

openMDM[®] – an Open Source Platform for Measured Data Management

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Plan. Measure. Share.

And simplify your
measured data management



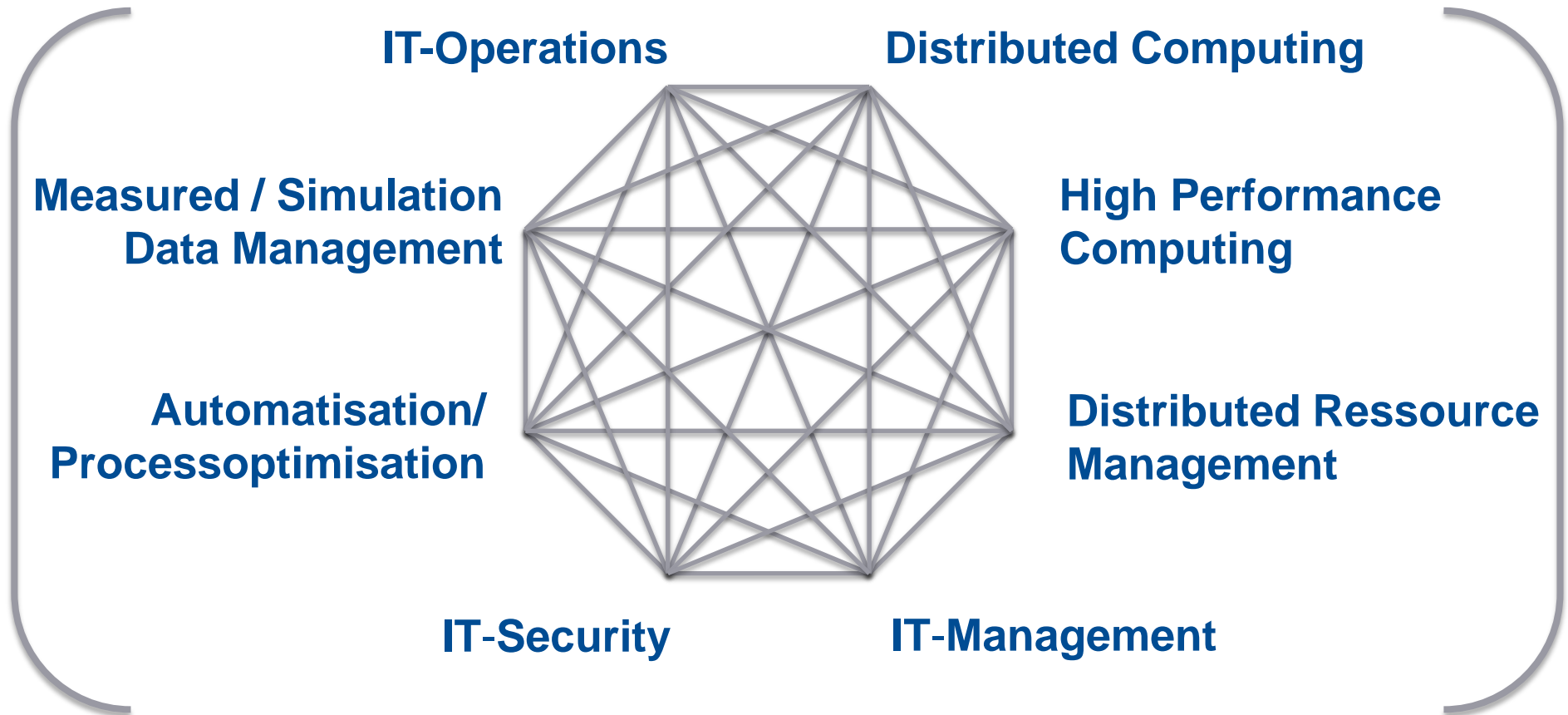
openMDM® – an Open Source Platform for Measured Data Management



Members of the openMDM® Eclipse Working Group

- IT and PLM consulting business since 2003
- Lead a PLM consulting company in Switzerland from 2009 to 2013.
- Responsible for IT design of functional validation processes at BMW Group since 2014
- Biologist (biocybernetics) doing psychophysics of human motion detection and software programmer
- At science + computing ag since 1997
- Senior Manager CAT and Senior Consulting Measured Data Management
- Member of ASAM ODS standardisation group

Effective use of complex IT environments in the engineering domain










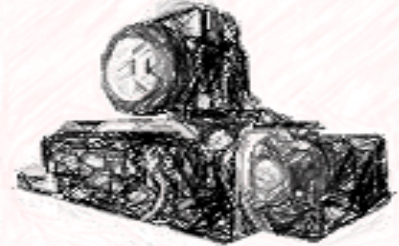



s+c core competence: **IT Services** | **Consulting** | **Software**

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

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
 - Software versions on ECUs are highly volatile and must be linked to the measurement
- Amount of cross-linked data is growing fast
 - Measured data needs to be cross-linked with bus data
 - Validation statements need to be transferable to other variants

Challenges with test data

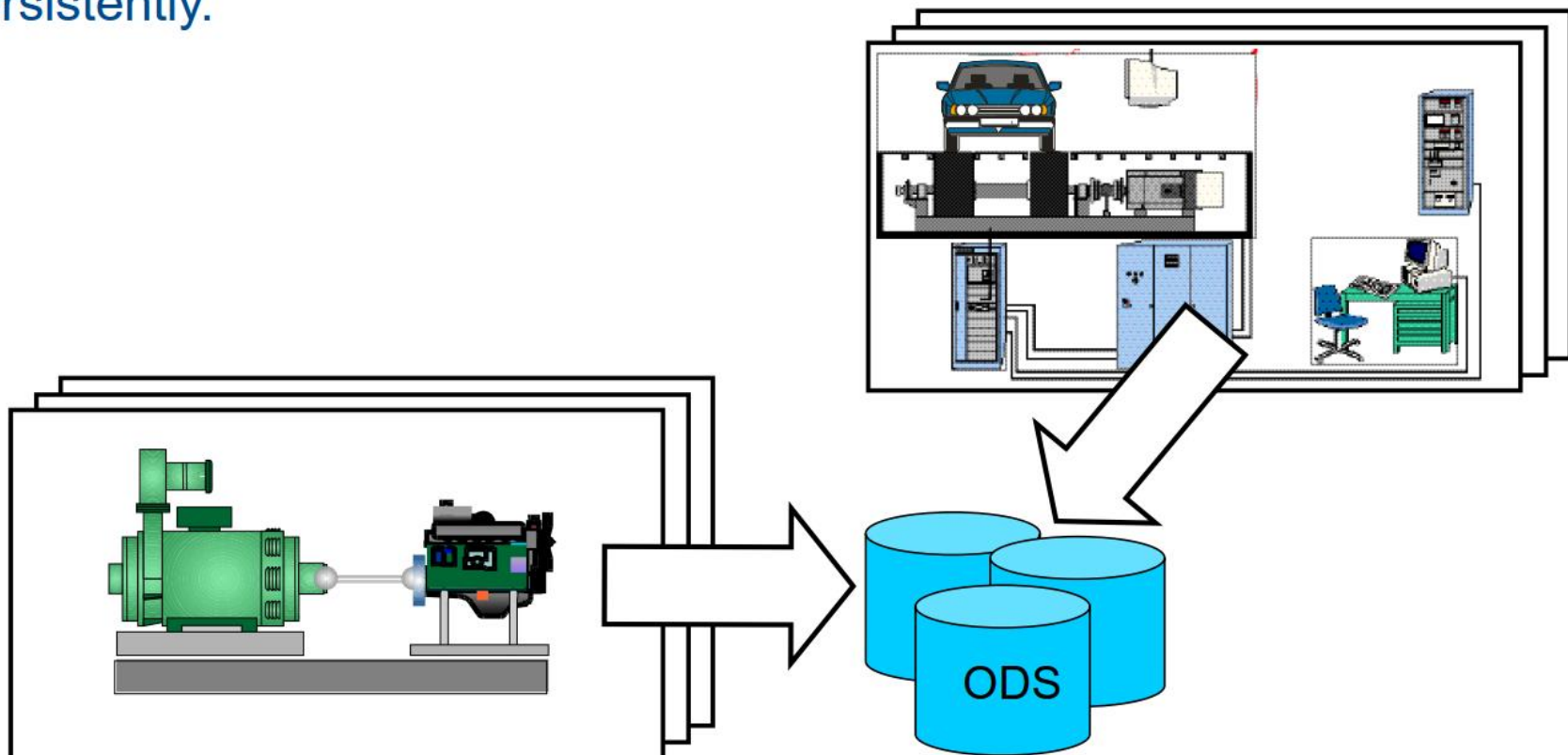


- Data formats vary with test software, each software vendor uses his own data format – and there are many of them
 - Not comparable data
- Different and undocumented units and dimensions of measures
 - Useless data
- Undocumented measurement environment
 - Uninterpretable data = useless data
- Documentation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

Standardizing the storage of measured data



- ▶ ASAM ODS is intended to define a standard for archiving test result data persistently.



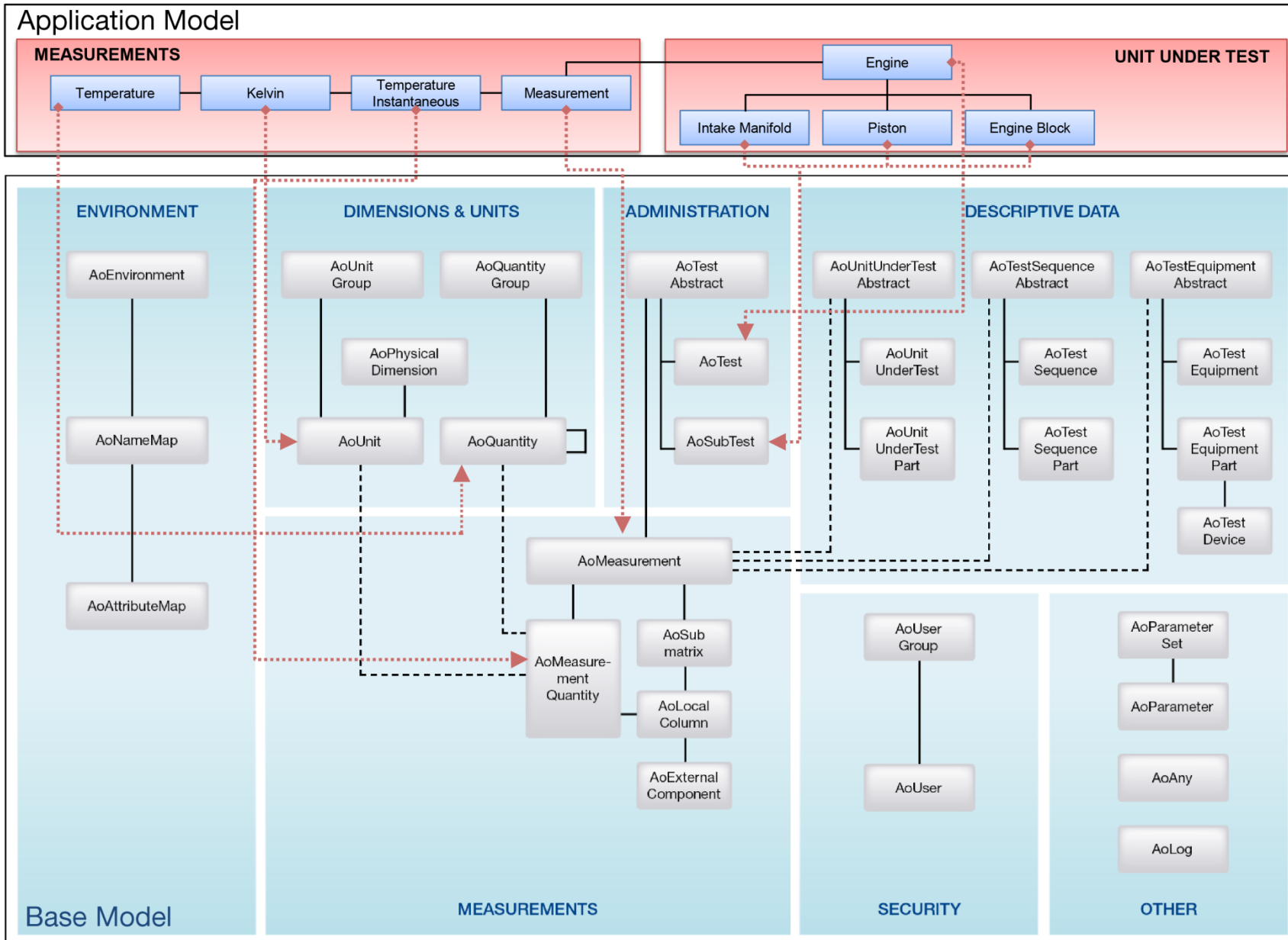
ASAM ODS – Standardizing the storage of measured data



- Defined data model with well-defined semantics
 - 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
 - File storage compatible to MDF 4.1 standard
- 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)



ASAM ODS data model



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

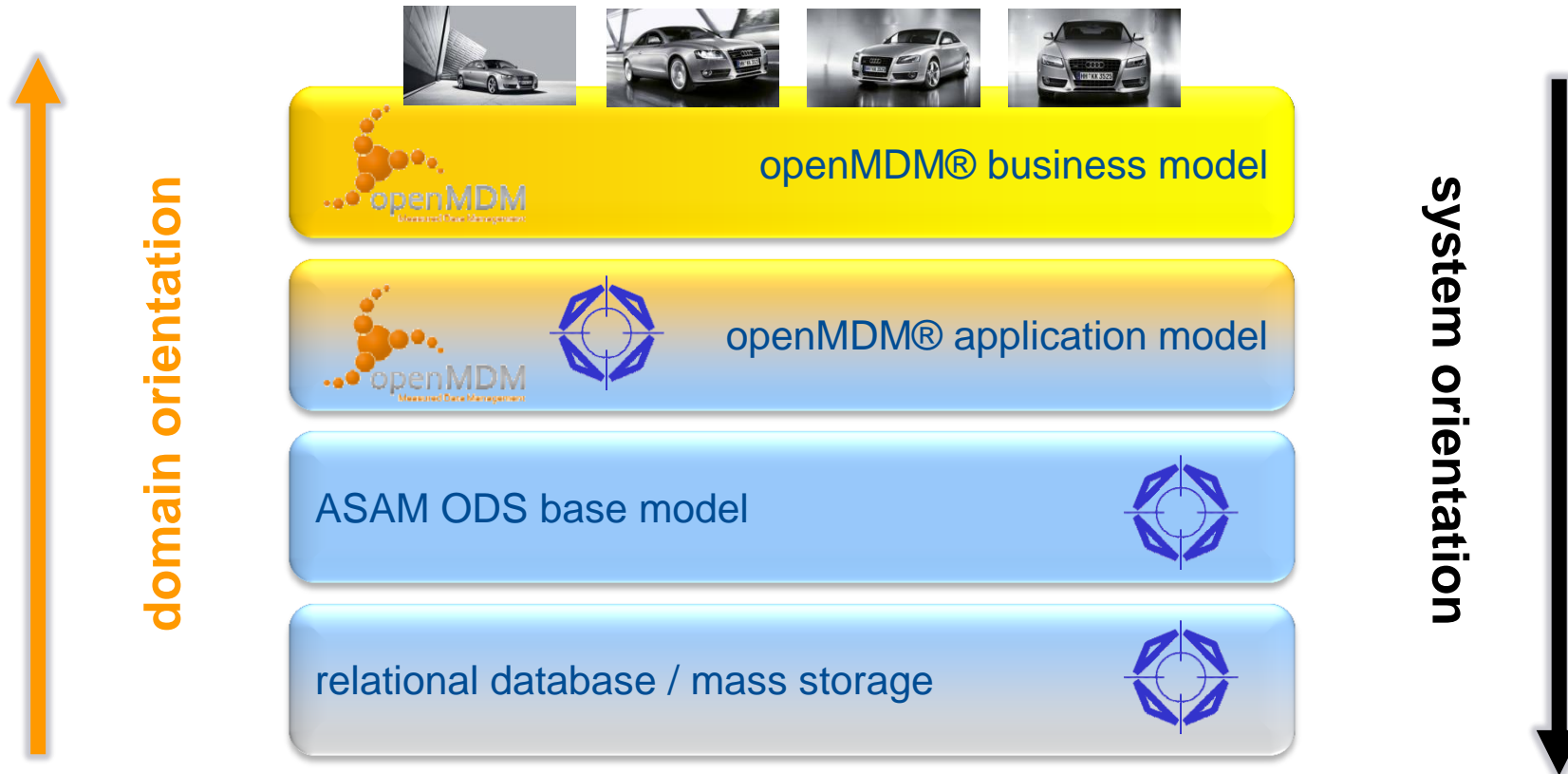


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– Implementing MDM systems



openMDM[®] – one step further



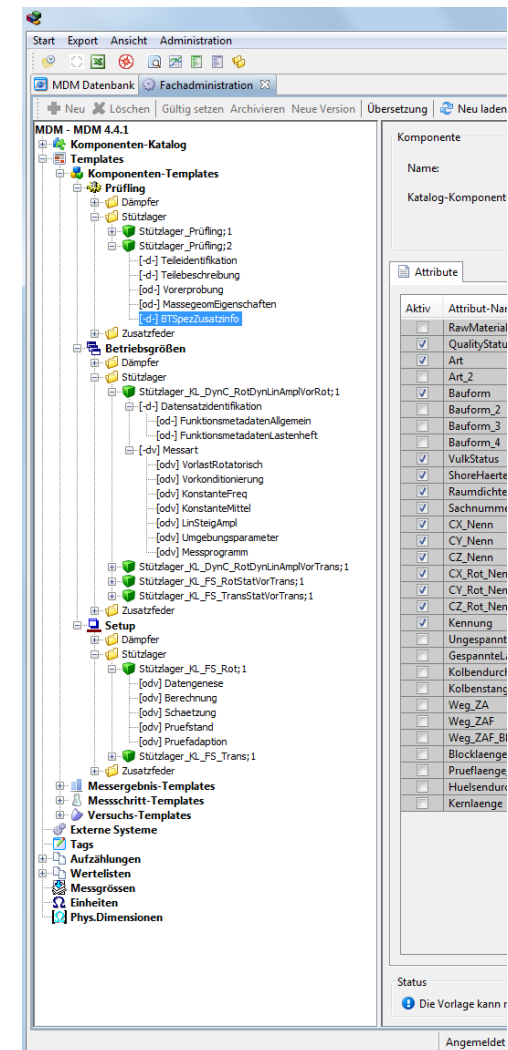
Care about your business, not about the technics

Simplifying and accelerating the development of MDM systems



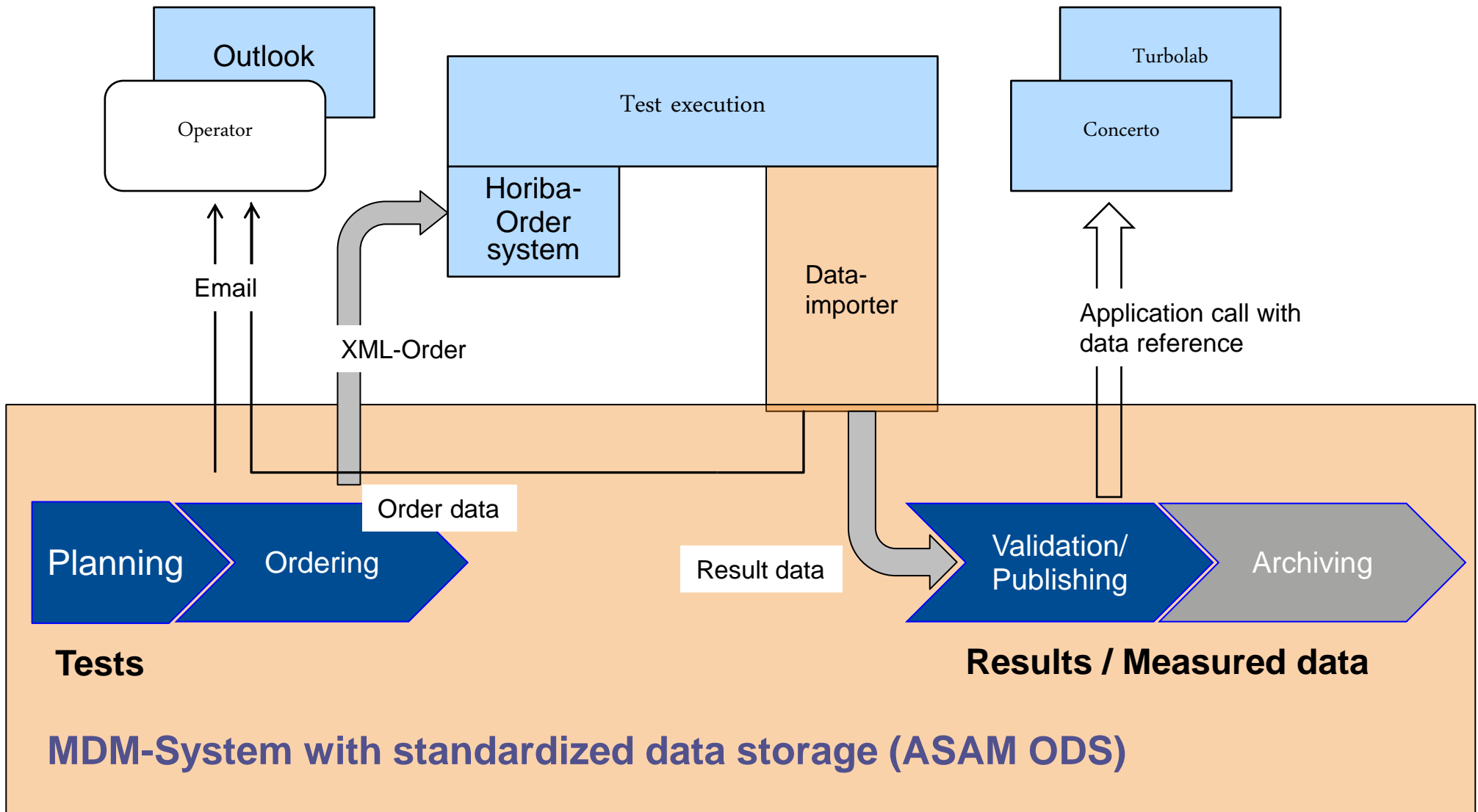
Application development with openMDM®

- 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



openMDM@BMW

Motorbike emission test



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

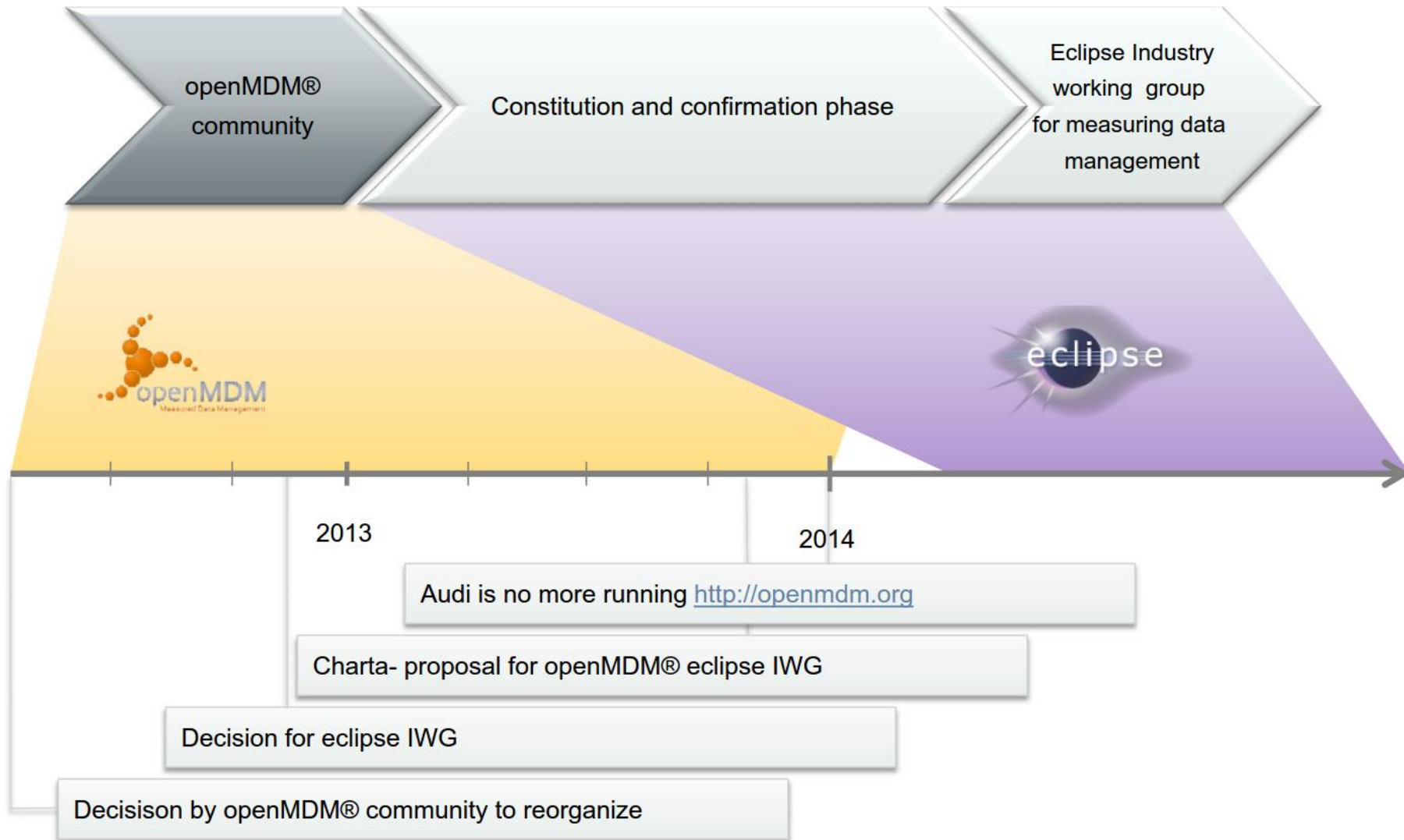
– why we chose Eclipse as platform



- 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[®] Roadmap

– Where we are today

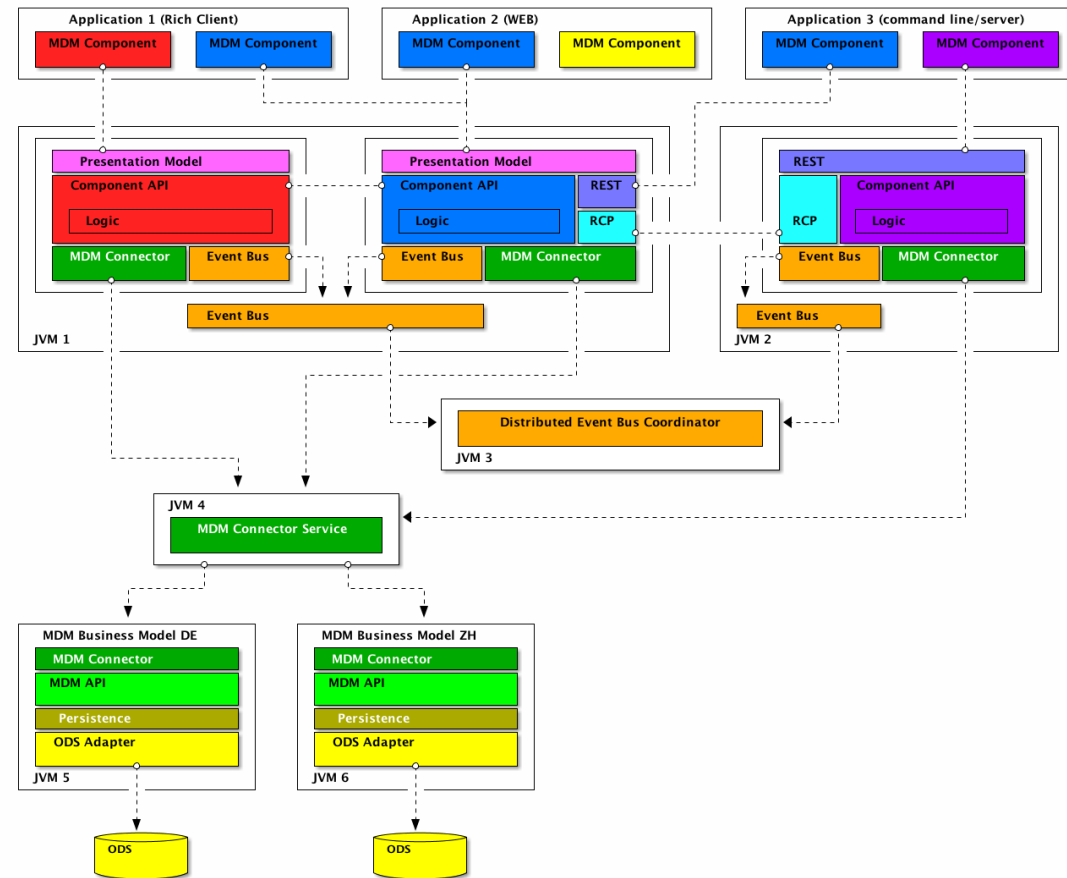


- 14.07.2014
 - Eclipse WG was founded
 - 3 driver members, 4 service providers, 1 application vendor
- Aug. 2014
 - Charter is finalised, all committees are in place
- Sept. 2014
 - First new member joins the WG
- April 2015
 - New architecture is approved, infrastructure for source code management is established
- May 2015
 - Requirements- and bug-tracking system and process is in place
- Today
 - Eclipse WG has grown and has become international
 - 6 driver members, 1 user member, 7 service providers, 1 application vendor

New openMDM[®] architecture

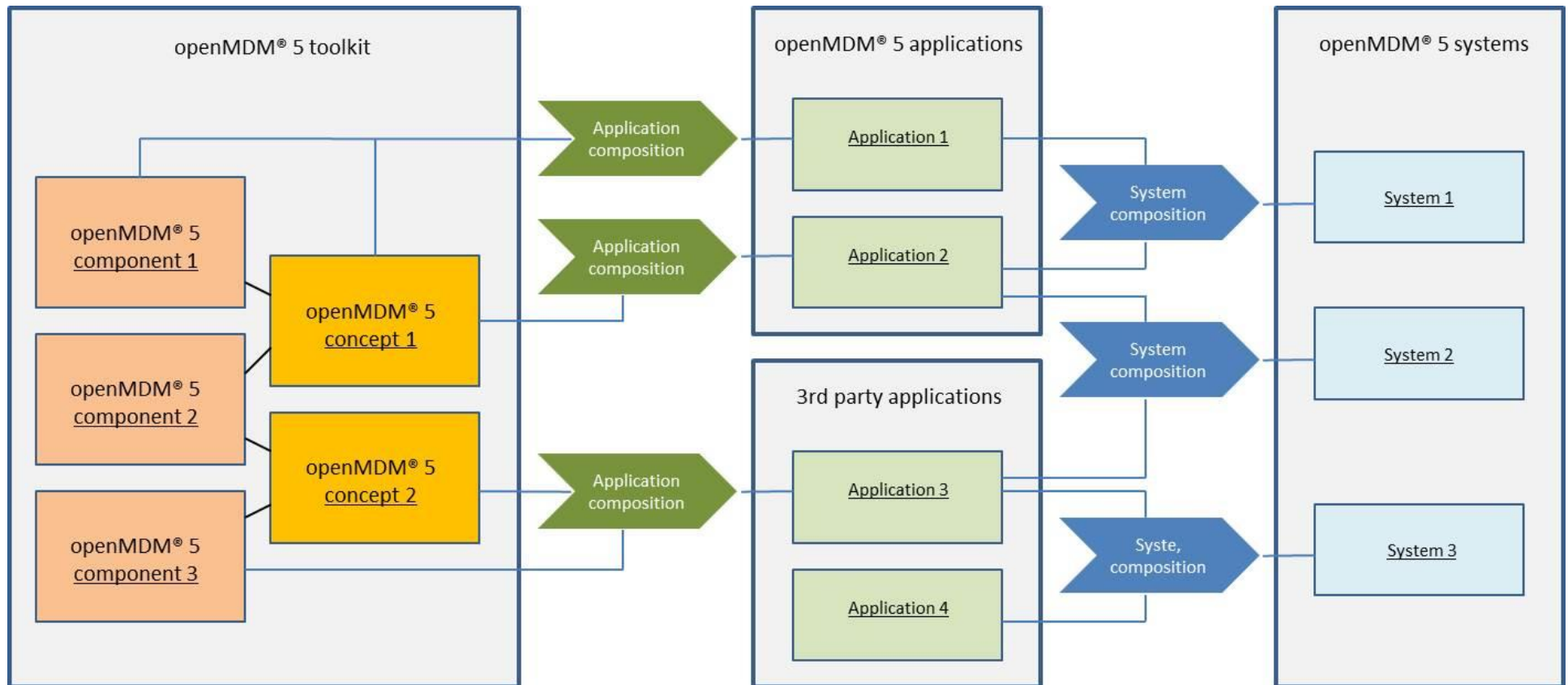


- Definition of the modular openMDM[®] architecture and communication protocols
- Multi-tier architecture to support multiple client architectures
- Standardisation of the communication with the ASAM ODS backend



New architecture is finalised and approved by all members

openMDM[®] hierarchical component model



- openMDM[®] systems are build by modular building blocks
- Business requirements are broken down to components

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
- Basic system and readiness for migration of existing modules and development of new modules is expected for late summer



openMDM[®] for YOU



- 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
- openMDM[®] accelerates the implementation of measured data management processes
- Members aim to create a basis to harmonise / bring together different disciplines in car development
 - CAT, CAE, E/E diagnostics processes

<http://www.openmdm.org>

Thank You for Your attention
Vielen Dank für Ihre Aufmerksamkeit

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