

Release Presentation

ASAM AE CPX/ P2016-02

CPX Maintenance

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Project Purpose

- ▶ Maintenance of CPX standard (Released 02/2016)
 - Quality assurance
 - Standard verification
- ▶ Consideration of implementation feedback
 - Short time feedback for uprising problems
 - Adaption of UML and XSD
 - Adjustment from CERP requirements

Standard content

- ▶ **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

Standard content

4 + 1 + 9 OTX extensions

- ▶ **FlowChart** extension
- ▶ **MeasurementRead** extension
- ▶ **ControlMath** extension
- ▶ **Model** extension

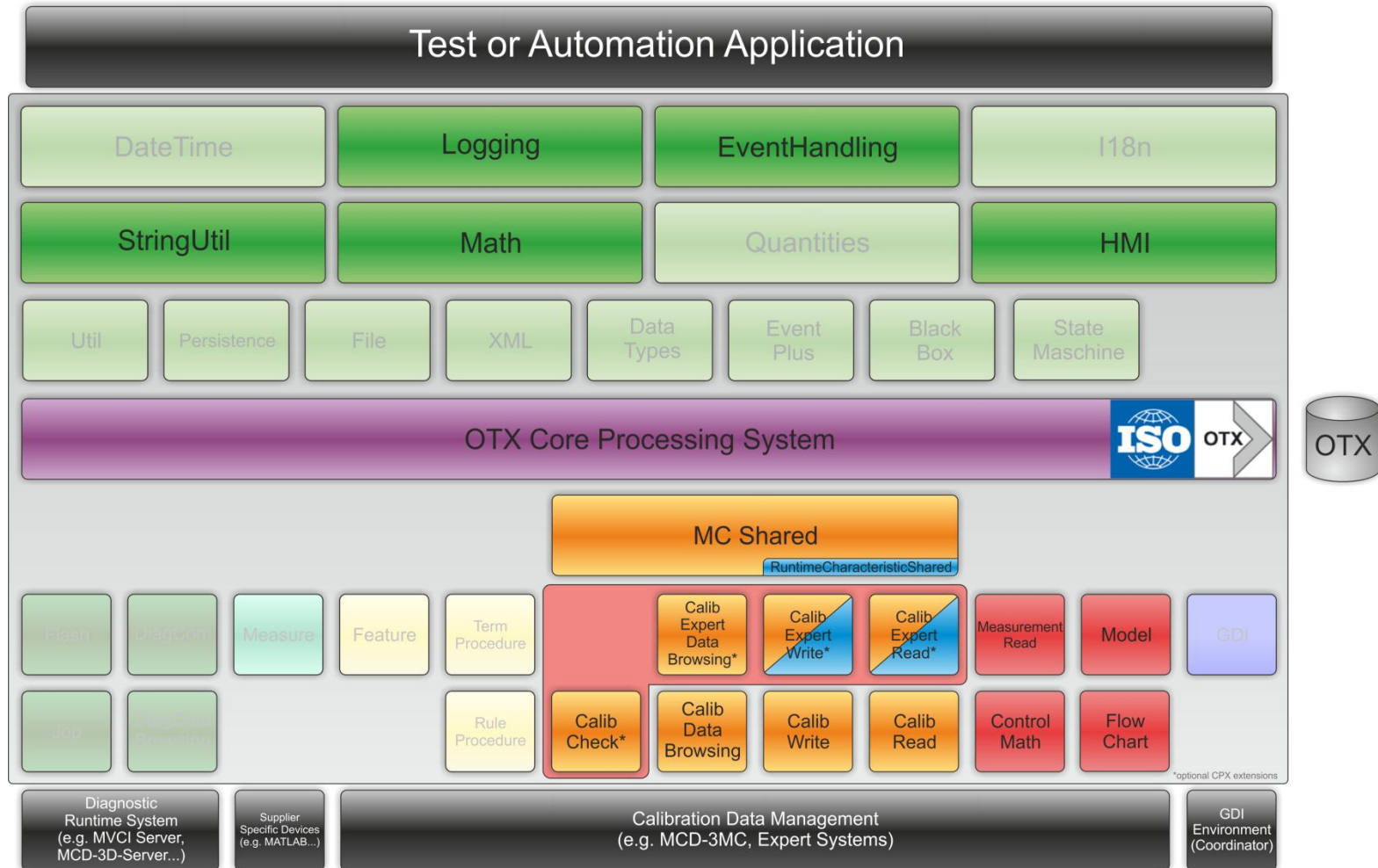
- ▶ Former **StateMachine** extension is no longer part of CPX
 - Describes of a behavior model with states, actions, triggers and transitions
 - Transferred to ASAM OTX working group
 - To have one single source for the ISO 13209 part 4

- ▶ 9 with CERP shared extensions for **calibration**

Project Content

- ▶ No member has implemented the standard currently
 - No feedback from practical usage
- ▶ No feedback from CERP
 - CERP working group has canceled the project
- ▶ Maintenance
 - Revision of StateMachine and FlowChart Extension, resolving of some gaps and errors
 - Adaption of UML, XSD and specification
 - Transferring of StateMachine Extension to ASAM OTX working group

Deliverables Overview



Features

▶ CPX OTX-Extensions

- **FlowChart**

Describes a sequence with implicit jumps

- **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 (with CERP) 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

- ▶ 4 CPX OTX extensions
- ▶ 9 shared OTX extensions (CERP)
- ▶ EA model (UML)
- ▶ XSD schemas generated from the EA model, containing shared extensions with CERP
- ▶ Extensions Specification

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 new OTX extensions

- ▶ **ASAM OTX extension transferred to ISO 13209 and integrated into OTX extension model (Part 4)**
 - StateMachine extension