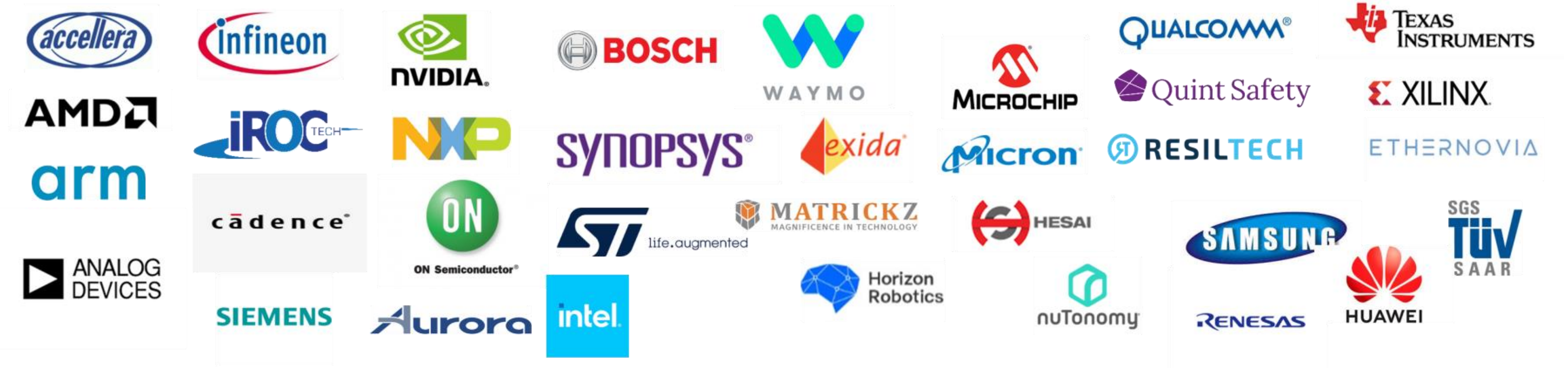
IEEE P2851

Overview

About P2851

- IEEE P2851 is about “Exchange/Interoperability Format for Safety Analysis and Safety Verification”.
- Its initial scope was IPs and ICs but its scope has been extended to items, systems and SW as well.
- Artificial Intelligence is also a key part of the activity.
- Leadership team:
  - Chair: Riccardo Mariani, NVIDIA
  - Vice Chair: Nir Maor, QUALCOMM
  - Secretary: Jyotika Athavale, NVIDIA
  - IEEE CS DASC Chair: Dennis Brophy, Mentor *(P2851 will move to FSSC)*
  - IEEE Program Manager: Jonathan Goldberg and Vanessa Lalitte, IEEE-SA
- As of today, 34 companies (IP/IC providers, EDA vendors, Tier1s and OEMs) are members with 70+ active individuals.
- The P2851 is already referenced by ISO/TR 4804.

P2851 members



P2851 and IEEE FSSC

- IEEE Computer Society decided to create an overall container (named "FSSC") for everything related to functional safety.
- The scope is:

  The Functional Safety Standards Committee (FSSC) is responsible for functional safety-related standards in the IEEE where functional safety means the part of the overall safety of a system or piece of equipment that depends on a system or equipment operating correctly in response to its inputs. The FSSC is focused on architectures, methodologies, tools addressing functional safety and other safety-related aspects of the intended functionality at the different levels of abstraction (system of systems, systems, hardware or software component) and across application fields such as automotive, industrial, avionics, high-performance computing. It also covers relationships of functional safety with contiguous domains such as system safety, cybersecurity, reliability, real-time interactions, and artificial intelligence.

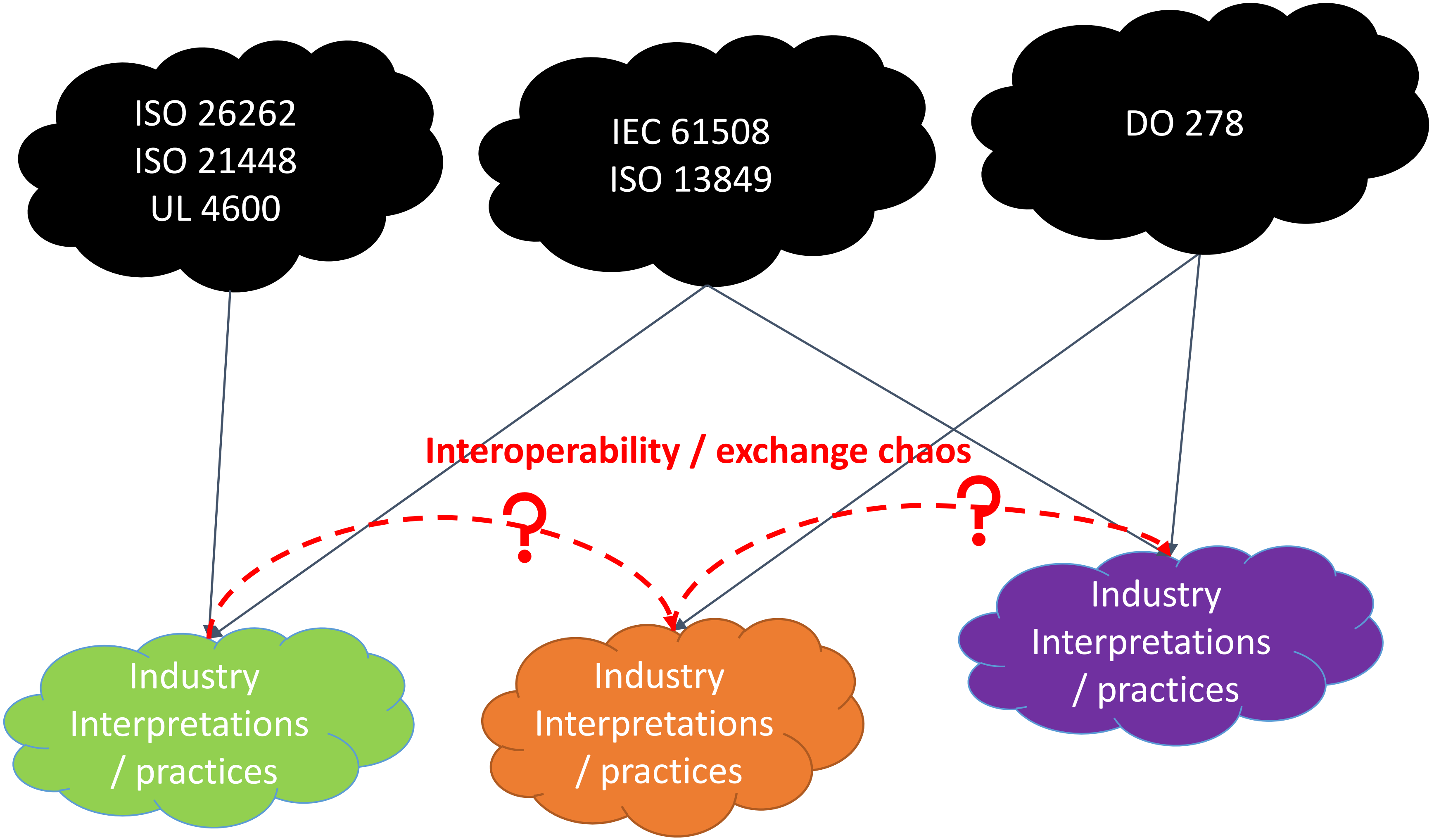
- Status:
  - approved by C/SAB and CS BoG,
  - approved by IEEE SA AudCom, SASB and BoG
  - Starting the activity in April 2021
  - P2851 will move from DASC to FSSC.
  - FSSC will be also the co-sponsor of P2846

P2851 activities and roadmap

- 6 subgroups: Automotive FuSa, Artificial Intelligence, Avionics, Security, Industrial/Medical/Robotics, SOTIF
- Roadmap
  - Within April 2021
    - Publication of a white paper based on the first version of “landscape document”, describing lifecycle activities and related methodologies and tools needed
    - Partitioning of P2851 in sub-standards (P2851.0, P2851.1 etc.) to address different levels / use cases
  - Within end of 2021
    - first draft of the standard, incorporating outcomes of Accellera FSWG
  - Within end of 2022
    - final version of the standard

P2851 highlights

Position with respect to other standards



ISO 26262
ISO 21448
UL 4600

IEC 61508
ISO 13849

DO 278

Interoperability / exchange chaos

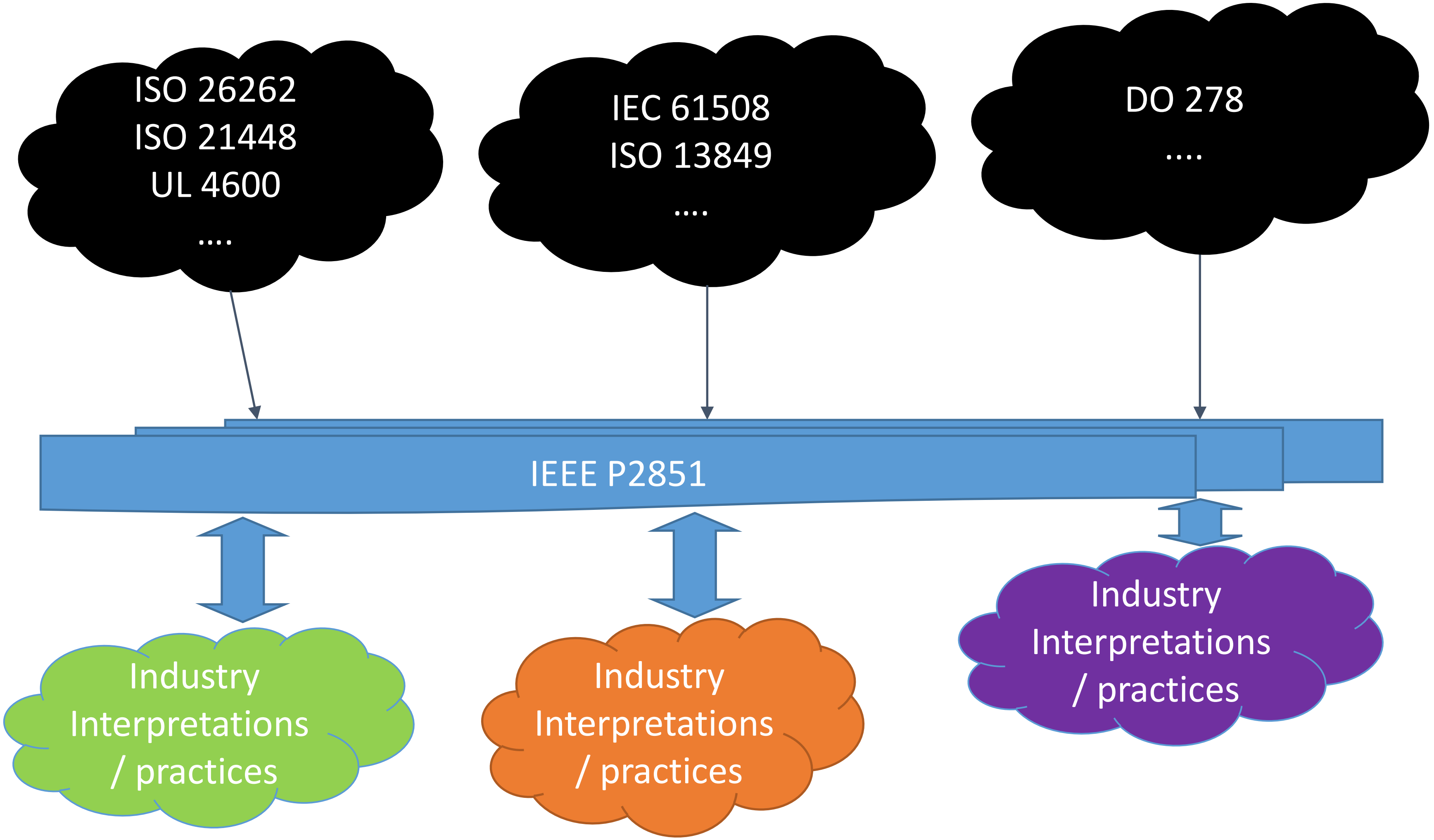
Industry Interpretations / practices

Industry Interpretations / practices

Industry Interpretations / practices

P2851 highlights

Position with respect to other standards



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IEEE P2851

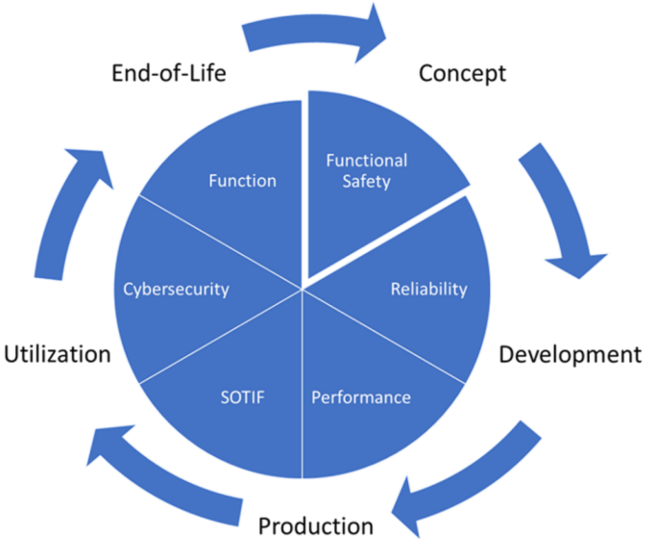
Industry Interpretations / practices

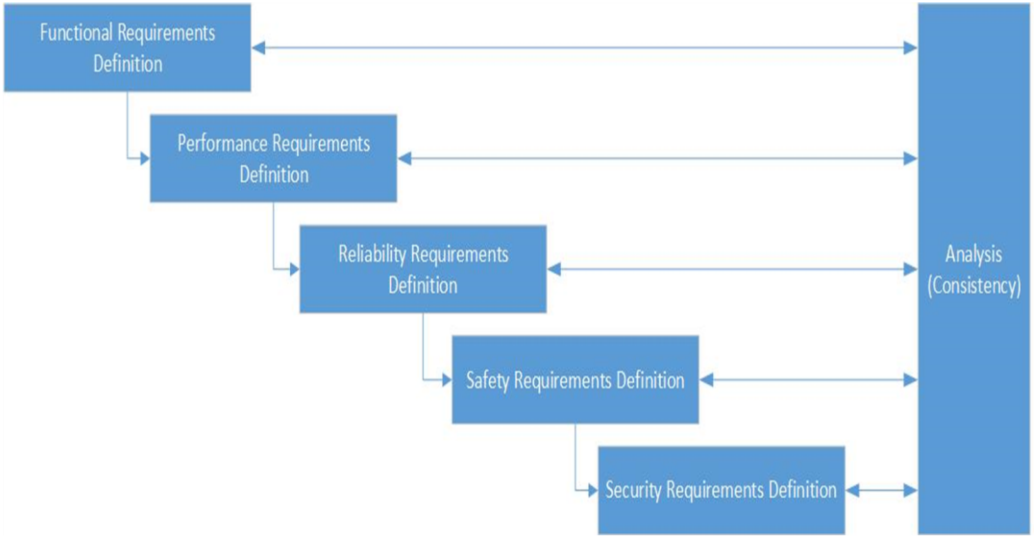
Industry Interpretations / practices

Industry Interpretations / practices

P2851 highlights

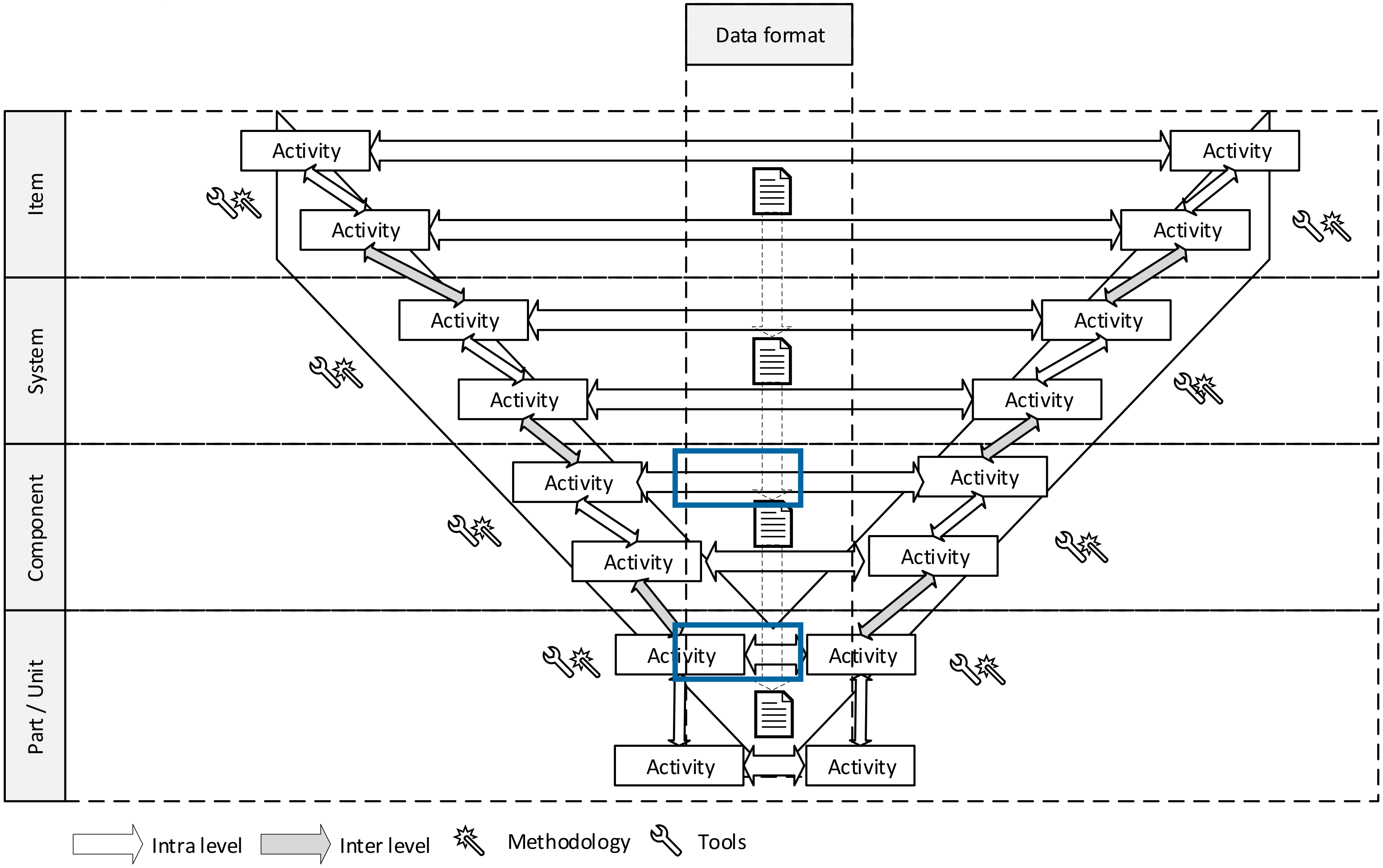
Product dependability lifecycle / Dependability lifecycle model




Functional Requirements Definition
Performance Requirements Definition
Reliability Requirements Definition
Safety Requirements Definition
Security Requirements Definition
Analysis (Consistency)

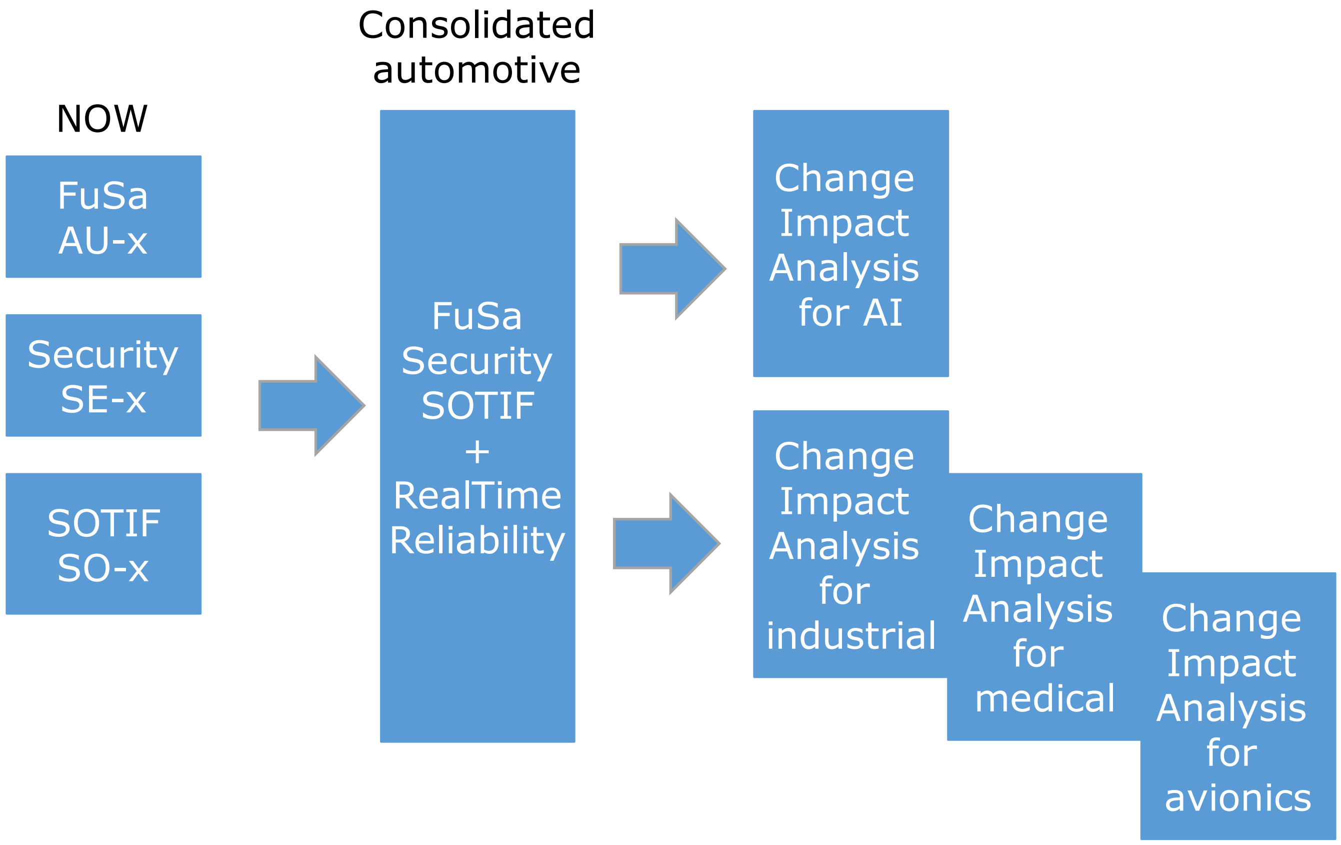
P2851 highlights

Landscape



P2851 highlights

Use cases



NOW

FuSa AU-x

Security SE-x

SOTIF SO-x

Consolidated automotive

FuSa Security SOTIF + RealTime Reliability

Change Impact Analysis for AI

Change Impact Analysis for industrial

Change Impact Analysis for medical

Change Impact Analysis for avionics

P2851 highlights

Needs: Description languages, methodologies, databases (excerpt)

- DESCRIPTION LANGUAGES (DL)
  - Safety Plan & Safety Case DL
  - Confirmation Measures DL
  - External Measures DL
  - Assumptions of Use DL
  - Base Failure Rate (BFR) DL
  - Etc…

- METHODOLOGIES (ME)
  - Requirements evaluation ME
  - Vulnerability Factors ME
  - Dependent Failure Analysis ME
  - ASIL decomposition ME
  - Non-deterministic behavior analysis ME
  - Etc…

- DATABASES (DB)
  - Use environment DB
  - External measures DB
  - Severity, Controllability, Exposure DB
  - Safety mechanisms DB
  - AI training data DB
  - Etc..