



Automotive Industry Solutions

IBM Embedded Systems Lifecycle Management (ESLM)

“Model driven System Engineering, integrated Process and Data Management are key to improved testability and system integration quality“

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Position statements:

Complete traceability across all design artifacts enables improved test coverage and SW quality management

Architectural models and use case based requirements management improve the system collaboration across automotive domains including the supply chain.

Trying to cover the increasing functionality in a car with an increasing number of independent ECU's will not be successful. An overall system architecture with distributed functionality is required. Test systems have to be provided to adequately support this approach.

Topic outline:

The complex interaction between several internal engineering areas within the automotive OEM, the collaboration with Tier 1 suppliers and the introduction of new functionality in the car which spans across formerly separated functional domains, requires improved process workflows and the management of key functional tasks:

- System requirements management broken down in overall stakeholder requirements and the design contract and collaboration of the relevant sub systems
- These collections of requirements also have to include testability requirements (subsystem test, system integration test, field diagnostic onboard and offboard testing) and ultimately links to test case generation systems.
- A layered system architecture that enables the redistribution of functional modules in SW to a system of standardized hardware platforms, which enable the cross domain functionality as well as serving as redundancy backbone.
- The integration of the authoring tools (engineering tool chain) into an overall engineering data management system, which enables the logical linking and traceability of development artifacts along the complete engineering lifecycle of the system. This will support the testability of a product and ensure that all test cases are based on the related functional system requirements and cover all requirements.
- An autogeneration of subsystem test cases and system integration test suites should be possible from use cases of a functional model working against a system architecture with integration rules and interface requirements

These and other disciplines will ensure that a product can be tested and the test cases can be mapped and traced against the related functional and non functional requirements, thus improving the overall system quality and reliability.

Also the cost of late design changes and reliability issues due to undiscovered system errors can be managed much better by using these approaches and mission critical states of projects can be avoided.