openMDM
Plan. Measure. Share.

eclipse

openMDM® – an Open Source Platform for Measured Data Management

Dr. Dietmar Rapf, Michael Schwarzbach

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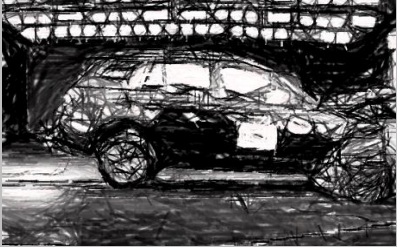And simplify your
measured data management
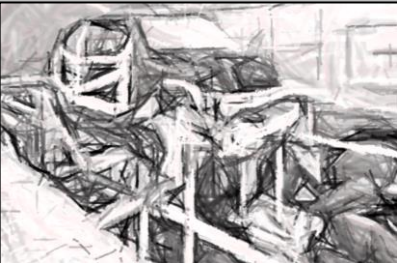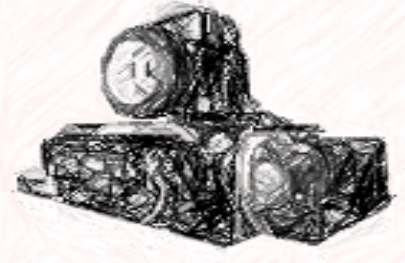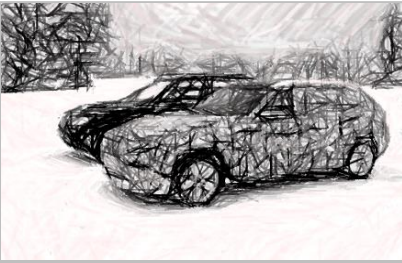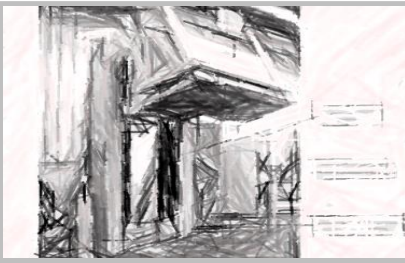
Agenda

- **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)

Crash	Pedestrian protect.	Powertrain	Endurance testing

Durability	Thermal properties	Aerodynamics	Wheels, Tires

Summertesting	Wintertesting	Roof pressure	…

many, many more disciplines produce measured data

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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 | Association for Standardisation of Automation and Measuring Systems

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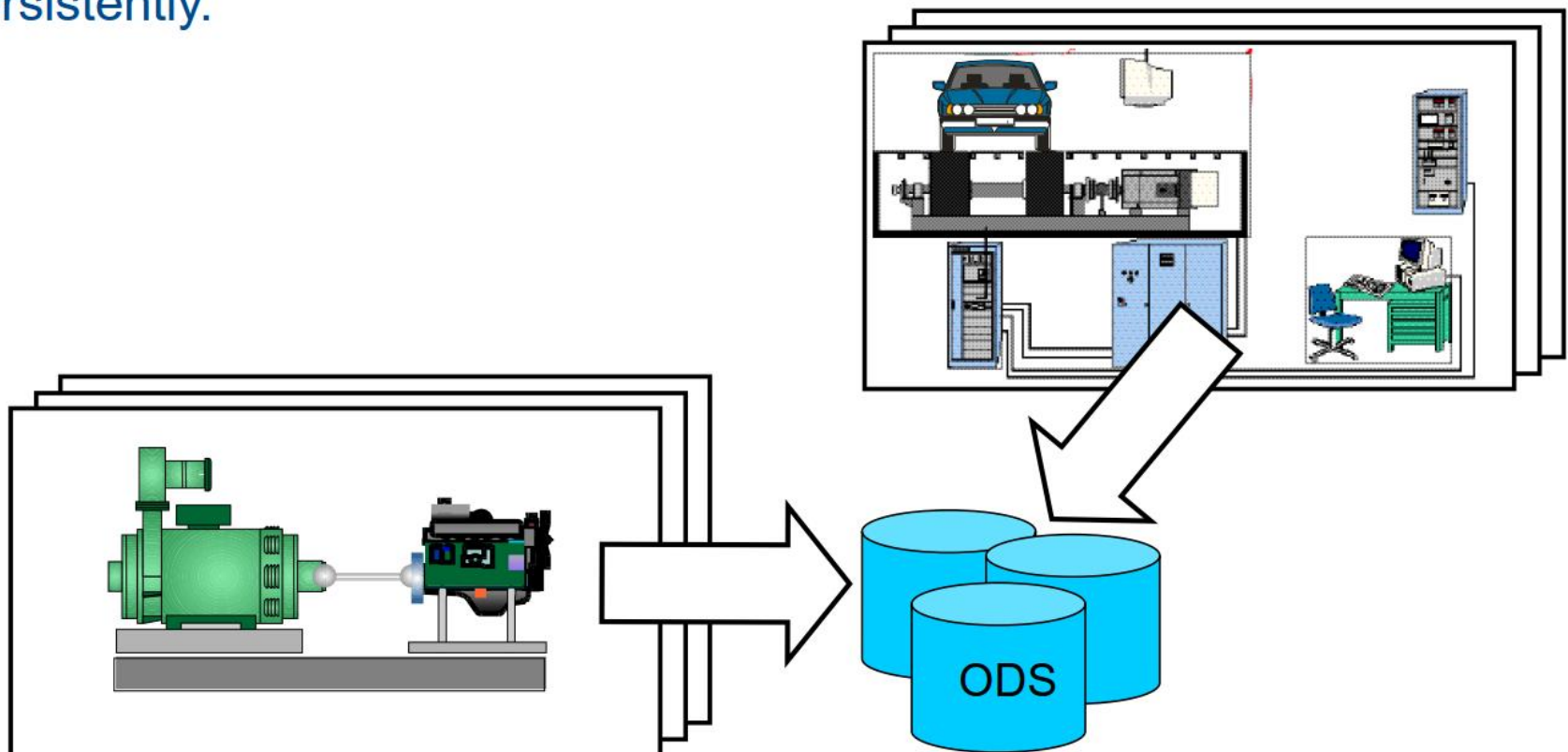
ASAM ODS – Standardizing the storage of measured data

- **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)

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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)
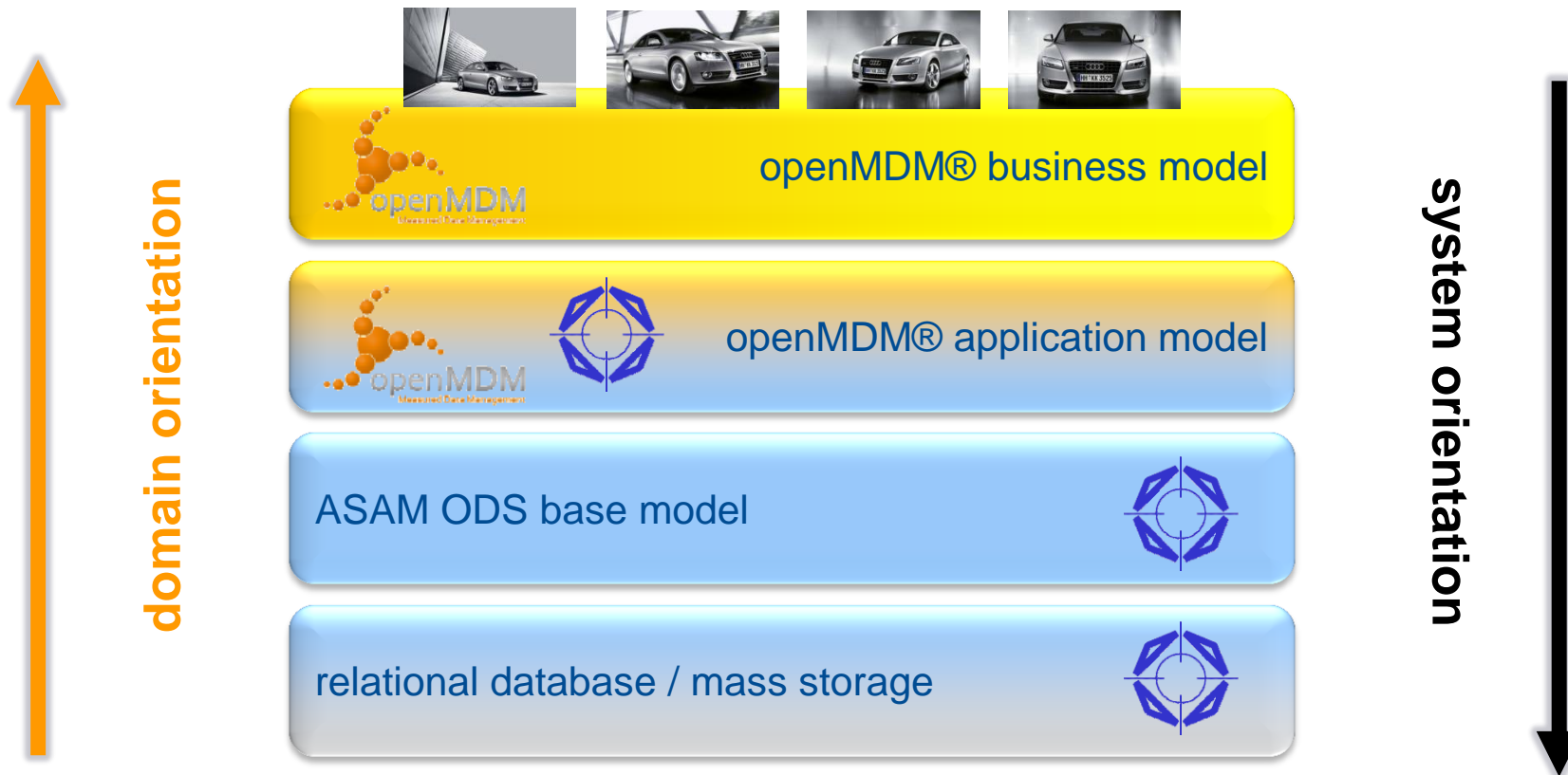 - Application development and integration
  - Roles and data access rights

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– Implementing MDM systems
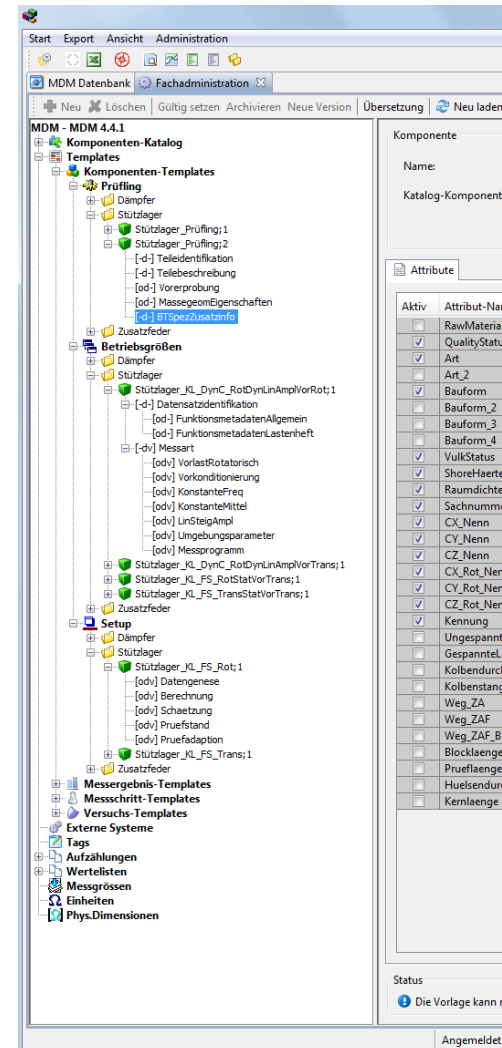
openMDM® – one step further

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**

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openMDM@BMW
Motorbike emission test

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Outlook

Operator

Email

Test execution

Horiba-Order system

Data-importer

XML-Order

Order data

Turbolab

Concerto

Application call with data reference

Result data

Planning ▶ Ordering ▶

Validation/ Publishing ▶ Archiving ▶

Tests

Results / Measured data

MDM-System with standardized data storage (ASAM ODS)
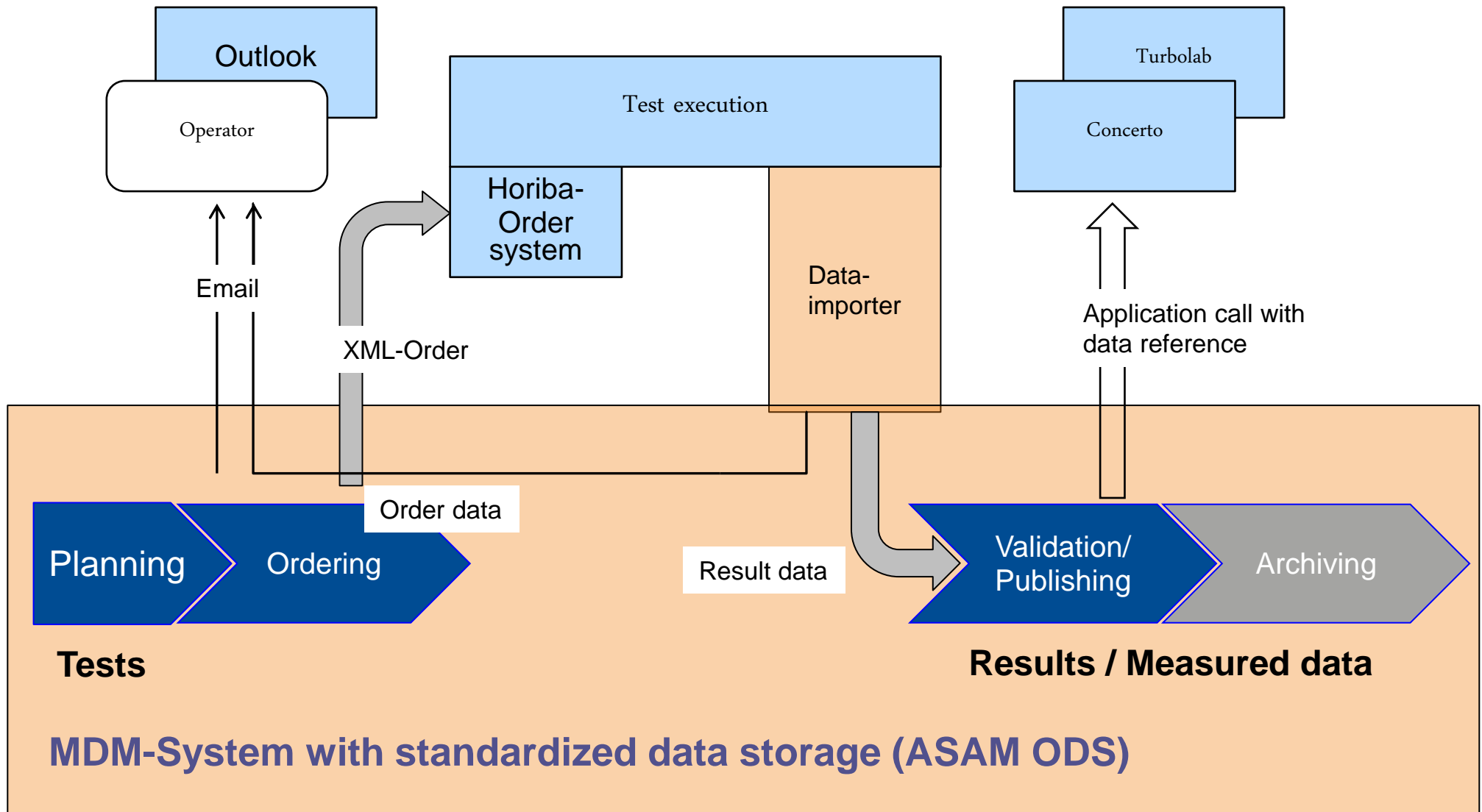
Experience in openMDM®

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

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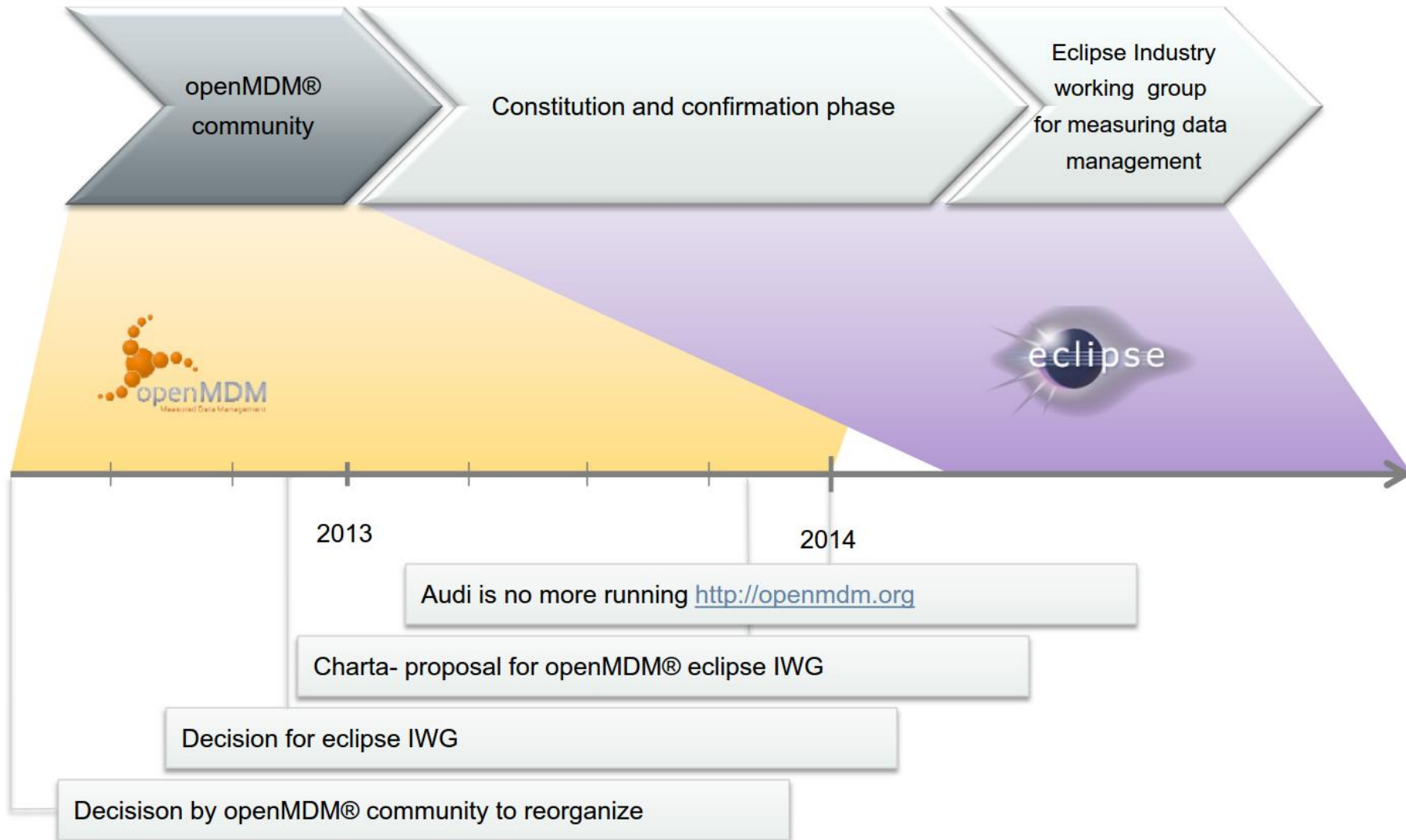
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openMDM@Eclipse
– why we chose Eclipse as platform

- 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

2014

Audi is no more running http://openmdm.org

Charta- proposal for openMDM® eclipse IWG

Decision for eclipse IWG

Decisison by openMDM® community to reorganize

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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**
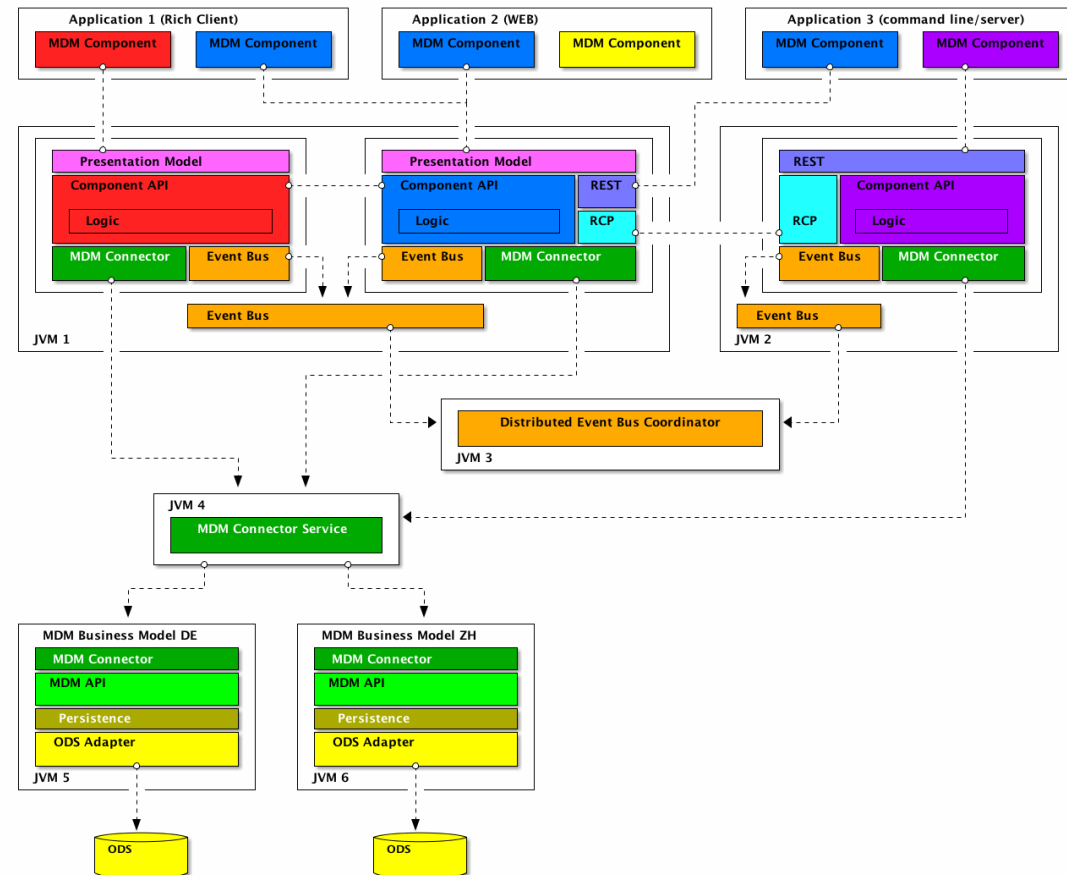
New architecture is finalised and approved by all members

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