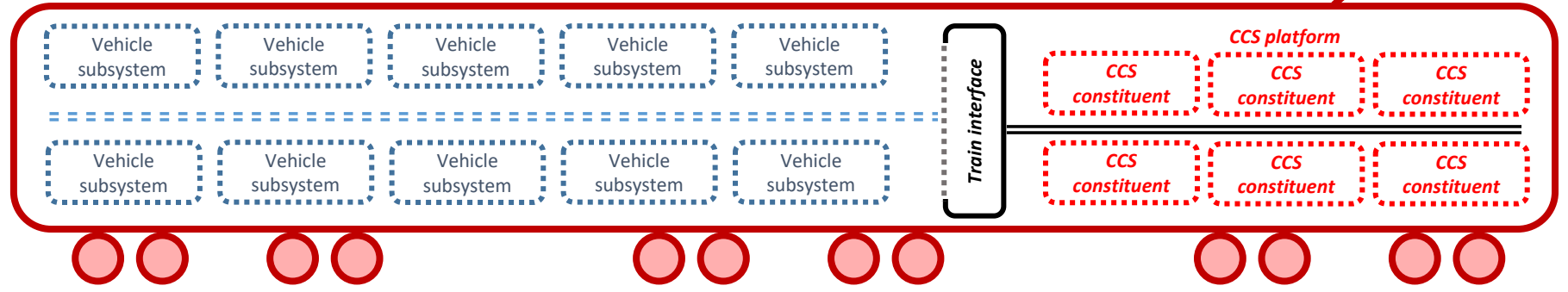CCS constituent | CCS constituent | CCS constituent
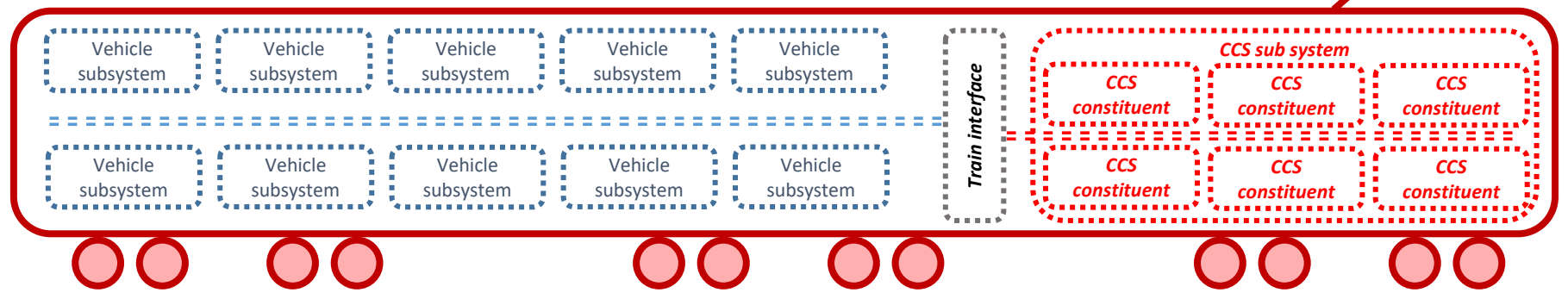
Project proposal: SS119 and SS139 Compliant ETCS and ATO GoA 2 Interface Specification (June 2020)

Level of Modularity 1 (imminent retrofit projects): the interface between the proprietary CCS system is isolated from the fully integrated proprietary vehicle environment, enabling exchange of the CCS environment without affecting the vehicle and vice versa, simplifying obsolescence issues

Vehicle subsystem | Vehicle subsystem | Vehicle subsystem | Vehicle subsystem | Vehicle subsystem

Train interface

CCS sub system

CCS constituent | CCS constituent | CCS constituent

Vehicle subsystem | Vehicle subsystem | Vehicle subsystem | Vehicle subsystem | Vehicle subsystem

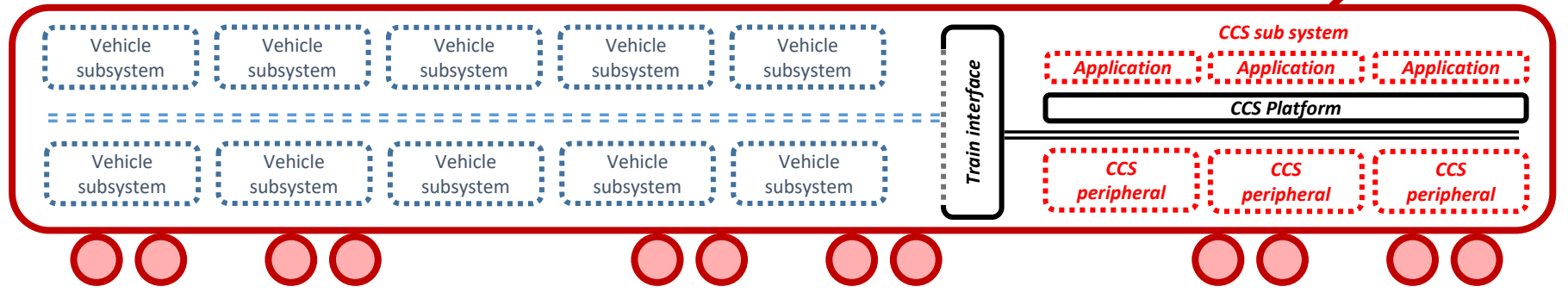CCS constituent | CCS constituent | CCS constituent

Project proposals: Modular ETCS and GOA 2 Semi Formal Functional Model (December 2020); Modular ETCS and GOA 2 Full Formal Functional Model (December 2021); Modular ETCS and ATO GoA 2 Executable Software (December 2021); MVP - Prototype (starting from May 2021)
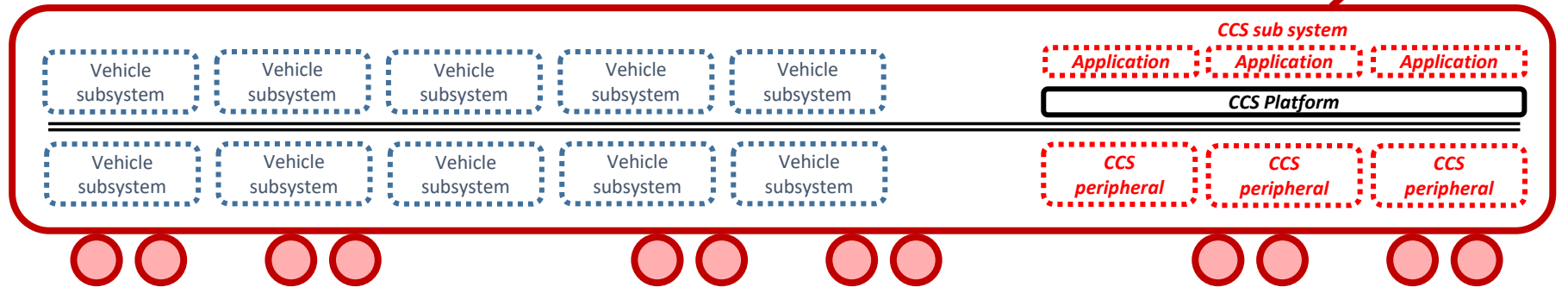
Level of Modularity 2 (short term OCORA objective): the interface between proprietary constituents of the CCS system are isolated, enabling exchange of those constituents without affecting either the vehicle or other CCS constituents, simplifying obsolescence and migration issues

Vehicle subsystem | Vehicle subsystem | Vehicle subsystem | Vehicle subsystem | Vehicle subsystem

Train interface

CCS platform

CCS constituent | CCS constituent | CCS constituent

Vehicle subsystem | Vehicle subsystem | Vehicle subsystem | Vehicle subsystem | Vehicle subsystem

CCS constituent | CCS constituent | CCS constituent

Urgent project proposal   **Next project proposals**   Integrated, proprietary subsystem or constituent   Open, universal subsystem or constituent – MVP

Level of Modularity 5 (full OCORA on-board): the CCS system is composed of a platform, hosting independent application and connected to peripheral through a universal bus. This open CCS environement is isolated from the fully integrated proprietary vehicle environment
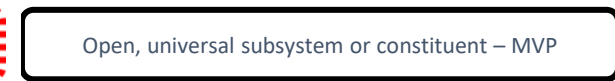
Vehicle subsystem | Vehicle subsystem | Vehicle subsystem | Vehicle subsystem | Vehicle subsystem

Train interface

CCS sub system

Application | *Application* | *Application*

CCS Platform

Vehicle subsystem | Vehicle subsystem | Vehicle subsystem | Vehicle subsystem | Vehicle subsystem

CCS peripheral | *CCS peripheral* | *CCS peripheral*

Level of Modularity *n* (long term perspective): the CCS universal bus interface any vehicle constituents, simplifying obsolescence and migration issues

Vehicle subsystem | Vehicle subsystem | Vehicle subsystem | Vehicle subsystem | Vehicle subsystem

CCS sub system

Application | *Application* | *Application*

CCS Platform

Vehicle subsystem | Vehicle subsystem | Vehicle subsystem | Vehicle subsystem | Vehicle subsystem

CCS peripheral | *CCS peripheral* | *CCS peripheral*

Urgent project proposal   **Next project proposals**

Integrated, proprietary subsystem or constituent

Open, universal subsystem or constituent – MVP

OCORA Connecta Alignment

Why?

▶ Using the same technology is beneficial to ease the future integration of domains (CCS/TCMS/PIS) as part of further automation and digital services enabled by 5G and to save development cost

How?

▶ Alignment of Requirements to identify a system fitting for TCMS and CCS domain

▶ Investigating the way of interfacing between the domains with different lifecycles (architecture and processes)

▶ Alignment of timelines

▶ Part of LinX4Rail

OCORA key note