Safe4RAIL2

SAFE architecture for Robust distributed Application Integration in roLling Stock 2

CONNECTA-2

CONtributing to Shift2Rail's NExt generation of high Capable and safe TCMS. Phase 2

Shift2Rail

Regional Demonstration & SF

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Regional Demonstrator

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21/01/2020   CONtributing to Shift2Rail's NExt generation of high Capable and safe TCMS. Phase 2 | SAFE architecture for Robust distributed Application Integration in roLling stock 2   2
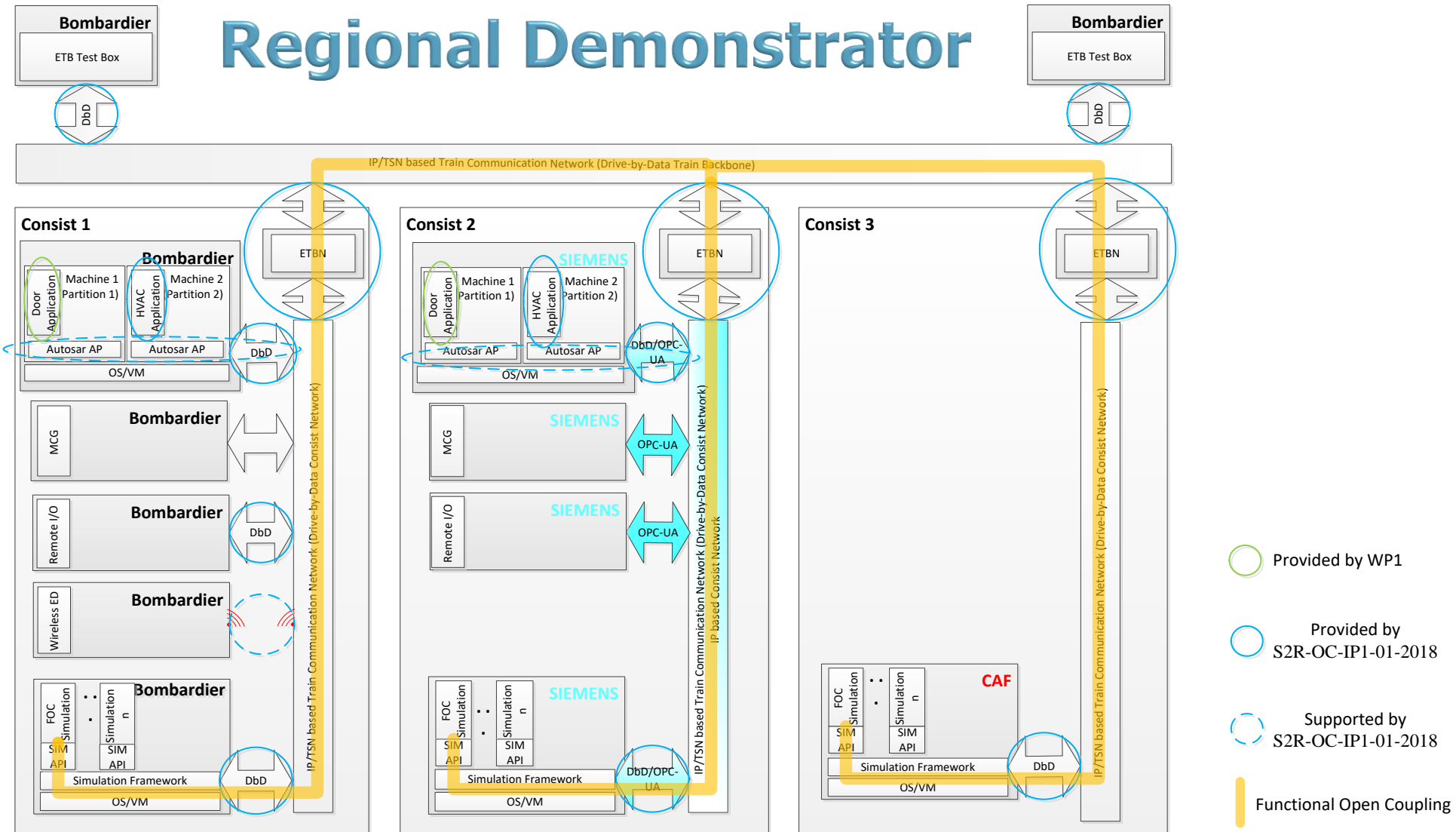
Functional Distribution Framework

- FDF == Autosar + extensions (TRDP, SDTv4, ECSC, …)
- Hosting applications with different SIL
- FDF ensures strict temporal and spacial separation
- FDF API ensures independency from
  - HW
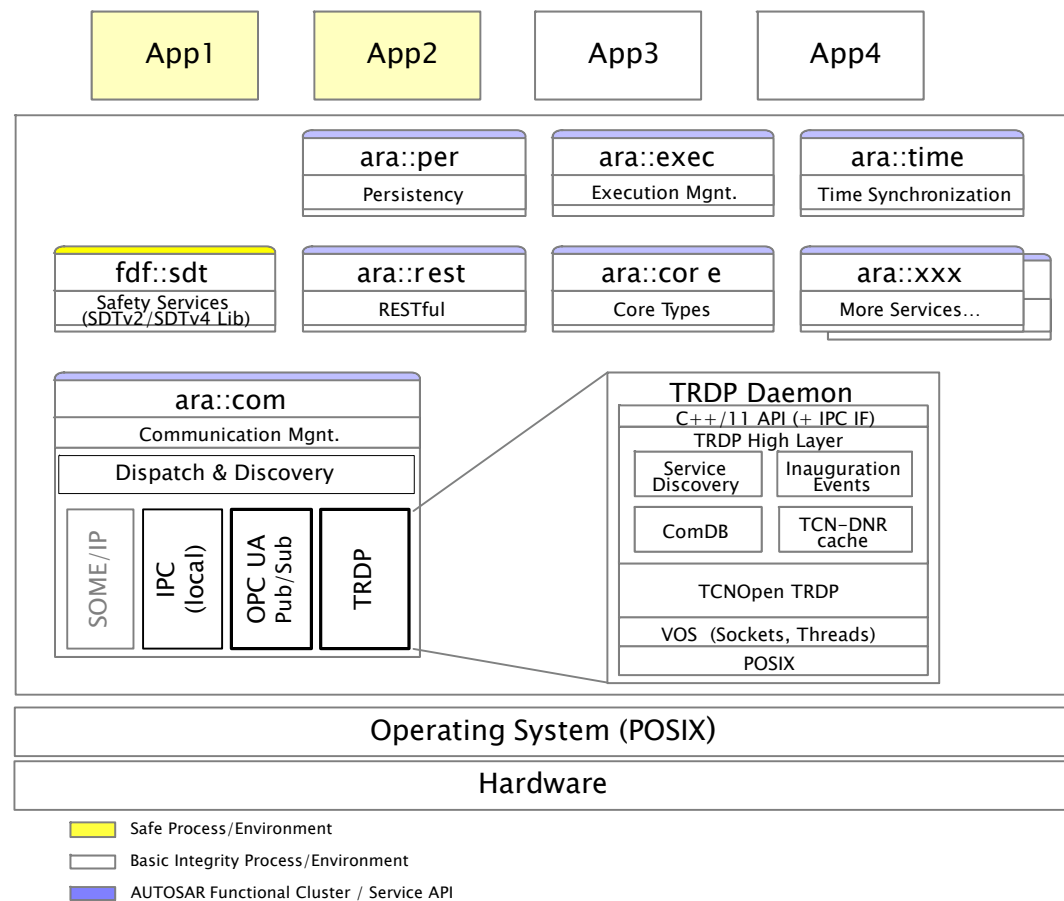 - OS
  - Communication protocols
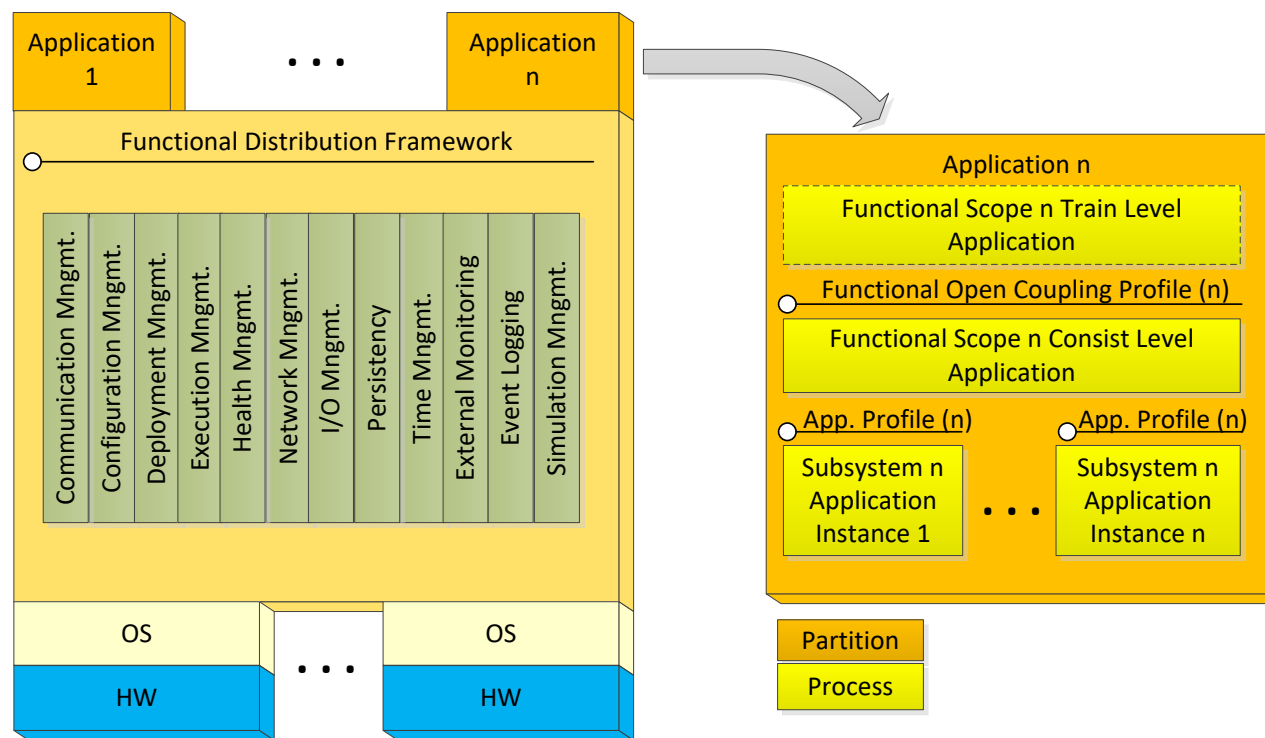
Test Future Standard Interfaces for Interoperability

- Application profiles for Door, HVAC
- Functional Open Coupling for Door, HVAC
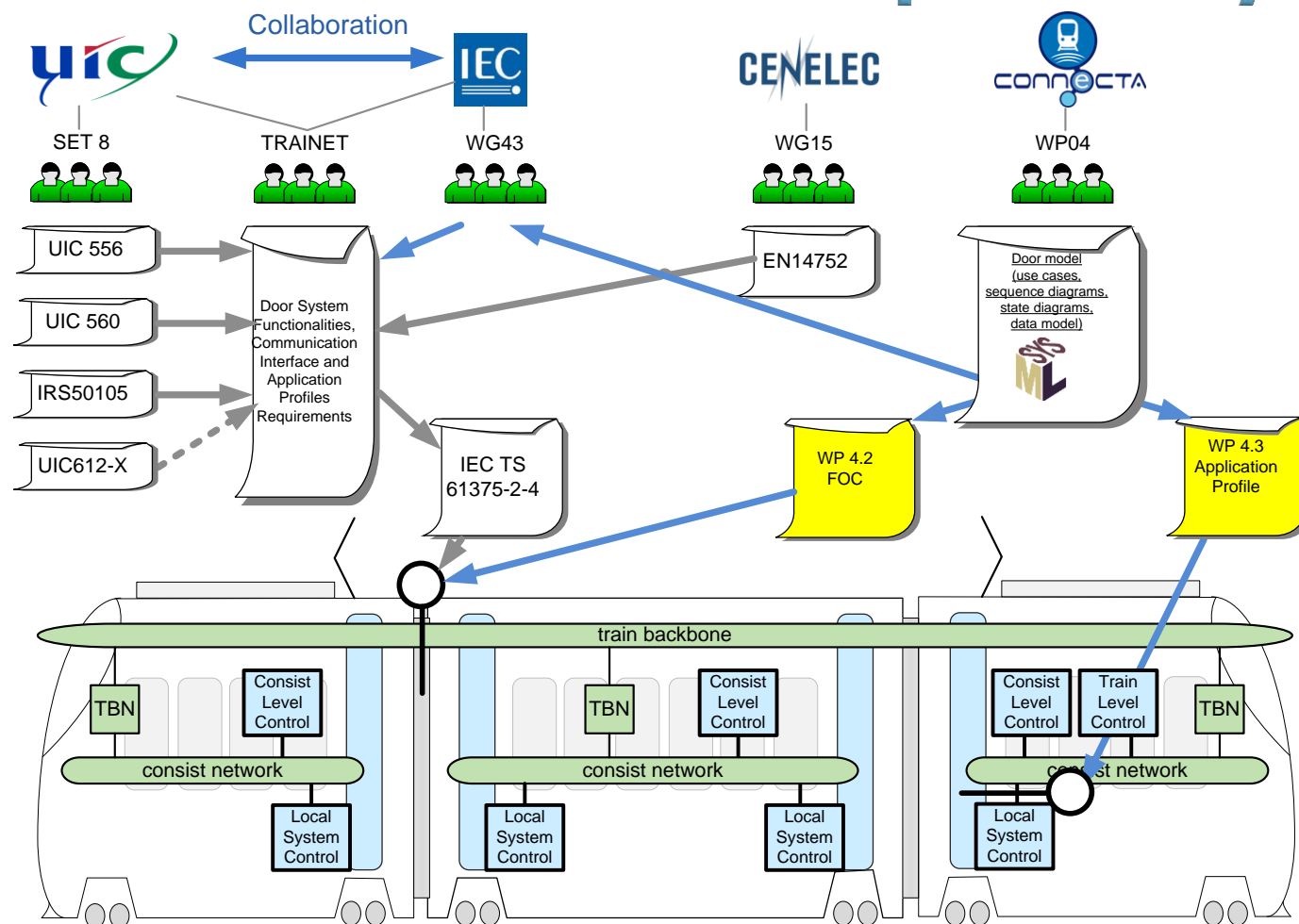
Implementation of Dependable Applications

- For implementation of the FDF making strong use of upcoming AUTOSAR Adaptive solutions

- Integration of **TRDP** and **OPC UA (Pub/Sub)** into AUTOSAR Adaptive solution of ETAS to enable communication on ETBN and consist level

- Usage of SDTv4 to ensure safe communication between applications over a grey channel

ETB Simulator

The TTB supports ETB connections on both 'ends' and it supports simulating an arbitrary number of consists (limited by the maximum number of ETB Nodes defined in IEC 61375-2-5)
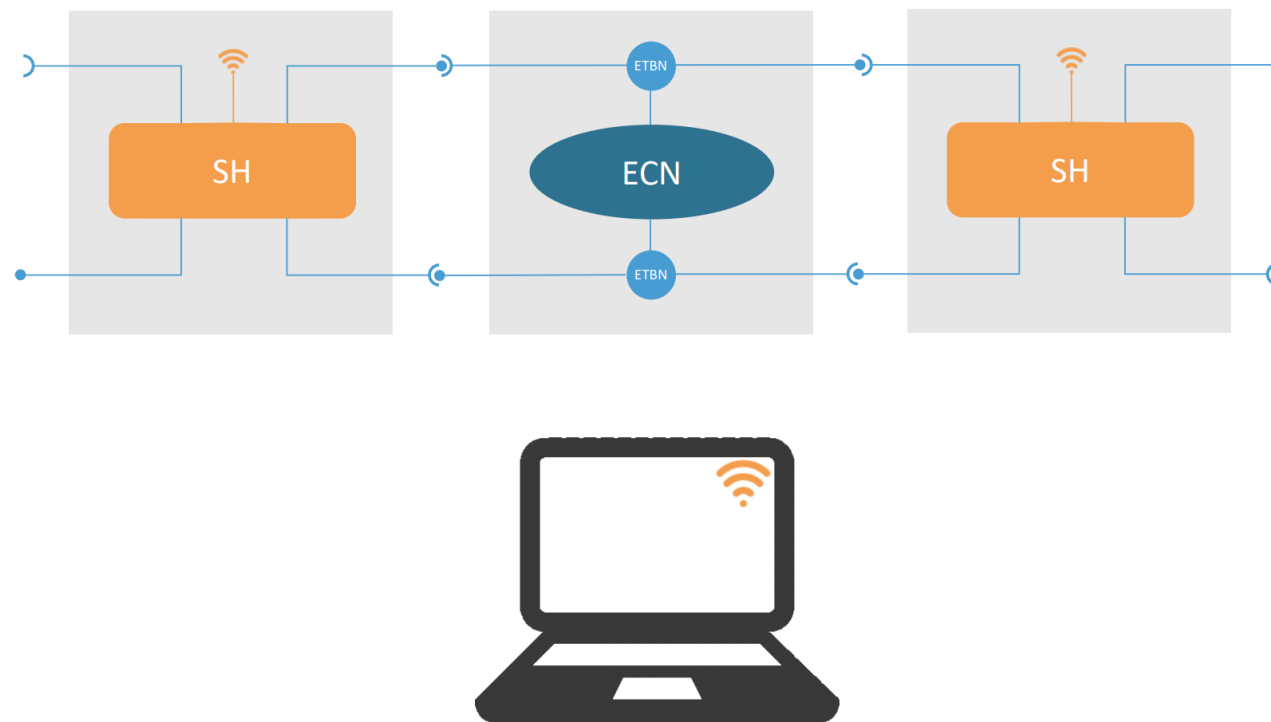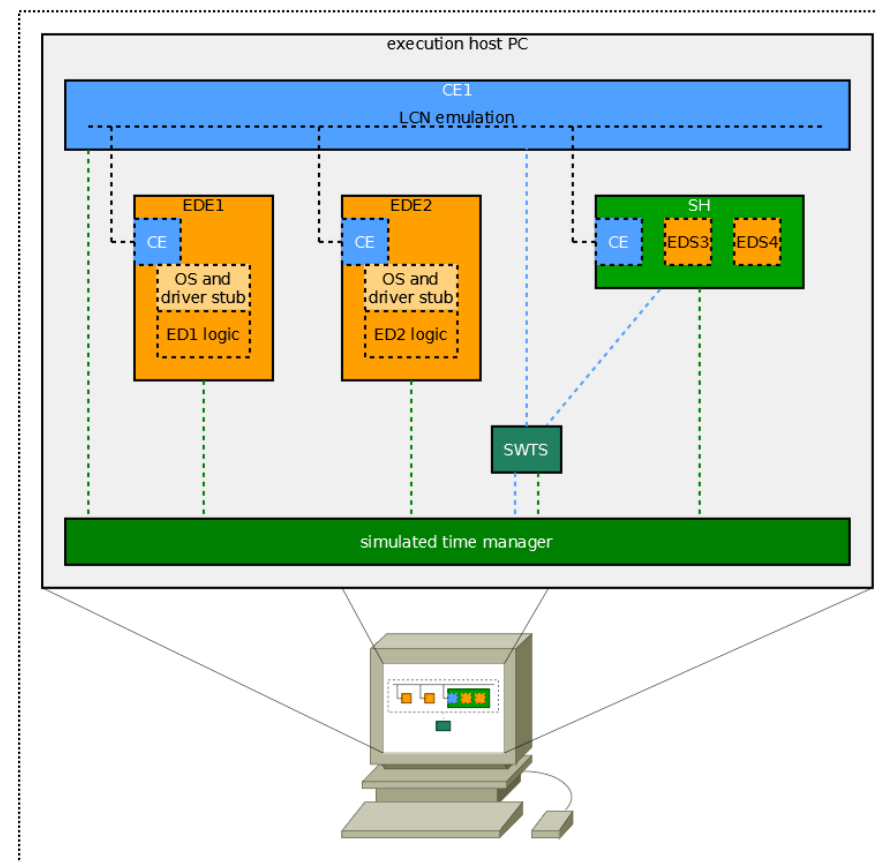
Simulation Host of Consist 2 (SIE) with Pub/Sub Interface
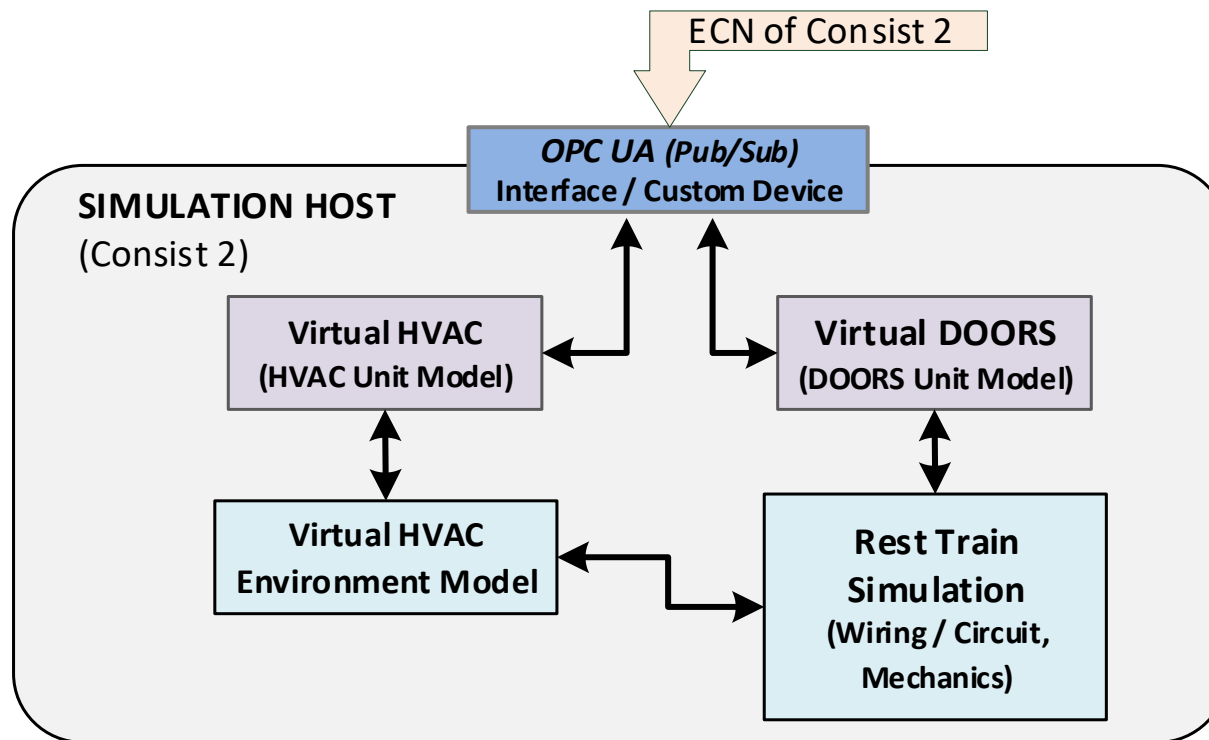
TCMS Virtualization

- Network emulation (ETB, ECN)
- A simulated time manager to support simulated real-time behaviour
- OS and driver stubs to e.g. host the FDF based TCMS application logic
- The Simulation Host application hosting End Device Simulations

Questions ?

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