Big Data Technologies for ODS

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Presenter

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Content

Introduction – Big Data with ODS

‣ Today's measurement data volumes exceed existing ODS capabilities.

‣ Terra Byte (TB) measurement data sizes will emerge on a daily basis.

‣ Copying data to data-processing clients over the network is no longer advisable nor practically possible.

‣ Hence, algorithms need to come to the data stored on a scalable platform and not vice versa.

‣ Big data technologies provide the demanded features:

- Volume [~1 TB per drive recorder per day!]
- Velocity [for upload, search, download, reporting etc.]
- Variety [of data formats i.e. not only MDF]
- Variability [of measurement data with regard to context data]
- Veracity [supporting plausibility check and corrections]
- Visualization [for the data scientists]
- Value [retrieval – efficiency gain]

‣ ASAM has already taken this up with the Dec. 08 - 09, 2015 International Conference on BIG DATA and with **P2015-08 Big Data Technologies for ODS**

P2015-08 Overview

> Goal: Allow big data technologies to support huge measurements within ODS

Title: ODS Big Data Technologies

Release: Phase 2 – EO 2017[*)]

Project Scope

- Integrate data from development process and vehicle use (dealers, repair shops, end-users)
- Investigate suitable big data technologies with
    - Scalable data storage distribution, e.g. via Hadoop
    - Access layer for data processing within the distributed system
    - Independence from specific tools or technologies
- Prepare automotive use cases, requirements, and test cases, and create a prototype
- Identify and propose changes for ASAM and/or supporting standards
    - Mainly, a suitable access for search engines and data scientists is demanded
- Describe best practice Big Data solution for automotive testing

Achievements Phase 1

2016 – Meetings supplemented by WebEx conferences and networking

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Alignment with ODS 6 Project
- Mutual SVN access

- OEMs' elaboration on Use Cases

Regional Meeting
- Consolidation of Use Cases

Global Meeting
- Definition of Work Packages

Regional Meeting
- Handover Project Lead

- Proposal for some Phase 2 /3

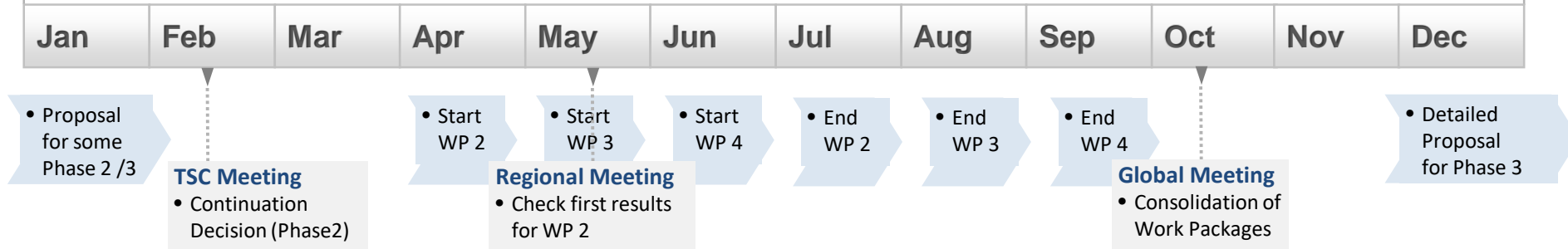## Project Start in 2015 – focus on WP 1 Results in 2016 / 2017

- Use Cases and Roles
- Work Packages
- Non-Functional Requirements
- Proposal for some Phase 2 with WP 2 – WP 5 and Phase 3 with WP 6 – WP 11

Participants in 2016

- Audi
- AVL
- BMW
- Cummins
- ETAS
- Ford Motor Company
- GM
- HighQSoft
- Horiba
- IASYS
- Peak Solution
- PSA
- Mr. Quinsland
- RD Electronic
- White Pine

Plan Phase 2

2017 – Meetings supplemented by WebEx conferences and networking

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

- Proposal for some Phase 2 /3

TSC Meeting
- Continuation Decision (Phase2)

- Start WP 2
- Start WP 3
- Start WP 4

Regional Meeting
- Check first results for WP 2

- End WP 2
- End WP 3
- End WP 4

Global Meeting
- Consolidation of Work Packages

- Detailed Proposal for Phase 3

Phase 2 Concept Work Packages (RFQ) Validation based on Use Cases and Non-Functional Requirements

- WP 2 – Mass data storage in HDFS
- WP 3 – Definition of processing access layer
- WP 4 – Context data storage in HDFS
- WP 5 – Findings and preparation of next phase (parallel to other WPs)

Participants in 2017 (so far)

- Audi
- AVL
- BMW
- Bosch
- Cummins
- ETAS
- Ford Motor Company
- IASYS
- National Instruments
- Peak Solution
- PSA
- Mr. Quinsland
- Müller-BBM
- RD Electronic
- Vector
- White Pine

Outlook: P2015-08 / Phase 3 and beyond

‣ Phase 3 has been roughly planned to go for these work packages in 2018

- WP 6: Provide example environment
- WP 7: Provide example processing software
- WP 8: Prototyping mass and context storage
- WP 9: (Re-) Definition of processing access layer
- WP 10: Prototyping the processing access layer
- WP 11: Findings and preparation of implementation project

‣ With the finalization of the project P2015-08 a CONCEPT is provided that shall enable a next major version of the ODS standard that

- allows more applications and use cases
- facilitates more connectivity to external systems
- enables more state of the art technologies
- provides insight into more data in a scalable solution

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