

**Scenario of using workflows
in Measurement Data
Management (MDM) that are
based on the ASAM ODS
Workflow Application Model**





Overview

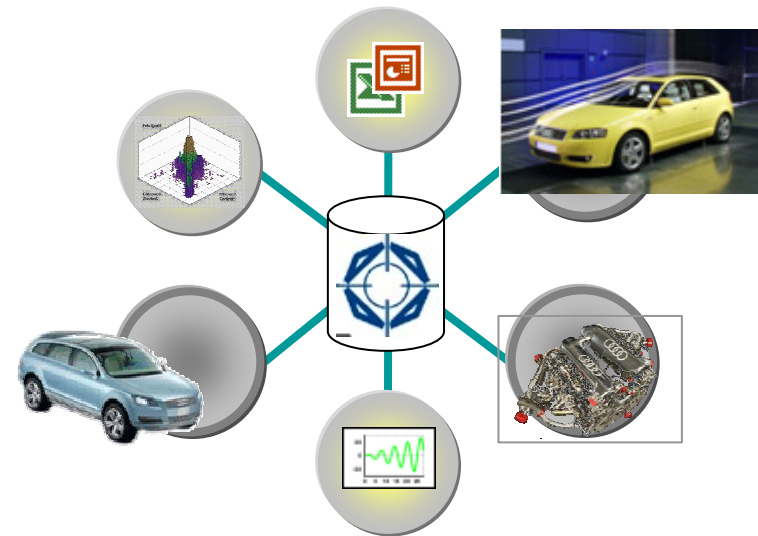
- Measurement Data Management with MDM
 - The MDM-Framework
 - MDM – API and its application model
 - Customizing MDM for your environment
- ASAM Workflow Model
- Workflows in MDM
 - MDM Workflow API
 - Integration of the application model
 - Objectives
 - Workflow Engine
- Use Case Scenario
 - Initial position and requirements
 - Pre-steps and application flow
- Summary





The MDM-Framework

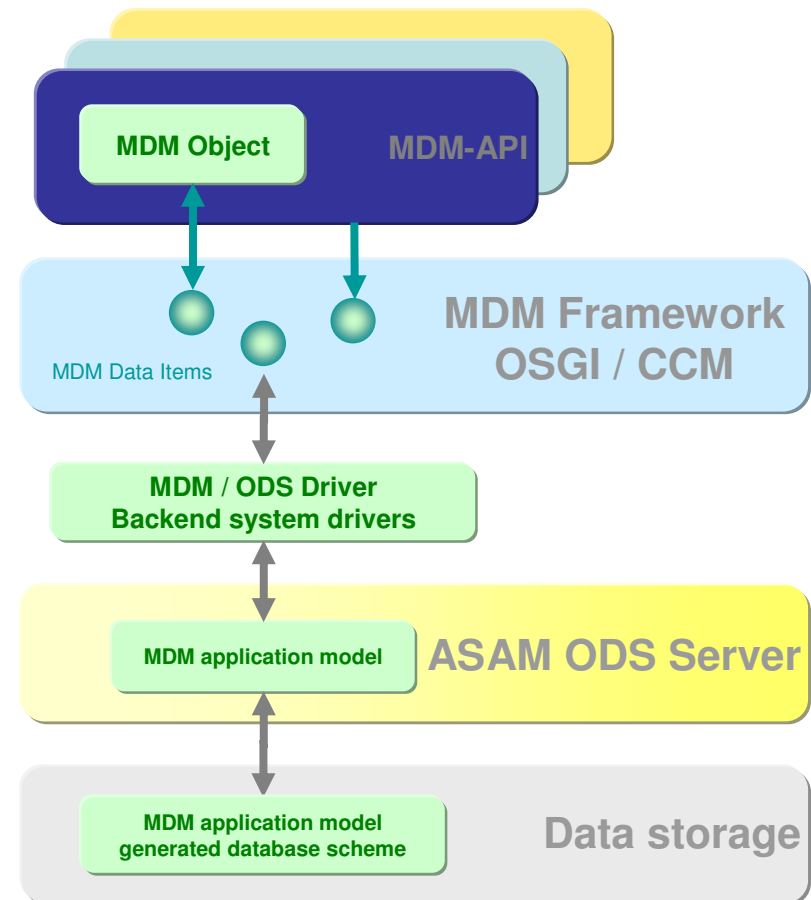
- Objectives: Use MDM as backend-system
 - MDM application model
 - MDM API encapsulates ASAM ODS
 - Simplifying the interchange of test data
 - Easy customizing
- Advantages of using MDM:
 - Approved in other projects
 - Presence of commercial components
 - Storing data ASAM ODS compliant
 - Experience of ASAM ODS
 - Using advantage of ASAM ODS
 - Easy Start - Low costs





MDM – Boundary and Usage

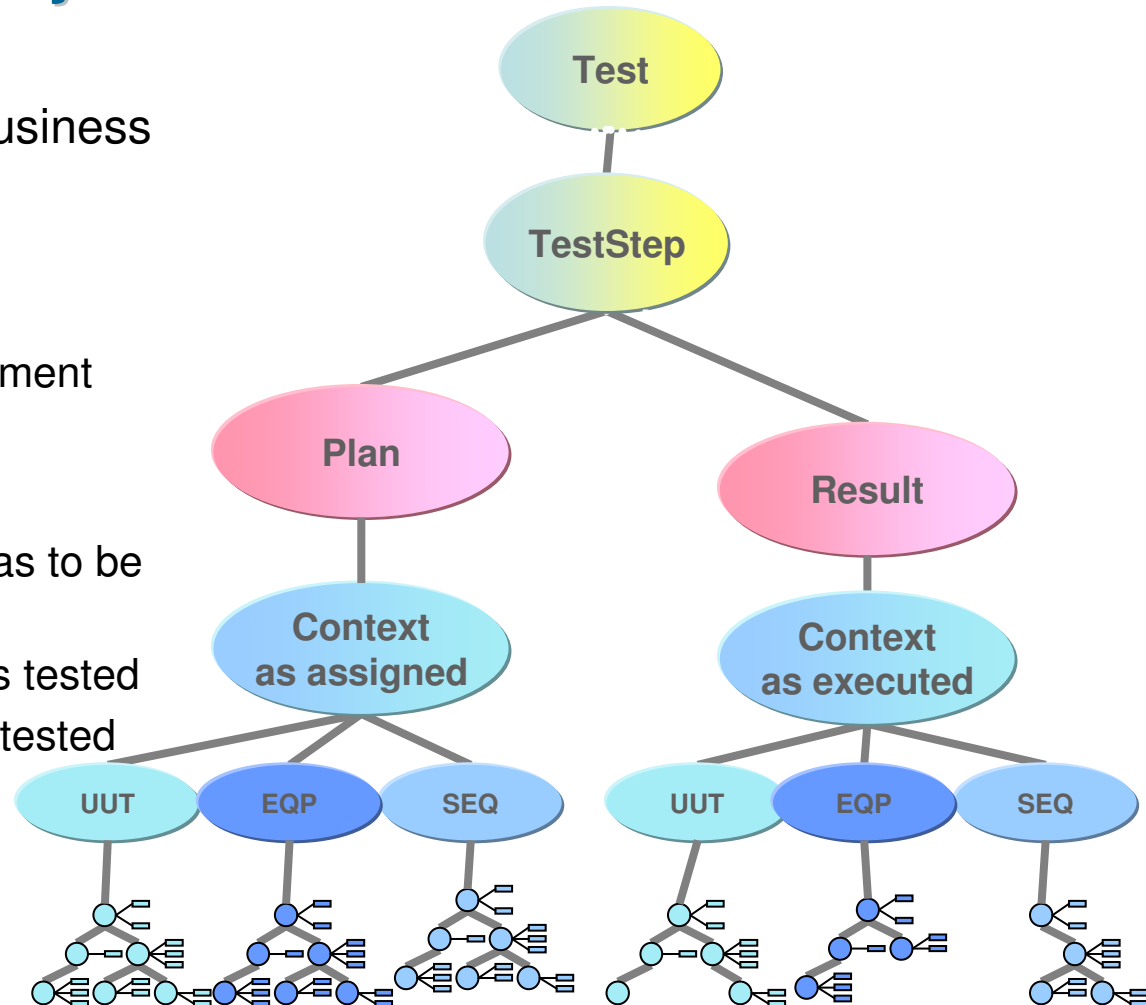
- MDM API
 - Based on MDM Framework
 - Encapsulates ASAM-ODS Methods
 - <http://www.mdm-community.org>
- MDM application model
 - Basic model for future MDM development
 - Supports MDM component environment
 - Delivered as pure ASAM ODS ATF/XML data
 - Includes a runtime generation of application elements





Customizing MDM for your environment

- Identifying and defining business objects
 - MDM Catalogue
 - MDM Templates
 - MDM Test and Measurement
- Mapping your business objects to MDM objects
 - Unit under test – what has to be tested
 - Equipment – with what is tested
 - Test sequence – how is tested





Measurement Data Management with MDM

Requirements

- The more MDM is used, the more data has to be processed.
- Much data has to run through the same processes
- Data is produced in external systems
- Data has to be analyzed in external tools
- Therefore we need some kind of automation to discharge the user



ASAM ODS – Workflow Application Model

- Last year the ASAM ODS Application model has been enhanced with workflow specific parts.
- Goal: Specify a standard methodology
- The model is based on Petri Nets



ASAM ODS – Workflow Application Model

- The model defines :
 - How workflows are stored
 - How the collected and produced information during a workflow run is stored
- The model is divided into:
 - a static part
 - a dynamic part



Workflows in MDM

Objectives

- Objectives of using workflows in MDM:
 - Persistence of
 - the workflow definition and
 - the data items
 - Traceability: Knowing the workflow allows to trace how specific results have been produced.
 - Parameterisation:
 - Condition: which data is necessary for the workflow
 - Action: additional data for the activated processes



Workflows in MDM

Integration in the application model

- Based on this know how we applied an interface to MDM that implements this Workflow Application Model.
- It can be used to define an automatic workflow and its embedded process steps.
- The workflow API stores the definition of the whole workflow and the data that represents an instance of a workflow run.



Workflows in MDM

Workflow Engine

- The Workflow engine must
 - interpret the defined model and
 - run the workflow and its processes.
 - Know and communicated with the tools that are possibly triggered by certain processes
 - Report errors
- At the moment we have no external triggers and influences to the workflow but think about that in future work.



Use Case Scenario

Initial position and requirements

- Increasing amount of data
- Demand of automation:
 - Import of data produced in external systems
 - Analysis and Calculation
 - Usage of external tools:
 - MatLab
 - Vector
 - Diadem
 - ...



Use Case Scenario

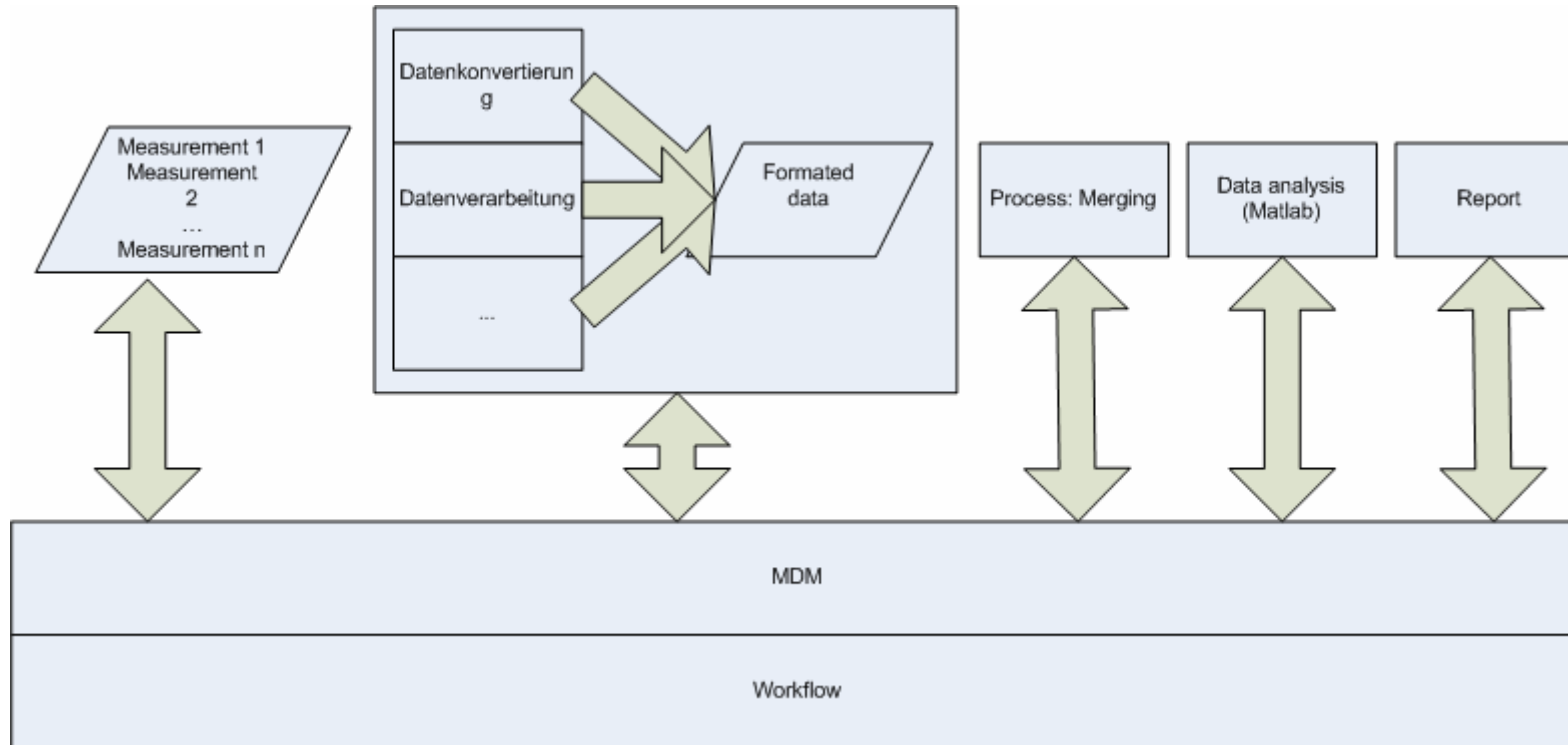
Pre-Steps

- Determination of the necessary components based on the MDM Workflow component
- Determination of necessary components to be developed for the MDM analysis workflow
- Clarification and definition of interfaces and restrictions
- Synchronization of processes
- Errorhandling



Use Case Scenario

Application Flow





Summary

- Modeling and storing workflows with ASAM ODS-data items in a standardized way
- Tracing of the Workflow Data
- Possibility to analyse the created and modified data items and therefore processes
- Automation of analysis, imports, ...
- Graphical support for the administration of workflows in the future