

MODEL BASED SYSTEMS ENGINEERING

Visualize | Collaborate | Reuse

Trending

The number of functions in the average vehicle is growing, and OEMs are adopting advanced connectivity & autonomous features.

Changes to ecosystem (e.g. SOA ,centralized architectures), increased use of logical elements in vehicle (ADAS,AD features) leading to sourcing of software & hardware from multiple vendors. Systems and vehicle architectures are becoming increasingly complex due to feature addition and automakers want to deploy better methods, tools and processes to ease the complexity of vehicle architecture and reduce time for feature development. OEMs are looking at the entire systems engineering life cycle, from source requirements analysis, through behavior analysis and physical architecture, to verification and validation.

The behavior model can be fully executed to verify its correctness long before money is wasted building prototypes. The use of the model-based approach will aid in the reduction of cost and enhance quality.

Opportunities & Challenges

- Model based approach has to be customized ,developed and deployed in alignment with existing process ,for both OEMs and Tier1s ,this is to ensure smooth transitioning
- System engineers across organization will have to adapt to system modelling language and tools
- Right MBSE resources are required to define the purpose, scope and method and this has to be addressed from the early phases

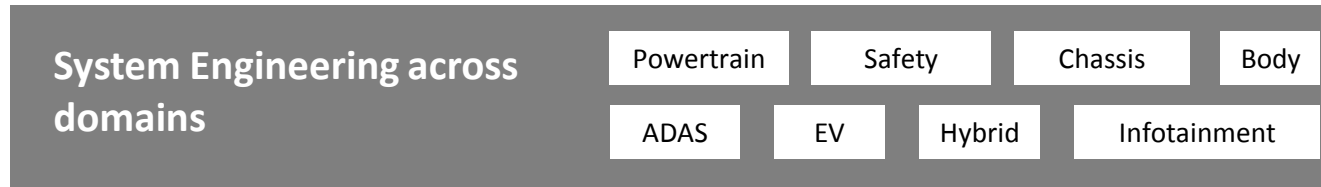


Benefits for your Consumer

- From OEM perspective, end customer will be pleased to have defect free, on time delivery of his expectation.
- From Teir1 perspective, end customer interaction and collaboration is smooth and there is added benefit of reusability for future model years.
- Overtime Vehicle/parts recall can be minimized

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Service Framework



Process Advisory

MBSE adoption
(Mapping existing process to MBSE and developing synergy in transition process)

MBSE infusion
(Setting up standards, checklists for wider deployment)

Develop approach to incorporate MBSE alongside existing organization process

Tools & Accelerators

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Models & Methods

Behavioural model methods (use case modelling, scenario modelling, state modelling)

Structural modelling methods (Decomposition hierarchy modelling, Interaction modelling, parametric modelling)

Collaborative models
(Best practices for holistic enterprise wide system engineering)

Service Summary

- Develop MBSE models in top-down engineering
- Reverse engineer existing artefacts to generate MBSE models
- Identify gaps in requirements through systematic analysis and behavior visualization methods
- Perform design synthesis for best design trade-off
- Develop tool specific plugins to automate system engineering tasks (e.g. Plugins in Rhapsody ,PREVISION)
- Providing training in SysML, MBSE process, and necessary preparation to system engineers

Differentiators

- Expertise in developing MBSE process for organization based on existing organization structure and communication framework
- Proven across automotive, aerospace and rail segments

Cases

- MBSE as enabler for OEM to handle increased vehicle portfolios
- EV Retrofitting (Converting a Tata ZEST from ICE vehicle to EV)
- Functional engineering for Rail customer
- Holistic system engineering for AD feature development