Organization SPICE PRM/PAM

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Content

1. Document Information

1.1. Trademarks

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1.2. Copyright Notice

1.3. Statement of Compliance

This Organization SPICE Process Assessment Model, Process Reference Model and Maturity Model is compliant with ISO/IEC 33004 and can be used to perform process maturity assessments for a defined organizational unit.

1.4. Distribution of This Document

Released versions of this document can be obtained freely from the www.intacs.info website. It is permitted for the recipient to further distribute this document without modification.

1.5. Change Request Handling

Any problems or change requests shall be reported via the ticketing system on www.intacs.info. Please add the prefix 'Org-SPICE PRM/PAM' to the subject of your ticket.

In order for a change request to be processed it shall contain

1. a detailed problem description;
2. an elaborated argumentation, why a particular rationale is false or incomplete;
3. a change proposal i.e. the new or optimized text to integrate.

1.6. References

[1] ISO/IEC 33001:2015, Information technology -- Process assessment – Concepts and terminology

[2] ISO/IEC 33002:2015 Information technology -- Process assessment – Requirements for performing process assessment

[3] ISO/IEC 33003:2015 Information technology -- Process assessment – Requirements for process measurement frameworks

[4] ISO/IEC 33004:2015 Information technology -- Process assessment – Requirements for process reference, process assessment and maturity models

[5] ISO/IEC 33020:2015 Information technology -- Process assessment – Process measurement framework for assessment of process capability

[6] ISO/IEC 33020:2019 Information technology -- Process assessment – Process measurement framework for assessment of process capability

[7] ISO 15504-7 TR

[8] Automotive SPICE® Process Reference Model/Process Assessment Model, v3.1, VDA QMC

[9] 'VDA Automotive SPICE® Guidelines', 1st. edition, September 2017, VDA, Quality Management in the Automotive Industry

[10] Automotive SPICE® Process Reference Model/Process Assessment Model, v4.0, VDA QMC

[11] 'VDA Automotive SPICE® Guidelines', 2nd. edition, 2023, VDA, Quality Management in the Automotive Industry

[12] Intacs® certified Provisional Assessor training course materials

1.7. Terms, Definitions, and Abbreviations

Shall	means that compliance with a statement is mandatory for compliance with an assessment indicator;
should	means that compliance with a statement is recommended but is not mandatory for compliance with an assessment indicator
may	is used to describe a permissible way to achieve compliance with an assessment indicator

Table 1 – Terms shall, should and may

Term	Origin	Description
ASIL	ISO 26262	Automotive Safety Integrity Level

Table 2 – Definition and abbreviations

2. Introduction and Scope

2.1. Document Scope

This document contains the Organization SPICE Process Reference Model (PRM) and Process Assessment Model (PAM), hereinafter called 'Organization SPICE', as integral parts.

Further, in [9], section 'Introduction' the VDA informs that

> *'The objective of working group 13 is the definition of the Automotive SPICE process reference and assessment model. In addition to that, it is the objective of the working group to give necessary clarifications and recommendations for the application of Automotive SPICE ...*
>
> *To fulfill this mandate, the following activities were performed:*
> *Improving the Automotive SPICE Process Assessment and Reference Model regarding structure, inconsistencies, clarifications and additional concepts. This was done with the publication of the 3.0 version of Automotive SPICE in July 2015*
>
> *… Giving guidelines on the interpretation of Automotive SPICE and on Assessment performance. This is provided by [the 'VDA Automotive SPICE® Guidelines] in 2017.'*

This means that a full understanding about Automotive SPICE® is provided in two distinct documents, i.e. the Automotive SPICE® PRM/PAM and the VDA Automotive SPICE® Guidelines. Further, even though the book is called 'Guidelines' that are recommended by the VDA to be followed by its members, its content can be considered 'normative expectations'. This can be concluded from the fact that e.g. a deviation of a full rating rule (RL) requires a documented justification in the assessment report by the assessor responsible.

In order to

- reduce the number of documents needed and
- provide assessment indicators that are as expressive and rich as the VDA Automotive SPICE® Guidelines [7] this Organization SPICE integrates the 'guidelines' (i.e., there is no separate 'Organization SPICE guideline' document). This is done by directly strengthening base practices, adding informative notes, and providing rating rules and recommendations in addition to the PAM directly below the corresponding process.

2.2. Community of Interest

This Organization SPICE model has been created

- by consensus of supplier and consultancy companies organized in a working group set up and monitored by intacs® (www.intacs.info); during the creation of this document since Feb 2020 this working group has received an increasing number of inquiries about the status and content. This proves that there is a community of interest in the automotive industry.
- based on the need raised by the community performing ISO/IEC 33060/33061 ML assessments,
- in accordance with the requirements of ISO/IEC 33002 and ISO/IEC 33004.

3. Maturity Level concept

According to ISO/IEC 33004:2015 (Information technology - Process assessment - Requirements for process reference, process assessment and maturity model) chapter 7.3.5, there shall be three sets of processes:

a) The Basic Process Set are processes that are essential to support the organization's business.

b) Extended processes are processes specific to a maturity level higher than ML1;

c) Additional processes due to specific business needs, development environments and/or domain plug-ins like SYS, HW, ME may be added based on the organization's context.

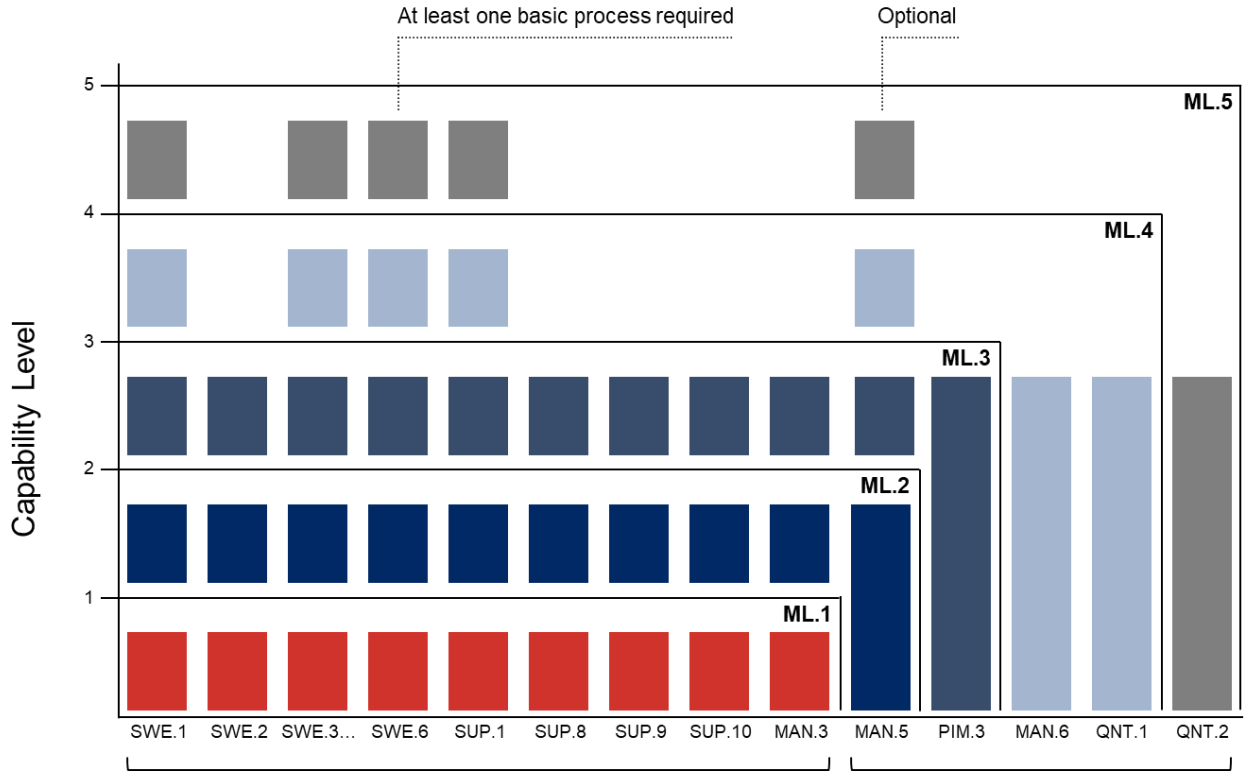

Figure 1 – The intacs Maturity Level Concept using an example with Automotive SPICE PAM 3.1

The process sets for various PAMs can be found in Annex A: Process sets for maturity level assessments.

3.1. Maturity Level Definition

The Maturity Levels are defined in the following table:

Maturity Level	Maturity Level Name	Maturity Level Description
Level 0	Incomplete	The organization does not demonstrate effective implementation of its processes to support the organization's business.
Level 1	Performed	The organization demonstrates achievement of the purpose of the processes that are fundamental to support the organization's business.
Level 2	Managed	The organization demonstrates management of the processes that are fundamental to support the organization's business.
Level 3	Established	The organization demonstrates effective definition and deployment of processes and process standards that are fundamental to support the organization's business.
Level 4	Predictable	The organization demonstrates a quantitative understanding of relevant processes that are fundamental to achieving the organization's business goals, in order to establish consistent and predictable performance.
Level 5	Innovating	The organization demonstrates the ability to change and adapt the performance of the processes that are fundamental to achieving the organization's business goals in a systematically planned and predictable manner.

Table 3 – Maturity Level Definition

4. Process Reference Model, Performance Indicators (CL1), Rating Rules, Rating Recommendations

Editorial guidance

The processes in the process dimension can be drawn from the PRM, which is incorporated in the tables below indicated by a red bar at the left side.

Analogously to Automotive SPICE® 3.1, each table related to one process in the process dimension contains the PRM (indicated by a red bar at the left side) and the process performance indicators necessary to define the PAM. The process performance indicators consist of BPs (indicated by a green bar) and output work products (indicated by a blue bar). Note that if an output work product indicator given here does not appear in Annex A then it represents the corresponding indicator in Automotive SPICE® [10]. This is according to ISO33020:2019.

Rating rules and recommendations are presented separately as they are not an element of a PRM or PAM [4].

Process reference model	**Process ID** **Process name** **Process purpose** **Process outcomes**	The individual processes are described in terms of process name, process purpose, and process outcomes to define the Automotive SPICE process reference model. Additionally a process identifier is provided.
Process performance indicators	**Base practices**	A set of base practices for the process providing a definition of the tasks and activities needed to accomplish the process purpose and fulfill the process outcomes
	Output work products	A number of output work products associated with each process *NOTE: Refer to Annex B for the characteristics associated with each work product.*

Table 4 Template for process description

4.1. PIM.1 Process Establishment

Process ID	PIM.1
Process name	Process Establishment
Process purpose	The purpose of the Process Establishment process is to establish the processes of the organization's management system [ISO9001, Clause 4.4.1] required to consistently provide products that meet customer and applicable statutory and regulatory requirements. [ISO9001, Clause 1.b]
Process outcomes	As a result of successful implementation of the Process Establishment Process: 1) A defined and maintained standard set of processes are established in line with the quality policy and quality objectives, along with an indication of each process's applicability; 2) The standard processes are defined, including their inputs, activities, outcomes, and further necessary information; 3) A strategy for tailoring the standard process for the product or service is developed in accordance with the needs of the project; and 4) Information and data related to the use of the standard process for specific projects exist and is maintained.
Base practices	**PIM.1.BP1: Define process architecture.** Define a standard set of processes meeting the define quality objectives and quality policy. Determine the sequence and interaction between processes so that they work as an integrated system of processes. Determine required inputs and expected outputs of each process. [OUTCOME 1] NOTE 1: A process architecture typically contains a clear distinction of process, project, product and/or service documents. **PIM.1 BP2: Define standard processes.** Define and maintain a description of each standard process according to the process needs of the organization. [OUTCOME 2] NOTE 2: This includes activities, input and output work products, roles and responsibilities, phases and/or milestones/gates, resources, templates, checklists, instructions, training material, and the trigger for activities. **PIM.1 BP3: Establish process tailoring guidelines.** Establish organizational guidelines for tailoring the organization's standard process to meet the specific needs of projects. [OUTCOME 1, 3] **PIM.1 BP4: Communicate process.** Communicate and ensure awareness for the standard processes, the quality policy, and the quality objectives. [OUTCOME 1, 4] NOTE 3: This includes all required training. **PIM.1 BP5: Monitor and adjust process performance.** Monitor process performances. Capture and maintain information and data related to the use of standard processes to facilitate the maintenance of the process architecture and the standard processes. Adjust as needed to achieve the quality objectives. [OUTCOME 4] **PIM.1 BP6: Report process performance.** Report process performance data, trend and target values. [OUTCOME 1, 4]
Output work	09-00 Policy [Outcome: 1, 3]

products	09-02 Quality policy [Outcome: 1, 3]
	14-10 (Process improvement) work package [Outcome: 2]
	10-00 Process description [Outcome: 3, 4]
	06-51 Tailoring Guideline [Outcome: 3]
	03-06 Process performance data [Outcome: 4]
	13-18 Quality record [Outcome: 4]
	13-19 Review record [Outcome: 4]
	15-01 Analysis report [Outcome: 4]
	16-06 Process repository [Outcome: 4]

4.1.1. Rating Rules

[PIM.1.RL1] If process descriptions are only available for processes in scope of the assessment, but not for other processes (e.g., other Automotive SPICE® processes) that are also needed in a project context, the indicator [PIM.1.BP2] may be downrated. [ISO9001, Clause 6.2.1].

[PIM.1.RL2] If organization-wide deployment support doesn't cover the whole company, but only the defined organizational unit, the indicator [PIM.1.BP2] shall not be downrated.

[PIM.1.RL3] If the interactions between the processes is not clear, PIM.1.BP1 shall be downrated [ISO24774; ISO9001, Clause 4.4.1.b]

[PIM.1.RL4] If name, purpose or outcomes are missing from a process, PIM.1.BP1 and PIM.1.BP2 shall not be higher than P. [ISO24774, Clause 5.3]

[PIM.1.RL5] If the inputs and outputs of a process, while necessary, are not specified, PIM.1.BP1 and PIM.1.BP2 shall not be higher than P. [ISO24774; ISO9001, Clause 4.4.1.a]

[PIM.1.RL6] If any of the following is missing:

a) performance indicators [ISO 9001, Clause 4.4.1.c]

b) requested or at least critical resources [ISO 9001, Clause 4.4.1.d]

c) responsibilities and authorities [ISO 9001, Clause 4.4.1.e]

PIM.1.BP3 shall be downrated.

[PIM.1.RL7] If performance indicators are missing, PIM.1.BP4 shall be downrated [ISO9001, Clause 4.4.1.c]

[PIM.1.RL8] If process data is collected, but not evaluated to analyze whether the process architecture and processes meet their intended result, PIM.1 BP1, PIM.1 BP3, and PIM.1 BP6 shall be downrated. [ISO9001, Clauses 4.4.1.g and h]

[PIM.1.RL9] If the relevant processes, objectives and guidelines are not managed and maintained properly, PIM.1 BP6 shall be downrated.

4.2. RIN.2 Skill Development

Process ID	RIN.2
Process name	Skill Development
Process purpose	The purpose of the Skill Development process is to provide the organization and project with individuals who possess the needed skills and knowledge to perform their roles effectively.
Process outcomes	As a result of successful implementation of the Skill Development Process: 1) Training is provided to address the training needs in the organization; and 2) Training is conducted to ensure that all individuals have the skills required to perform their assignments.
Base practices	**RIN.2.BP1: Develop a strategy for skill development.** Develop a strategy for skill development and training including how the competence needs will be identified, how the needed development and training will be developed or acquired and provided. [OUTCOME 1] NOTE 1: The strategy typically includes how the skill needs are identified and required trainings are provided in time. The strategy typically includes methods to ensure that no individual in the organization perform any activities without sufficient skills. NOTE 2: The skill needs of each individual are typically identified based on potentials roles and responsibility the person might be assigned to. NOTE 3: Typically, the skill needs of each individual covers the specific skills for the assigned activities, roles and responsibilities, the soft skills, the process knowledge, and the skills required to ensure a specific culture for quality, learning, and aspects of safety and security. NOTE 5: Usually, established standards and recognized certificates are required as proof of the required skills. NOTE 5: Typical training methods are classroom training, online training, exercises, workshops, on-the-job training, coaching concepts, or a combination of them. At a minimum, the training objectives and criteria for achievement need to be clearly defined. **RIN.2 BP2: Identify new skills and competencies.** Identify and evaluate skills and competencies to be provided or improved through development and training. [OUTCOME 1] NOTE 6: Sources or reasons for new skills and competencies might be new individuals, new tasks, new tools or techniques, new laws and guidelines, and renewal requirements. **RIN.2 BP3: Develop or acquire training.** Develop or acquire training that addresses the common skill development needs. Maintain training. [OUTCOME 1] **RIN.2 BP4: Train individuals.** Train the individuals of the organization so that they attain the knowledge and skills needed to perform their roles. Maintain adequate skill records. [OUTCOME 2] **RIN.2 BP5: Evaluate training effectiveness.** Identify and evaluate added value provided by each training session, including the satisfaction in training results. [OUTCOME 2]
Output work	06-04 Training material [Outcome: 2]

products	06-ORG1 Training feedback [Outcome: 2]
	08-02 Acquisition plan [Outcome 1]
	08-24 Training plan [Outcome: 2]
	13-23 Training record [Outcome: 2]
	15-22 Training evaluation report [Outcome: 2]
	15-ORG01 Skill analysis report [Outcome: 2]
	19-08 Training strategy [Outcome: 1]

4.2.1. Rating Rules

No specific rating rules for RIN.2

4.3. QNT.1 Quantitative Performance Management

Process ID	QNT.1
Process name	Quantitative Performance Management
Process purpose	The purpose of the Quantitative Performance Management process is to establish and maintain a quantitative understanding of the performance of selected organization's processes through measurement and the use of statistical and other quantitative techniques to predict the performance of the organization's implemented processes and to support the achievement of the organization's relevant business goals.
Process outcomes	As a result of successful implementation of the Quantitative Process Management Process: 1) Processes or process elements are selected for quantitative measurement based on of their relevance and significance to the achievement of business objectives; 2) Measures and analytical techniques to be used in statistically managing the processes or process elements are established and maintained; 3) Process performance data is collected and analyzed using appropriate statistical or other quantitative techniques to establish an understanding of the variation of the selected processes or process elements; 4) Results of data analysis are used to identify special causes of variation (assignable causes) in process performance; 5) Corrective and preventive actions are implemented to address the special and other causes of variation; 6) Performance of the selected processes or process elements is monitored and improved to establish stable, capable and predictable processes within established control limits; and 7) Projects are managed using statistical and quantitative techniques to optimize the probability of achieving critical business objectives.
Base practices	**QNT.1.BP1: Identify critical business and/or project objectives.** Select the relevant business and/or project objectives to be addressed through quantitative management. [OUTCOME 1] **QNT.1 BP2: Establish quantitative process performance objectives.** Select the processes or process elements that impact the identified business/project objectives. Then establish and maintain quantitative process performance objectives, both for the selected process or process elements. [OUTCOME 1] NOTE 1: Process Performance objectives can cover various characteristics of a process, such as quality, elapsed effort, duration, etc. **QNT.1.BP3: Establish an appropriate set of measures and analytic techniques for selected processes/process elements.** Define measures and analytical techniques to be used in quantitative management of the processes and process element that impact achievement of the process performance objectives. Define the handling and usage of data sources and storage. Ensure consistency to the performance, project and business objectives. Perform measurements and use the analytical techniques as defined. [OUTCOME 1, 2] NOTE 2: Analytical techniques might be statistical or other quantitative techniques.

	QNT.1.BP4: Establish distributions that characterize Process Performance. Collect and analyze the process performance data of selected processes and process elements and establish distributions that characterize process performance [OUTCOME 3, 4, 6] NOTE 3: The distribution that characterizes the process performance is also known as a process performance baseline. **QNT.1.BP5: Analyze and correct special causes of variation.** Perform root cause analysis when process performance is out of its control limits or in cases where process performance objectives are not achieved. Identify and implement corrective and if needed preventive actions. [OUTCOME 4, 5] NOTE 4: Special causes of variation are also known as assignable causes. **QNT.1.BP6: Establish Process Performance Models.** Develop process performance models based on the relationship of measurable characteristics of one or more processes or process elements in order to statistically predict the probability of achieving the desired process performance objectives. [OUTCOME 1,3,6, 7] **QNT.1.BP7: Compose and deploy a defined process:** Use statistical and other quantitative techniques to compose and deploy a defined process that enables the project to achieve its process performance objectives. [OUTCOME 1, 7] NOTE 5: Project planning uses process performance baselines and process performance models. **QNT.1.BP8: Use statistical and other quantitative techniques to monitor and manage the project.** Use statistical and quantitative techniques to monitor the performance of selected process elements and manage the project so that its objectives will be met. [OUTCOME 1, 7]
Output work products	07-10 Process Performance Models [Outcome: 7]
	08-ORG01 Description of measurement and analytical techniques [Outcome: 1, 2]
	10-00 Process Description [Outcome: 7]
	10-06 Process control limit (also known as Process Performance Baselines) [Outcome: 3, 4, 6]
	14-02 Corrective action register [Outcome: 5]
	14-12 Preventive action register [Outcome: 5]
	15-01 Analysis report [Outcome: 4]
	15-08 Risk analysis report [Outcome: 1, 4]
	15-18 Process performance report [Outcome: 6]
	16-06 Process repository [Outcome: 1, 6]
	16-07 Measurement repository [Outcome: 3]
	19-13 Decision-making strategy [Outcome: 1, 7]
	19-14 Selection criteria [Outcome: 1, 7]

4.3.1. Rating Rules

[QNT.1.RL1] If there are no written root cause analysis for special causes, but documented corrective actions are implemented to bring variations back to control limits, QNT.1.BP5 shall not be downrated.

4.4. QNT.2 Process Innovation

Process ID	QNT.2
Process name	Process Innovation
Process purpose	The purpose of the Process Innovation Process is to improve the performance of selected processes that are fundamental to achieve an organization's business objectives in a systematically planned and predictable manner, based on statistical and quantitative analysis of the impact of the proposed changes, that might be small improvement or bigger innovations. NOTE 1: Any process improvements according to this purpose falls within the term process innovation.
Process outcomes	As a result of successful implementation of the Process Innovation Process: 1) Quantitative business objectives are maintained based on business strategies and current results; 2) Process performance objectives are established by analysis using statistical and quantitative techniques to understand the organization's ability to meet the identified business objectives; 3) Process performance shortfalls and common causes of variation are understood and areas that could contribute to achieving business objectives are identified for innovation; 4) Identified innovation areas are analyzed for their relevance, significance and possible impact on the organization's process performance objectives; 5) Process innovations are piloted in order to validate the expected impact on process performance objectives; and 6) Validated improvements are selected for deployment based on an evaluation of cost, benefits and other factors.
Base practices	**QNT.2.BP1: Maintain business objectives.** New business visions and objectives are monitored and analyzed on a regular basis. Process innovation objectives are adjusted if needed. [OUTCOME: 1, 2] **QNT.2.BP2: Identify common causes of variation and shortfalls in achieving process performance objectives.** Use statistical and quantitative techniques to analyze performance of processes and process elements that directly impact business objectives in order to understand common causes of variation and shortfalls in achieving process performance objectives. [OUTCOME: 3] **QNT.2.BP3: Identify innovation opportunities.** Identify potential innovation opportunities for processes, arising from new technologies and process concepts. Analyze feedback on opportunities for innovation and select the improvement opportunities based on their relevance and significance to the achievement of business objectives. [OUTCOME: 4] **QNT.2.BP4: Establish process innovation objectives for innovation opportunities.** Analyze the costs, benefits, and risks of selected innovation opportunities and the impact on the organization's process performance objectives and determine an implementation strategy. [OUTCOME: 4]

	QNT.2.BP5 Pilot potential beneficial innovation opportunities. Select and plan the pilot innovations including criteria to be used for evaluating results in order to gain early feedback on the potential benefits the impact on process performance objectives. [OUTCOME: 4, 5] **QNT.2.BP6: Review the results of pilot innovations.** Review the results of pilots to determine whether to deploy the innovations to other parts of the organization. [OUTCOME: 5, 6] **QNT.2.BP7: Select innovations to be deployed.** Prioritize and select candidate innovations for implementation based on • Economic factors (productivity, profit, growth, efficiency, quality, competition, resources, and capacity); • Human factors (job satisfaction, motivation, morale, conflict/cohesion, goal consensus, participation, training, span of control); • Management factors (skills, commitment, leadership, knowledge, ability, organizational culture and risks); • Technology factors (sophistication of system, technical expertise, development methodology, need of new technologies). [OUTCOME: 6] **QNT.2.BP8: Monitor the implementation of the innovation.** Plan and monitor the implementation of the innovations based on the implementation strategy. [OUTCOME: 6] **QNT.2.BP9: Measure progress towards achieving process innovation objectives.** Use quantitative and statistical techniques to evaluate effectiveness of process change against process objectives and historical data, with respect to common causes of variations. [OUTCOME: 1] **QNT.2.BP10: Take corrective actions if process innovation objectives are not achieved.** Take corrective actions when process innovations fail to meet the defined process innovation objectives. [OUTCOME: 1]
Output work products	03-06 Process performance data [Outcome: 2, 3]
	05-02 Business goals [Outcome: 1]
	05-07 Process performance objectives [Outcome: 2]
	07-09 Quantitative analysis technique [Outcome: 2, 3]
	07-10 Process performance model [Outcome: 3, 4]
	08-29 Improvement plan [Outcome: 4, 5]
	09-02 Quality policy [Outcome: 1]
	10-05 New process concept [Outcome: 4]
	14-02 Corrective action register [Outcome: 5, 6]
	14-12 Preventive action register [Outcome: 6]
	15-01 Analysis report [Outcome: 1, 2, 3, 4, 5]
	15-05 Evaluation report [Outcome: 4, 5]
	15-16 Improvement opportunity [Outcome: 3, 4]

	16-07 Measurement repository [Outcome: 1, 2, 3]
	19-02 Process strategy [Outcome: 1, 2]
	19-13 Decision-making strategy [Outcome: 3, 4, 5]
	19-14 Selection criteria [Outcome: 3, 4]

4.4.1. Rating Rules

[QNT.2.RL1] If there is no or less evidence of maintenance of process innovation objectives, the indicator [QNT.2.BP3] should be downrated.

[QNT.2.RL2] If all defined process innovation objectives are achieved with or without documented corrective actions, the indicator QNT.2.BP10 shall not be downrated.

Annex A: Process sets for maturity level assessments

ISO/IEC 33004:2015 chapter 7.3.5 requires a definition of a Basic Process Set, Extended Process Set and Additional Processes.

Annex A1: Process set for Automotive SPICE® PAM 3.1 maturity level assessments

ML	Process ID & Name		Scope	Source
ML-1	SYS.2	System Requirements Analysis	Basic*	Automotive SPICE®
	SYS.3	System Architectural Design	Basic*	Automotive SPICE®
	SYS.4	System Integration & Integration Test	Basic*	Automotive SPICE®
	SYS.5	System Qualification Test	Basic*	Automotive SPICE®
	SWE.1	Software Requirements Analysis	Basic	Automotive SPICE®
	SWE.2	Software Architecture Design	Basic	Automotive SPICE®
	SWE.3	Software Detailed Design and Unit Construc-tion	Basic	Automotive SPICE®
	SWE.4	Software Unit Verification	Basic	Automotive SPICE®
	SWE.5	Software Integration and Integration Test	Basic	Automotive SPICE®
	SWE.6	Software Qualification Test	Basic	Automotive SPICE®
	SUP.1	Quality Assurance	Basic	Automotive SPICE®
	SUP.8	Configuration Management	Basic	Automotive SPICE®
	SUP.9	Problem Resolution Management	Basic	Automotive SPICE®
	SUP.10	Change Request Management	Basic	Automotive SPICE®
	MAN.3	Project Management	Basic	Automotive SPICE®
	ACQ.4	Supplier Monitoring	Basic*	Automotive SPICE®
ML-2	SYS.1	Requirements Elicitation	Extended*	Automotive SPICE®
	MAN.5	Risk Management	Extended	Automotive SPICE®
	SPL.2	Product Release	Extended*	Automotive SPICE®
ML-3	PIM.1	Process Establishment	Extended*	This document
	RIN.2	Skill development	Extended*	This document
	PIM.3	Process Improvement	Extended	Automotive SPICE®
	REU.2	Reuse Program Management	Extended*	Automotive SPICE®
ML-4	QNT.1	Quantitative Performance Management	Extended	This document
	MAN.6	Measurement	Extended	Automotive SPICE®
ML-5	QNT.2	Quantitative Process Innovation	Extended	This document

Table 5 – Maturity Level Process Set & Source for Automotive SPICE® PAM 3.1

Concept for Selecting Process Scope for Automotive SPICE® 3.1

The process set is defined in Table 5 – Maturity Level Process Set & Source for Automotive SPICE® PAM 3.1. This defines both the basic scope and extended scope.

Processes not marked with a * (Basic, Extended) always need to be in scope for a maturity level assessment.

Processes marked with a * (Basic*, Extended*) need to be in scope of a maturity level assessment, according to the following conditions:

- In case of pure software development and delivery the processes SYS.2, SYS.3, SYS.4, SYS.5 may be deselected.
- In case there are no external suppliers the process ACQ.4 may be deselected. According to the Automotive SPICE® Guideline the definition of external suppliers includes suppliers for engineering service, commercial of the shelf products, firmware, etc. Excluded are suppliers which deliver products without any support (e.g. open-source software) (see also [8] chapter 3.1.1.1)

The following processes are recommended but can be deselected without any documented decision:

- SYS.1 Requirements Elicitation
- SPL.2 Product Release
- PIM.1 Process Establishment
- RIN.2 Skill development
- REU.2 Reuse Program Management

Additional processes of Automotive SPICE® or plugins (e.g., Hardware SPICE, Mechanical SPICE, Machine Learning SPICE, Data Management SPICE, Automotive SPICE for Cyber Security) might be added to the assessment scope as needed.

Annex A2: Process set for Automotive SPICE® PAM 4.0 maturity level assessments

ML	Process ID & Name		Scope	Source
ML-1	SYS.2	System Requirements Analysis	Plug-In	Automotive SPICE®
	SYS.3	System Architectural Design	Plug-In	Automotive SPICE®
	SYS.4	System Integration & Integration Verification	Plug-In	Automotive SPICE®
	SYS.5	System Verification	Plug-In	Automotive SPICE®
	SWE.1	Software Requirements Analysis	Plug-In	Automotive SPICE®
	SWE.2	Software Architecture Design	Plug-In	Automotive SPICE®
	SWE.3	SW Detailed Design and Unit Construction	Plug-In	Automotive SPICE®
	SWE.4	Software Unit Verification	Plug-In	Automotive SPICE®
	SWE.5	Software Component Verification and Integration Verification	Plug-In	Automotive SPICE®
	SWE.6	Software Verification	Plug-In	Automotive SPICE®
	HWE.1	Hardware Requirement Analysis	Plug-In	Automotive SPICE®
	HWE.2	Hardware Design	Plug-In	Automotive SPICE®
	HWE.3	Verification against Hardware Design	Plug-In	Automotive SPICE®
	HWE.4	Verification against Hardware Requirements	Plug-In	Automotive SPICE®
	MLE.1	Machine Learning Requirements Analysis	Plug-In	Automotive SPICE®
	MLE.2	Machine Learning Architecture	Plug-In	Automotive SPICE®
	MLE.3	Machine Learning Training	Plug-In	Automotive SPICE®
	MLE.4	Machine Learning Model Testing	Plug-In	Automotive SPICE®
	SUP.1	Quality Assurance	Basic	Automotive SPICE®
	SUP.8	Configuration Management	Basic	Automotive SPICE®
	SUP.9	Problem Resolution Management	Basic	Automotive SPICE®
	SUP.10	Change Request Management	Basic	Automotive SPICE®
	SUP.11	Machine Learning Data Management	Plug-In	Automotive SPICE®
	MAN.3	Project Management	Basic	Automotive SPICE®
	ACQ.4	Supplier Monitoring	Extended*	Automotive SPICE®
ML-2	SYS.1	Requirements Elicitation	Extended*	Automotive SPICE®
	MAN.5	Risk Management	Extended	Automotive SPICE®
	SPL.2	Product Release	Extended*	Automotive SPICE®
ML-3	PIM.1	Process Establishment	Extended*	This document
	RIN.2	Skill development	Extended*	This document

	PIM.3	Process Improvement	Extended	Automotive SPICE®
	REU.2	Reuse Program Management	Extended*	Automotive SPICE®
ML-4	QNT.1	Quantitative Performance Management	Extended	This document
	MAN.6	Measurement	Extended	Automotive SPICE®
ML-5	QNT.2	Quantitative Process Innovation	Extended	This document

Table 6 – Maturity Level Process Set & Source for Automotive SPICE® PAM 4.0

Concept for Selecting Process Scope for Automotive SPICE® 4.0

The process set is defined in Table 6 – Maturity Level Process Set & Source for Automotive SPICE® PAM 4.0

This defines both the basic scope and extended scope.

Processes marked as Basic or Extended without a * always need to be in scope for a maturity level assessment.

According to the context of the assessment at least one process group marked as Plug-In (SYS, SWE, HWE, MLE & SUP.11) needs to be selected to be in scope for a maturity level assessment.

Processes marked with as Extended* need to be in scope of a maturity level assessment, according to the following conditions:

The following processes are recommended but can be deselected without any documented decision:

- SYS.1 Requirements Elicitation
- ACQ.4 Supplier Monitoring
- SPL.2 Product Release
- PIM.1 Process Establishment
- RIN.2 Skill development
- REU.2 Reuse Program Management

Additional processes of Automotive SPICE® or plugins (e.g., Mechanical SPICE, Data Management SPICE, Automotive SPICE for Cyber Security) might be added to the assessment scope as needed.

Annex A3: Process set for “System Life Cycle” PAM (ISO/IEC TS 33060:2020) maturity level assessments

ML	Process ID & Name		Scope	Source
ML-1	TEC.3	System Requirements Definition	Basic	ISO/IEC 33060:2020
	TEC.4	Architecture Definition	Basic	ISO/IEC 33060:2020
	TEC.5	Design Definition	Basic	ISO/IEC 33060:2020
	TEC.6	System Analysis	Basic	ISO/IEC 33060:2020
	TEC.7	Implementation	Basic	ISO/IEC 33060:2020
	TEC.8	Integration	Basic	ISO/IEC 33060:2020
	TEC.9	Verification	Basic	ISO/IEC 33060:2020
	TEC.10	Transition	Basic*	ISO/IEC 33060:2020
	TEC.12	Operation	Basic*	ISO/IEC 33060:2020
	TEC.13	Maintenance	Basic*	ISO/IEC 33060:2020
	TEC.14	Disposal	Basic*	ISO/IEC 33060:2020
	MAN.1	Project Planning	Basic	ISO/IEC 33060:2020
	MAN.2	Project Assessment and Control	Basic	ISO/IEC 33060:2020
	MAN.5	Configuration Management	Basic	ISO/IEC 33060:2020
	MAN.8	Quality Assurance	Basic	ISO/IEC 33060:2020
	AGR.1	Acquisition	Basic*	ISO/IEC 33060:2020
ML-2	TEC.1	Business or Mission Analysis	Extended*	ISO/IEC 33060:2020
	TEC.2	Stakeholder Needs & Requirements Definition	Extended*	ISO/IEC 33060:2020
	TEC.11	Validation	Extended*	ISO/IEC 33060:2020
	MAN.3	Decision Management	Extended	ISO/IEC 33060:2020
	MAN.4	Risk Management	Extended	ISO/IEC 33060:2020
	MAN.6	Information Management	Extended*	ISO/IEC 33060:2020
	AGR.2	Supply	Extended*	ISO/IEC 33060:2020
	ORG.5	Quality Management	Extended*	ISO/IEC 33060:2020
ML-3	ORG.1	Life Cycle Model Management	Extended	ISO/IEC 33060:2020
	ORG.2	Infrastructure Management	Extended*	ISO/IEC 33060:2020
	ORG.3	Portfolio Management	Extended*	ISO/IEC 33060:2020
	ORG.4	Human Resource Management	Extended*	ISO/IEC 33060:2020
	ORG.6	Knowledge Management	Extended*	ISO/IEC 33060:2020
ML-4	QNT.1	Quantitative Performance Management	Extended	Organization SPICE

	MAN.7	Measurement	Extended	ISO/IEC 33060:2020
ML-5	QNT.2	Quantitative Process Innovation	Extended	Organization SPICE

Table 7 – Maturity Level Process Set & Source for System Life Cycle PAM

NOTE:

PIM.1 Process Establishment from Organization SPICE is not added; it is already covered by ORG.1 Life cycle model management from ISO/IEC 33060:2020. But as this process also covers PIM.3 Process Improvement, it is not marked with a *.

RIN.2 Skill development from this Organization SPICE is not added; it is already covered by ORG.4 Human resource management from ISO/IEC 33060:2020.

Concept for Selecting Process Scope for System Life Cycle PAM

The process set is defined in Table 7 – Maturity Level Process Set & Source for System Life Cycle PAM. This defines both the basic scope and extended scope.

Processes not marked with a * (Basic, Extended) always need to be in scope for a maturity level assessment.

Processes marked with a * (Basic*, Extended*) need to be in scope of a maturity level assessment, according to the following conditions:

- In case the basics for the business analysis are already covered by the project management (MAN.1 and MAN.2) and requirements processes (TEC.2 and TEC.3), the process TEC.1 may be deselected.
- In case of pure development without stakeholder requirements elaboration, without transition to customer and without validation the processes TEC.2, TEC.10, TEC.11 may be deselected.
- In case the scope of work explicitly does not cover operations, maintenance or disposal, TEC.12, TEC.13, TEC.14 may be deselected accordingly.
- In case there are no external suppliers the process AGR.1 may be deselected. The definition of external suppliers includes suppliers for engineering service, commercial of the shelf products, etc. Excluded are suppliers which deliver products without any support (e.g. open-source designs)
- In case the business orientation does not need portfolios (e.g. platform strategy, reuse strategy, or similar) the process ORG.3 may be deselected.

The following processes are recommended but can be deselected without any documented decision:

- ORG.2 Infrastructure
- ORG.4 Human Resource Management
- ORG.6 Knowledge Management
- MAN.6 Information Management
- AGR.2 Supply
- ORG.5 Quality Management

Additional processes of PAMs (e.g., Automotive SPICE®, Hardware SPICE, Mechanical SPICE, Machine Learning SPICE, Data Management SPICE, Automotive SPICE for Cyber Security) might be added to the assessment scope as needed.

Annex A4: Process set for "Software Life Cycle" PAM (ISO/IEC TS 33061:2021) maturity level assessments

ML	Process ID & Name		Scope	Source
ML-1	TEC.3	System/software Requirements Definition	Basic	ISO/IEC 33061:2021
	TEC.4	Architecture Definition	Basic	ISO/IEC 33061:2021
	TEC.5	Design Definition	Basic	ISO/IEC 33061:2021
	TEC.6	System Analysis	Basic	ISO/IEC 33061:2021
	TEC.7	Implementation	Basic	ISO/IEC 33061:2021
	TEC.8	Integration	Basic	ISO/IEC 33061:2021
	TEC.9	Verification	Basic	ISO/IEC 33061:2021
	TEC.10	Transition	Basic*	ISO/IEC 33061:2021
	TEC.12	Operation	Basic*	ISO/IEC 33061:2021
	TEC.13	Maintenance	Basic*	ISO/IEC 33061:2021
	TEC.14	Disposal	Basic*	ISO/IEC 33061:2021
	MAN.1	Project Planning	Basic	ISO/IEC 33061:2021
	MAN.2	Project Assessment and Control	Basic	ISO/IEC 33061:2021
	MAN.5	Configuration Management	Basic	ISO/IEC 33061:2021
	MAN.8	Quality Assurance	Basic	ISO/IEC 33061:2021
	AGR.1	Acquisition	Basic*	ISO/IEC 33061:2021
ML-2	TEC.1	Business or Mission Analysis	Extended*	ISO/IEC 33061:2021
	TEC.2	Stakeholder Needs & Requirements Definition	Extended*	ISO/IEC 33061:2021
	TEC.11	Validation	Extended*	ISO/IEC 33061:2021
	MAN.3	Decision Management	Extended	ISO/IEC 33061:2021
	MAN.4	Risk Management	Extended	ISO/IEC 33061:2021
	MAN.6	Information Management	Extended*	ISO/IEC 33061:2021
	AGR.2	Supply	Extended*	ISO/IEC 33061:2021
	ORG.5	Quality Management	Extended*	ISO/IEC 33061:2021
ML-3	ORG.1	Life Cycle Model Management	Extended	ISO/IEC 33061:2021
	ORG.2	Infrastructure Management	Extended*	ISO/IEC 33061:2021
	ORG.3	Portfolio Management	Extended*	ISO/IEC 33061:2021
	ORG.4	Human Resource Management	Extended*	ISO/IEC 33061:2021
	ORG.6	Knowledge Management	Extended*	ISO/IEC 33061:2021
ML-4	QNT.1	Quantitative Performance Management	Extended	Organization SPICE

	MAN.7	Measurement	Extended	ISO/IEC 33061:2021
ML-5	QNT.2	Quantitative Process Innovation	Extended	Organization SPICE

Table 8 – Maturity Level Process Set & Source for Software Life Cycle PAM

NOTE:

PIM.1 Process Establishment from Organization SPICE is not added; it is already covered by ORG.1 Life cycle model management from ISO/IEC 33061:2021. But as this process also covers PIM.3 Process Improvement, it is not marked with a *.

RIN.2 Skill development from this Organization SPICE is not added; it is already covered by ORG.4 Human resource management from ISO/IEC 33061:2021.

Concept for Selecting Process Scope for Software Life Cycle PAM

The process set is defined in Table 8 – Maturity Level Process Set & Source for Software Life Cycle PAM. This defines both the basic scope and extended scope.

Processes not marked with a * (Basic, Extended) always need to be in scope for a maturity level assessment.

Processes marked with a * (Basic*, Extended*) need to be in scope of a maturity level assessment, according to the following conditions:

- In case the basics for the business analysis are already covered by the project management (MAN.1 and MAN.2) and requirements processes (TEC.2 and TEC.3), the process TEC.1 may be deselected.
- In case of pure development without stakeholder requirements elaboration, without transition to customer and without validation the processes TEC.2, TEC.10, TEC.11 may be deselected.
- In case the scope of work explicitly does not cover operations, maintenance or disposal, TEC.12, TEC.13, TEC.14 may be deselected accordingly.
- In case there are no external suppliers the process AGR.1 may be deselected. The definition of external suppliers includes suppliers for engineering service, commercial of the shelf products, etc. Excluded are suppliers which deliver products without any support (e.g. open-source software)
- In case the business orientation does not need portfolios (e.g. platform strategy, reuse strategy, or similar) the process ORG.3 may be deselected.

The following processes are recommended but can be deselected without any documented decision:

- ORG.2 Infrastructure
- ORG.4 Human Resource Management
- ORG.6 Knowledge Management
- MAN.6 Information Management
- AGR.2 Supply
- ORG.5 Quality Management

Additional processes of PAMs (e.g., Automotive SPICE®, Hardware SPICE, Mechanical SPICE, Machine Learning SPICE, Data Management SPICE, Automotive SPICE for Cyber Security) might be added to the assessment scope as needed.

Annex A5: Process set for “Test SPICE” PAM 4.0 maturity level assessments

ML	Process ID & Name		Scope	Source
ML-1	TST	The Overarching Testing Process	Basic	TEST SPICE 4.0
	TRM	Test Regression Reuse and Maintenance Process	Basic	TEST SPICE 4.0
	AGT.1	Testing Resource Acquisition	Basic*	TEST SPICE 4.0
	AGT.2	Testing Service Supply	Basic*	TEST SPICE 4.0
	TEM	The Overarching Test Environment Management Process	Basic	TEST SPICE 4.0
	TDM	The Overarching Test Data Management Process	Basic	TEST SPICE 4.0
	TAU	The Overarching Test Automation Process	Basic	TEST SPICE 4.0
ML-2	TST.1	Provision of required Test Inputs	Extended	TEST SPICE 4.0
	TST.2	Test Analysis & Design	Extended	TEST SPICE 4.0
	TST.3	Test Realization and Execution	Extended	TEST SPICE 4.0
	TST.4	Test Results Analysis and Reporting	Extended	TEST SPICE 4.0
	TRM.1	Test Asset Management	Extended	TEST SPICE 4.0
	TRM.2	Test Work Products Reuse Management	Extended	TEST SPICE 4.0
	TRM.3	Regression Test Management	Extended	TEST SPICE 4.0
	TRM.4	Testware Maintenance	Extended	TEST SPICE 4.0
	AGT.1a	Acquisition Preparation	Extended*	TEST SPICE 4.0
	AGT.1b	Supplier Selection	Extended*	TEST SPICE 4.0
	AGT.1c	Contract Agreement	Extended*	TEST SPICE 4.0
	AGT.1d	Testing Resource Delivery Monitoring	Extended*	TEST SPICE 4.0
	AGT.1e	Testing Service Acceptance	Extended*	TEST SPICE 4.0
	AGT.2a	Test Supplier tendering	Extended*	TEST SPICE 4.0
	AGT.2b	Testing Resource Delivery	Extended*	TEST SPICE 4.0
	AGT.2c	Testing Resource Acceptance Support	Extended*	TEST SPICE 4.0
	TEM.1	Test Environment Requirements Analysis	Extended	TEST SPICE 4.0
	TEM.2	Test Environment Design and Configuration Planning.	Extended	TEST SPICE 4.0
	TEM.3	Test Environment Assembly	Extended	TEST SPICE 4.0
	TEM.4	Test Environment Testing	Extended	TEST SPICE 4.0
	TEM.5	Test Environment Operation	Extended	TEST SPICE 4.0

	TEM.6	Environment User Support	Extended	TEST SPICE 4.0
	TEM.7	Test Environment Disassembly	Extended	TEST SPICE 4.0
	TDM.1	Test Data Requirements Management	Extended	TEST SPICE 4.0
	TDM.2	Test Data Provision Planning	Extended	TEST SPICE 4.0
	TDM.3	Test Data Set Up	Extended	TEST SPICE 4.0
	TDM.4	Test Data Maintenance and Support	Extended	TEST SPICE 4.0
	TAU.1	Test Automation Needs & Requirements Elicitation	Extended	TEST SPICE 4.0
	TAU.2	Test Automation Design	Extended	TEST SPICE 4.0
	TAU.3	Test Automation Implementation	Extended	TEST SPICE 4.0
	TAU.4	Test Case Implementation	Extended	TEST SPICE 4.0
	TAU.5	Test Automation Usage	Extended	TEST SPICE 4.0
	TAU.6	Test Automation process monitoring	Extended	TEST SPICE 4.0
	TPM	The Overarching Test Process Management Process	Extended	TEST SPICE 4.0
ML-3	PIM.1	Process Establishment	Extended*	Organization SPICE
	TTA.1	Adoption of Equivalence Partitioning.	Extended*	TEST SPICE 4.0
	TTA.2	Adoption of Classification Tree Method.	Extended*	TEST SPICE 4.0
	TTA.3	Adoption of Boundary Value Analysis	Extended*	TEST SPICE 4.0
	TTA.4	Adoption of State Transition Testing	Extended*	TEST SPICE 4.0
	TTA.5	Adoption of Decision Table Testing	Extended*	TEST SPICE 4.0
	TTA.6	Adoption of Cause-Effect Graphing	Extended*	TEST SPICE 4.0
	TTA.7	Adoption of Syntax Testing	Extended*	TEST SPICE 4.0
	TTA.8	Adoption of Combinatorial Test Techniques	Extended*	TEST SPICE 4.0
	TTA.9	Adoption of Scenario Testing	Extended*	TEST SPICE 4.0
	TTA.10	Adoption of Error Guessing	Extended*	TEST SPICE 4.0
	TTA.11	Adoption of Random Testing	Extended*	TEST SPICE 4.0
	TTA.12	Adoption of Statement Testing	Extended*	TEST SPICE 4.0
	TTA.13	Adoption of Branch Testing	Extended*	TEST SPICE 4.0
	TTA.14	Adoption of Decision Testing	Extended*	TEST SPICE 4.0
	TTA.15	Adoption of Condition Testing	Extended*	TEST SPICE 4.0
	TTA.16	Adoption of Data Flow Testing	Extended*	TEST SPICE 4.0
	RIN.2	Skill development	Extended*	Organization SPICE
	TPM.1	Organizational Test Strategy Management	Extended	TEST SPICE 4.0

	TPM.2	Test Requirements Analysis	Extended	TEST SPICE 4.0
	TPM.3	Test Planning	Extended	TEST SPICE 4.0
	TPM.4	Test Monitoring and Control	Extended	TEST SPICE 4.0
	TPM.5	Test Closing and Reporting	Extended	TEST SPICE 4.0
ML-4	QNT.1	Quantitative Performance Management	Extended	Organization SPICE
ML-5	QNT.2	Quantitative Process Innovation	Extended	Organization SPICE

Table 9 – Maturity Level Process Set & Source for Test SPICE PAM

Concept for Selecting Process Scope for Test SPICE PAM

The process set is defined Table 9 – Maturity Level Process Set & Source for Test SPICE PAM. This defines both the basic scope and extended scope.

Processes not marked with a * (Basic, Extended) always need to be in scope for a maturity level assessment.

Processes marked with a * (Basic*, Extended*) need to be in scope of a maturity level assessment, according to the following conditions:

- In case there are no external suppliers the process AGT.1 (and AGT.1a to AGT.1e) may be deselected. The definition of external suppliers includes suppliers for engineering service, commercial of the shelf products, etc. Excluded are suppliers which deliver products without any support (e.g. open-source software)
- In case the testing is provided as a service, AGT.2 (and AGT.2a to AGT.2c) shall *not* be deselected.
- In case some of the test techniques are not applicable to the domain or don't make sense in the context of the project/service, the corresponding test technique adoption process (TTA.1 to TTA.16) may be deselected.

The following processes are recommended but can be deselected without any documented decision:

- PIM.1 Process Establishment
- RIN.2 Skill development

Additional processes of PAMs (e.g., Automotive SPICE®, Hardware SPICE, Mechanical SPICE, Machine Learning SPICE, Data Management SPICE, Automotive SPICE for Cyber Security) might be added to the assessment scope as needed.

Annex B Information Item Characteristics

The information item characteristic is a definition and explanation on how to interpret the information items and their characteristics.

Information item identifier	An identifier number for the information item which is used to reference the information item.
Origin	Identifies from which standard the definition originates.
Information item name	Provides an example of a typical name associated with the information item characteristics. This name is provided as an identifier of the type of information item the practice or process might produce. Organizations may have different names for these information items. The name of the information item in the organization is not significant. Similarly, organizations may have several equivalent information items which contain the characteristics defined in one information item type. The formats for the information items can vary. It is up to the assessor and the organizational unit coordinator to map the actual information items produced in their organization to the examples given here.
Information item characteristics	Provides examples of the potential characteristics associated with the information item types. The assessor may use these in evaluating the samples provided by the organizational unit. It is not intended to use the listed characteristics as a checklist. Some characteristics may be contained in other work products, as it would be found appropriate in the assessed organization.

ID	Origin	Name	Characteristics
03-00	Automotive SPICE® v3.1	Data	• Result of applying a measure
03-06	Automotive SPICE® v4.0	Process performance information	• Measurements about defined quantitative or qualitative measurable indicators, that match defined information needs. • Measurement metrics for the calculation of the quantitatively or qualitatively measurable indicators • Data providing quantitative or qualitative information about the performance of the process • Examples for project performance information: - resource utilization against established target - time schedule against established target - activity or task completion criteria met - defined input and output work products available - process quality against quality expectations and/or criteria - product quality against quality expectations and/or criteria - highlight product performance issues, trends • Examples for service level performance information: - references any goals established - real time metrics related to aspects such as: capacity, throughput, operational performance, operational service, service outage time, up time, job run time
05-00	Automotive SPICE® v3.1	Goals	• Identifies the objective to be achieved • Identifies who is expected to achieve the goal • Identifies any incremental supporting goals • Identifies any conditions/constraints • Identifies the timeframe for achievement • Are reasonable and achievable within the resources allocated • Are current, established for current project, organization • Are optimized to support known performance criteria and plans

05-02	ISO/IEC 15504-5:2006	Business goals	• Contains a description of the goal • Identifies a requirement specification for the business need • Identifies association and interfaces to other goals • Identifies the level of degree of the need and effect on the business of not having that need.
05-07	ISO/IEC 15504-7:2008	Process performance objectives	• Process performance objectives aligned with business goals and context-specific other relevant objectives like: - Project / process effectiveness - Baselines for process performance and product quality
06-00	Automotive SPICE® v3.1	User documentation	• Identifies: - external documents - internal documents - current site distribution and maintenance list maintained • Documentation kept synchronized with latest product release • Addresses technical issues
06-04	Automotive SPICE® v3.1	Training material	• Updated and available for new releases • Coverage of system, application, operations, maintenance as appropriate to the application • Course listings and availability
06-51	Automotive SPICE® v4.0	Tailoring Guideline	• Criteria for tailoring • Proceeding of tailoring describing how to derive and document the defined process from the standard process including responsibility for tailoring and corresponding approval • Requirements for the defined process to ensure integrity and consistency of the defined process • Subset of process assets that is essential for the defined process
07-00	Automotive SPICE® v3.1	Measure	• Available to those with a need to know • Understood by those expected to use them • Provides value to the organization/project • non-disruptive to the workflow • Appropriate to the process, life cycle model, organization: - is accurate - source data is validated - results are validated to ensure accuracy • Has appropriate analysis and commentary to allow meaningful interpretation by users
07-09	ISO/IEC 15504-7:2008	Quantitative analysis technique	• Guidelines to determine which issues or problems are subject to a quantitative analysis • Measures and historical data required in quantitative analysis technique • Appropriate analysis technique considering the measures as well as the purpose • Assumptions of selected technique • Contribution to measurement repository
07-10	ISO/IEC 15504-7:2008	Process performance model	• Purpose of analysis • Measures related to the purpose of analysis • Operational definition of the measures • A model appropriate to the process context • Model Calibration • Assumptions and limitations of the model • Baseline update • Distribution to relevant stakeholders • Contribution to measurement repository

08-00	Automotive SPICE® v3.1	Plan	As appropriate to the application and purpose: • Identifies what objectives or goals there are to be satisfied • Establishes the options and approach for satisfying the objectives, or goals • Identification of the plan owner • Includes: - the objective and scope of what is to be accomplished - assumptions made - constraints - risks - tasks to be accomplished - schedules, milestones and target dates - critical dependencies - maintenance disposition for the plan • Method/approach to accomplish plan • Identifies: - task ownership, including tasks performed by other parties (e.g. supplier, customer) - quality criteria - required work products • Includes resources to accomplish plan objectives: - time - staff (key roles and authorities e.g. sponsor) - materials/equipment - budget • Includes contingency plan for non-completed tasks • Plan is approved
08-02	ISO/IEC 15504-5:2006	Acquisition plan	• Identifies what needs to be acquired • Establishes the approach for acquiring the product or service; options might include: - off-the-shelf - develop internally - develop through contract - enhance existing product or combination of these • Establishes the evaluation and supplier selection criteria • Acceptance strategy
08-24	ISO/IEC 15504-5:2006	Training plan	• Defines current staff capabilities • Defines the skills required • Outlines means available to achieve training goals
08-29	Automotive SPICE® v3.1	Improvement plan	• Improvement objectives derived from organizational business goals • Organizational scope • Process scope, the processes to be improved • Key roles and responsibilities • Appropriate milestones, review points and reporting mechanisms • Activities to be performed to keep all those affected by the improvement program informed of progress
08-ORG01	Organization SPICE PRM PAM V1.0	Description of measurement and analytical techniques	• Defines measures and analytical techniques to analyze processes at organizational level • Analytical techniques might be statistical or other quantitative techniques
09-00	Automotive SPICE® v3.1	Policy	• Authorized • Available to all personnel impacted by the policy • Establishes practices/rules to be adhered to

09-02	ISO/IEC 15504-5:2006	Quality policy	• Established by the top management • Appropriate to the organization • Addresses product and process quality goals • Supports the establishment and review of quality objectives • Commitment to comply with requirements • Commitment to improve the effectiveness of the quality management system
10-00	Automotive SPICE® v3.1	Process description	• A detailed description of the process/procedure which includes: - tailoring of the standard process (if applicable) - purpose of the process - outcomes of the process - task and activities to be performed and ordering of tasks - critical dependencies between task activities - expected time required to execute task - input/output work products - links between input and outputs work products • Identifies process entry and exit criteria • Identifies internal and external interfaces to the process • Identifies process measures • Identifies quality expectations • Identifies functional roles and responsibilities • Approved by authorized personnel
10-05	ISO/IEC 15504-7:2008	New process concept	• Potential improvement: - advances in related hardware products - new techniques, methodologies, processes, lifecycle models - new quality-improvement techniques - new process development and deployment support tools - Expected benefits, costs, and risks
10-06	ISO/IEC 15504-7:2008	Process control limit	• Guideline to determine which issues of process or product are subject to process control • Characteristics of process or products subject to control chart • Selection of an appropriate control chart • Initial control limit • Control chart monitored • Special causes identified and its sources • Validated result after remedial activities of special causes • Control limits re-established • Distribution to relevant stakeholders
13-00	Automotive SPICE® v3.1	Record	• Work product stating results achieved or provides evidence of activities performed in a process • An item that is part of a set of identifiable and retrievable data
13-18	Automotive SPICE® v3.1	Quality record	• Identifies what information to keep • Identifies what tasks/activities/process produce the information • Identifies when the data was collected • Identifies source of any associated data • Identifies the associated quality criteria • Identifies any associated measurements using the information • Identifies any requirements to be adhered to create the record, or satisfied by the record

13-19	Automotive SPICE® v3.1	Review record	• Provides the context information about the review: - what was reviewed - lists reviewers who attended - status of the review • Provides information about the coverage of the review: - check-lists - review criteria - requirements - compliance to standards • Records information about: - the readiness for the review - preparation time spent for the review - time spent in the review - reviewers, roles and expertise • Review findings: - non-conformances - improvement suggestions • Identifies the required corrective actions: - risk identification - prioritized list of deviations and problems discovered - the actions, tasks to be performed to fix the problem - ownership for corrective action - status and target closure dates for identified problems
13-23	ISO/IEC 15504-5:2006	Training record	• Record of employee's training • Identifies employee's name • Identifies any courses taken (date, hours, course title) • Identifies current skills / capabilities / experience level, lists: - formal education - certifications / examination results - in-house training - mentoring • Identifies future training needs • Identifies current status of training requests
14-00	Automotive SPICE® v3.1	Register	• A register is a compilation of data or information captured in a defined sequence to enable: - an overall view of evidence of activities that have taken place - monitoring and analyzes - provides evidence of performance of a process over time
14-02	Automotive SPICE® v3.1	Corrective action register	• Identifies the initial problem • Identifies the ownership for completion of defined action • Defines a solution (series of actions to fix problem) • Identifies the open date and target closure date • Contains a status indicator • Indicates follow up audit actions
14-10	Automotive SPICE® v4.0	Work package	• 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
14-12	ISO/IEC 15504-7:2008	Preventive action register	• Identification of the potential problem(s) or issue(s) • Ownership for completion of defined action • Solution (series of actions to fix problem) • Open date and target closure date

			• Status indicator • Follow-up audit actions
15-00	Automotive SPICE® v3.1	Report	• A work product describing a situation that: - includes results and status - identifies applicable/associated information - identifies considerations/constraints - provides evidence/verification
15-01	Automotive SPICE® v3.1	Analysis report	• What was analyzed? • Who did the analysis? • The analysis criteria used: - selection criteria or prioritization scheme used - decision criteria - quality criteria • Records the results: - what was decided/selected - reason for the selection - assumptions made - potential risks • Aspects of correctness to analyze include: - completeness - understandability - testability - verifiability - feasibility - validity - consistency - adequacy of content
15-05	Automotive SPICE® v3.1	Evaluation report	• States the purpose of evaluation • Method used for evaluation • Requirements used for the evaluation • Assumptions and limitations • Identifies the context and scope information required: - date of evaluation - parties involved - context details - evaluation instrument (checklist, tool) used • Records the result: - data - identifies the required corrective and preventive actions - improvement opportunities, as appropriate
15-08	Automotive SPICE® v3.1	Risk analysis report	• Identifies the risks analyzed • Records the results of the analysis: - potential ways to mitigate the risk - assumptions made - constraints
15-16	Automotive SPICE® v3.1	Improvement opportunity	• Identifies what the problem is • Identifies what the cause of a problem is • Suggest what could be done to fix the problem • Identifies the value (expected benefit) in performing the improvement • Identifies the penalty for not making the improvement

15-18	Automotive SPICE® v3.1	Process performance report	No requirements additional to Evaluation report (Generic)
15-22	ISO/IEC 15504-7:2008	Training evaluation report	• Training effectiveness survey • Training program performance assessment • Analysis of training evaluation forms
15-ORG01	Organization SPICE PRM PAM V1.0	Skill analysis report	• Identifies set of skills needed per role • Evaluates team members versus the defined skill set needed • Identify skill gaps - skills may include knowledge about tools, methods, process adherence, soft skills
16-00	Automotive SPICE® v3.1	Repository	• Repository for components • Storage and retrieval capabilities • Ability to browse content • Listing of contents with description of attributes • Sharing and transfer of components between affected groups • Effective controls over access • Maintain component descriptions • Recovery of archive versions of components • Ability to report component status • Changes to components are tracked to change/user requests
16-06	Automotive SPICE® v3.1	Process repository	• Contains process descriptions • Supports multiple presentations of process assets
16-07	ISO/IEC 15504-7:2008	Measurement repository	• Guidelines for entering repository • Classification of measures, data and relevant documents • Control mechanism of items in measurement repository • Search mechanism to find appropriate information • Ability to identify where the information in repository has been used
19-00	Automotive SPICE® v3.1	Strategy	• Identifies what needs and objectives or goals there are to be satisfied • Establishes the options and approach for satisfying the needs, objectives, or goals • Establishes the evaluation criteria against which the strategic options are evaluated • Identifies any constraints/risks and how these will be addressed
19-02	ISO/IEC 15504-5:2006	Process strategy	• Describes process deployment in the organizational unit • Identifies goals for process definition, implementation and improvement • Determines required support to enable the strategy
19-08	ISO/IEC 15504-5:2006	Training strategy	• Establishes the options (acquisition, development) and approach for satisfying training needs • Establishes the evaluation criteria against which the strategic options are evaluated • Identifies any constraints / risks and how these will be addressed
19-13	ISO/IEC 15504-7:2008	Decision making strategy	• Guideline to determine which issues belong to decision-making • Options and approach for satisfying decision needs: – decision categories – prioritization scheme – decision-making parties

19-14	ISO/IEC 15504-7:2008	Selection criteria	• Evaluation purpose • Selected evaluation criteria against which the strategic options are evaluated. • Types of criteria to consider include the following: – technology limitations – environmental impact – risks – total ownership and lifecycle costs • Operational definition of the selected criteria • Aggregation method of candidate alternatives • Distribution to relevant stakeholders

Annex C Mapping of indicators to Automotive SPICE® PAM 3.1

If the following BPs / PAs are downrated, this should be in line with the following GPs / PAs of other processes.

PIM.1.BP1	GP3.1.1 and GP3.1.2
PIM.1.BP2	PA3.2
PIM.1.BP3	GP3.1.1
PIM.1.BP5	GP3.1.1
RIN.2.PA1.1	GP3.2.3
QNT.1.BP1	GP4.1.2
QNT.1.BP2	GP4.1.3
QNT.1.BP3	GP4.2.1
QNT.1.BP4	GP4.2.3
QNT.1.BP5	GP4.2.4
QNT.1.BP8	GP4.2.1
QNT.2.BP1	GP5.1.1
QNT.2.BP2	GP5.1.2
QNT.2.BP3	GP5.1.3
QNT.2.BP4	GP5.1.4
QNT.2.BP5	GP5.2.3
QNT.2.BP6	GP5.2.3
QNT.2.BP7	GP5.2.2
QNT.2.BP8	GP5.2.2
QNT.2.BP9	GP5.2.3

Annex D Contact Persons

In alphabetical order:

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Document History

Version	Date	By	Notes
1.0	27.05.2022	Intacs WG	First Release
1.1	01.09.2022	Kosmas Kopmeier	Annex A: Correct the use of “Basic Scope” and “Extended Scope” in accordance to ISO33004 chapter 7.3.5
1.2	11.01.2023	Intacs WG	Chapter 3: refer to ISO33020:2015 add picture according to ML concept Annex A: Make some processes on ML2/3 as optional. Add Tables for ISO33060/61/74 and Test SPICE
1.3	28.01.2023	Christian Steinmann	Chapter 3: Update Figure 1 for the intacs Maturity Level Concept and adding explanation. Annex A: Added tables and concept for selection for PAMs ISO33060, ISO33061, ISO33074 and TestSPICE 4.0 Annex B: Added note for handling WPCs for other PAMs
1.4	13.05.2023	Christian Steinmann	Annex A: Removed table for PAM ISO33074 Updated table for TestSPICE 4.0: moved TPM from CL3 to CL2
2.0	28.07.2023	Intacs WG	Second Release
2.1	23.01.2024	Kosmas Kopmeier, Heiko Zastrau	Corrections of spellings Extend community of interest Update list of contact persons Annex A: Add table for Automotive SPICE® 4.0 Chapter 4: Update RL/RC to new RL look and feel Review of QNT.1 and QNT.2 to be still in line with Automotive SPICE® 4.0
2.99	24.01.2024	Intacs WG	Released by WG
2.99.1	12.04.2024	Knüvener	Feedback implemented e.g. PIM.1 BPs plus rules and some definitions in Annex B Information Items Characteristics
3.00	19.04.2024	Knüvener	Released after review by WG; Released by intacs AB