



Release Presentation

ASAM AE CPX/ P2014-03

Calibration Process Exchange Format

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2016 / 02 /22

Project Purpose

- ▶ **CPX** (Calibration Process Exchange Format) is a vendor independent exchange format for the description of **calibration process sequences** based on OTX according to ISO 13209
- ▶ Support OEMs, suppliers and engineering service providers to publish, to exchange and to consume **processes knowledge** and to create, reuse and automate workflows

Participating Companies

Approved Project and project extension

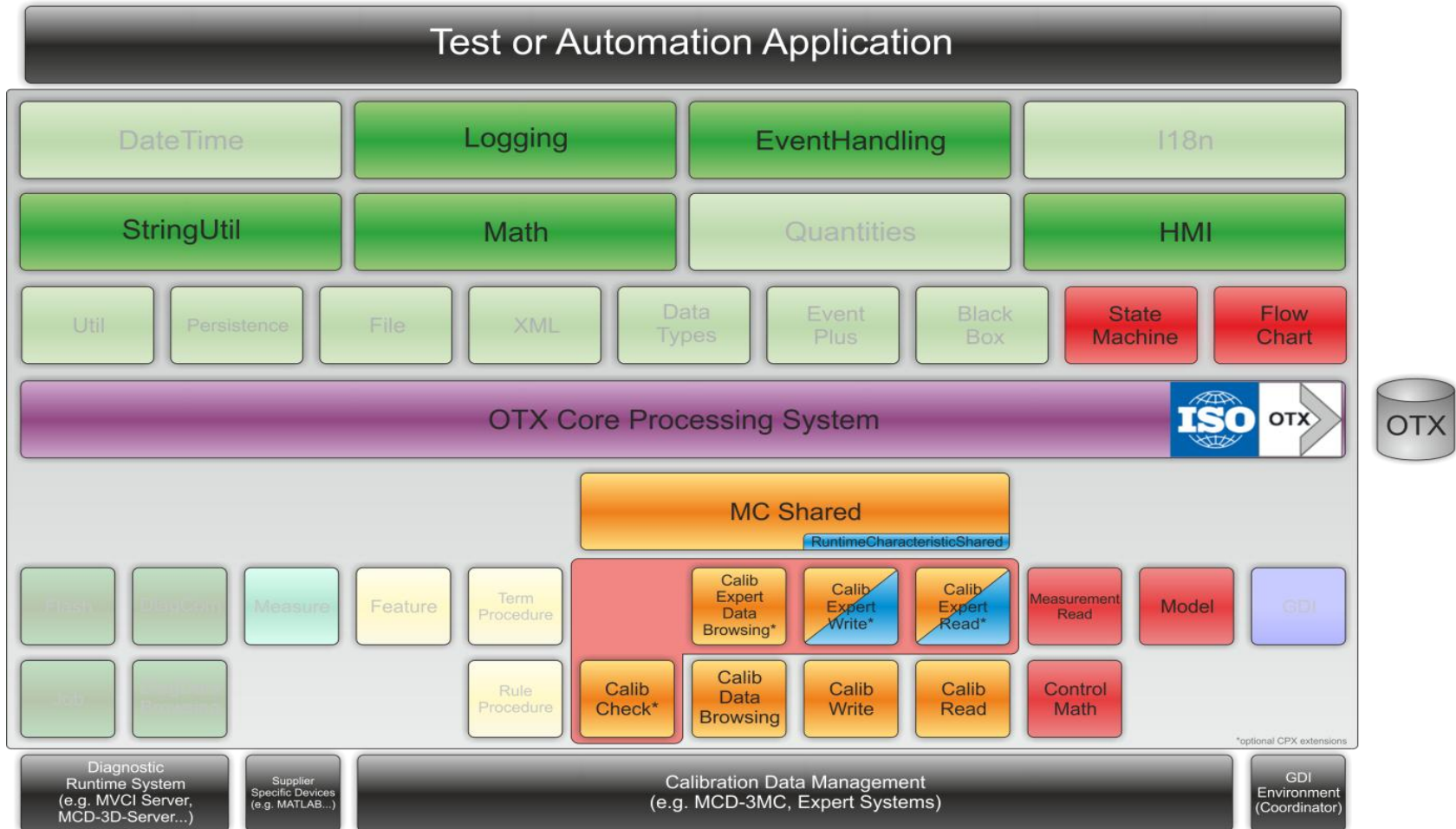
- ▶ EMOTIVE
- ▶ ETAS (presents also IAV)
- ▶ FEV
- ▶ Horiba
- ▶ M&K
- ▶ Vector (passive participating)
- ▶ ZF

Project content

Main tasks

- ▶ New **State Machine** Extension
- ▶ New **Flow Chart Workflow** Extension
- ▶ New **MeasurementRead** Extension
- ▶ New **ControlMath** Extension
- ▶ New **Model** Extension
- ▶ 9 new shared Extensions for **Calibration**; harmonized and reviewed together with CERP

Deliverables Overview



Features

▶ ISO OTX-Extensions

- FlowChart: Describes a workflow
- StateMachine: States, triggers and transitions

▶ CPX OTX-Extensions

- MeasurementRead: Control and access of measured data
- Model: Start and stop of different models, Model Port Mapping, Access to calculation results
- ControlMath: Mathematical calculations for captured measurements

- ▶ **Shared Measurement and calibration extensions**
 - Read or write characteristic values
 - Access to database (A2L) information
 - Compare characteristic values (ECU / physical representation, consider quantization, interpolate maps)
 - Low level functions (expert view) with access to all properties
 - Comfort functions (simple view) with limited but simplified access to most important properties

Deliverables CPX

- ▶ Definition of OTX extensions for
 - I. MeasurementRead
 - II. Model
 - III. ControlMath
- ▶ EA model (UML)
- ▶ XSD schemas generated from the EA model, containing shared extensions with CERP
- ▶ Extensions Specification
 - CPX Reference Guide
 - Calib Extension Interface Definition (for shared extensions)

Deliverables ISO

- ▶ Definition of OTX extensions for
 - I. StateMachine
 - II. FlowChart
- ▶ XSD schemas generated from the EA model,
- ▶ Extensions Specification as ISO part 5 of 13209

Compatibility

Relation with other ASAM standards

- ▶ **CERP V 1.0.0**
 - Calibration Expert system **R**ule and **P**roduct model format
 - 9 extensions shared
- ▶ **MCD-2 MC V 1.7.0**
 - Base for database access (ASAP 2)
- ▶ **MCD-3 MC V 3.0.0**
 - Base for read and write extensions

Relation to ISO

- ▶ **Results are ISO 13209 compliant**
 - CPX is a set of OTX extensions

- ▶ **Together with results of ASAM OTX project (the result of this project shall be transferred to ISO 13209**
 - Part 5: FlowChart_&_StateMachine_Extensions-interface-definition