

The Challenge of Functional Safety in Software-Defined Vehicle (SdV) Architectures - 3 December 2025

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Summary of Presentation

The webinar explored the challenges of applying functional safety within software-defined vehicle (SdV) architectures, where functionality is increasingly delivered through software running on centralised computing platforms. The speaker explained that traditional functional safety approaches, developed for distributed ECUs with static functionality, are under pressure from dynamic software behaviour, over-the-air updates, and shared hardware resources.

A key insight was the need to architecturally separate High-Performance Computers (HPCs) and Safety Islands to manage mixed criticality and enable the application of different ASIL levels. HPCs typically host multiple functions with varying safety relevance and frequent software changes, while Safety Islands provide simpler, deterministic environments for higher-ASIL safety monitoring and fallback functions. This separation supports freedom from interference and enables ASIL decomposition, avoiding the need to assign the highest ASIL to all software running on shared compute platforms.

The speaker discussed how standards such as ISO 26262 still apply but require careful interpretation in SdV contexts, particularly regarding independence, partitioning, and configuration control. Emphasis was placed on early architectural decisions, robust separation mechanisms, and lifecycle governance to manage software changes post-deployment.

The webinar concluded that functional safety in SdVs is achievable, but only through disciplined system architecture, clear separation of safety responsibilities, and continuous alignment between software development, system engineering, and safety assurance activities.

If you are a SaRS Member and would like to watch the recording of the webinar please [click here](#).