



Automotive SPICE® 4.0 Analysis

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SoQrates Team



Acknowledgement

Presentation is based on the Paper “Analysis of Automotive SPICE V4.0 changes” published for the EuroSPI 2024 Conference by:

- Damjan Ekert, ISCN GmbH, Austria
- Elena-Flavia Povirnaru, Cariad SE, Germany
- Andreas Gasch, Cariad SE, Germany
- Ralf Mayer, Bosch Engineering GmbH, Germany
- So Norimatsu, NP Lab, Japan
- Alexander Feulner, Process Fellows GmbH, Germany
- Brigitte Kurz-Grießnig, Engineering Center Steyr GmbH & CO KG, Austria
- Peter Lindermuth, Magna Powertrain GmbH & CO KG, Austria
- Rainer Dreves, Dreves Rainer SPICE Consulting, Germany
- Rudolf Grave, TASKING Germany GmbH, Germany
- Dr. Richard Messnarz, ISCN GmbH, Austria

AND THE SOQRATES Automotive SPICE® Working Group

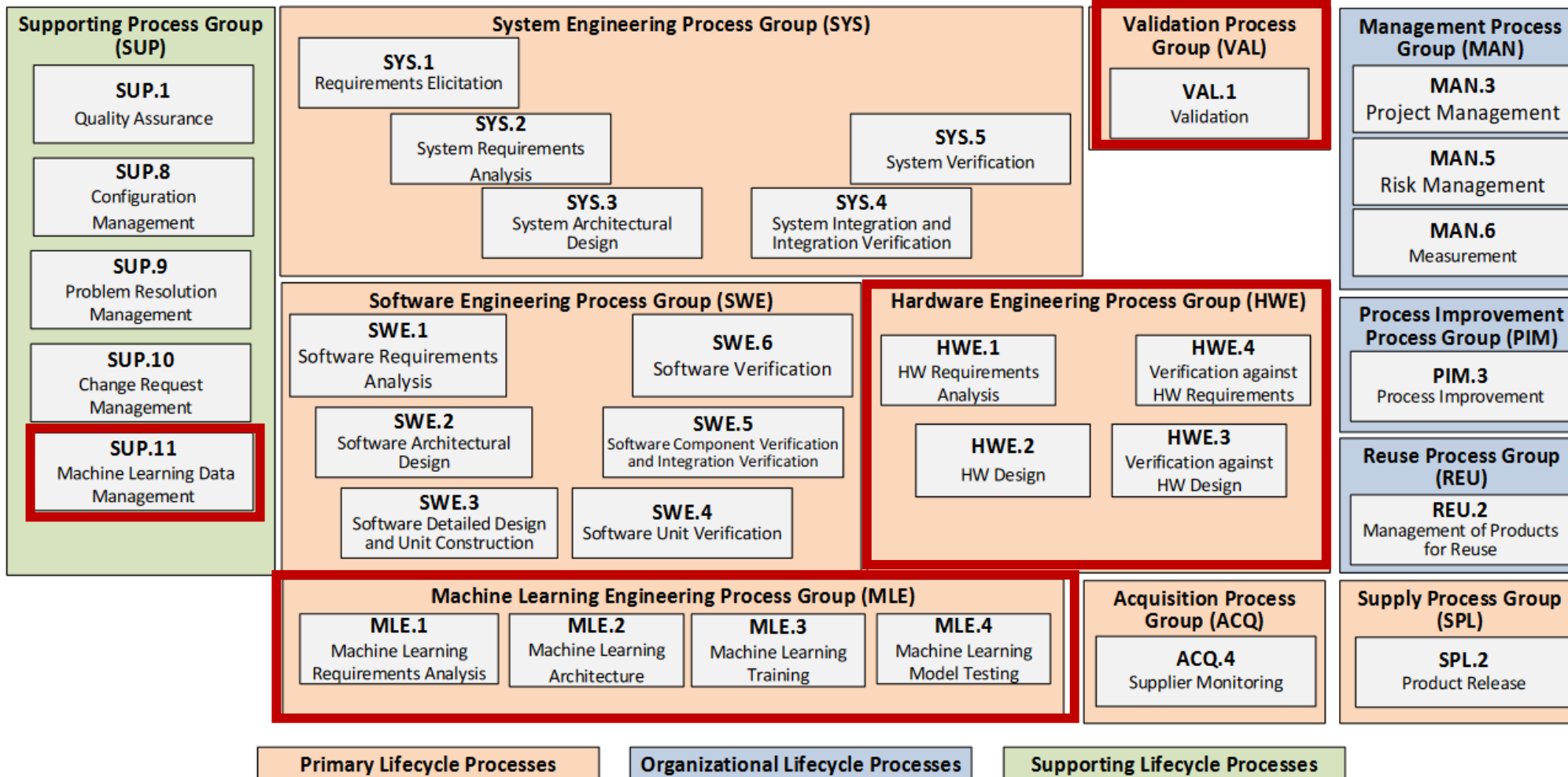


Automotive SPICE® 4.0

- Published 29. 11. 2023 by the VDA Working Group 13
- Free Available to Download: <https://vda-qmc.de/wp-content/uploads/2023/12/Automotive-SPICE-PAM-v40.pdf>
- VDA Guidelines 2.0 (available as paper version in the VDA Webshop and online as part of the VDA Subscription program)
- All process have been reworked
- New layout
- Less Base Practices compared to Automotive SPICE® 3.1 (199 vs 265 for the VDA Scope)
- Some major concept changes
- New Process Groups



Automotive SPICE® 4.0 Process Landscape



Source: Automotive SPICE® 4.0

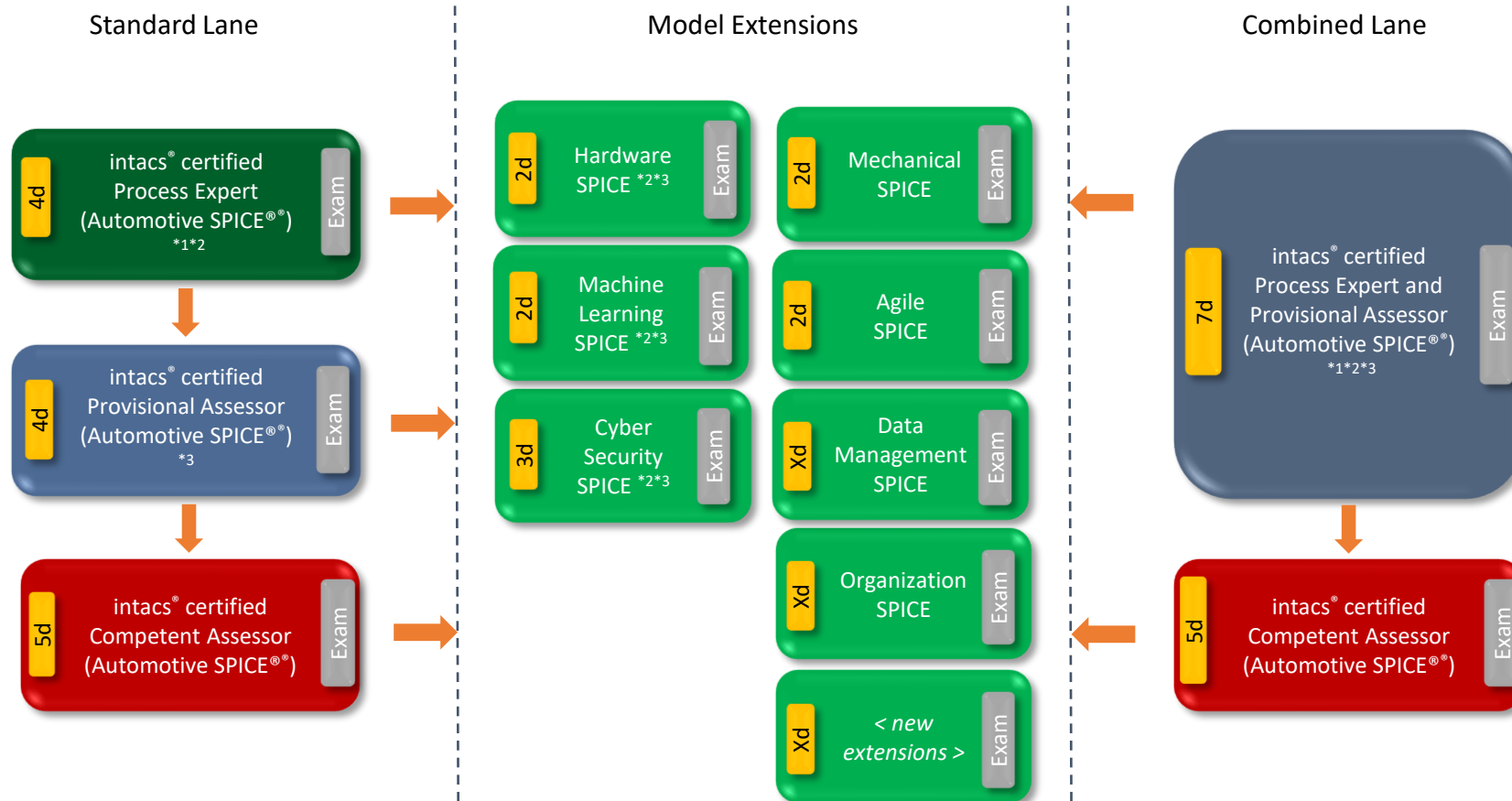


Impact on existing assessors and training programme

- Competent and Principal Assessor need a one day **Upgrade Training** in order to be able to assess according to Automotive SPICE® 4.0
- Provisional Automotive SPICE® 3.1 Assessor can be co-assessors in Automotive SPICE® 4.0 assessments without the Upgrade Training → only needed if they want to become Competent Assessors for Automotive SPICE® 4.0
- New intacs® Training Architecture from October 1st, 2024



intacs® Training Architecture from October 1st, 2024



Source: intacs.info



Updates and Concept Changes

- New processes and process groups (HW, Machine Learning, Validation)
- No explicit notion of strategy on Level 1 → No dedicated BP for the strategy on Level 1, some aspects covered by other BPs within the process. Dedicated strategy is integrated within GP 2.1.1 (see Level 2 changes)
- Traceability and consistency integrated into one BP
- Information Item Characteristics instead of Work products
- No more expected content for a strategy
- Verification instead of Testing



Information Items Characteristics

Information Items Characteristics rather than Work Product Characteristics

Provide example of potential characteristics – assessor may use them

Can be part of one or more work products

Strategies/Plan e.g. Quality Plan are not described anymore

14-10	Work package	<ul style="list-style-type: none"> • Defines activities to be performed • Documents ownership for activities e.g., by domains • Documents critical dependencies to other work packages • Documents input and output work products • Documents the critical dependencies between defined work products • Information needed to perform these activities • Estimates of effort, duration • NOTE: The work package descriptions may be integrated into the/be a part of a schedule, see 08-56
14-53	Role Assignment	<ul style="list-style-type: none"> • Assignment of person(s) to roles - required competencies vs existing competencies - required skills vs existing skills - required experience and trainings based on identified competencies / skills gap
18-52	Escalation path	<ul style="list-style-type: none"> • Defined mechanisms to report and confirm escalation relevant issues • Identifies stakeholders to be included in the escalation path • Identifies levels of escalation

Source: Automotive SPICE® 4.0



VDA Guideline 2.0

- Rating guidelines available for all processes
- No more rating recommendations, only rating rules
- Helps to interpret the PAM
- VDA Scope defined
- Many dependencies between processes removed → Process ratings shall be independent
- Guideline is not differentiating anymore between the assessment purpose “process improvement” and “process-related product risk”. The purpose may impact also the assessment scope and should be clearly documented in the assessment plan and report



Traceability and Stakeholder Requirements

- Often the customer defines already very detailed software/hardware requirements which clearly do not address the system requirements (SYS.2) but SWE.1/HWE.1
- Also design constraints are sometimes defined (how this should be realized) impacting already the system architecture (SYS.3) or software/hardware (SWE.1/HWE.1) architecture
- In some of this cases (after a detailed evaluation/analysis) they can be directly derived to the domain and don't need to be repeated at system level.
- Important! This has to be agreed with the representatives of the sub-domain and system.
- The VDA Guidelines address also now which stakeholder requirements require a vertical and horizontal traceability and which not → requirements that address work product or process requirements



Verification instead of Testing

- **Scope Updated to Verification:** Verification is not only **testing** but also includes other verification measures such as reviews, calculations, simulations, measurements of e.g. non functional requirements, or requirements that can e.g. only be checked by a review.
- **Impact:**
 - Every requirement, even those that cannot be verified through testing, should have an assigned verification measure.
 - Traceability/Consistency to requirements should be also ensured to non testing verification measures
 - Logs/evidences (03-50 Verification Measure data) should be available for all verification measures
 - Summary Reports should include also the status/results of all verification measures



No explicit notion of specification and strategy on Level 1

- Strategy BPs have been removed (e.g. SUP.1.BP1, SYS.4.BP1, SUP.9.BP1)
- Some Strategy relevant BP content has been “re-allocated” to other existing BPs
- Work Products indicator “Plan” split into smaller “Information Items”
- Generic Practice 2.1.1 has been adjusted to include the strategy for the basis of a performed process
- Strategies now also expected for the processes on the left side of the V



Many changes in the processes...

- “Develop Verification Criteria” has been deleted and is now mentioned as note in BP1 of SYS.2 and SWE.1
- Rather than evaluating the system architecture and alternative system/software architectures (why other designs were not selected) the BP3 expects that the system/software architecture is analysed e.g., for cybersecurity, functional safety.
- SWE.5 addresses now Integration and Integration verification of software units into a component and testing of the behaviour a single component
- Archiving (long term) removed from SUP.8.BP8
- Dedicated BPs for static and dynamic aspects of the System and Software Architecture (BP1 and BP2).



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