

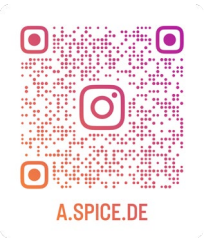
ASPICE PAM 4.0

.. all changes in one view

Part II: SYS.1 - SYS.5



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SYS.1

ASPICE PAM 3.1

Outcomes

1) continuing communication with the stakeholder is established; (BP.1)

2) agreed stakeholder requirements are defined and baselined; (BP.2, BP.3, BP.4)

3) a change mechanism is established to evaluate and incorporate changes to stakeholder requirements into the baselined requirements based on changing stakeholder needs; (BP.4, BP.5, BP.6)

4) a mechanism is established for continuous monitoring of stakeholder needs; (BP.1)

5) a mechanism is established for ensuring that customers can easily determine the status and disposition of their requests; (BP.6)

6) changes arising from changing technology and stakeholder needs are identified, the associated risks assessed and their impact managed. (BP.5)

1

1

The outcomes for changing requirements have been removed. In SYS.1 BP.3 the Note 4 & Note 5 refers to SUP.10 Change request management if required.

ASPICE PAM 4.0

Outcomes

1) Continuing communication with the stakeholder is established. (BP.1, BP.4)

2) Stakeholder expectations are understood, and requirements are defined and agreed. (BP.2)

3) Stakeholder requirements changes arising from stakeholder needs are analyzed to enable associated risk assessment and impact management. (BP.3)

4) Determination of stakeholder requirements status is ensured for all affected parties. (BP.4)



ASPICE PAM 3.1

Base Practices

BP1: Obtain stakeholder requirements and requests.
BP2: Understand stakeholder expectations.
BP3: Agree on requirements.
BP4: Establish stakeholder requirements baseline.
BP5: Manage stakeholder requirements changes.
BP6: Establish customer-supplier query communication mechanism.

ASPICE PAM 4.0

Base Practices

BP1: Obtain stakeholder expectations and requests.
BP2: Agree on requirements.
BP3: Analyze stakeholder requirements changes.
BP4: Communicate requirements status.

1

- 1 PAM 3.1 : BP.2, BP.3, BP.4 were pointing already to the same outcome. In ASPICE 4.0 common agreements (such as understanding of expectations or agreement on baselines) are not separated by individual BP's anymore. Hence the base practices are merged together and the number of BP's is reduced.

SYS.2

ASPICE PAM 3.1

Outcomes

- 1) a defined set of system requirements is established; (BP.1, BP.3)
- 2) system requirements are categorized and analyzed for correctness and verifiability; (BP.2, BP.3, BP.5)
- 3) the impact of system requirements on the operating environment is analyzed; (BP.4)
- 4) prioritization for implementing the system requirements is defined; (BP.2)
- 5) the system requirements are updated as needed; (BP.1)
- 6) consistency and bidirectional traceability are established between stakeholder requirements and system requirements; (BP.6, BP.7)
- 7) the system requirements are evaluated for cost, schedule and technical impact; (BP.1, BP.3, BP.4, BP.5)
- 8) the system requirements are agreed and communicated to all affected parties. (BP.8)

ASPICE PAM 4.0

Outcomes

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

- 1 In AS3.1 the outcomes 1 & 5 belong already to BP.1. Consequently it is now merged into one outcome in AS 4.0.
- 2 Same as the outcomes 2 & 4. In AS3.1 both belong to BP.2. Consequently it is again now merged into one outcome in AS 4.0.



SYS.2

ASPICE PAM 3.1

Base Practices

BP1: Specify system requirements.
BP2: Structure system requirements.
BP3: Analyze system requirements.
BP4: Analyze the impact on the operating environment.
BP5: Develop verification criteria.
BP6: Establish bidirectional traceability.
BP7: Ensure consistency.
BP8: Communicate agreed system requirements.

ASPICE PAM 4.0

Base Practices

BP1: Specify system requirements.
BP2: Structure system requirements.
BP3: Analyze system requirements.
BP4: Analyze the impact on the system context.
BP5: Ensure consistency and establish bidirectional traceability.
BP6: Communicate agreed system requirements and impact on the system context.

1

2

- 1 Consistent to SWE.1, ASPICE 4.0 points into public standards, where requirements characteristics are well defined. (i.e. IEEE29148, ISO 26262, etc.). Hence verification criteria are implicitly expected in specified system requirements. (SYS.2. Note 1&2)
- 2 Consistency and transparency are merged into one base practice systematically.

SYS.3

ASPICE PAM 3.1

Outcomes

- 1) a system architectural design is defined that identifies the elements of the system; (BP.1, BP.5, BP.7)
- 2) the system requirements are allocated to the elements of the system; (BP.2, BP.7)
- 3) the interfaces of each system element are defined; (BP.3)
- 4) the dynamic behavior of the system elements is defined; (BP.4)
- 5) consistency and bidirectional traceability are established between system requirements and system architectural design; (BP.6, BP.7)
- 6) the system architectural design is agreed and communicated to all affected parties.; (BP.7, BP.8)

ASPICE PAM 4.0

Outcomes

- 1) A system architecture is designed including a definition of the system elements with their behavior, their interfaces, their relationships, and their interactions. (BP.1, BP2)
- 2) The system architecture is analyzed against defined criteria, and special characteristics are identified. (BP.3)
- 3) Consistency and bidirectional traceability are established between system architecture and system requirements. (BP.4)
- 4) The agreed system architecture and the special characteristics are communicated to all affected parties. (BP.5)

- 1 SYS architecture at a glance. ASPICE4.0 moves the architectural elements, interfaces, as well as static and dynamic behavior into one outcome.
- 2 Outcome 2 & 5 merges into Outcome 3. Consistency includes the relation to requirements!
- 3 New is the outcome for BP.3 the system architecture analysis. In AS.3.1 this activity was addressed by B.5 "Evaluate alternative system architecture" but without a dedicated outcome.

SYS.3

ASPICE PAM 3.1

Base Practices

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

ASPICE PAM 4.0

Base Practices

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

- 1 Consistent to the outcomes the common elements of static and dynamic architecture are not separated by individual BP's anymore. Hence the number of BP's is reduced.
- 2 Comparing AS.3.1 BP.5 with AS.4.0 BP.3 indicates a higher relevance of cooperation between design decisions and project management objectives. *(see also VDA Guideline chapter 3.9.2.1)*

ASPICE PAM 3.1

Outcomes

1. a **system integration strategy** consistent with the project plan, the release plan and the system architectural design is developed to integrate the system items; (BP.1)
2. a **system integration test strategy** including the **regression test strategy** is developed to test the system item interactions; (BP.2)
3. a **specification for system integration test according to the system integration test strategy is developed** that is suitable to provide evidence for compliance of the integrated system items with the system architectural design, including the interfaces between system items; (BP.3)
4. system items are integrated up to a complete integrated system according to the integration strategy; (BP.4)
5. test cases included in the system integration test specification are selected according to the system integration test strategy and the release plan; (BP.5)
6. system item interactions are tested using the selected test cases and the results of system integration testing are recorded; (BP.6)
7. **consistency and bidirectional traceability between the elements of the system architectural design and test cases included in the system integration test specification and bidirectional traceability between test cases and test results is established;** (BP.7, BP.8)
8. results of the system integration test are summarized and communicated to all affected parties. (BP.9)

ASPICE PAM 4.0

Outcomes

- 1) **Verification measures are specified for system integration verification of the integrated system elements based on the system architecture, including the interfaces of, and interactions between, system elements.** (BP.1)
- 2) System elements are integrated up to a complete integrated system consistent with the release scope. (BP.3)
- 3) Verification measures are selected according to the release scope considering criteria, including criteria for regression verification. (BP.2)
- 4) Integrated system elements are verified using the selected verification measures, and the results of the system integration verification are recorded. (BP.3)
- 5) **Consistency and bidirectional traceability are established between verification measures and the elements of the system architecture.** (BP.4)
- 6) **Bidirectional traceability between verification results and verification measures is established.** (BP.4)
- 7) Results of the system integration and integration verification are summarized and communicated to all affected parties. (BP.5)

- 1 Same as in SWE.4 – SWE.6, the term “**strategy**” disappeared. Anyhow, a certain “**verification-tactic**” is still useful to ensure meaningful verification measures and characteristics according to ASPICE PAM 4.0.
- 2 “**Consistency**” and “**bilateral traceability**”, systematically has been merged in all process areas, **except for SYS.4 and SYS.5!**

SYS.4

ASPICE PAM 3.1

Base Practices

BP1: Develop system integration strategy.
BP2: Develop system integration test strategy including regression test strategy.
BP3: Develop specification for system integration test.
BP4: Integrate system items.
BP5: Select test cases.
BP6: Perform system integration test.
BP7: Establish bidirectional traceability.
BP8: Ensure consistency.
BP9: Summarize and communicate results.

ASPICE PAM 4.0

Base Practices

BP1: Specify verification measures for system integration.
BP2: Select verification measures.
BP3: Integrate system elements and perform integration verification.
BP4: Ensure consistency and establish bidirectional traceability.
BP5: Summarize and communicate results.

1

2

- ASPICE4.0 does not explicitly mention the term “strategy” on the right side of the V-model anymore. A look into the notes shows, that “**specify measures**” still requires a kind of “**verification-tactic**” to ensure meaningful verification measures and characteristics for a product release.
- The difference in merging consistency and traceability for the base practices but to split the single outcome into two new outcomes seems to be **inconsistent** and is different compared to SWE.4 – SWE.6!

SYS.5

ASPICE PAM 3.1

Outcomes

1. a system qualification test strategy including regression test strategy consistent with the project plan and release plan is developed to test the integrated system; (BP.1)
2. a specification for system qualification test of the integrated system according to the system qualification test strategy is developed that is suitable to provide evidence for compliance with the system requirements; (BP.2)
3. test cases included in the system qualification test specification are selected according to the system qualification test strategy and the release plan; (BP.3)
4. the integrated system is tested using the selected test cases and the results of system qualification test are recorded; (BP.4)
5. consistency and bidirectional traceability are established between system requirements and test cases included in the system qualification test specification and between test cases and test results; (BP.5, BP.6)
6. results of the system qualification test are summarized and communicated to all affected parties. (BP.7)

ASPICE PAM 4.0

Outcomes

- 1) Verification measures are specified for system verification of the system based on the system requirements. (BP.1)
- 2) Verification measures are selected according to the release scope considering criteria, including criteria for regression verification. (BP.2)
- 3) The integrated system is verified using the selected verification measures and the results of system verification are recorded. (BP.3)
- 4) Consistency and bidirectional traceability are established between verification measures and system requirements. (BP.4)
- 5) Bidirectional traceability is established between verification results and verification measures. (BP.4)
- 6) Verification results are summarized and communicated to all affected parties. (BP.5)

- 1 Same as in SWE.4 - SWE.6 and SYS.4, the term “**strategy**” disappeared. Anyhow, a certain “**verification-tactic**” is still useful to ensure meaningful verification measures and characteristics according to ASPICE PAM 4.0.
- 2 “**Consistency**” and “**bilateral traceability**”, systematically has been merged in all process areas, **except for SYS.4 and SYS.5!**



ASPICE PAM 3.1

Base Practices

BP1: Develop system qualification test strategy including regression test strategy.
BP2: Develop specification for system qualification test.
BP3: Select test cases.
BP4: Test integrated system.
BP5: Establish bidirectional traceability.
BP6: Ensure consistency.
BP7: Summarize and communicate results.

ASPICE PAM 4.0

Base Practices

BP1: Specify verification measures for system verification.
BP2: Select verification measures.
BP3: Perform verification of the integrated system.
BP4: Ensure consistency and establish bidirectional traceability.
BP5: Summarize and communicate results.

- 1** The circumstance that the term “**strategy**” disappeared from the level 1 terminology shall not be misunderstood in the way to skip any kind of strategy. Same as in SWE.4 and SWE.5 meaningful verification measures and characteristics are still required. A **tactic** of how to achieve these measures and characteristics must still be documented.
- 2** The difference in merging consistency and traceability for the base practices but to split the single outcome into two new outcomes seems to be **inconsistent** and is different compared to SWE.4 – SWE.6!

Conclusion:

- A lot of simplifications and a surprising complication for SYS.4 and SYS.5:
 - **No more use of the term “strategy”** on the right side of the V-model but the expectations towards the doing didn't really change.
 - **Less BP's:** Elements which are common because of other ISO norms and standards are not represented by individual BP's anymore. (e.g. characteristics of requirements)
 - **Better structure:** almost 1:1 mapping of outcomes to BP's.
 - **Inconsistency** for handling of consistency and traceability in SYS.4 and SYS.5.

