openMDM® – an Open Source Platform for Measured Data Management

Dr. Dietmar Rapf, Michael Schwarzbach

Plan. Measure. Share.
And simplify your measured data management
Agenda

- History and Scope of measured data management
- ASAM ODS – the basis for MDM systems
- openMDM®
  - How openMDM simplifies and accelerates the development and deployment of MDM installations
- openMDM@Eclipse
  - Motivation for an Open Source Platform
- The openMDM® Roadmap
# Measured Data Management (MDM)

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<thead>
<tr>
<th>Crash</th>
<th>Pedestrian protect.</th>
<th>Powertrain</th>
<th>Endurance testing</th>
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<tbody>
<tr>
<td>![Crash Image]</td>
<td>![Pedestrian Image]</td>
<td>![Powertrain Image]</td>
<td>![Endurance Image]</td>
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<tr>
<th>Durability</th>
<th>Thermal properties</th>
<th>Aerodynamics</th>
<th>Wheels, Tires</th>
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<tr>
<th>Summertesting</th>
<th>Wintertesting</th>
<th>Roof pressure</th>
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<td>![Summertesting Image]</td>
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many, many more disciplines produce measured data
Why do YOU need a MDM system?

- Measured data are key to achieve highest product quality
  - They are very valuable and should be safely stored
  - They should be accessible over a long period

- Cars are produced in fast growing numbers of variants
  - Number of measured data is growing exponentially
  - Variants need to be manageable

- Faster development cycles demand earlier product validation
  - Measured data of component tests need to be accessible
  - Data from dissimilar tests need to be combinable and comparable
  - Data need to be aligned with calculated and simulated CAE data

- Validation statements need to be transferable to other variants
Challenges with test data

- Data formats vary with test software, each software vendor uses his own data format – and there are many of them
  - Not comparable data
- Different and undocumented units and dimensions of measures
  - Useless data
- Undocumented measurement environment
  - Uninterpretable data = useless data
- Documentation and data stored in unconnected locations
  - Unfindable documentation = uninterpretable data = useless data
- Data stored somewhere
  - Unfindable data
Standardizing the storage of measured data

- ASAM ODS is intended to define a standard for archiving test result data persistently.
ASAM ODS – Standardizing the storage of measured data

- Defined data model
  - Specific information can always be found at the same position
- Standardized description of data
  - Which descriptive data are needed
  - Where which descriptions should be stored
- Standardized data format
  - Vendor independent
  - Stable over long time periods
- Data and descriptive information are stored together
  - No data without description – always interpretable
- Standardized exchange format for data and their descriptions
  - ATFX – ASAM Transport Format (XML)
openMDM®
– Implementing MDM systems

- Generic ASAM ODS application model
  - No need to define data model for your application
- Application Programming Interface (API)
  - For measured data management
  - Basis for application development
- Collection of system components for various tasks
  - A pluggable modules for productive use
- Collection of methods for measured data management
  - Measured data management process
  - Modelling of measurement processes (workflows)
  - Application development and integration
  - Roles and data access rights
openMDM® – Implementing MDM systems

openMDM® – one step further

Care about your business, not about the technics
Simplifying and accelerating the development of MDM systems

Application development with openMDM®

- Understand your data and your requirements
  - Define your data structures
  - Define your tasks and workflows

- Configure your data structures
  - Using the openMDM® configuration GUI

- Configure system components you want to use
  - Configure the system components

- Program your own pluggable system component

- Compile your application

- Test and rollout your openMDM® application
openMDM@BMW
Motorbike emission test

Outlook
Operator

Email

Horiba-Order system

Test execution

Data-importer

Turbolab
Concerto

Application call with data reference

XML-Order

MDM-System with standardized data storage (ASAM ODS)

Planning  Ordering

Tests

Order data

Result data

Validation/Publishing

Results / Measured data

Archiving

openMDM® – an open source MDM plattform

Dr. Dietmar Rapf – s+c,
Michael Schwarzbach – BMW Group

Seite 11

Euroforum 2015
Experience in openMDM®

Professional experience with openMDM® systems

- More than 25 productive openMDM® systems
  - Some running for more than 10 years in productive mode
  - Approximately 15 systems at Audi AG
  - 3 systems at BMW Group
  - 4 systems at Daimler AG
  - Systems at FEV AG, Bosch GmbH, DAV Trucks, …
- More than 10 systems under development
- Experience in openMDM® systems at German automotive companies
- Application vendors support interfaces to openMDM®
- Ecosystem of experienced openMDM® system integrators
Brief look at the history of openMDM® and the openMDM® community

- ASAM e.V. is standardising data formats for more than twenty years now

- In 2003 AUDI AG started developing a reusable MDM framework based on Eclipse RCP and ASAM ODS
  - The idea of openMDM® was born

- In 2007 openMDM® became a open source community
  - Several automotive OEMs and implementation partners work together
  - openMDM® becomes as flourishing community
Decision for a “relaunch” of openMDM®

Technical issues

- Revision of the technical architecture
- Issues with the CORBA protocol in enterprise organisations
- Demand for thin clients
- Definition of a clear architecture for openMDM® modules so they can be reused effectively
- Readiness for parallel development

Organizational issues

- A proper base for the open source community is required
- Clear copyright and licensing situation
- A defined community collaboration model
- Readiness for parallel development
- Readiness for the ever growing user base
openMDM@Eclipse
– why we chose Eclipse as platform

- More than 10 years of experience with open source in commercial environment
- Sound legal support for trademark, copyright and licencing issues
- Support for a stable collaboration model
  - Eclipse bylaws as a solid basis
  - Definition of a project specific charter
  - Definition of different membership classes with different roles, rights and duties
- Neutral ownership for trademarks
openMDM@Eclipse transition phase

openMDM® community

Constitution and confirmation phase

Eclipse Industry working group for measuring data management

2013

Audi is no more running [http://openmdm.org](http://openmdm.org)

Charta- proposal for openMDM® eclipse IWG

Decision for eclipse IWG

Decision by openMDM® community to reorganize

Seite 16

Dr. Dietmar Rapf – s+c, Michael Schwarzbach – BMW Group openMDM® – an open source MDM plattform

Euroforum 2015
openMDM® Roadmap
– Where we are today

14.07.2014  – Eclipse WG was founded
  • 3 driver members, 4 service providers, 1 application vendor

Aug. 2014  – Charter is finalised, all committees are in place

Sept. 2014  – First new member joins the WG

April 2015  – New architecture is approved, infrastructure for source code management is established

May 2015  – Requirements- and bug-tracking system and process is in place

Today  – Eclipse WG has grown and has become international
  • 4 driver members, 1 user member, 7 service providers, 1 application vendor
New openMDM® architecture

- Definition of the modular openMDM® architecture and communication protocols
- Multi-tier architecture to support multiple client architectures
- Standardisation of the communication with the ASAM ODS backend

New architecture is finalised and approved by all members
openMDM® Roadmap
– what we are working on

- Organisational transition is completed ✓
- New architecture is finalised and approved ✓
- Infrastructure for continuous integration and testing is being built up
- Basic modules are currently being migrated to the new architecture
- Readiness for migration of existing modules and development of new modules is expected for late summer
openMDM® for YOU

- openMDM® accelerates the implementation of measured data management processes
- It’s open and it’s free
- Requirements of all members are processed equally
- openMDM® already today is a flourishing ecosystem of OEMs, first tier suppliers, software- and service providers

→ Now is the right time for you to join

http://www.openmdm.org
http://www.openmdm.org

Thank You for Your attention
Vielen Dank für Ihre Aufmerksamkeit

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