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Conformity Assessment of Energy Measurement Systems

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Agenda

1. EMS Requirements

2. Conformity assessment procedure

3. Conformity assessment in practice

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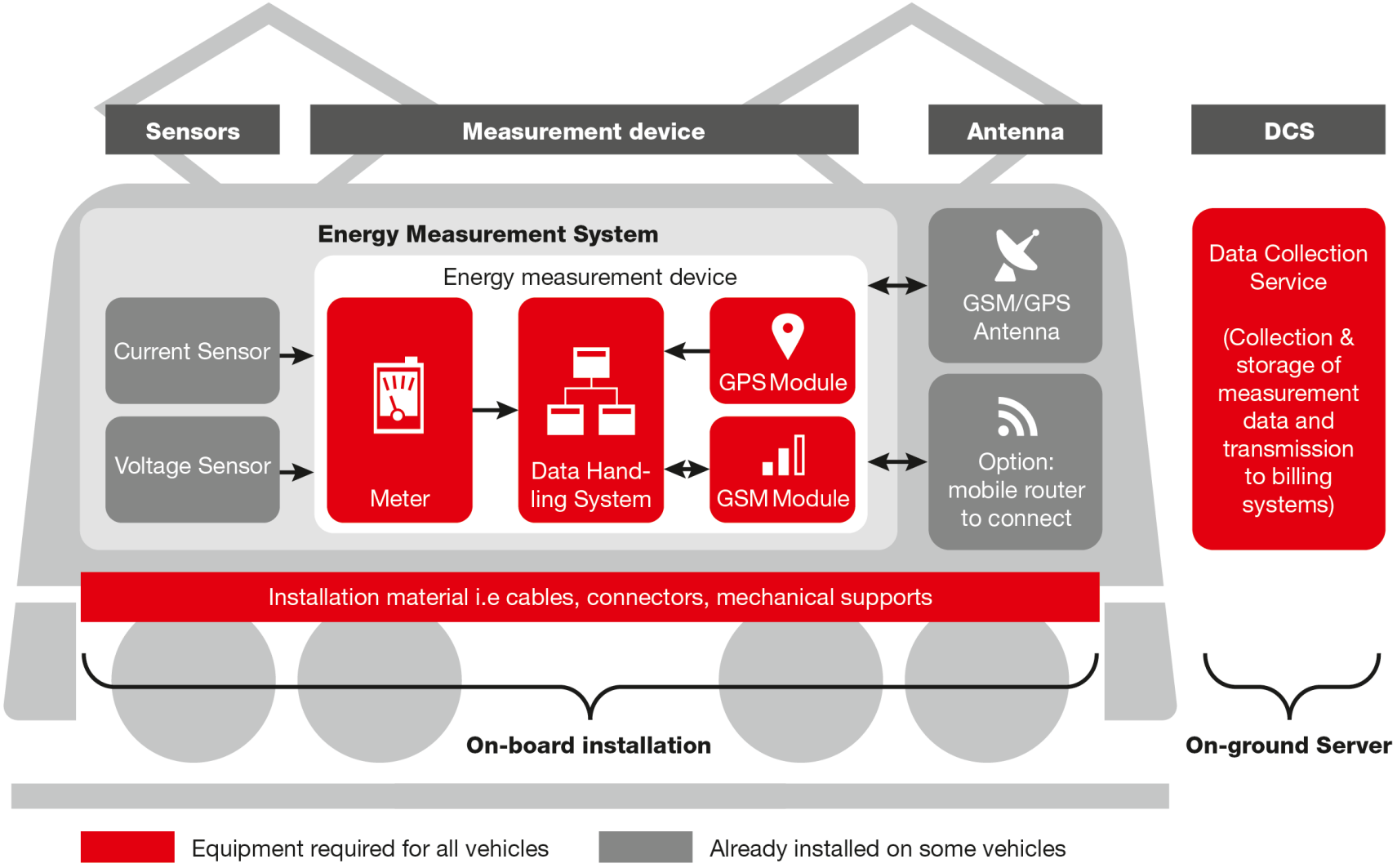
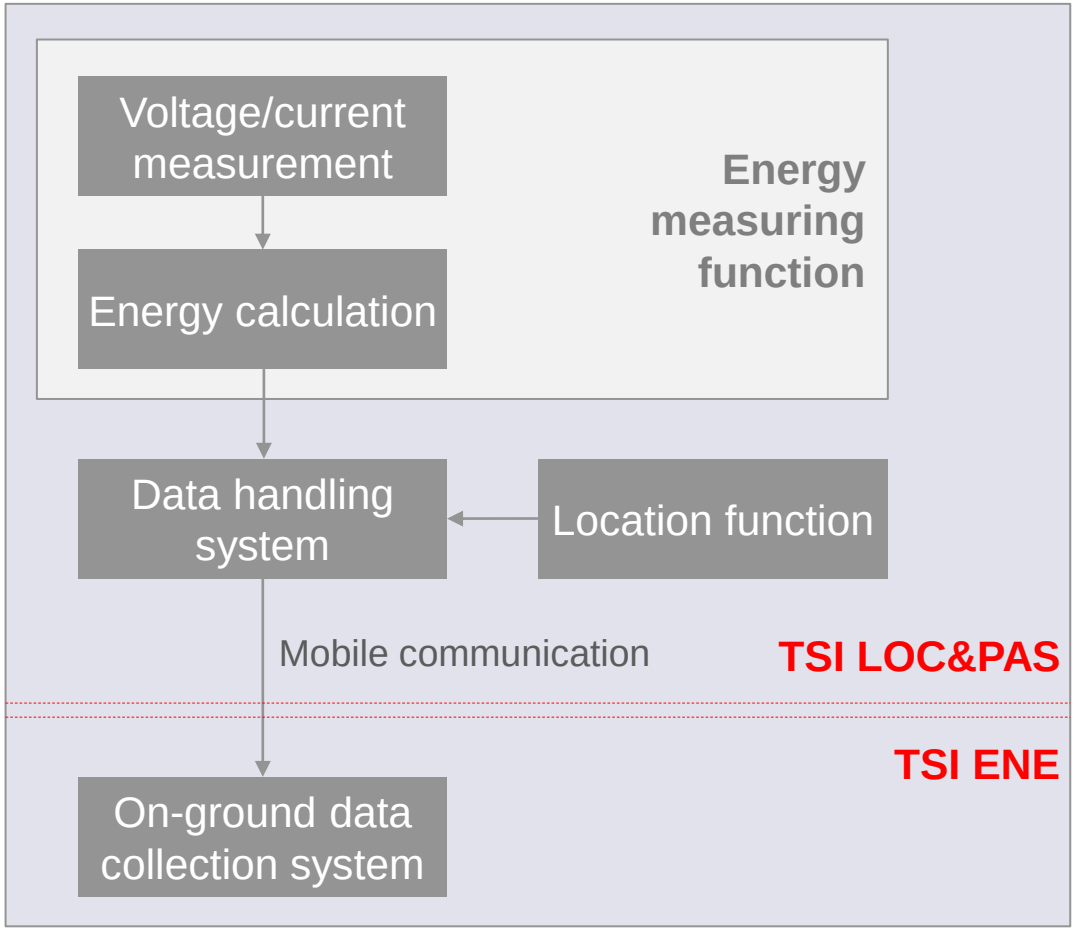
Energy Measurement System for railway vehicles

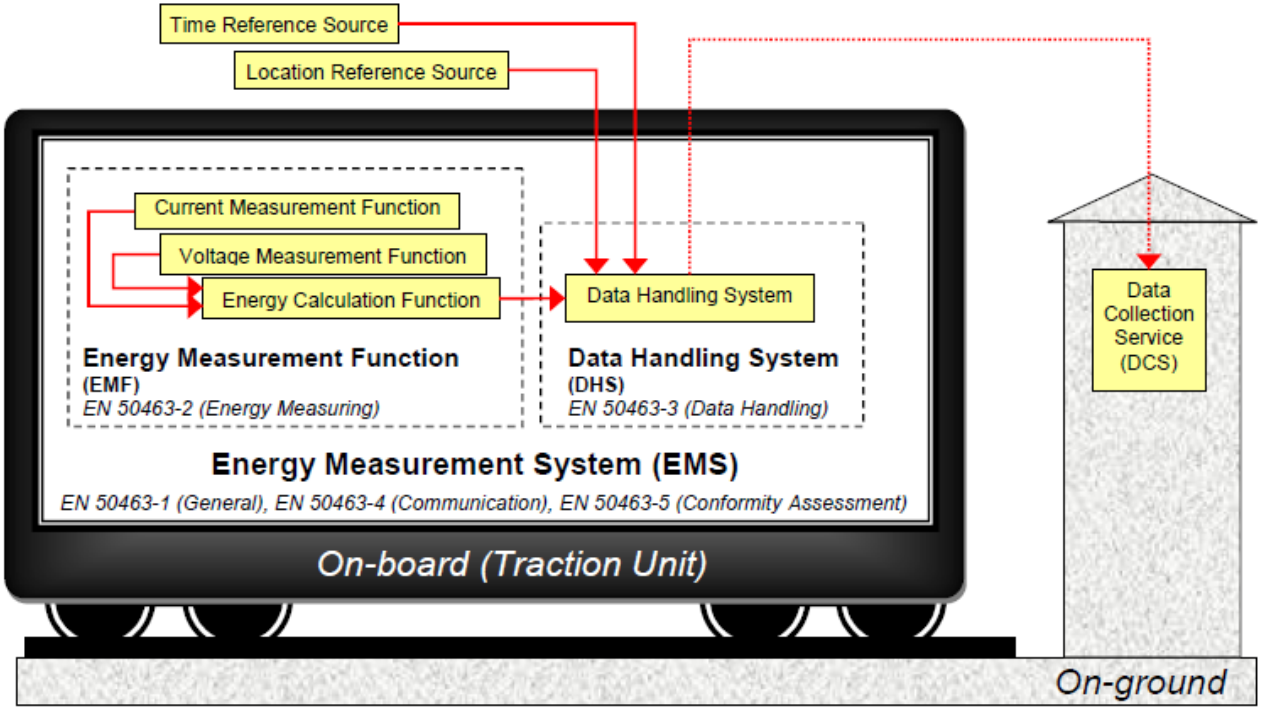


TSI Requirements



- TSI Loc&Pas defines the requirements for the on-board measurement system. These refer in many cases to specific clauses of the EN50463.
- These clauses of the EN50463 are therefore mandatory in the EU.
- The TSI Energy defines the requirements in regard to the Data Collection Service

EN 50463 - Railway applications
Energy measurement on board trains



Part 1, General

Part 2, Energy measuring

Part 3, Data handling

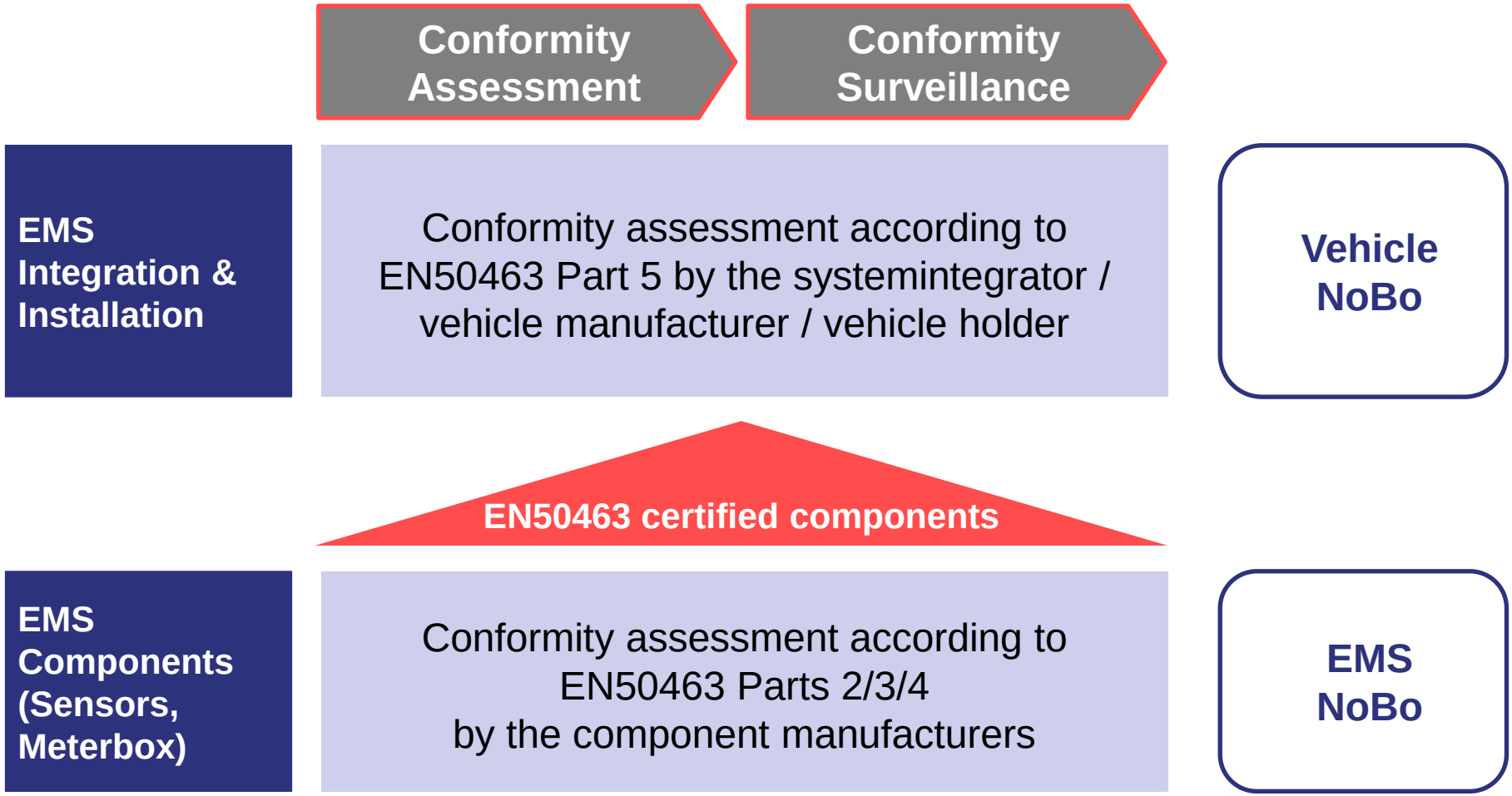
Part 4, Communication

Part 5, Conformity assessment

Conformity Assessment – Main Steps

1	**Assessment / Certification of components (Meterbox, Sensors)** Design Review → Type Test → Routine Test
2	**Assessment of EMS (component) integration** Design Review → Type Test
3	**Assessment of EMS installation in the vehicle** Design Review → Type Test → Routine Test
4	**Re-verification of conformity over the lifetime of the EMS**

EMS Conformity assessment procedure



Case example Switzerland: Conformity assessment in practice

Goal

Equip existing fleet of vehicles with EN50463 conform EMS.

Plan

Standard meterbox certified to EN50463 for all vehicles.

Re-use already installed sensors to save investment costs.

Conformity assessment and certification of EMS by NoBo.

Obstacles

- → Most vehicles are not TSI compliant and used only in Switzerland.
- → Many vehicles have existing sensors with high accuracy (0.5 or 1.0). But TSI and EN-Norm require 0.5R or 1.0R accuracy.
- → Methods and procedures for conformity assessment not so clear.
- → TSI and Norm focus on the on-board equipment, but DCS is a key component for operation.

Case example Switzerland: EMS requirements for billing in Network Statement SBB

Conformity documentation required by IM

	EMS conform to EN50463	OR	EMS conform to TSI	OR	EMS installed in traction units in service before 01.01.2018
Vehicle Type	NoBo conformity certification & report		NoBo intermediate statement of verification (ISV) & report		NoBo Conformity assessment report to EN50463 OR TSI (incl. declaraton of deviations) **Exceptions allowed:** - Sensors not certified to EN50463 but accuracy class 0.5 or 1.0 - Sensor output shared with another system - DC measurement not implemented
Individual Vehicle	1. Installation Routine Test Report (IRTR) 2. Calibration certificate for the energy meter				