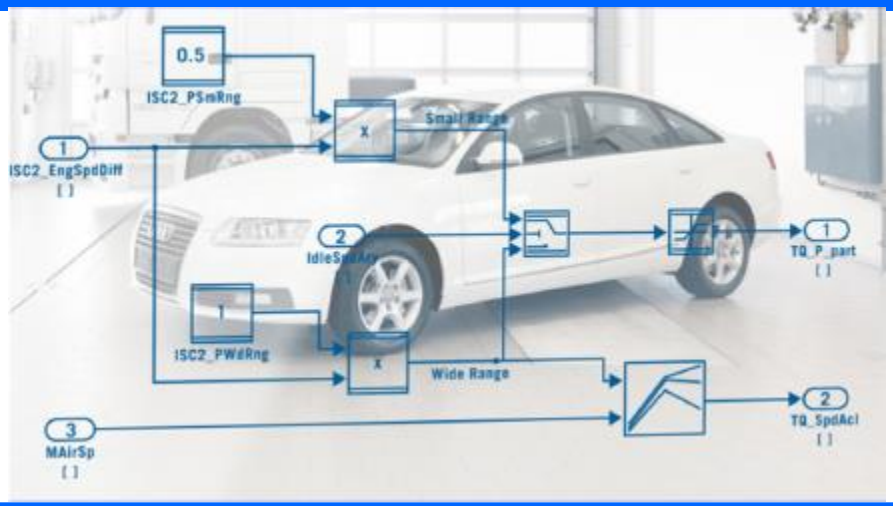

Safe-E Introduction

Coordination:
Andreas ECKEL
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The Eurostars Programme is powered by EUREKA and the European Community

GEFÖRDERT VOM
Bundesministerium für Bildung und Forschung

Eurostars Safe-E: what is it and why?:

- Eurostars is an Eureka SME Program
- In Austria there is no direct funding line for ITEA 2. The fruitful combination between ITEA 2 and Eurostars programs enabled to set-up the “Safe-E” project within the “Safe” ITEA 2 project frame.
- This innovative, cross country approach also supported the German ITEA 2 budget for “Safe”, taking 3 ITEA 2 Partners on-board of the Eurostars project “Safe-E”
  (FFG support by Philippe Loward, mail-to: phi@drawol.org).

Safe-E in numbers

Safe-E

- Filed in parallel to ITEA 2 Project “SAFE”
- Delivers all results to ITEA 2 Project “SAFE”
- Is a 100% part of ITEA 2 Project “SAFE”
- Coordination: TTTech Computertechnik AG
- Project Budget: €2,875150.-
- Project Start: 01. Sep. 2011 (2 months later than SAFE)
- Project Duration: 36 months
- Overall Effort: 290 man months
- TTTech: 54,53%, AVL: 22,47%, fortiss: 13,63%, Infineon: 9,36%

Safe-E

Safe-E Consortium:

TTTech	TTTech Computertechnik AG	SME	Austria
AVL	AVL Software & Functions GmbH	IND	Germany
fortiss innovation in software and systems	fortiss GmbH	RES	Germany
Infineon	Infineon Technologies	IND	Germany

Safe-E

Serve/solve issues for e-vehicles:

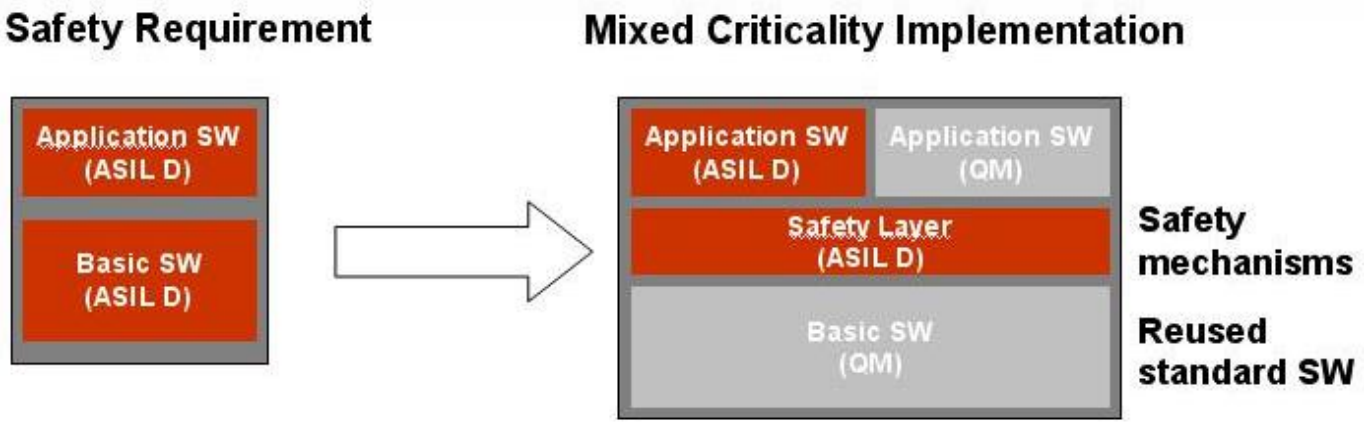
- Managing the increasing complexity in safety-critical, embedded systems
- Allow the use of AUTOSAR components not compliant to ASIL D for ASIL D compliant applications by use of safety layer concept
- Provide suitable abstractions and models allowing for early validation of key properties
- Provide new tools and integrate existing ones to design appropriate applications
- Compile appropriate training material supporting immediate pick-up in automotive industry
- Broaden functionality in modern vehicles w.r.t. safety critical applications (electronic breaks, electronic gear boxes, steering, drive train for e-vehicles, motor control for e-vehicles, …)

Safe-E Contribution per Partner: TTTech

TTTech

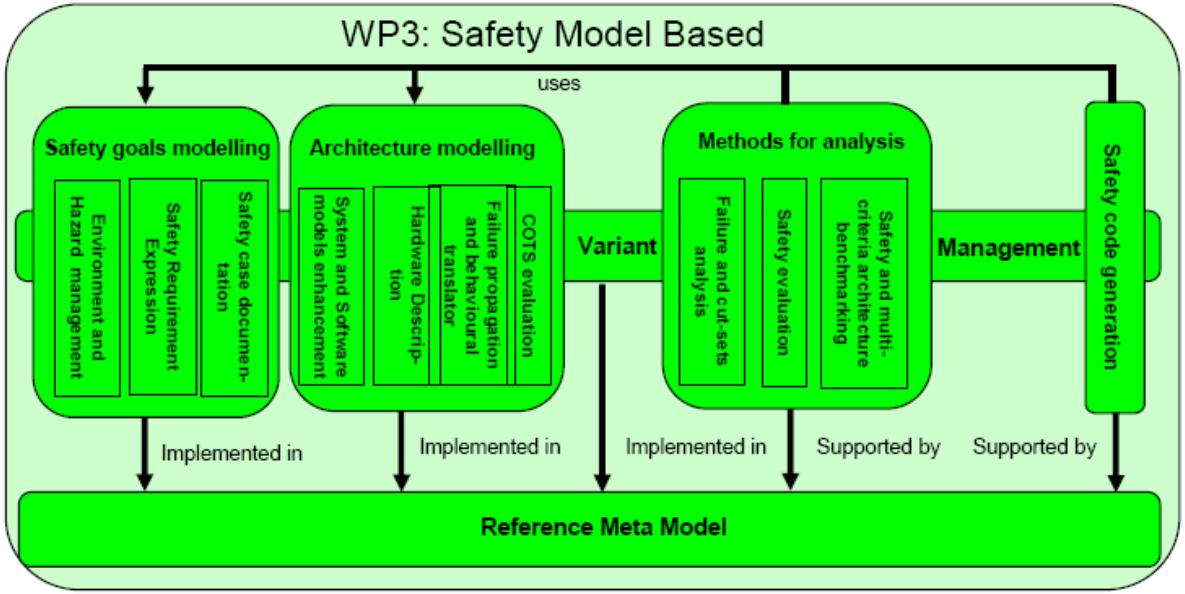
Two main goals:

- Software Safety Layer
- Safety ECUs: compare approach with dual core and single core CPU

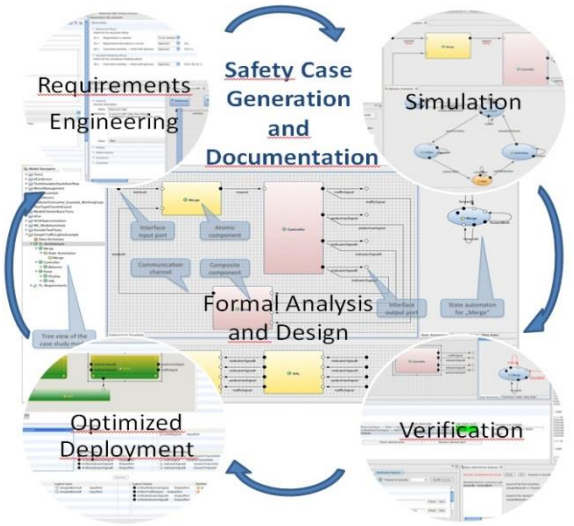


Safe-E Contribution per Partner: AVL

- **Safety Goals Modeling**:
  following ISO 26262: integrate safety goal definition, ASIL definition & hazard analysis for automotive grade E/E architecture
- **Architecture Modeling:**
  Extension of EAST- ADL w.r.t. safety requirements in ISO 26262
- **Methods for Analysis:** use information available from architectural model for analysis methods in order to apply them in very early design stage on high abstraction level
- **Variant Management:**
  Extend meta model for variant management
- **Meta Model Definition:**
  define new, resulting meta model
- **Safety Code Generation:**
  investigate means for automatic code generation including safety functionality acc. to ISO 26262



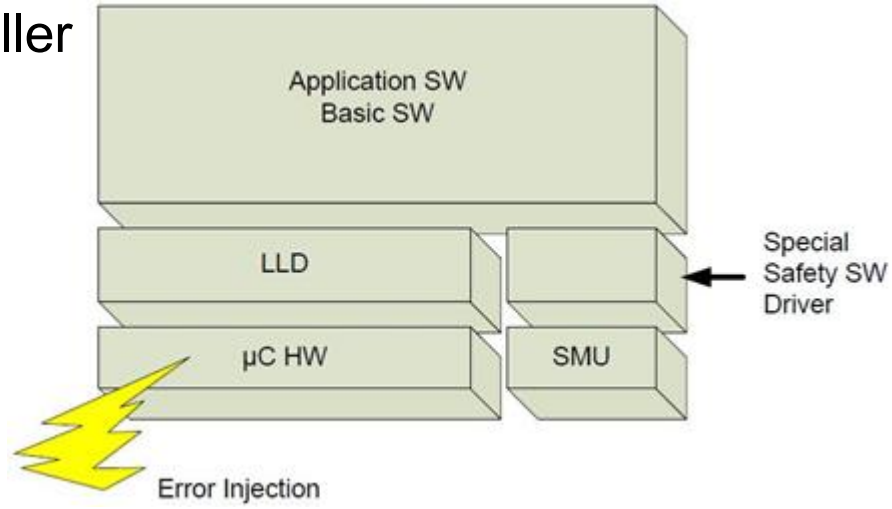
Safe-E Contribution per Partner: fortiss



- **Safety Requirements Analysis**:
  Analysis and elicitation of ISO26262 compliancy requirements for mixed-criticality software Safety-Layer for model-based development using AUTOSAR basic components.
- **Meta Model Definition:**
  Support extension of meta-model for SAFE requirements.
- **Safety Case Modeling**:
  Propose extension of meta-model for Safety Case generation and provide prototypical solution.
- **Safety Code Generation:**
  Investigate means for automatic code generation for safety-critical patterns in support of ISO 26262 and implementation of prototypical code generator.
- **Architecture Modeling and multi-criteria Design Space Exploration:**
  Analysis of applied SW architecture and development of a prototypical implementation for safety-critical, multi-criteria architectural evaluation and benchmarking as well as design space exploration.
- **Test Suite Generation:**
  Provide Test Suite Generation Plug-In.
- **Methods for Analysis:**
  Support the specification of functional safety process modeling.
- **Dissemination:**
  Implement SAFE result into technology demonstrators.
  Integrate technologies and experience into the curriculum at the Technical University of Munich.

Contribution to the safety layer platform:

- Microcontroller models (single core & dual core)
- Investigation of the Safety Management Unit (SMU) and microcontroller HW by model based fault injection
- Rating of efficiency for fault detection in complex scenarios
- Implementation of ISO 26262 standard requirements for “functional safety“ in Microcontroller HW and AUTOSAR MCAL SW
- Comparison of single core and dual core based HW
- Test & verification of such HW in real world environment



Safe-E Conclusion

- Safe-E (Eurostars) fully supports Safe (ITEA 2)
- Safe-E as such can also stand-alone but both projects will strongly benefit from each other
- The innovation and research contents is exceptional and a unique added value to the European society (enabling electric vehicle, “more electric car”, cross domain application in wind power plant parks & space, …)




www.safe-project.eu (see Safe-E Partner Project)

Thank you for your attention!

We value your opinion & questions

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