Integrating Functional Safety Audit with ASPICE and How to Interface Safety Objectives and Functional Safety Assessment

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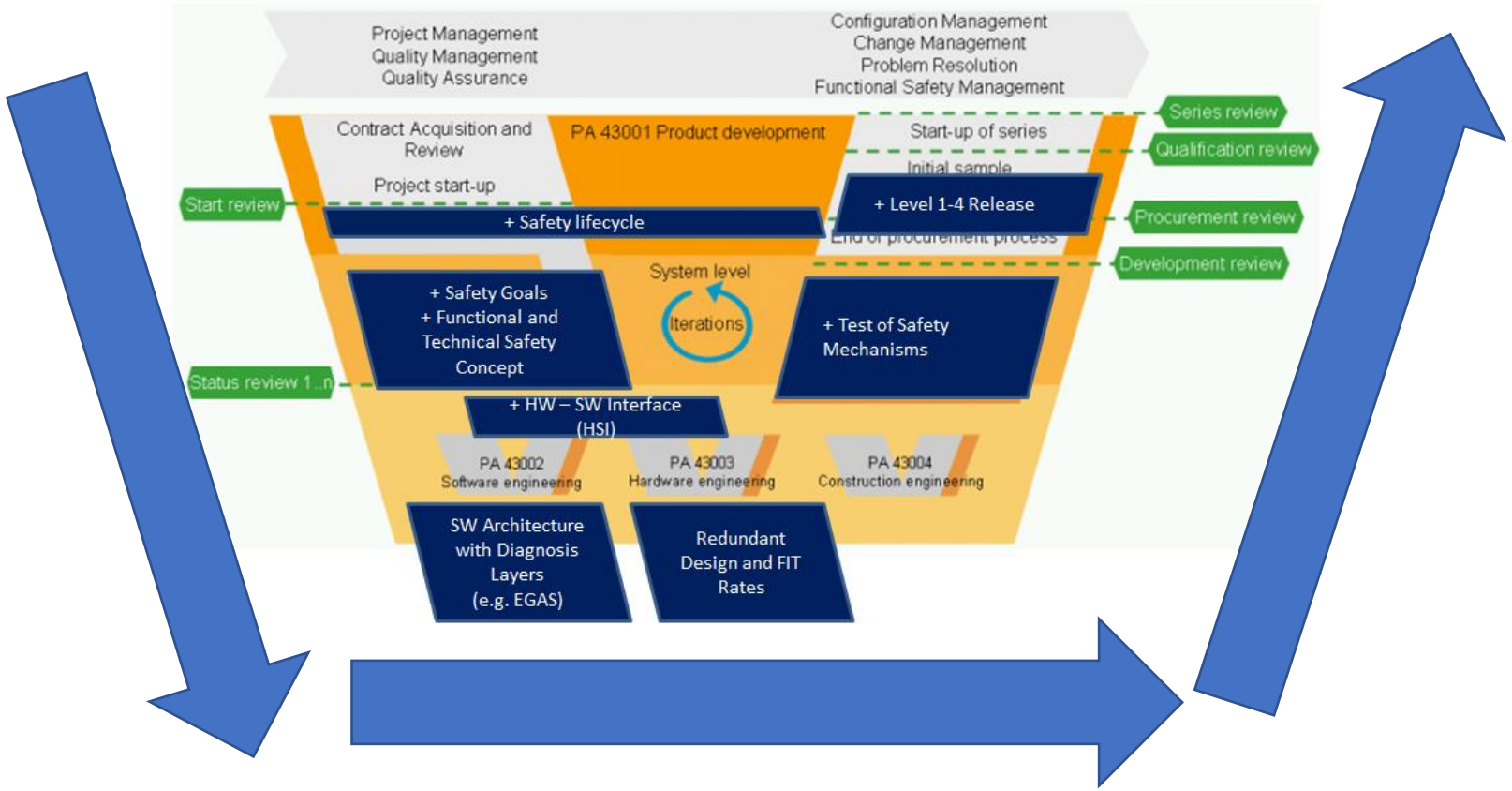
Integrated V Approach



- ✓ Check per Safety Goal
- ✓ Technical Review along V Model
- ✓ Traceability of the safety case
- ✓ Work Products related will be checked

2 Complementary Reports

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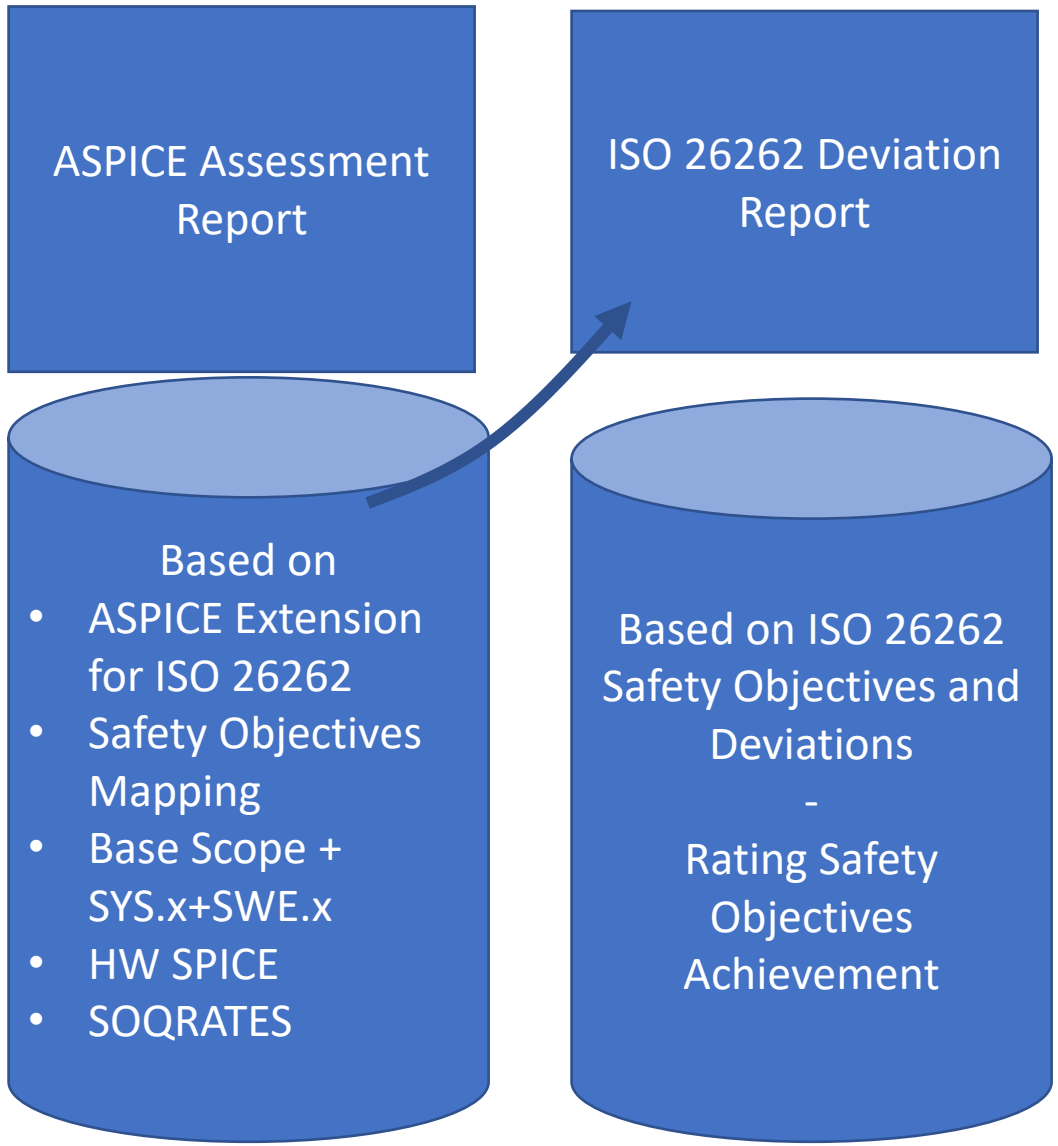

BPs – Safety Objectives – ISO 26262

Processes Mapped to Safety Objectives in SOQRATES WG

MAN.3 Project Management

SYS.1 Requirements Elicitation

SYS.2 System Requirements Analysis

SYS.3 System Architectural Design

SYS.4 System Integration and Integration Verification

SYS.5 System Verification

HWE.1 Hardware Requirements Analysis

HWE.2 Hardware Design

HWE.3 Verification against Hardware

HWE.4 Verification against Hardware Requirements

SWE.1 Software Requirements Analysis

SWE.2 Software Architectural Design

SWE.3 Software Detailed Design and Unit

SWE.4 Software Unit Verification

SWE.5 Software Component Verification and Integration

SWE.6 Software Verification

SUP.1 Quality Assurance

SUP.8 Configuration Management

SUP.9 Problem Resolution Management

SUP.10 Change Request Management

VAL.1 Validation

BPs – Safety Objectives – ISO 26262

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Processes Mapped to Safety Objectives in SOQRATES WG

ID	Cluster	Activity	Name	Description	Status	Rationale	Evidence
20	Part III: Concept Phase	Hazard Analysis and Risk Assessment	ISO_26262:2018-3-6-Obj2	the hazardous events, in order to avoid unreasonable risk.	None		SYS.1.BP2
130	Part III: Concept Phase	Hazard Analysis and Risk Assessment	ISO_26262:2018-3-6-Obj3	Objective 3 is to verify the completeness, correctness and consistency (internally and with the item definition) of the hazard analysis and risk assessment.	None	SUP.1.BP3: Assure quality of work products	SUP.1.BP3
21	Part III: Concept Phase	Functional Safety Concept	ISO_26262:2018-3-7-Obj1	Objective 1 is to specify the functional or degraded functional behaviour of the item in accordance with its safety goal	None	SYS.2.BP1: Specify system requirements. SYS.2.BP2: Structure system requirements. SYS.2.BP3: Analyze system requirements. SYS.2.BP4: Analyze the impact on the system context	SYS.2.BP1 SYS.2.BP2 SYS.2.BP3 SYS.2.BP4
22	Part III: Concept Phase	Functional Safety Concept	ISO_26262:2018-3-7-Obj2	Objective 2 is to specify the constraints regarding suitable and timely detection and control of relevant faults in accordance with its safety goals;	None	SYS.3.BP1: Specify static aspects of the system architecture. SYS.3.BP2: Specify dynamic aspects of the system architecture.	SYS.3.BP1 SYS.3.BP2
23	Part III: Concept Phase	Functional Safety Concept	ISO_26262:2018-3-7-Obj3	Objective 3 is to specify the item level strategies or measures to achieve the required fault tolerance or adequately mitigate the effects of relevant faults by the item itself, by the driver or by external measures	None	SYS.3.BP3: Analyze system architecture.	SYS.3.BP1 SYS.3.BP2

BPs – Safety Objectives – ISO 26262

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Capability Adviser

EUROSPI

All Assessments | Export | Logout

HWE.2 - Level 1 | Evidences | Consistency | Overview | Calculation | Consolidation

Demo Assessment Functional Safety Objective Mapping

PAM: Automotive SPICE 4.0 with Functional Safety

All Units

+ ACQ.4 Supplier Monitoring
+ HWE.1 Hardware Requirements Analysis
– HWE.2 Hardware Design
  » HWE.2 - Level 1
  » HWE.2 - Level 2
  » HWE.2 - Level 3
+ HWE.3 Verification against Hardware Desig
+ HWE.4 Verification against Hardware Requirements
+ MAN.3 Project Management
+ MAN.5 Risk Management
+ MAN.6 Measurement
+ MLE.1 Machine Learning Requirements Analysis
+ MLE.2 Machine Learning Architecture
+ MLE.3 Machine Learning Training
+ MLE.4 Machine Learning Model Testing
+ PIM.3 Process Improvement
+ REU.2 Management of Products for Reuse
+ SPL.2 Product Release
+ SUP.1 Quality Assurance
+ SUP.8 Configuration Management
+ SUP.9 Problem Resolution Management
+ SUP.10 Change Request Management

Hardware Design

Notes | Other Notes | Summary | Safety | Outcomes | Context | Save All

HWE.2.BP1 **Specify the hardware architecture.** Develop the hardware architecture that identifies the hardware components. Document the rationale for the defined hardware architecture.

ISO 26262 Extended Questions:
ISO_26262:2018-5-7-Obj1 Objective 1 is to create a hardware design that:
- supports the safety-oriented analyses;
- considers the results of the safety-oriented analyses;
- fulfils the hardware safety requirements;
- fulfils the hardware-software interface (HSI) specification;
- is consistent with system architectural design specification; and
- satisfies the required hardware design properties

	N	P	L	F	Not App.
⚠	○	●	○	○	○
SPICE	○	○	○	●	○

Note

HWE.2.BP2 **Specify the hardware detailed design.** Based on components identified in the hardware architecture, specify the detailed design description and the schematics for the intended hardware variants, including the interfaces between the hardware elements. Derive the hardware layout, the hardware bill of materials, and the production data.

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BPs – Safety Objectives – ISO 26262

INTERNATIONAL STANDARD **ISO 26262-5**

Second edition
2018-12

Road vehicles — Functional safety —

Part 5:
Product development at the hardware level

Véhicules routiers — Sécurité fonctionnelle —
Partie 5: Développement du produit au niveau du matériel

7 Hardware design

7.1 Objectives

The objectives of this clause are:

a) to create a hardware design that:

- supports the safety-oriented analyses;
- considers the results of the safety-oriented analyses;
- fulfils the hardware safety requirements;
- fulfils the hardware-software interface (HSI) specification;
- is consistent with system architectural design specification; and
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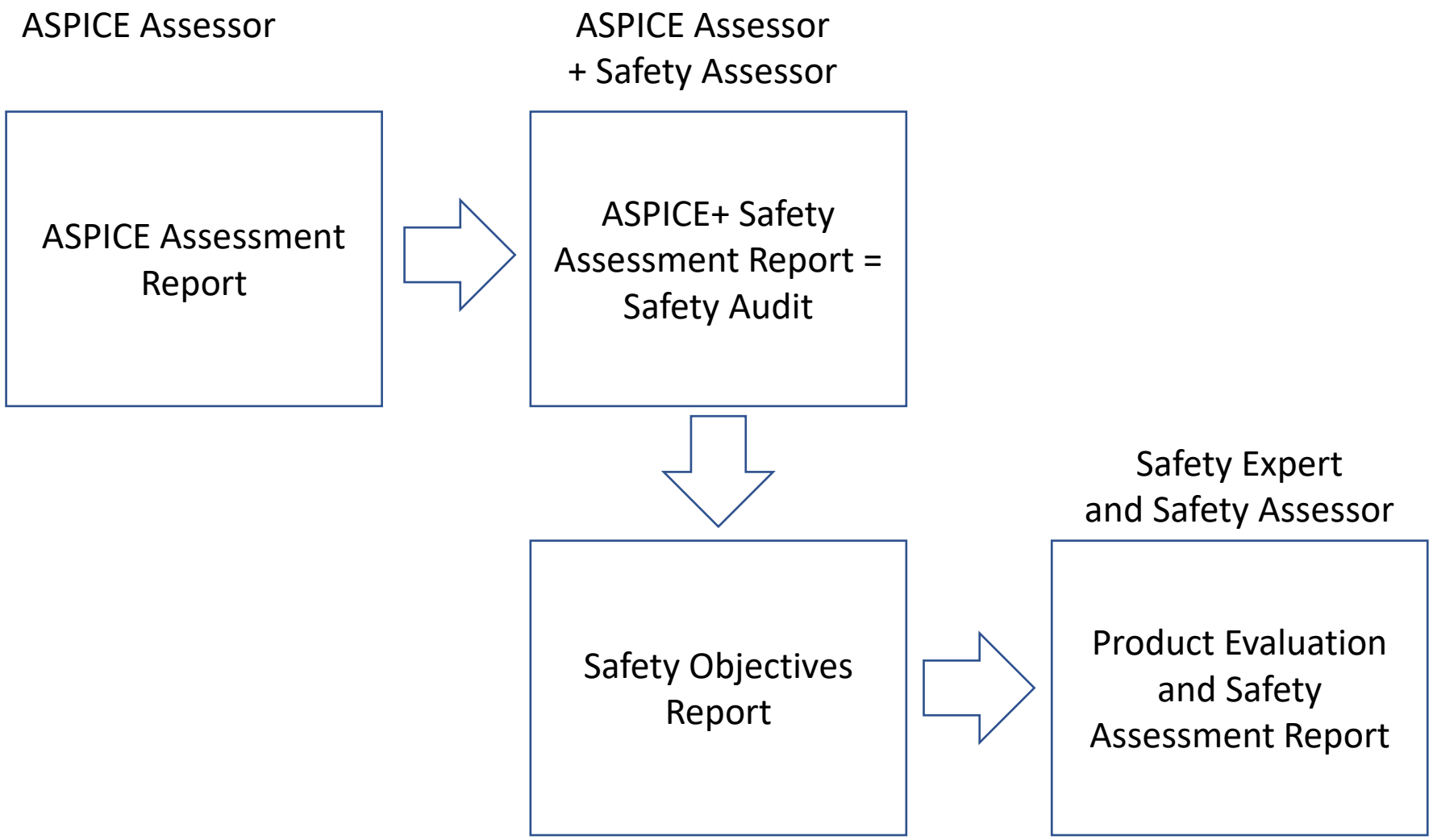
⚠	N ○	P ◉	L ○	F ○	Not App. ○
SPICE	N ○	P ○	L ○	F ◉	Not App. ○

Interfacing Both Views by Safety Objectives



Thanks

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Thanks

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