ArchitectECA2030

Trustable architectures with acceptable residual risk for the electric, connected and automated cars

Project vision:

The vision of ARCHITECTECA2030 is the provide a harmonized pan-European validation framework enabling missionoriented validation of electronic components and systems (ECS) for electric, connected and automated (ECA) SAE L3 to L5 vehicles to improve reliability, robustness, safety and traceability.

The overall goals of ArchitectECA2030 are:

Manage failure modes, uncertainties, and failure probabilities propagating through the entire ECA vehicle stack consisting of onboard HW, onboard SW, offboard SW and data, development and validation methodologies **to support hazard identification, risk analysis, and sufficient risk mitigation.**

Develop a widely agreed homologation framework comprised of harmonized methods, tools, and processes able to handle dynamic requirements (e.g., new scenarios, untested events, online traffic data, etc. provided by the MonDev) to ultimately design safe, secure, and reliable ECA vehicle **with a well-defined, quantified, and acceptable residual risk** across all ECS levels (from semiconductor to cyber-physical system-level / HW and embedded SW). The residual risk relies on the failure risks of every single semiconductor, electronic component, subsystem, and system used to build ECA vehicles.

Propose, align and develop a concept for an in-vehicle monitoring device (MonDev), which is able to indicate and measure the health status and possible degradations of the functional electronics and electronic systems, enabling predictive diagnosis, maintenance, and re-configuration of embedded SW.

Bring together the representative stakeholders from ECS industry, standardization and certification bodies (Europe, US, Asia), governments, test field operators, and academia in tight interaction with the **lighthouse initiative Mobility.E and its LIASE** group to influence emerging standards, validation and homologation procedures for ECA vehicles and contributing to the emerging UL 4600 which is based on ISO 26262 and ISO/PAS 21448 (SOTIF).

ArchitectECA2030 will deliver:

The project will implement a unique in-vehicle monitoring device able to measure the health status and degradation of the functional electronics empowering model-based safety prediction, fault diagnosis, and anomaly detection. A validation framework comprised of harmonized methods and tools able to handle quantification of residual risks using different data sources (e.g., monitoring devices, sensor/actuators, fleet observations) is provided to ultimately design safe, secure, and reliable ECA vehicles with a well-defined, quantified, and acceptable residual risk across all ECS levels.

Project facts:

Project Coordinator: INFINEON TECHNOLOGIES GERMANY AG
Project Start: 01-07-2020
Duration: 36M
Total investment: ~€M 13
Requested EU contribution: ~€M 4
Participating ogranizations: 20
Number of Countries: 8

Project partners:

Project Objectives:

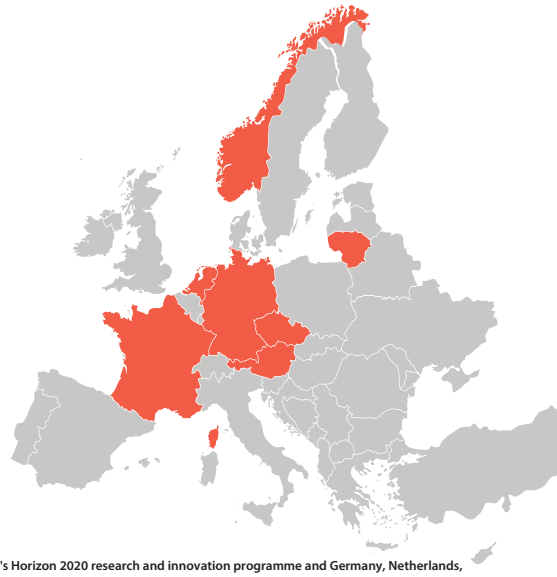
O1 Continuos robust design optimization fro each part in the EC value chain

O2 Framework for safety validation of ECS value chain

O3 Indentification & management of residual risks over the entire ECS value chain

O4 End-user acceptance by trusthworthy ECS value chain

O5 Zero Emissions, Zero Crashes, Zero Congestions by ECA2030-car*1



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