



Feedback in applying Automotive SPICE 4.0

Gate 4 SPICE

Paris - 9 October 2025

SMART TECHNOLOGY FOR SMARTER MOBILITY



Feedback in applying ASPICE 4.0

- **Background for this feedback**
- **How practitioners see ASPICE 4.0**
- **ASPICE 4.0 Genesis**
- **Community Feedback (VDA Sys 2025)**
 - Combined BPs
 - RC removal from Guidelines
 - Communication Practices
- **Workshop**

Sébastien Gebus

Lead Competent Assessor at Valeo (ASPICE 4.0 + SEC.x/MLE.x/HWE.x)



Background

- Sébastien Gebus has more than 25 years of experience around Quality and Process Improvement, mainly in the telecommunication, aeronautics and automotive industry.
- Since 2010 he is involved in Automotive SPICE and has had the opportunity to lead organizational changes by defining and deploying ASPICE compliant processes as well as managing the toolchain adaptations in different companies.

Current position

- At Valeo, Sébastien is part of the GAMA organization. This transverse team composed of lead assessors has the following missions:
 - Perform ASPICE assessments to fit customer and organizational needs (e.g. catB of independence).
 - Provide guidance to the R&D network to deploy Valeo ASPICE strategy.
 - Be the face to customer for ASPICE related topics.

Main Activities

- Lead or co-assessor in 10-15 assessments yearly.
- Develop competencies in Valeo quality network (e.g. mentoring of QA engineers as co-assessors).
- Contribute to the improvement of R&D activities by analyzing yearly assessment results and identifying systemic weaknesses.
- Provide support to the deployment of ASPICE 4.0 and extensions
- Identify and maintain Valeo knowledge about customer ASPICE related expectations.



Feedback in applying ASPICE 4.0

Background for this feedback

Background for this feedback

Sources for the feedback



Quality, Safety, and Security for Automotive Software-Based Systems

June 25–27, 2025 • Berlin



Bengaluru
jul-2025

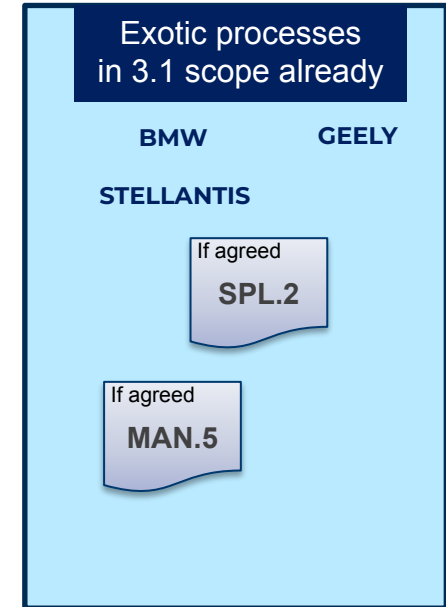
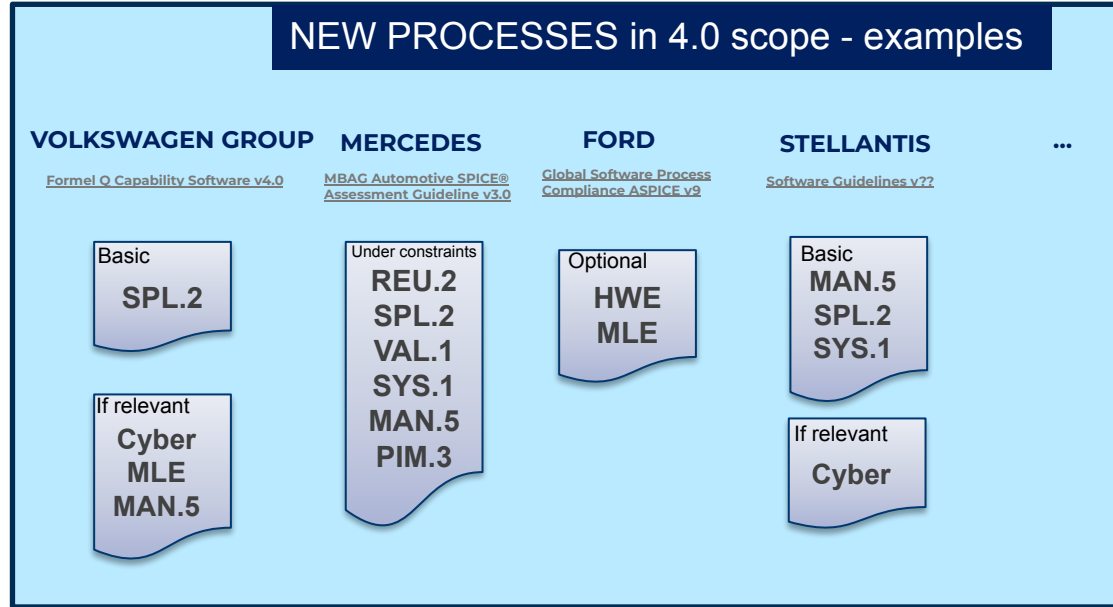


<https://www.linkedin.com/company/vda-ak13-automotive-spice/posts/?feedView=all>

- It is still complicated today to have 1st hand direct information on ASPICE 4.0 deployment
- Therefore multiple sources were used to collect feedback on the use of ASPICE 4.0.

Background for this feedback

Customer expectations on ASPICE 4.0



- Only few customers have formally released their ASPICE 4.0 specifications
- Projects that rely a lot on reuse tend to be allowed to continue on ASPICE 3.1

Background for this feedback

From VDA Sys 2025 questionnaires

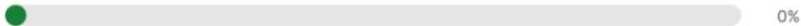
What is your Automotive SPICE certification status?

Multiple Choice Poll ☒ 42 votes  42 participants

None - 9 votes



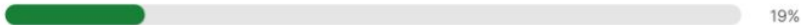
intacs® Process Expert - 0 votes



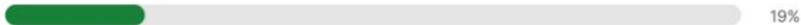
intacs® Provisional Assessor - 16 votes



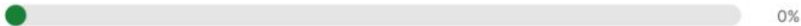
intacs® Competent Assessor - 8 votes



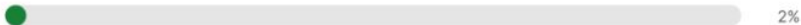
intacs® Principal Assessor - 8 votes



intacs® Instructor provisional level - 0 votes



intacs® Instructor competent level - 1 vote



Did you already gain experience with Automotive SPICE 4.0?

Multiple Choice Poll ☒ 41 votes  41 participants

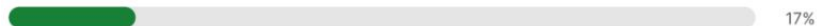
Passive experience through readings and/or trainings - 21 votes



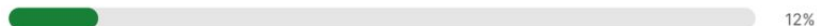
Moderate active experience by performing spot checks or process improvements - 7 votes



Medium active experience through one or two ASPICE 4.0 assessments as assessor or assessee - 7 votes



Extended experience in three or more ASPICE 4.0 assessments as assessor or assessee - 5 votes





Feedback in applying ASPICE 4.0

How practitioners see ASPICE 4.0

How practitioners see ASPICE 4.0

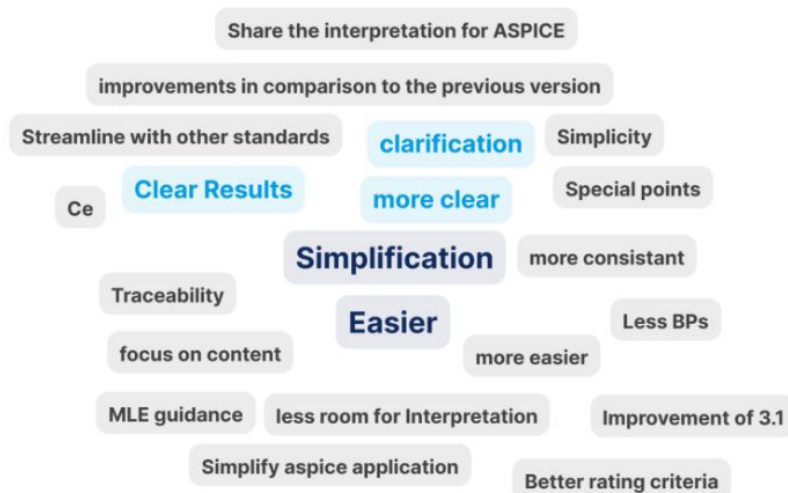
What are your expectations towards ASPICE 4.0 / Guidelines 2.0?

Answers during G4S

- Question more direct
- Simplification
- Less interpretation
- No redundancy
- Less dependency
- Process connection more simple
- CL1 easier to reach

Answers from VDA Sys 2025

Wordcloud Poll  59 responses  36 participants



How practitioners see ASPICE 4.0

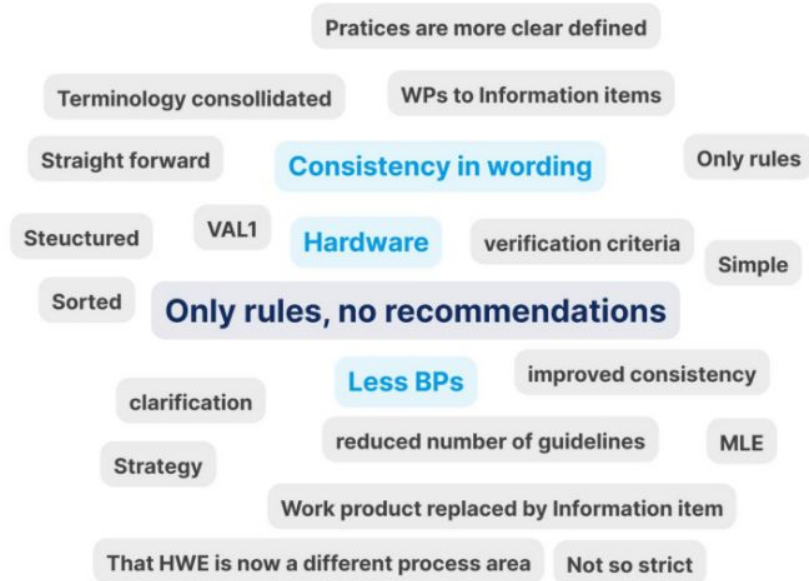
What would you like in ASPICE 4.0 / Guidelines 2.0?

Answers during G4S

- Feature absence (Agile) - Consistency in wording
- No improvement chart (Frozen risk analysis)
- ASQMS link with ASpice level 3

Answers from VDA Sys 2025

Wordcloud Poll  47 responses  32 participants



How practitioners see ASPICE 4.0

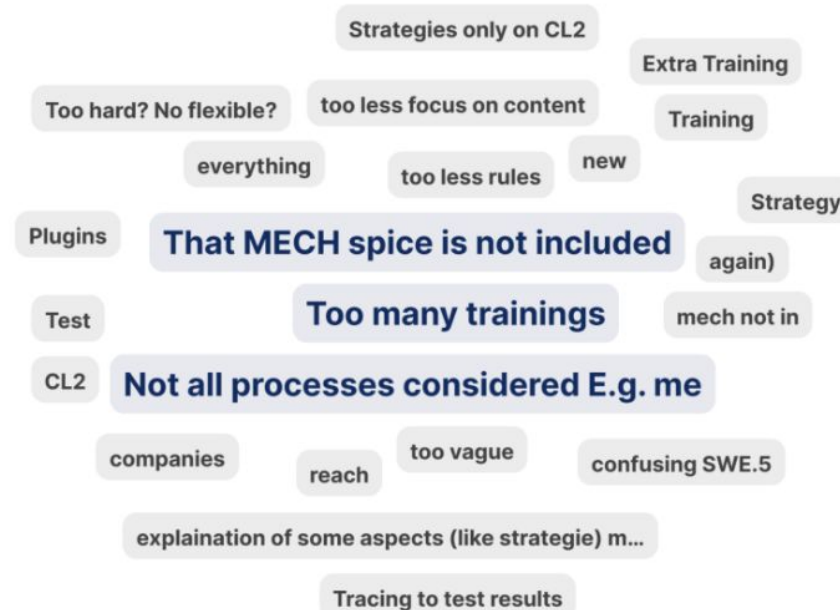
What is not so good in ASPICE 4.0 / Guidelines 2.0?

Answers during G4S

- BP regroupment not good
- Strategy level 2 not good
- Easier to be CL1
- Few difference only with 3.1

Answers from VDA Sys 2025

Wordcloud Poll  43 responses  31 participants



How practitioners see ASPICE 4.0

Does Automotive SPICE 4.0 meet your expectation as state-of-the-art PAM?

Answers during G4S

- I don't know yet
7
- Not at all
0
- Partially
0
- Largely
5
- Fully
2

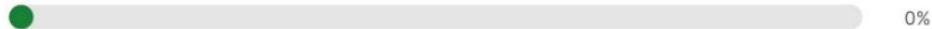
Answers from VDA Sys 2025

Multiple Choice Poll 37 votes 37 participants

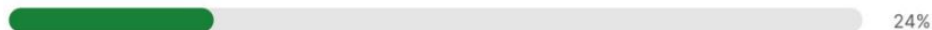
I don't know yet - 11 votes



Not at all - 0 votes



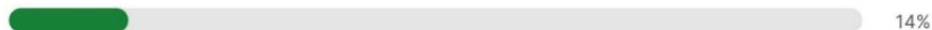
Partially - 9 votes



Largely - 12 votes



Fully - 5 votes





Feedback in applying ASPICE 4.0

ASPICE 4.0 genesis

ASPICE 4.0 genesis

History

VDA QMC mandates WG13 to update PAM & GL:

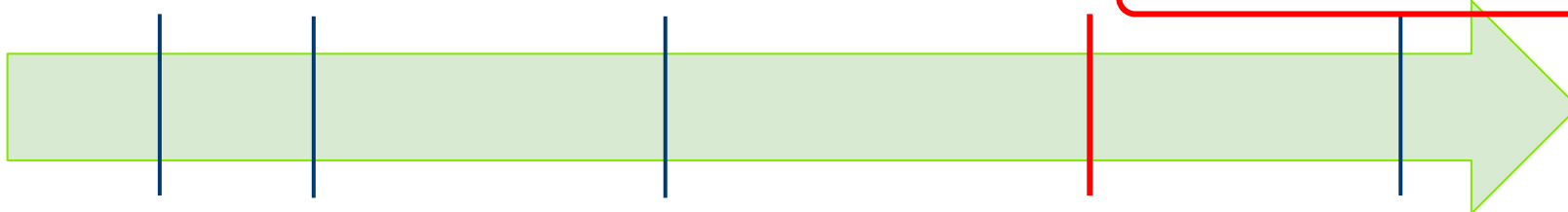
- Kick-Off Jan. 2020
- VDA Survey “Assessment Comparability” in 2022

History regarding PAM and Guideline:

- PAM 3.1 published in Nov. 2017
- VDA Guideline 1.0 published in Sep. 2017

On the Market since ~18 Months
→ Time to draw a first interim conclusion

PAM 4.1 update currently under work
YOUR feedback/experience wanted!



Application Phase since 2018:

- Feedback and Change Requests collected
- New Regulations and Trends
 - Cybersecurity (UN ECE R155/156, ISO 21434)
 - Artificial Intelligence / Machine Learning

- PAM 4.0 released in Nov. 2023 (incl. HWE & MLE)
- VDA Guideline 2.0 released in Nov. 2023
 - CybSec. PAM 1.0 released in Jul. 2021
 - VDA CybSec. GL 1.0 released in Aug. 2021
 - PoA PAM 1.0 released in Jun. 2024
 - VDA PoA GL 1.0 released in Aug. 2024
 - CybSec. PAM 2.0 released in Mar. 2025
 - VDA CybSec. GL 2.0 released in Mar. 2025

ASPICE 4.0 genesis

VDA Survey regarding ASPICE Assessments done in 2022

- Survey was initiated by the VDA PG13, approved and distributed by VDA QMC
- Web-based anonymous questionnaire covering 35 questions, open from April to May 2022
- Altogether 767 responses were received
- Participants from OEMs, tier-1 to tier-x, consulting & training companies around the world
- Questions were covering the complete assessment process and focusing on interpretations of results
- Result of this survey was used as input for the PAM 4.0 and guidelines 2.0

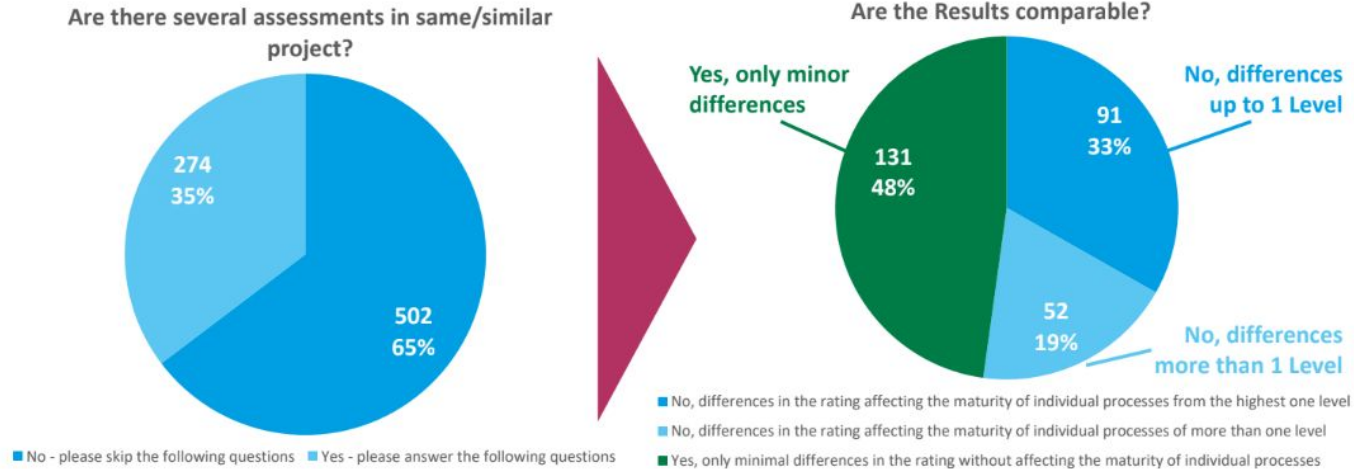
⇒ Although we are looking today for feedback on ASPICE 4.0 deployment, development of ASPICE 4.0 is already the result of feedback collected from ASPICE 3.1 deployment

⇒ Any feedback collected during this G4S will also be used as a contribution to future evolution of PAM 4.0

ASPICE 4.0 genesis

VDA Survey regarding ASPICE Assessments done in 2022

ASPICE 3.1: Are Results of different Assessments in same/similar projects comparable?



Very often several Assessments,

but

Comparability of Results is < 50%

Why?

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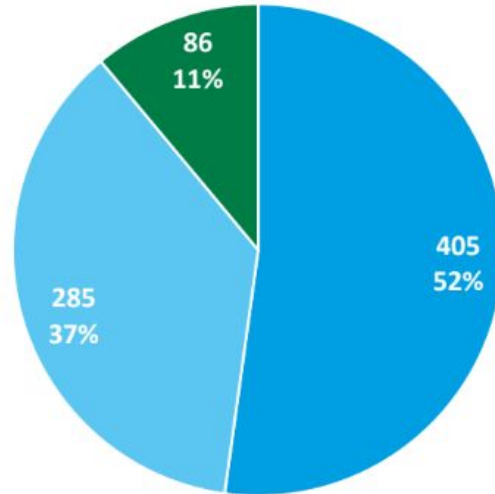
16

⇒ ASPICE 4.0 needs to make assessments more comparable

ASPICE 4.0 genesis

VDA Survey regarding ASPICE Assessments done in 2022

ASPICE 3.1: If the Automotive SPICE Guidelines (RLs/RCs) have been used for downrating, are the reasons understandable?



- Yes, the application of the corresponding RL/RC is explained and the fulfillment of any further contents of a base or generic practice is also discussed.
- Partially, the reference to the relevant RL/RC is sufficient, but further contents of a base or generic practice are not explained.
- No, reference is made to the relevant RL/RC without further explanation of the actual content.

Nearly 50% of the finding documentation is insufficient, when RLs/RCs from the VDA Guideline are applied!

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17

⇒ ASPICE 4.0 needs to simplify RLs/RCs and make them easier to use

ASPICE 4.0 genesis

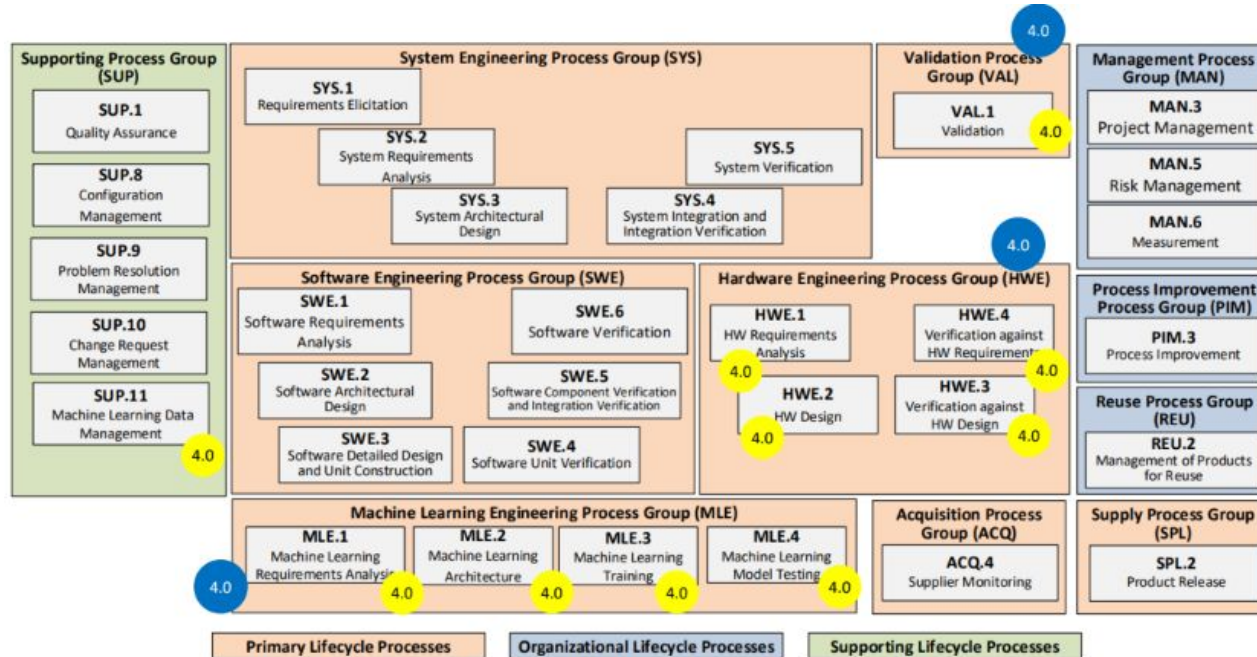
Main changes - Improve efficiency

- Inclusion of relevant processes and process groups (e.g. extensions)
- Rework of all processes in the PAM:
 - Reducing the number of BPs by combining similar and/or related aspects
⇒ Simplification?
- Rework of the Measurement Framework:
 - Planning-related aspects shifted completely to Level 2
 - Restructuring of Level 3 GPs
⇒ Better alignment with purpose at each level
- Output Work Products replaced by Information Items:
 - Means: looking for relevant pieces of information rather than the repository where it should be stored
⇒ Better alignment with purpose at each level

⇒ An objective of ASPICE 4.0 is to make the model more flexible in measuring how outcomes and purposes are met in each process area

ASPICE 4.0 genesis

Main changes - Process overview



3 additional process groups
10 additional processes

ASPICE 4.0 genesis

Main changes - Reduction of Base / Generic Practices

		Outcomes / Achievements			Base / Generic Practices		
		PAM 3.1	PAM 4.0	Σ	PAM 3.1	PAM 4.0	Σ
SYS	PA 1.1	34	27	-7	38	25	-13
SWE	PA 1.1	39	33	-6	48	33	-15
MAN+SUP	PA 1.1	35	32	-3	42	37	-5
ACQ.4	PA 1.1	4	4	0	5	5	0
Level 2	PA2.1 & PA2.2	12	12	0	11	10	-1
Level 3	PA3.1 & PA3.2	11	11	0	11	8	-3
Totals		135	119	-16	155	118	-37

Significant reduction of indicators:

Level 2 ('VDA Scope'): 270 BP+GP (v3.1: 320): -50

Level 3 ('VDA Scope'): 406 BP+GP (v3.1: 507): -101

⇒ An objective of ASPICE 4.0 is to make the model more efficient by reducing the number of BPs/GPs and reducing some redundancies

ASPICE 4.0 genesis - **Guidelines 2.0**

Main changes - Improve efficiency

Purpose:

- Automotive SPICE® Guidelines 2.0 is a mean to support assessors
- Automotive SPICE® Guidelines 2.0 is not an engineering standard to be compliant with
- Strong emphasis on guidance for assessors to understand the context of the assessed organization
- Guidelines will improve reproducibility of assessment results

Main Changes:

- Stronger emphasis on guidance for assessors to understand the context of the assessed organization
- Wording for RC (should) in contradiction to common language in norming, where „should“ means a requirement that, when not fulfilled, has to be justified. That applies to RL
- The application of RC as a „may“ or „can“ was a source of inconsistent ratings
- Only rating rules (RLs) for guidance
- Focus on disjunctive evaluation of processes
- All processes in PAM 4.0 are addressed

⇒ The main purpose of the guidelines remains to help assessors have a better understanding.

⇒ Stronger emphasis on detecting inconsistencies throughout all process areas

ASPICE 4.0 genesis - **Guidelines 2.0**

Main changes - Reduction of complexity in Rules and Recommendations

Guideline 1.0								
Clause	RL	RC	Process	RL	RC	Process	RL	RC
CPL	2		ACQ.4	5	4	MAN.3	17	31
TAC	3		SPL.2			MAN.5		
SAC	2	6	SYS.1			MAN.6		
VER	2		SYS.2	9	9	SUP.1	11	9
SAP	4		SYS.3	8	4	SUP.8	14	9
MDB	11		SYS.4	15	7	SUP.9	11	7
AGE		11	SYS.5	12	6	SUP.10	11	18
DID	10		SWE.1	10	12	REU.2		
TPS		13	SWE.2	9	5	PIM.3		
PLS		8	SWE.3	7	7	L2	48	18
APA	9	1	SWE.4	11	4	L3	22	7
			SWE.5	15	7			
			SWE.6	12	6			
	43	39		113	71		134	99
Total (RC+RL)								509

Guideline 2.0							
Clause	RL	Process	RL	Process	RL	Process	RL
GEN	1	ACQ.4	1	MAN.3	21	HWE.1	11
TAC	3	SPL.2	3	MAN.5	9	HWE.2	
COM	1	SYS.1		MAN.6	3	HWE.3	3
		SYS.2	10	SUP.1	8	HWE.4	4
		SYS.3	1	SUP.8	6	MLE.1	1
MDB	7	SYS.4	4	SUP.9	3	MLE.2	1
AGE	5	SYS.5	4	SUP.10	11	MLE.3	2
DEX	16	SWE.1	10	REU.2	3	MLE.4	2
		SWE.2	1	PIM.3	4	SUP.11	1
		SWE.3	3	L2	30	VAL.1	3
APA	6	SWE.4	4	L3	41		
		SWE.5	4				
		SWE.6	4				
	39		49		139		28
Total							255

⇒ Recommendations have been removed because they were often misused (Have they really disappeared?)

⇒ Only rules remain which means that every deviation now needs to be understood and justified



Feedback in applying ASPICE 4.0

Community feedback (VDA Sys 2025) - Combined BPs

Community feedback - Combined BPs

Simplification or Complication

- Combining BPs is probably the most visible change in ASPICE 4.0 (e.g. see SPL.2 presentation during previous G4S)
- The main objective was to make the assessment process more efficient... But how do you measure this efficiency increase?
- Let's focus on a few simple questions:
 - Does it save time during interviews?
 - Does it save time during consolidation / rating?
 - Does it simplify the assessment?
 - Are the ratings more reliable / comparable?
 - Are the findings easier to understand and improvement actions easier to derive?

⇒ These questions were asked during a VDA Sys workshop using SWE.2 as a case study. Following slides summarizes the answers

Community feedback - Combined BPs

Simplification or Complication

- SWE.2 is a good example of simplification

ASPICE 3.1

BP1: Develop software architectural design
BP2: Allocate software requirements
BP3: Define interfaces of software elements
BP4: Describe dynamic behavior
BP5: Define resource consumption objectives
BP6: Evaluate alternative software architectures
BP7: Establish bidirectional traceability
BP8: Ensure consistency
BP9: Communicate agreed software architectural design

ASPICE 4.0

BP1: Specify static aspects of the software architecture
BP2: Specify dynamic aspects of the software architecture
BP3: Analyze software architecture
BP4: Ensure consistency and establish bidirectional traceability
BP5: Communicate agreed software architecture

Community feedback - Combined BPs

Simplification or Complication

- The team was given the following scenario and requested to perform ratings on both ASPICE 3.1 and 4.0

Scenario:

- The SW Architecture is well defined in EA, and has 4 hierarchical levels showing the static elements
- All functional SW Requirements were traced to architectural elements of level 3 and/or 4
- ~15% of the non-functional SW requirements are not covered in the SW Architecture / Design
- ~90% of the external interfaces are existing in the static architecture
- ~50% of the internal interfaces between SW elements are defined
~25% are just named, but no details
~25% are still missing

ASPICE 3.1

- **SWE.2.BP1: Develop software architectural design.** Develop and document the software architectural design that specifies the elements of the software with respect to functional and non-functional software requirements.
- **SWE.2.BP2: Allocate software requirements.** Allocate the software requirements to the elements of the software architectural design.
- **SWE.2.BP3: Define interfaces of software elements.** Identify, develop and document the interfaces of each software element.

ASPICE 4.0

- **SWE.2.BP1: Specify static aspects of the software architecture.**
Specify and document the static aspects of the software architecture with respect to the functional and non-functional software requirements, including external interfaces and a defined set of software components with their interfaces and relationships.

Community feedback - Combined BPs

Simplification or Complication

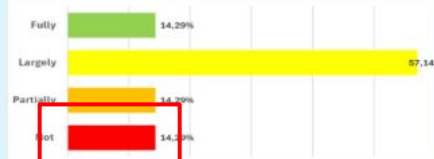
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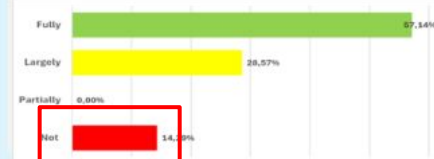
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PAM 3.1 Rating Results:

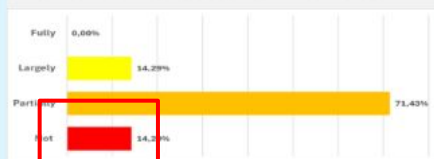
BP1 Develop SW Architectural Design:



BP2 Allocate SW Requirements:

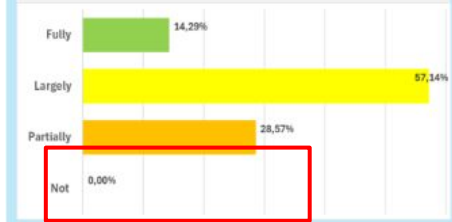


BP3 Define interfaces of SW Elements:



PAM 4.0 Rating Result:

BP1 Specify static aspects of the SW Architecture:



- Main finding is on BP3
- PAM 3.1 leads to stricter rating

Community feedback - Combined BPs

Simplification or Complication

- General Feedback from the group following the exercise:

ASPICE 3.1

- ❖ Rating shows clearer weaknesses (**lower granularity in BPs**)
- ❖ More transparent and easier for non-experienced assessors
- ❖ Some BPs were rated N (**more variability in ratings**)

ASPICE 4.0

- ❖ Simpler, less complex (**BP is more “open” / less directive**)
- ❖ Findings are more important (**more outcome oriented**)
- ❖ No N rating

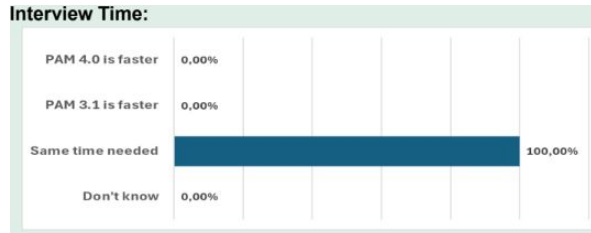
⇒ Despite the differences, it was considered that PA rating will not change between PAM3.1 and PAM 4.0

Community feedback - Combined BPs

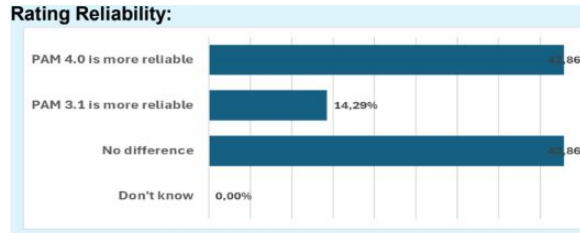
Simplification or Complication

- Answer to the questions raised to measure efficiency improvement:

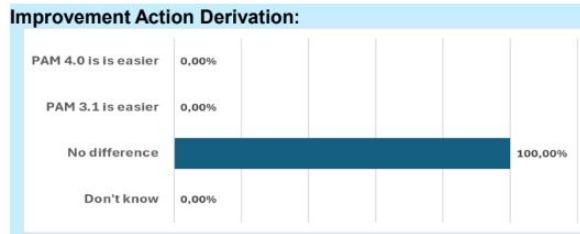
- Same content = same time



- 3.1 easier because of distinction between BPs
- 4.0 requires more discussion due to different opinion / experience
- 4.0 has less ratings



- 3.1 easier to define the amount of downrating
- 3.1 easier to allocate weakness
- 3.1 + GL more explicit (better for inexperienced assessors)



- 3.1 better for fixing problems
- 4.0 better for improvement actions

⇒ There doesn't seem to be a big difference between PAM3.1 and PAM 4.0 in terms of ratings. However...

⇒ PAM 4.0 requires a better understanding of the model because the approach is less directive

Community feedback - Combined BPs

Simplification or Complication

- Final survey following the workshop:

Easier, same time needed

Increases "smoothness"

Nobody is Perfect even 4.1

Good

Simple

Good Idea

Experience needed

No problem

Makes resting difficult -

Continuous Improvement



Feedback in applying ASPICE 4.0

Community feedback (VDA Sys 2025) - RCs removal from Guidelines

Community feedback - RCs removal from Guidelines

Is it really the case?

- Another major change between PAM 3.1 and PAM 4.0 is the complete removal of recommendations in the guidelines.

⇒ This is not true. RCs have mostly been integrated directly in the text of the guidelines. The objective was to clearly separate what is impacting the rating (Rules) from what is providing information and context (Former recommendations)

- PROs and CONs of having recommendations when asked practitioners:

PRO

- ❖ It ensures that assessors can make comparable ratings
- ❖ It highlights possible inconsistencies in the rating

- ❖ Proposal to have case examples as guidance for the assessors
⇒ This is closer to CMMI philosophy than ASPICE

CON

- ❖ Less RLs/RCs altogether = less thinking
- ❖ Many assessors were not looking at RCs or looking too much at them (like RLs)

⇒ There is no common conclusion emerging on this topic. But given the limited arguments given by practitioners, one may consider that having RCs or not having RCs is not a life changer for assessors



Feedback in applying ASPICE 4.0

Community feedback (VDA Sys 2025) - Communication practices

Community feedback - Communication practices

Changes in expectations

- **ASPICE 4.0 has introduced changes / clarifications concerning communication. This is described in the Guidelines 2.0**

2.3.6 “Communicate” base practice

At capability level 1 it is only required that agreement and communication is effective. A PAM cannot predefine a particular form. Therefore, the information item 13-52 ‘Communication evidence’ is explained as:

- All forms of interpersonal communication such as
 - e-mails, also automatically generated ones
 - tool-supported workflows
 - podcasts
 - blogs
 - videos
 - forums
 - live chats
 - wikis
 - meetings, orally or via meeting minutes (e.g., daily standups)

This implies that it is not necessary for information, or a work product, to be communicated by means of baselines in terms of configuration management. Further, following both a push or pull principle can be acceptable. Furthermore, this means that the sender and receiver do not necessarily need to communicate with each other directly.

- In PAM 3.1, communication of an agreed information was generally demonstrated by handing over a properly reviewed and baselined work product

- PAM 4.0 acknowledges the use of modern tools for interactions between stakeholders and emphasizes that communication, above all, needs to be **effective**

[COM.RL.1]

If effective communication of agreed information at capability level 1 is not done based on baselines or by explicitly documented communication or review records then BP "Communicate" shall not be downrated.

Community feedback - Communication practices

Changes in expectations

- Guidelines 2.0 also introduces a rule for NOT downgrading if communication is effective

[COM.RL.1]

If effective communication of agreed information at capability level 1 is not done based on baselines or by explicitly documented communication or review records then BP "Communicate" shall not be downrated.

⇒ It is now the responsibility of the assessor to demonstrate lack of agreement or ineffective communication

- How to evaluate, if communication is effective?
- Which evidences can be accepted?
- Any different treatment for CL1 and CL2?
- Rating differences expected between ASPICE 3.1 and 4.0?

Community feedback - Communication practices

Changes in expectations

Scenario 1:

SYS.5.BP.5 Summarize and communicate results for System verification

Test responsible sends a synthesis report and link to details of the test campaign to the core team without mentioning the related baseline and release and without confirming that email has been received.

Possible Finding and rating in PAM3.1:

Communication not effective:

- Configuration management information are missing with risk of analyzing wrong test results.
- Confirmation of receiver missing implies risk that email has not been analyzed

⇒ This Finding would justify to have a downrate to **P** acc. [SAC.RC.2]/[SAC.RL.1] for SYS.5.BP.7, GP2.1.7 and possibly MAN.3.BP.7

Reaction on PAM4.0:

If it is not evident that communication was ineffective (e.g. not used for decision making of the release), then rule [COM.RL.1] justifies “no downrate”

Community feedback - Communication practices

Changes in expectations

Scenario 2:

MAN.3.BP.10 Review and report progress of Requirement analysis

Project dashboard retrieves all project relevant data automatically and all team member have access.

Possible Finding and rating in PAM3.1:

Communication of project status and progress not effective:

- Consistency of data created by automatic data collection is not ensured
- No commitment evident that all team member use automatized dashboard as main source to track progress

⇒ This Finding would justify to have a downrate to **P** acc. [SAC.RC.2]/[SAC.RL.1] for GP2.1.7 and possibly MAN.3.BP.10

Reaction on PAM4.0:

If it is not evident that communication was ineffective, then rule [COM.RL.1] justifies “no downrate”

Community feedback - Communication practices

Changes in expectations

Scenario 3:

SWE.3 BP.5 Communicate agreed Sw detailed design

Sw detailed design is managed within a design tool (e.g Catia Magic). File is uploaded and managed on TWC server. Not all team member (e.g. QA) have access to perform review. Communication in daily for status updates and released after peer review.

Possible Finding and rating in PAM3.1:

Communication of Software detailed design not effective:

- Not all relevant team member have access to TWC server (e.g. QA)

Consistency of Software detailed design not ensured:

- Only peer review in use but no formal check by QA

⇒ This Finding would justify to have a downrate to **P/L** for SWE.3 BP6/7

Reaction on PAM4.0:

It is evident that communication was ineffective, then rule [COM.RL.1] does not apply →

P/L for SWE.3 BP4/5

Community feedback - Communication practices

Changes in expectations

Conclusion:

PRO

- Focus not on the formalities but on real problems and process effectiveness
 - Less irrelevant findings and reducing number of work products generated only! for the assessments / assessors.
-
- Contribution to the competency development of assessors (but will not happen rapidly)

ADD-ON

- Potentially more work for assessors to find evidences for ineffectiveness
⇒ finding has to be based on evidence, which can lead extra time to collect
- Questioning technique of assessor needs improvement to find evidences for ineffectiveness
- Interconnections of communication among process steps needs better understanding
⇒ what is a potential effect if communication, e.g. in Integration test, is not effective?

- For CL2 there is still evidence needed on how the communication shall happen, documented evidences for the communication itself are not mandatory.
- Unclarity in GP2.1.6: “managing communication” is not clearly specifying, if it is about the communication content of the communication itself. This should be clarified.



Feedback in applying ASPICE 4.0

Workshops presentation

SMART TECHNOLOGY FOR SMARTER MOBILITY

Workshop 1 - Which Strategy for the Strategy GPs?

Présentation

When asking the ASPICE community what is the biggest change in ASPICE 4.0, the first answer tends to be:

No more strategy at Level 1!

This is true in the sense that “planning” aspects have been shifted to Level 2 and “strategy” is now considered as part of GP2.1.1

Questions to be addressed in the workshop:

- What is left on level 1? Is performing blindly verification or problem resolution activities OK?
- What is the impact of moving the term “Strategy” to level 2?
- Choose a process and explain what are good and bad examples of process performance objectives
- Should I downrate (and where CL1 or CL2?) if the strategy is not documented?

Workshop 2 - Where is the SW integration in ASPICE 4.0?

Présentation

In ASPICE 4.0, a new section appeared in the guidelines to provide explanation about SW decomposition. This impacts SWE.5 process

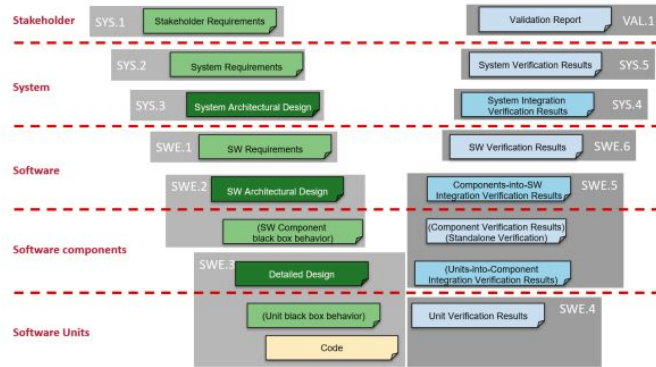
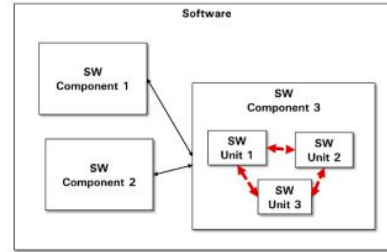
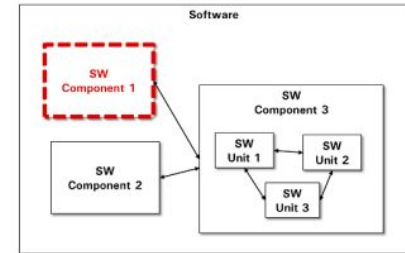


Figure 2-7 Software unit behavior and unit integration, component behavior, and software component-level verification

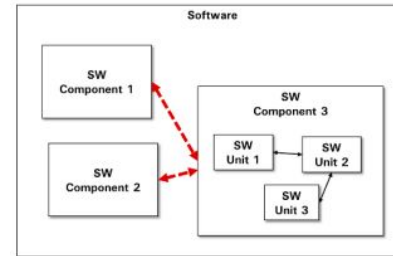
Integration, and integration verification, of software units into their component



Verification of a single software component (prior to integration with other components)

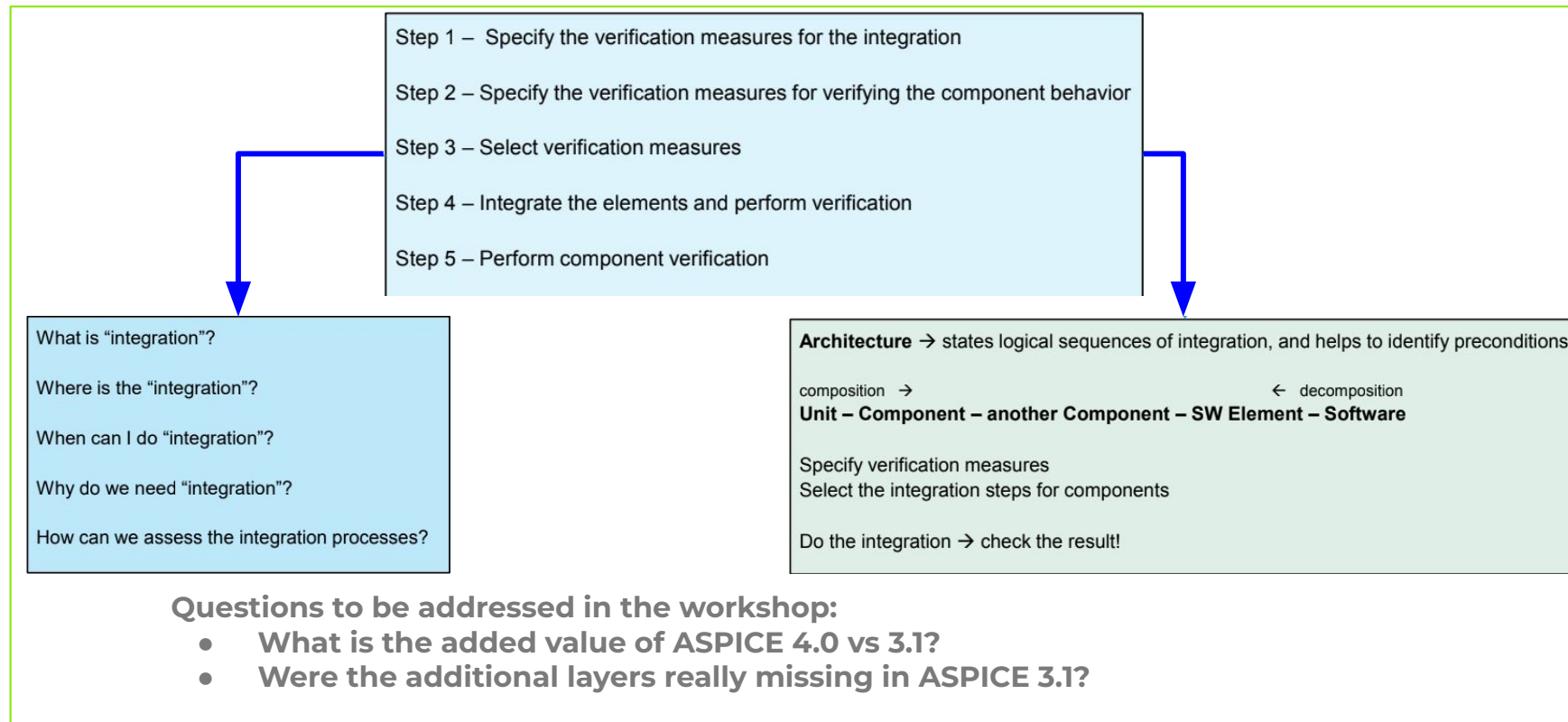


Integration and verification of software components



Workshop 2 - Where is the SW integration in ASPICE 4.0?

Présentation





Feedback in applying ASPICE 4.0

Workshops results

Workshop 1 - Which Strategy for the Strategy GPs?

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Workshop 1 - Which Strategy for the Strategy GPs?

Présentation

Process attribute ID
PA 2.1
Process attribute name
Process performance management process attribute
Process attribute scope
The performance management process attribute is a measure of the extent to which the performance of the process is managed.
Process attribute achievements
1) Strategy for the performance of the process is defined based on identified objectives. 2) Performance of the process is planned. 3) Performance of the process is monitored and adjusted to meet the planning. 4) Needs for human resources including responsibilities and authorities for performing the process are determined. 5) Needs for physical and material resources are determined. 6) Persons performing the process are prepared for executing their responsibilities. 7) Physical and material resources for performing the process are identified, made available, allocated and used. 8) Interfaces between the involved parties are managed to ensure both effective communication and the assignment of responsibilities.

Workshop 1 - Which Strategy for the Strategy GPs?

Présentation

Generic practices

GP 2.1.1: Identify the objectives and define a strategy for the performance of the process.

The scope of the process activities including the management of process performance and the management of work products are determined.

Corresponding results to be achieved are determined.

Process performance objectives and associated criteria are identified.

Note 1: Budget targets and delivery dates to the customer, targets for test coverage and process lead time are examples for process performance objectives.

Note 2: Performance objectives are the basis for planning and monitoring.

Assumptions and constraints are considered when identifying the performance objectives.

Approach and methodology for the process performance is determined.

Note 3: A process performance strategy may not necessarily be document-ed specifically for each process. Elements applicable for multiple processes may be documented jointly, e.g. as part of a common project handbook or in a joint test strategy.

Workshop 1 - Which Strategy for the Strategy GPs?

Workshop Result

What is left on level 1? Is performing blindly verification or problem resolution activities OK?

- Key question is “what is strategy?”
 - In 3.1 it was a formal documentation
 - In 4.0 it is anything that explains what to do...
- In SYS.5, strategy is not mentioned at BP1 but it says that verification measures need to be defined in terms of entry/exit criteria, means...
 - ⇒ Some form of systematicity is expected even if not documented (e.g. only oral explanations)
- For verification processes, criteria are requested which imposes some consistency in the approach
 - ⇒ At CL1 a template for test case is OK
 - ⇒ At CL2, guidelines would be required

Workshop 1 - Which Strategy for the Strategy GPs?

Workshop Result

What is left on level 1? Is performing blindly verification or problem resolution activities OK?

SUP.9.BP1: Identify and record the problem. Each problem is uniquely identified, described and recorded. A status is assigned to each problem to facilitate tracking. Supporting information is provided to reproduce and diagnose the problem.

NOTE 1: Problems may relate to e.g., product, resources, or methods.

NOTE 2: Example values for the problem status are "new", "solved", "closed", etc.

NOTE 3: Supporting information may include e.g., the origin of the problem, how it can be reproduced, environmental information, by whom it has been detected.

NOTE 4: Unique identification supports traceability to changes made as needed by the change request management process (SUP.10).

SUP.9.BP2: Determine the cause and the impact of the problem. Analyze the problem, determine its cause, including common causes if existing, and impact. Involve relevant parties. Categorize the problem.

NOTE 5: Problem categorization (e.g., light, medium, severe) may be based on severity, criticality, urgency, etc.

- In the example above, methods, criteria are expected. If these are not consistent among the stakeholders, then MAN.3 will not be able to do its job (estimating, monitoring of status...)

⇒ People still need to know what and how to perform their activities!

Workshop 1 - Which Strategy for the Strategy GPs?

Workshop Result

What is left on level 1? Is performing blindly verification or problem resolution activities OK?

4.1.2.2 Define a strategy for the performance of the process (GP 2.1.1)

The process performance strategy defines the operational approach in terms of proceedings and methodologies supporting the achievement of the process performance objectives considering the scope of the process application.

A strategy can be represented by:

- a) presentation slides of an organizational unit describing the purpose and objectives of their individual processes and providing sufficient explanation of corresponding proceedings
- b) existence of tools that enforce certain workflows (e.g., including user interfaces with mandatory or restricted edit fields, attributes in a document management, configuration or change request management system)
- c) automated (or partially automated) workflows implemented by tools and scripts, e.g.
 - automatically generated test result report frame with traceability links to the test case specification
 - build tools including mandatory static software verification
 - continuous integration approaches
 - continuous delivery approaches
- d) an appropriate media source such as a photo of a whiteboard drawing, video or podcast explaining key elements of the process performance.

A process performance strategy does not necessarily have to be documented for each process separately. The strategy does not have to be described in a specific document either. Common and useful practices are to document strategy elements applicable to multiple processes in joint documents, e.g.

- joint test strategy for system testing related processes
- joint change request and configuration management strategies (as change requests are to be placed against concrete versions of artifacts or entire product baselines)
- communication strategies of several processes in a common project manual.

Adherence to a given strategy and the effectiveness of the strategy are essential. However, the existence of a documented strategy does not necessarily ensure that the strategy is established and effective.

Therefore,

- the necessary comprehensiveness, and detail of information indicated by the examples above is always context-dependent.
- people interviewed (besides the author of the strategy) shall be independently able to demonstrate the knowledge and awareness of the strategy.

It is the responsibility of the assessors to check whether an existing strategy is also effective.

Note that the definition and existence of documented information related to a strategy is not relevant for the rating of PA 1.1 of the process.

If process performance objectives and aspects of the strategy are derived from an existing standard process, the suitability of this standard process's objectives and strategy for the specific project context needs to be considered. Still, the definition of standard objectives and standard strategies in a standard process according to capability level 3 is not required for GP 2.1.1.

Workshop 1 - Which Strategy for the Strategy GPs?

Workshop Result

What is the impact of moving the term “Strategy” to level 2?

Hint: Think for example about organization maturity

- It allows focusing on objectives first... documenting it after
⇒ First priority is achieving the purpose of the process, only after putting it on paper
- Level 2 is to ensure completeness and agreement through review of the documented strategy (list of activities, order...)
- Puzzle analogy:
 - Level 1 is about looking at pieces with details that are provided by practitioners (How)
 - Level 2 is about demonstrating the completeness of the full picture (What + How)
- For mature organization: nothing changes. Strategies already exist and should be shown at Level 1
- For new organization: ???
- Impact from team size: If the team is big, strategy becomes a must have to ensure effectiveness in process performance (also impact on MAN.3. Communication effectiveness becomes crucial)

Workshop 1 - Which Strategy for the Strategy GPs?

Workshop Result

Choose a process and explain what are good and bad examples of process performance objectives.

- **SYS.2:**
 - **100% of customer reqs covered by Sys reqs (decomposed by milestone or release)**
⇒ to be measured at baseline (after review and agreement)
 - **Effort estimated per release and 100% staffed**
 - **100% analysis completed for scope of release prior to certain milestone**
 - **Analysis/review performed by all relevant (as defined in strategy / communication plan / in line with expected quality criteria) stakeholders**
 - **Baseline released and available to relevant stakeholders (incl. Peer reviews done)**
 - **Reviews performed by relevant reviewers (e.g. independent)**

Process outcomes
1) System requirements are specified.
2) System requirements are structured and prioritized.
3) System requirements are analyzed for correctness and technical feasibility.
4) The impact of system requirements on the operating environment is analyzed.
5) Consistency and bidirectional traceability are established between system requirements and stakeholder requirements.
6) The system requirements are agreed and communicated to all affected parties.

Workshop 1 - Which Strategy for the Strategy GPs?

Workshop Result

Choose a process and explain what are good and bad examples of process performance objectives.

4.1.2.1 Identify the objectives for the performance of the process (GP 2.1.1)

Process performance objectives need to be defined as a basis for the detailed planning (see GP 2.1.2). They are not a repetition of process outcomes at capability level 1. In this respect, performance objectives target how to organize the establishment of the process outcomes.

The definition of process performance objectives can be done based on the SMART principles (specific, measurable, achievable, relevant and time-bound).

Process performance objectives can either be quantitative (e.g., requirements to be implemented for specific releases, maximum/minimum efforts to be spent) or qualitative (e.g., adherence to an Automotive SPICE capability level). However, the defined quantitative process performance objectives do not require process measurements as defined in MAN.6 or Automotive SPICE capability level 4.

Examples are:

- effort, costs, or budget targets (e.g., min & max limits)
- process-specific deadlines for work packages, or frequency of activities (e.g., dates for process-specific work packages)
- metric-oriented objectives e.g.
 - for SUP.10: max. number of open change requests 6 weeks before the next product release
 - for SUP.8: not more than 60% of configuration items in status “in work” two months before next delivery baseline.

Based on, but also complementing, the identified process performance objectives, a strategy is defined. A strategy addresses:

- the operational approach, e.g.
 - proceedings, including the monitoring of the performance of the process
 - methodology
- the strategy scope within the process, e.g.
 - development sites
 - application domain-specific differences (e.g., software drivers vs. powertrain software)
 - disciplines (such as SUP.8 differently for software and hardware, or a combined approach)
 - options due to socio-cultural differences.

This leads to the following rating rules for the indicator GP 2.1.1 in relation to process performance objectives:

Rating rules:

[PA2.1.RL.1] If a standard process does not include standard or generic objectives, but process performance objectives have been defined, then GP 2.1.1 shall not be down-rated.

Workshop 1 - Which Strategy for the Strategy GPs?

Workshop Result

Should I downrate (and where CL1 or CL2?), if the strategy is not documented?

What are the related rating rules?

[PA2.1.RL.1] If a standard process does not include standard or generic objectives, but process performance objectives have been defined, then GP 2.1.1 shall not be downrated.

[PA2.1.RL.2] If a standard process including a standard or generic strategy does not exist, but a strategy is effectively adhered to, then GP 2.1.1 shall not be downrated.

[PA2.1.RL.3] If a strategy is not documented in a specific document, but there is evidence of the strategy adhered to by all relevant parties, then GP 2.1.1 shall not be downrated.

**CL2 not
downgraded**

[PA2.1.RL.4] If the strategy is not described in a single process-specific document, but strategies of different processes are combined in one document, then GP 2.1.1 shall not be downrated.

[PA2.1.RL.5] If a documented process performance strategy does not exist, but there is evidence that an effective strategy is followed, then PA 1.1 shall not be downrated.

**CL1 not
downgraded**

Workshop 1 - Which Strategy for the Strategy GPs?

Workshop Result

Should I downrate (and where CL1 or CL2?), if the strategy is not documented?

What are the related rating rules?

GP.2.1.1

Identify the objectives and define a strategy for the performance of the process

GP.2.1.2

Plan the performance of the process

GP.2.1.3

Determine resource needs

according to the strategy and objectives

according to the plan

[PA2.1.RL.6] If no process description is available, but all expected planning information based on the performance objectives exists, then GP 2.1.2 shall not be downrated.

[PA2.1.RL.9] If the objectives or the strategy for the performance of the process (GP 2.1.1) is downrated due to missing suitability to achieve the process outcomes, then GP 2.1.2 shall be downrated.

GP.2.1.5

Monitor and adjust the performance of the process

against the plan

GP.2.1.4

Identify and make available resources

according to the needs

4.1.3.2 Rating consistency with other processes and practices

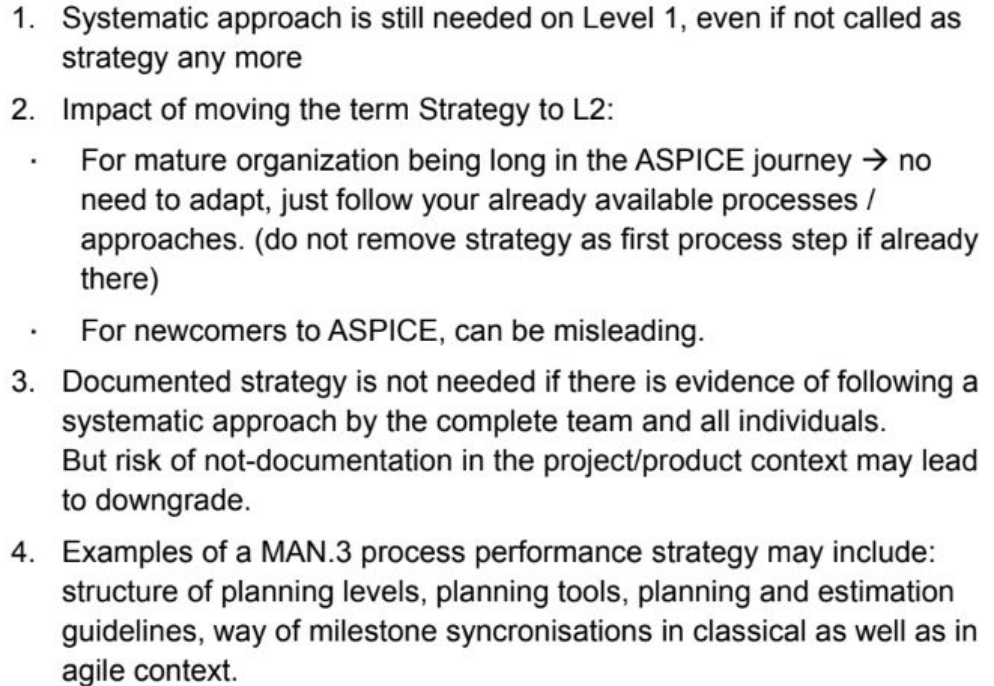
During the assessment and in terms of the consistency of the assessment ratings, dependencies between PA 2.1 and assessment indicators of other processes are to be considered.

Accordingly, evidence obtained during the assessment needs to be analyzed regarding potential relevance for other dependent assessment indicators. Significant rating differences across dependent processes and process attributes (e.g., with more than one NPLF step) might be indicative of an inconsistent rating.

Dependencies of the PA 2.1 Process Performance Management attribute and its generic practices to other processes are:

- The ratings of base practices 4,5,6,7,8 of MAN.3 should be in line with the ratings of GP 2.1.2, GP 2.1.3, GP 2.1.4, GP 2.1.5, and GP 2.1.6 of the other processes.

VDA Sys Results



Workshop 2 - Where is the SW integration in ASPICE 4.0?

Présentation

In ASPICE 4.0, a new section appeared in the guidelines to provide explanation about SW decomposition. This impacts SWE.5 process

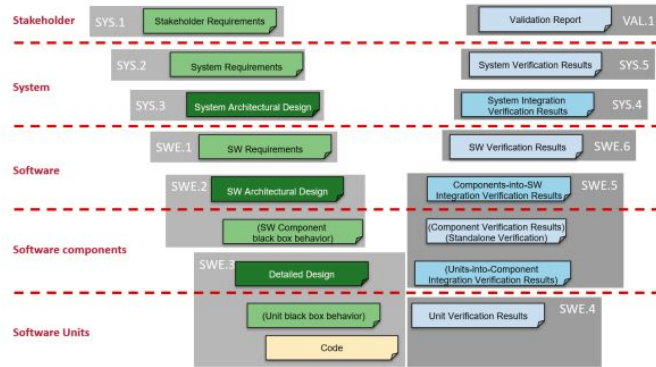
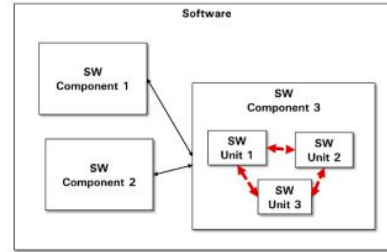
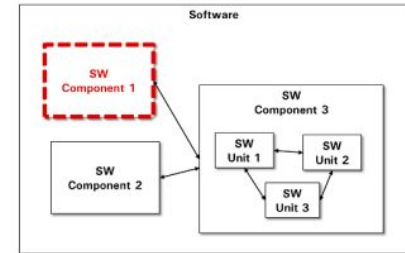


Figure 2-7 Software unit behavior and unit integration, component behavior, and software component-level verification

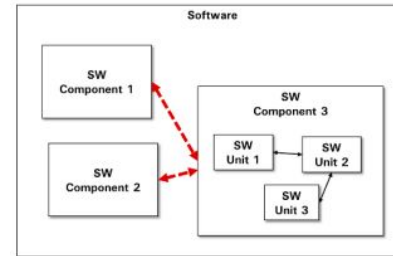
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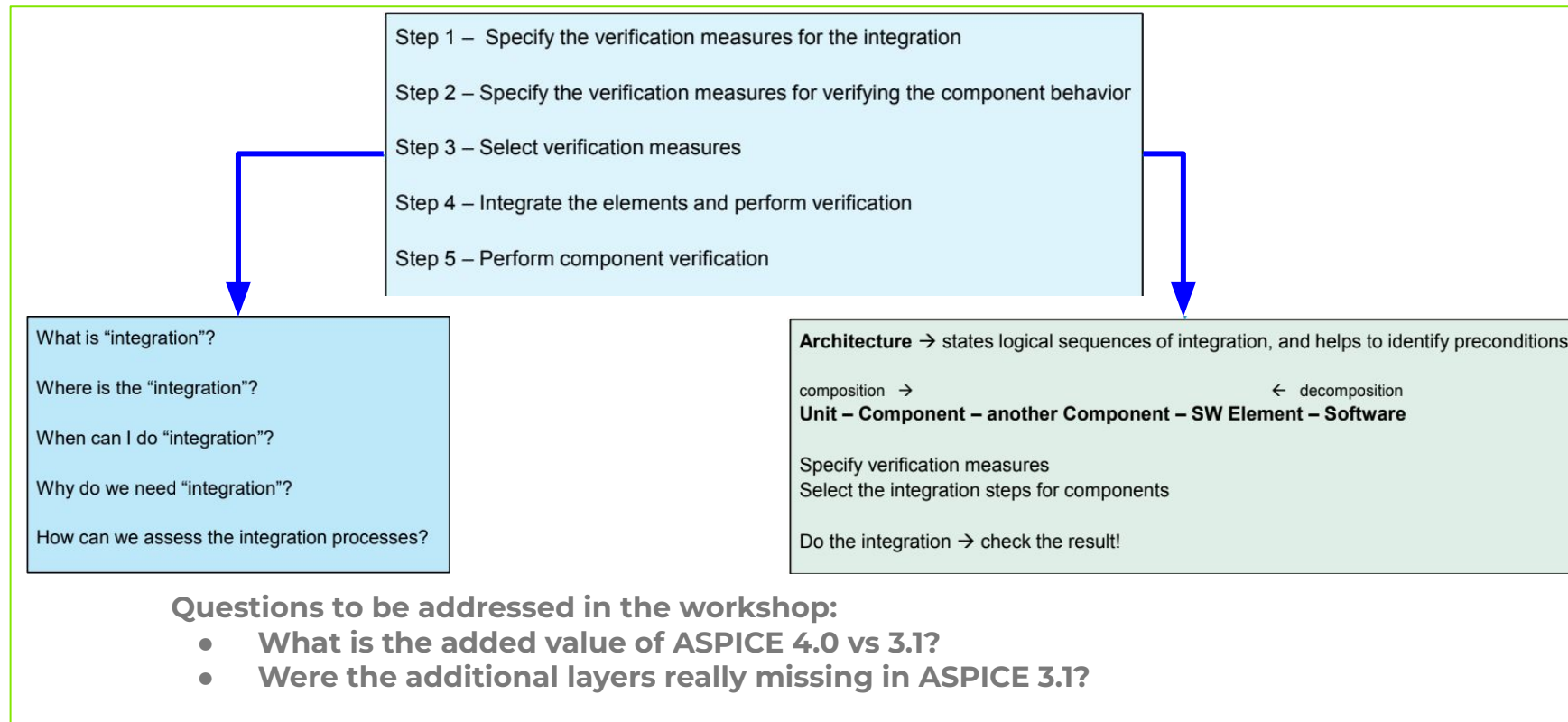


Integration and verification of software components



Workshop 2 - Where is the SW integration in ASPICE 4.0?

Présentation



Workshop 2 - Where is the SW integration in ASPICE 4.0?

Workshop Result

What is the added value of ASPICE 4.0 vs 3.1?
Also think about new challenges...

-

Not enough time to be addressed during G4S

Workshop 2 - Where is the SW integration in ASPICE 4.0?

Workshop Result

Were the additional layers really missing in ASPICE 3.1?

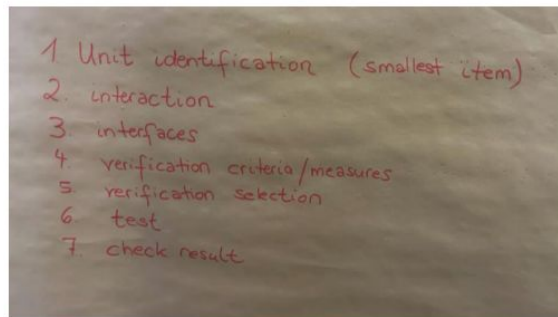
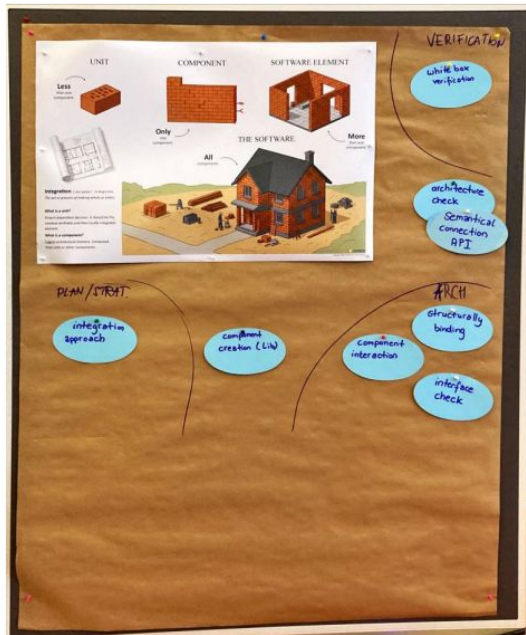
Hint: Guideline 2.0 mentions that it was not intuitively/adequately addressed in PAM 3.1

-

Not enough time to be addressed during G4S

Workshop 2 - Where is the SW integration in ASPICE 4.0?

VDA Sys Results



Summary

- Integration has more level than just unit level and architecture level. This additional level is now included in ASPICE 4.0.
- To assess integration according ASPICE there is more assessor experience about integration needed than for ASPICE 3.1.
- ASPICE4.0 ensures that integration is completely covered.



Feedback in applying ASPICE 4.0

Conclusions

How practitioners see ASPICE 4.0

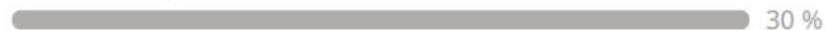
Does Automotive SPICE 4.0 meet your expectation as state-of-the-art PAM?

VDA Sys results

(Pre) Does Automotive SPICE 4.0 meet your expectation as state-of-the-art process assessment model?

0 3 7

I don't know yet



Not at all



Partially



Largely



Fully



(Post) Does Automotive SPICE 4.0 meet your expectation as state-of-the-art process assessment model?

0 3 5

I don't know yet



Not at all



Partially



Largely



Fully





SMART TECHNOLOGY
FOR SMARTER MOBILITY

Colors

