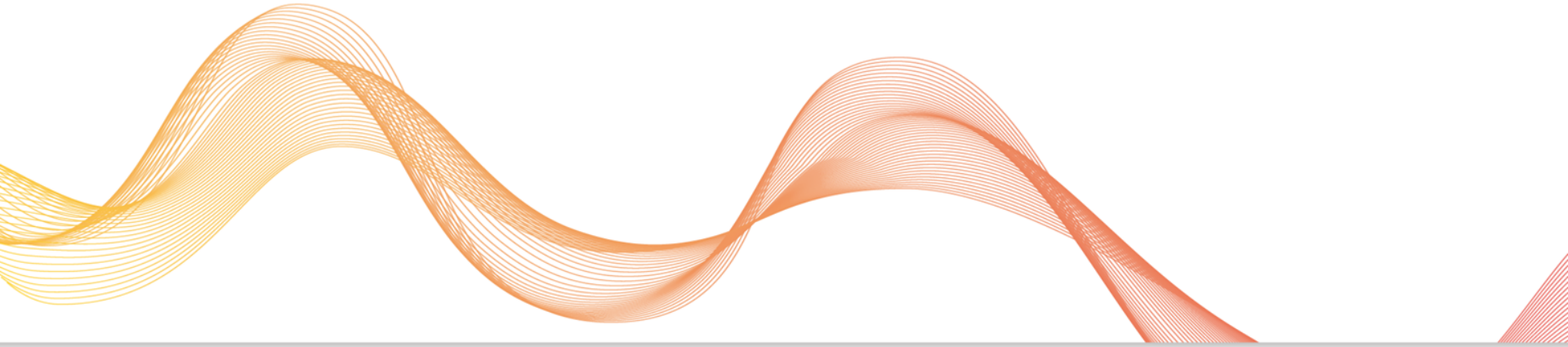
ASAM | Association for standardisation of automation and measuring systems



Japanese ASAM Interest Group (JAIG) – Understanding ASAM Standards on an Enterprise Level

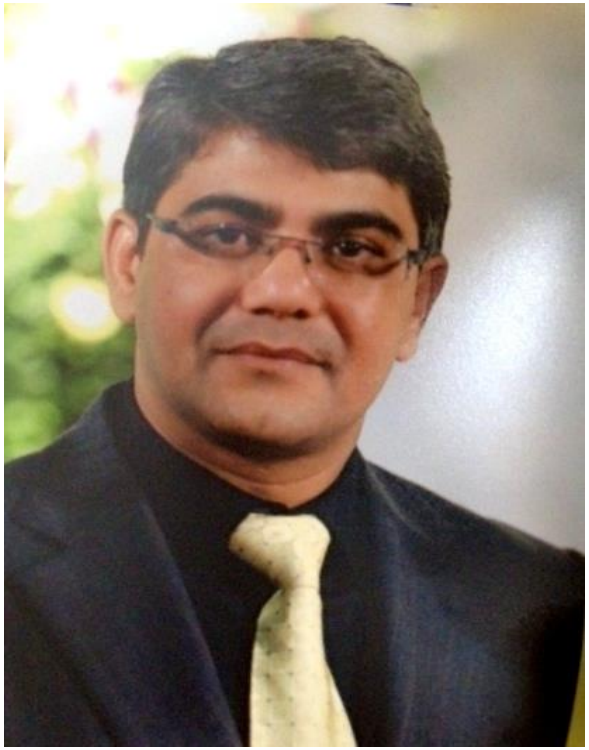
Puran Parekh
CEO & MD - PVMSys Infra Solutions Private Limited
Pune INDIA
ppuran@pvmsys.co.in

Agenda

JAIG PPWG – ODS

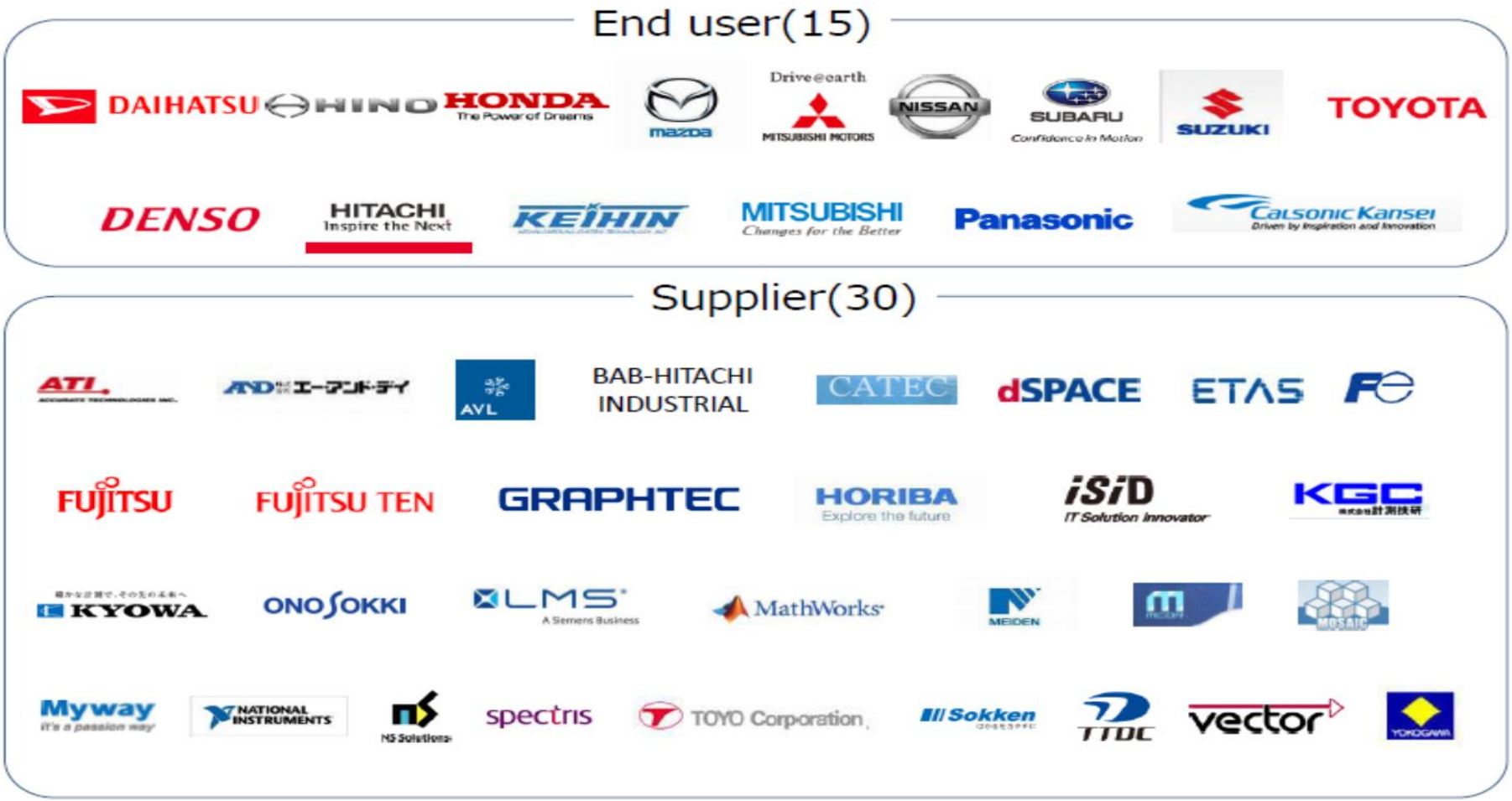
1	**Introduction**
2	History of JAIG
3	JAIG PPWG: Challenges & Objectives
4	Step 1 – Specification / Explanation
5	Step 1 – Explanation
6	Future Plans
7	Approach towards Big Data

Introduction



- CEO & MD of iASYS and PVMSys
- Since 1999: CEO of iASYS, a company in test automation and data management
- Since 2005: Close Co-operation with HighQSoft in the area of ASAM ODS
- Since 2007: Voluntary ASAM representative in India
- 2009 – 2013: Board member of ASAM
- Since 2010: Supporting JAIG activities (formerly called ASAM study Group)

JAIG Members



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JAIG & It's Objectives

History of JAIG

- Started informal activities in 2010
  - Objective: understanding use cases of ASAM standards
- Formal activities as of 2012
  - Objective:
    1. Study & Learn ASAM standards (Eco System)
    2. Learning by Studying (SSG) – AE Area
    3. Learning by doing - PPWG ODS – CAT Area

Moderator
Cooperation

Toyota
Katsuhiro Miyoshi

Moderator
PPWG ODS

Honda
Kaoru Aoki

Moderator
SSG AE

Honda
Tatsuya Sakurai

Agenda

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PPWG ODS' Objectives as a Community

- Step-1: Learning Objectives
  - Learn about ASAM ODS beyond pure file search
    - ⇨ Create an environment for Model based development
    - ⇨ System integration with validation data on an enterprise level
    - ⇨ CAE & CAT integration
  - Understand the ASAM ODS standard
    - ⇨ ATFX file Structure
    - ⇨ Usage of MIME types for complex engineering data
  - Develop an idea on how to build an eco system around ASAM ODS?
    - ⇨ „ASAM Framework" between OEM , Tier-1 supplier , Tool vendor and IT vendors
- Step-2: Integration Objectives
  - How to understand the different solutions available in the marekt (AVL, NI, OpenMDM...)
  - Do the products keep their promises in reality
  - Learning by doing

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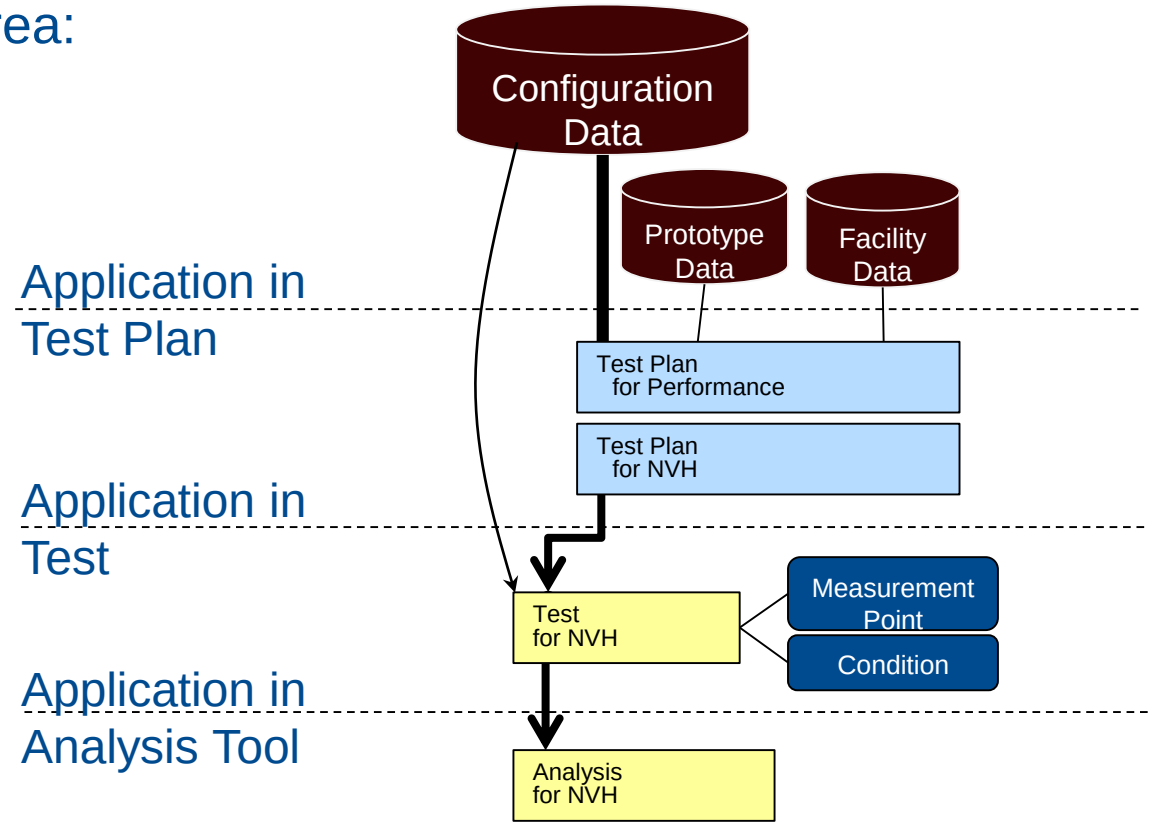
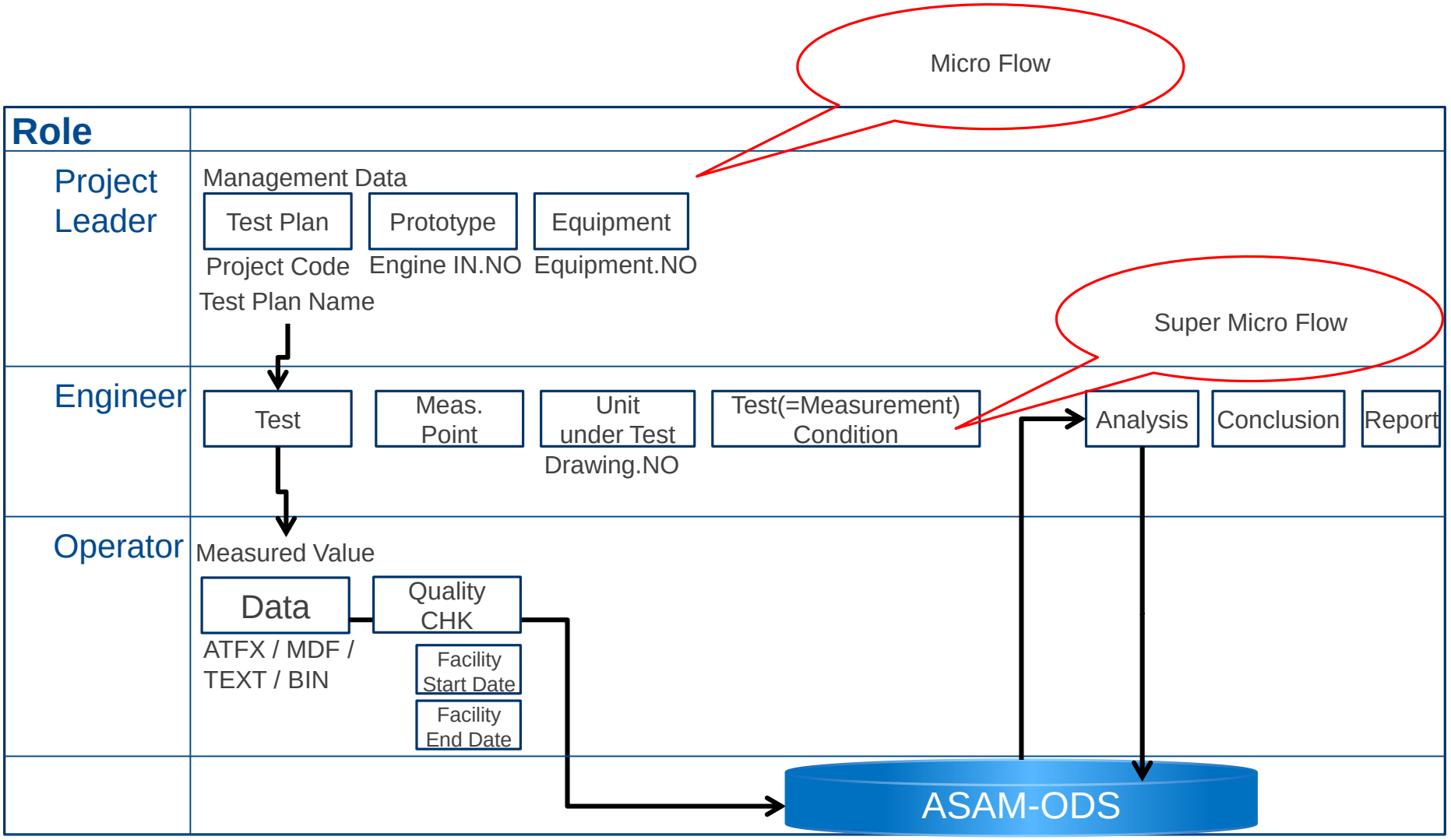
ASAM ODS Tool Chain

Linking test data with company data to setup a complete "**Product Validation Management" (PVM) process**

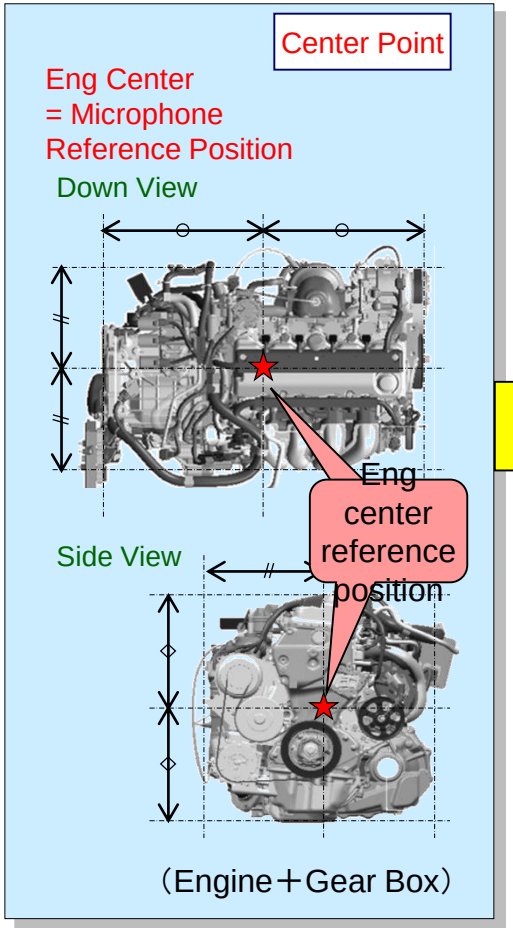
Each Area:

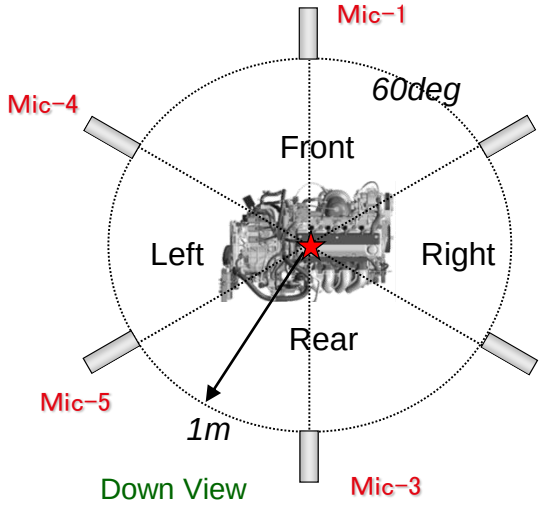


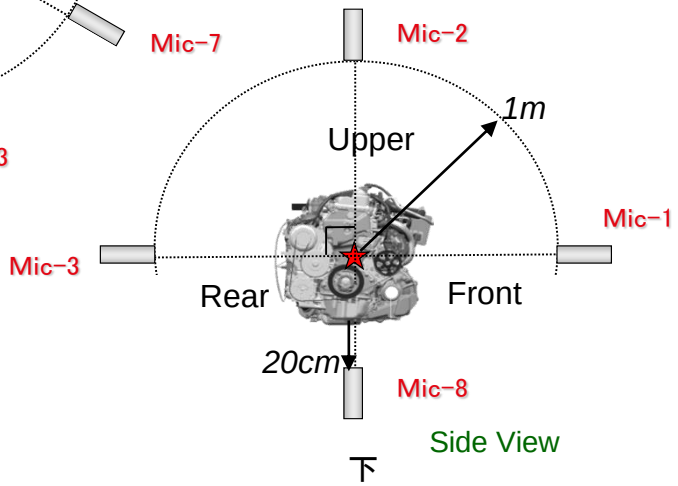
PVM : Micro Flow & Super Micro Flow



Measurement Point Example
Standard Microphone Position - Noise







Mic-1 : Front 1m
Mic-2 : Upper 1m
Mic-3 : Rear 1m
Mic-4 : Left Front 1m
Mic-5 : Left Rear 1m
Mic-6 : Right Front 1m
Mic-7 : Right Rear 1m
Mic-8 : Oilpan Lower 0.2m

Company Meta Data Example

Test Plan

Maker	Honda
Project Code	WW
Test Plan Name	7p&Mt-G Haikikei-Ion

Prototype

Maker	Honda
Model	Accord
Destination	USA
Vehicle IN.NO	Accord-1234
Engine IN.NO	0X-2.2.4L-NV-ENG
Transmission.NO	0X-2.2.4L-NV-CVT
Door	4 Door

Equipment

Test Place	HGT / JARI
Bench / Course	Lab.29 T-2 / Track A
Test Type	Dynamo / Road

Unit Under Test

Drawing.no	1345-Accord-2032

Test Condition

Load	WOT / 50% / N.L.
Gear Pos.	1st / 2nd / D / N / R

Raw Data

ATFx file	MDF (Measurement Data Format)
Text file 	Bin file 

PPWG – ODS Project

Specification

- Common company meta data (Enterprise level system integration)
  - UUT configuration
  - Facility reference
- Common use case in NVH area (**Run Up & Constant Speed data**)
  - Application Model of NVH area
  - MIME type concept of NVH Data (Octave spectrum , Auto Power spectrum, Order Analysis…)
  - Sharing data between Powertrain NVH and Vehicle NVH
  - ATFX Understanding - Throughput data / Analyzed data
- Data Source
  - Honda – Mueller BBM
  - Toyota – LMS, B&K
  - Suzuki – Mueller BBM, LMS, B&K (for same use case)
  - Others – MDF Files
- Cloud Server
  - ODS Server /Web Server access through VPN

PPWG – ODS Demo

- Functionality Supported:
  - Web Application
    - ⇨ To Support Micro / Super micro work flow (Test plan / test specifications)
    - ⇨ Data Browser with Search , Select and Launch functions
  - Importer -
    - ⇨ LMS , B&K ,BBM
  - Analysis tool integration -
    - ⇨ Diadem , Concerto ,FAMOS , Test.Lab , EDP

Demo Learning

- ATFX file structure
  - Different tool vendors can store same data with different valid MIME type

    Example: Octave Spectrum data can be stored either in 2D (as Octave Spectrum cut data with cut frequency) or in 3D data with Octave Spectrum MIME type with 3 rd dimension as cut frequency
- Application Model
  - Every OEM can have his own validation process which can affect the application model
    - ⇨ Standard application model for tool vendor and then OEM can import tool vendor specific model to their own application model (Two Step Approach)
    - ⇨ brings simplicity
  - Organized structure of measurement data (Measurement Condition, Measurement Point helps in CAE /CAT integration)
- Understanding of super micro flow level and up to enterprise level usage of ASAM ODS

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PPWG ODS Step 2 – Different solutions

Step 2: Demonstration of available solutions

- Tool Demonstrations / Presentions by different tool vendors

1. Sep. 18, 2014 6th Demo / Presentation (AVL, National Instruments)
2. Sep. 19, 2014 6th Demo / Presentation (Peak Solutions/OpenMDM)

- Definition of data management at Engineer level, Lab level, Enterprise level
- Use case of Lab Management, Product validation process management presented
- Design Life Cycle,Validation Life cycle, test life cycle, data life cycle

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PPWG ODS Step 2 – Different solutions

Step 2: Demonstration of available solutions

- Challenges identified
  - Engineering meta data standardization
    - ⇨ More Efforts are required
  - Eco System around ASAM standards in Japan
    - ⇨ Involvement of Japan Tool Vendor
  - More benefits at enterprise level
    - ⇨ How to create awareness at Management level about Product Validation Management (PVM)?
- Future Plan
  - Use the demo in cloud to enhance the understanding
  - Performance benchmark with different solutions
  - Possibility of Clusters of ODS servers to connect the enterprise

JAIG : A Community approach of learning ASAM standards

Thank you!

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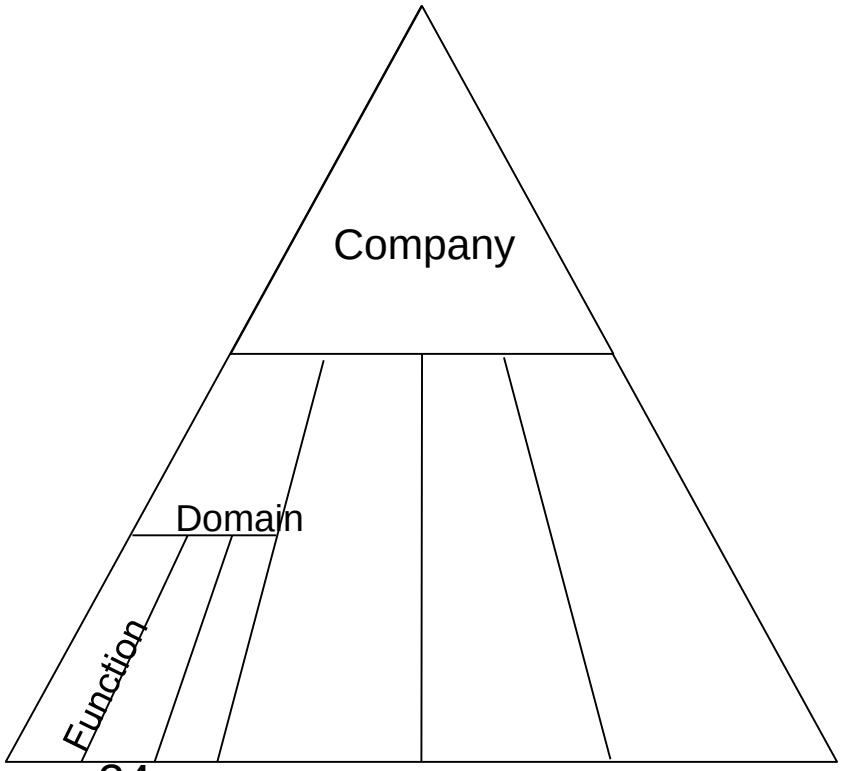
PPWG ODS Step 2 – Different solutions

Step 2: Demonstration of available solutions

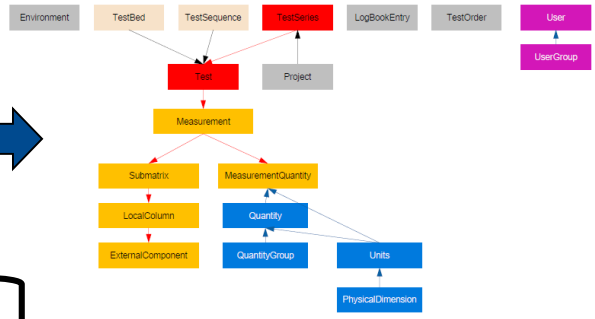
- Standardization of Engineering Meta Data
  - Micro Level
    - ⇨ Test Plan type
  - Super Micro level
    - ⇨ Test type
  - Measurement conditions
    - ⇨ Measurement points
- Possibility of Clusters of ODS servers to connect the enterprise
- Setup of private Cloud

Enterprise level View of complete Validation process



Business Model

Application Model

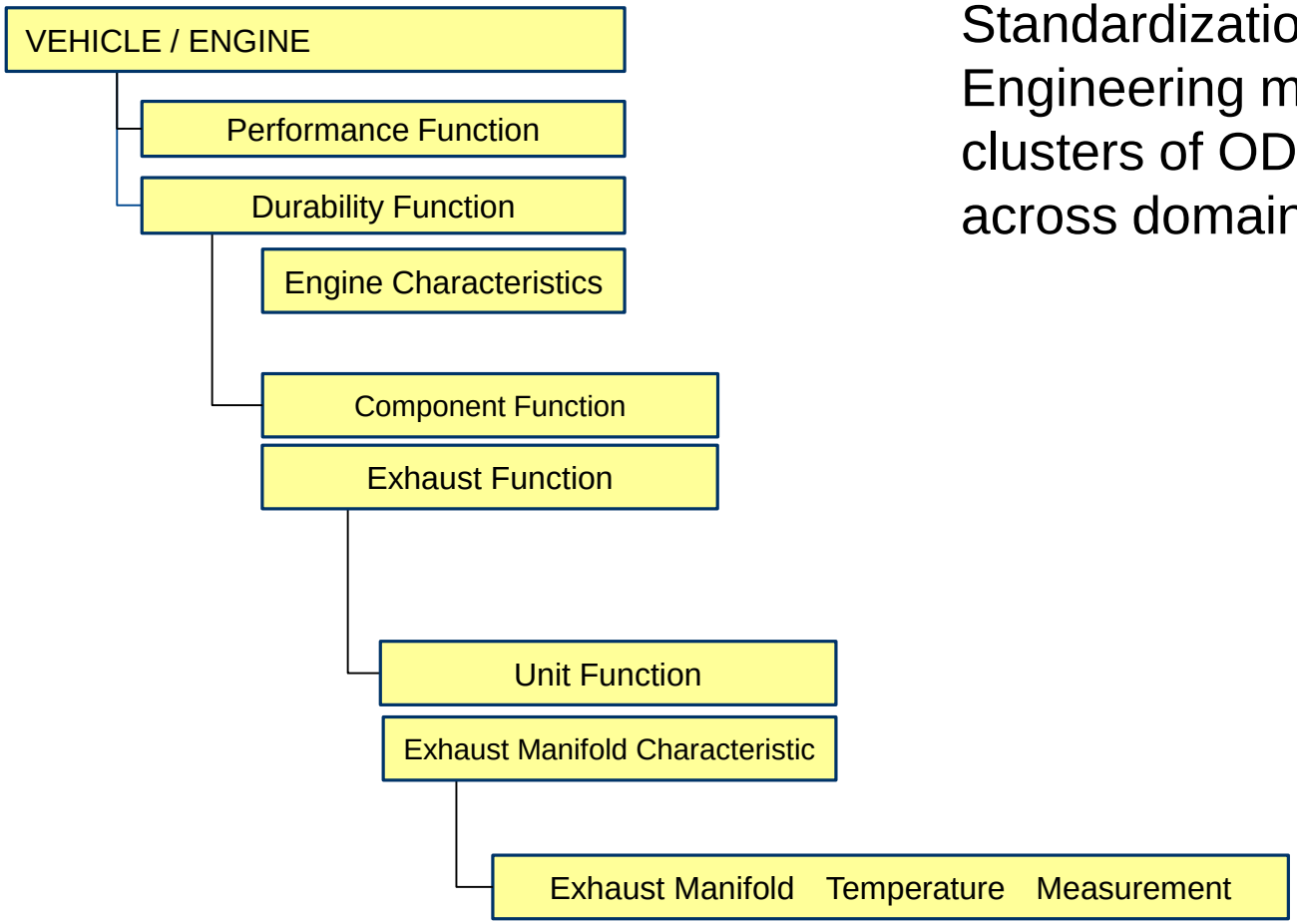


ODS Base Model

Relational Data Base

Storage of Data ASAM

Engineering Meta Data Standardization



Standardization of Engineering meta data to link clusters of ODS servers across domains

Engineering Meta Data Standardization

TAG.NO has three more parameters.

1. Measurement Point
2. Measurement Conditions
3. Analysis Technique

It was not able to imagine in the beginning.. However, we noticed by the consultant.

1 . Measurement Point

ID	001	#1-#2 or part
	002	#2-#3 or part

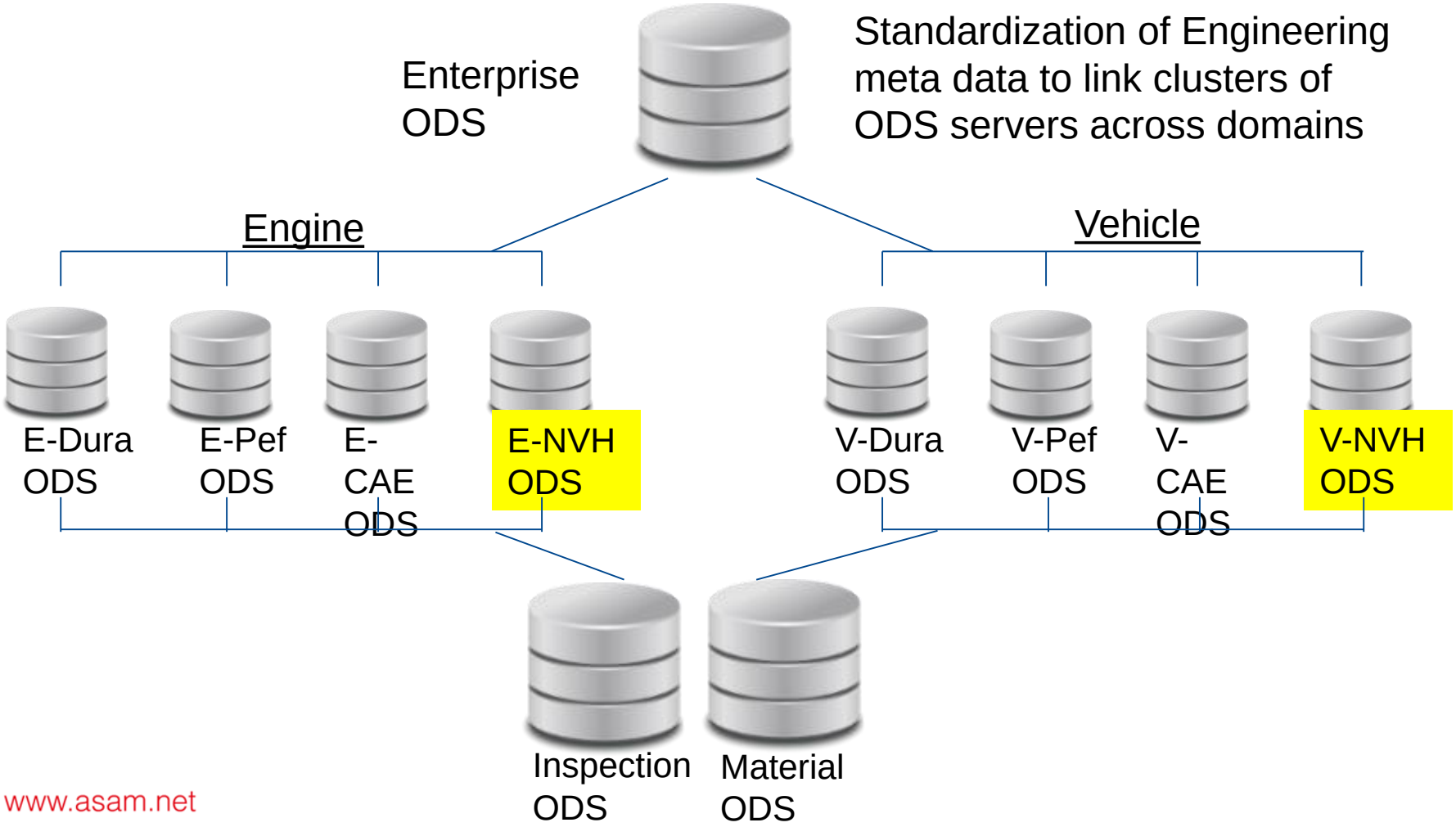
2 . Condition

ID	01	R/L
	02	Climbing hill

3 . Analysis (Data Quality Verification)

ID	01	Calculate saturation temperature

System Architecture @ Enterprise level
Validation Data cloud



PPWG ODS

Further reading

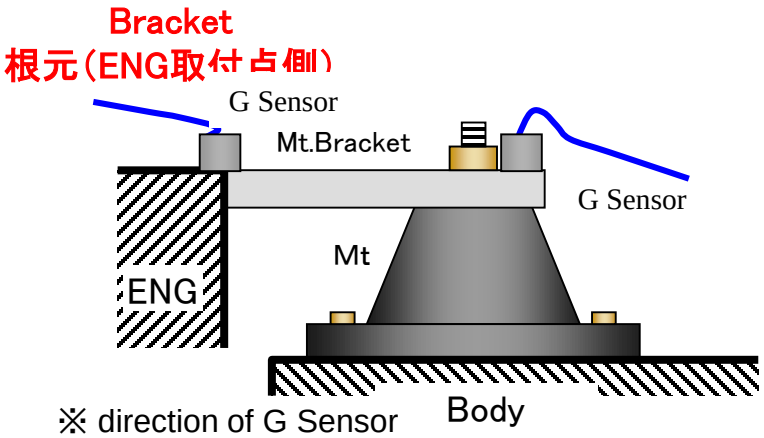
Introduction to Product Validation Management article

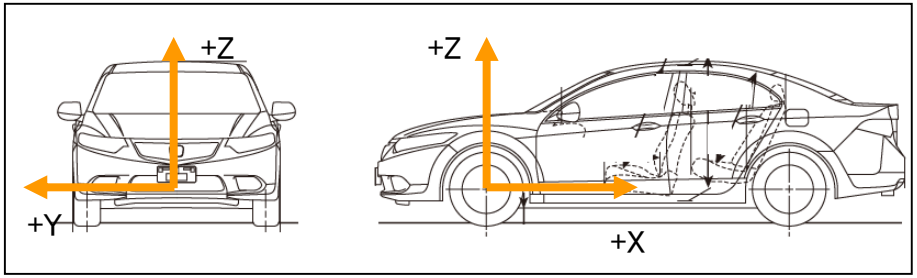
page no. 24 for the same at this link:
http://www.cioreview.in/magazines/magzter-july/

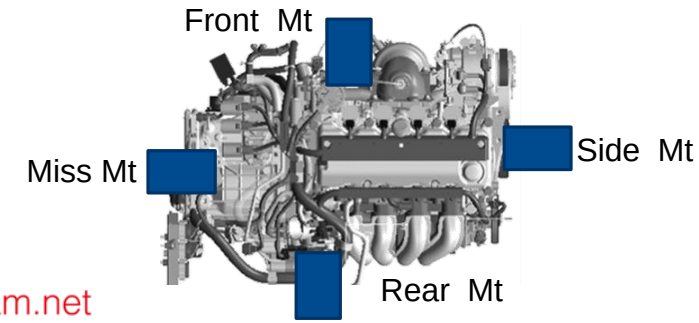
Real use case of how PVM can solve engineering problem (Test data integration)

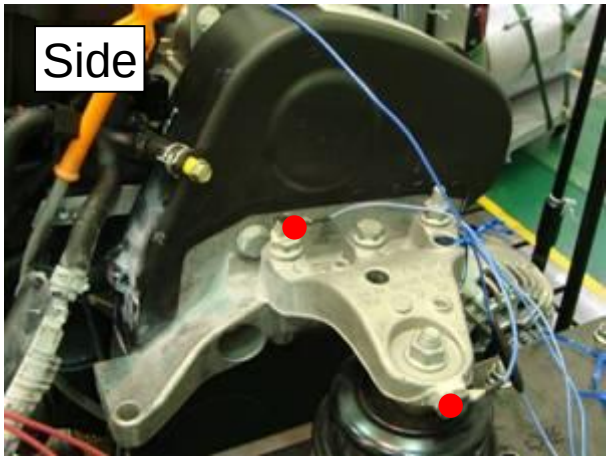
- To view the full magazine, link is available below:
- http://viewer.zmags.com/publication/e87cd0b9#/e87cd0b9/1

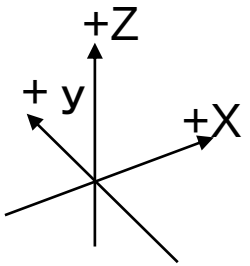
Measurement Point Example: Standard Accelerometer Position – Vibration

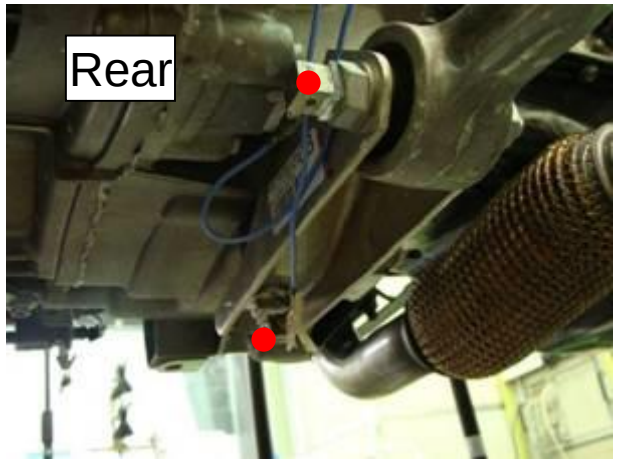


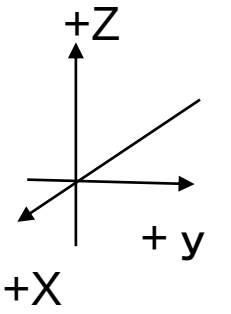




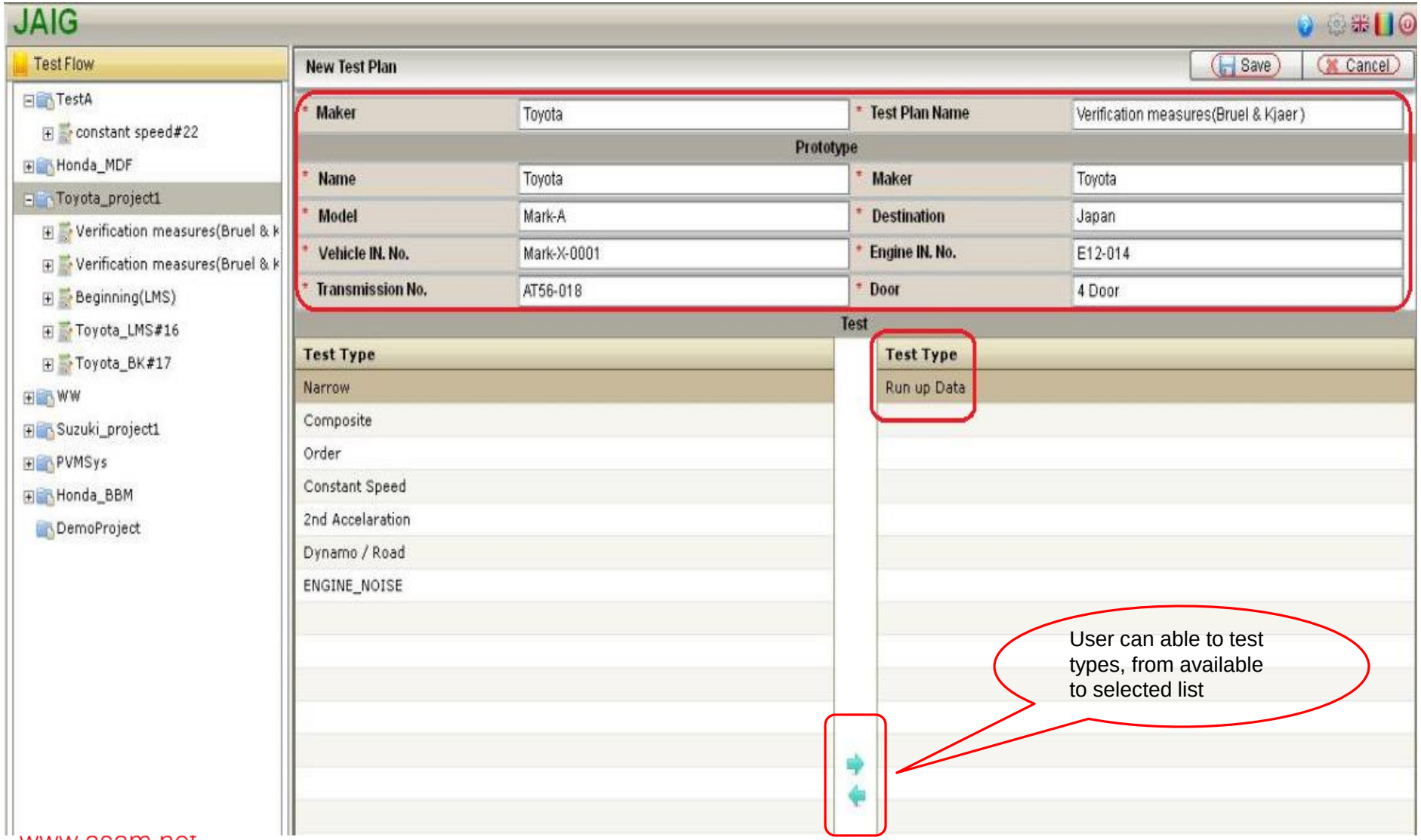




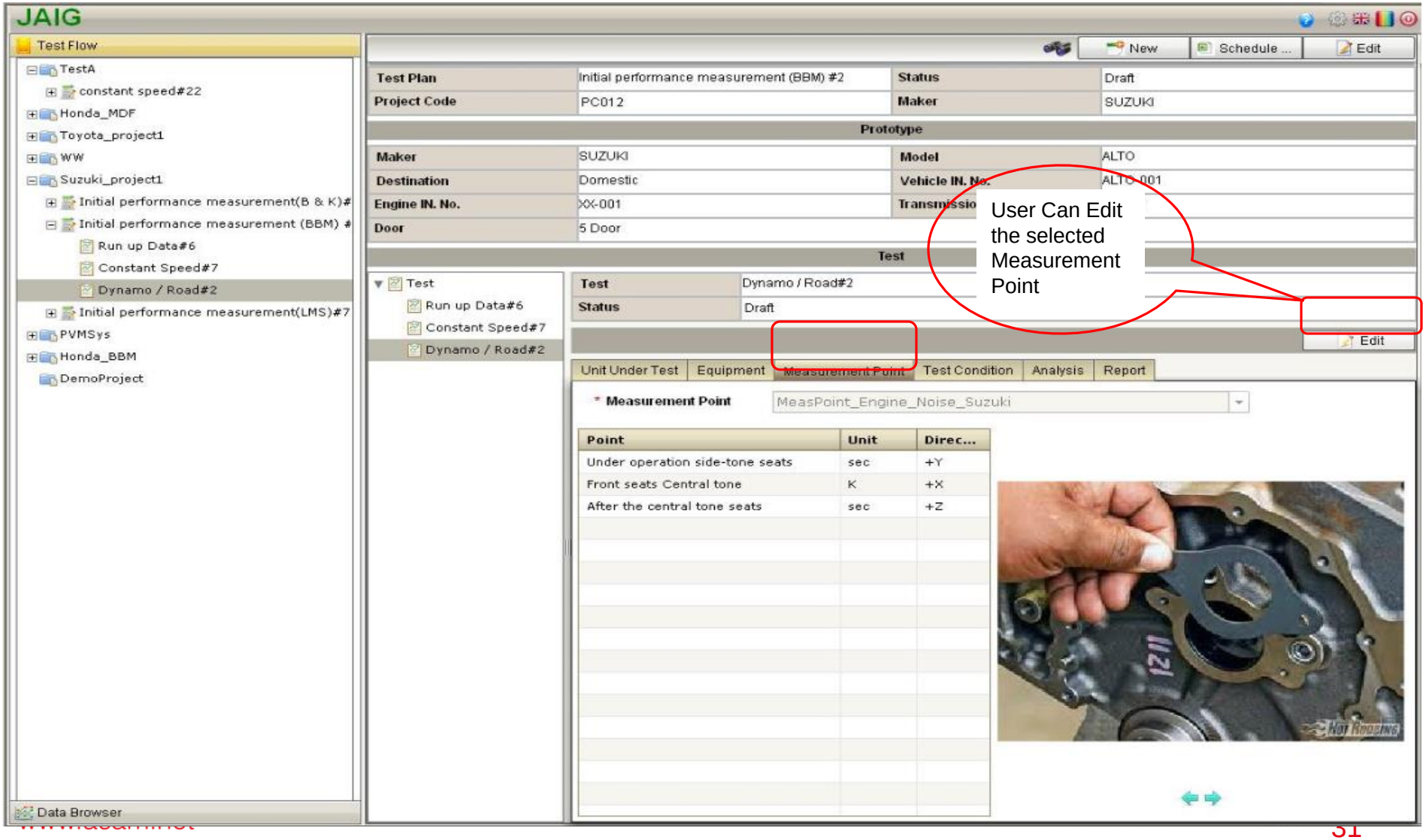




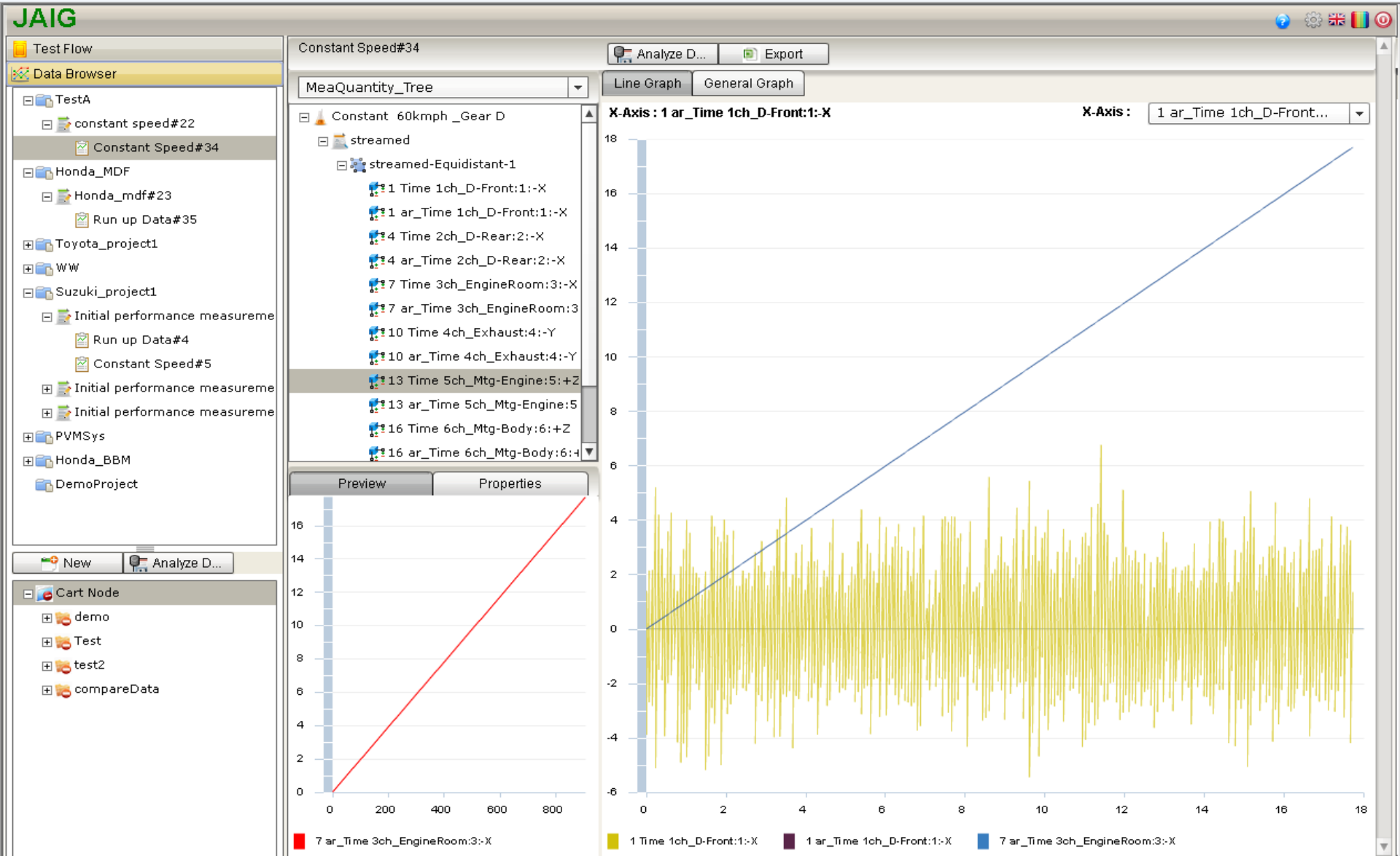
Test Plan Creation (Micro Flow)



Test Plan & its details(Super Micro Flow)



PPWG- ODS : Data Browser



Challenges that “PPWG ODS” was facing

Communication	How can we translate IT language to Engineer language? (e.g.: application model, API, MIME types, etc.)
Scope	What is a proper definition of Data Management in validation? „Product Validation Management“ (PVM), to express inclusion of validation processes & data
Processes	How can we build an eco system around ASAM ODS?
Plurality	How can we understand the different solutions available in the market?
Feasibility	Will ASAM ODS keep its promises? Promises versus reality – especially when implemented in tools
Business	What is the Return on Investment (ROI)?

2 Step Approach to Face these Challenges

Communication	How can we translate IT language to Engineer language? (e.g.: application model, API, MIME types, etc.)	Step 1
Scope	What is a proper definition of Data Management in validati „Product Validation Management“ (PVM), to express inclusion of validation processes & d	Step 1
Processes	How can we build an eco system around ASAM ODS?	Step 1
Plurality	How can we understand the different solutions available in the market?	Step 2
Feasibility	Will ASAM ODS keep its promises? Promises versus reality – especially when implemented in tools	Step 2
Business	What is the Return on Investment (ROI)?	