VDA QMC

Verband der Automobilindustrie
Qualitäts-Management-Center

Automotive SPICE® V4.0
Automotive SPICE® Guidelines V2.0

Status Report from VDA QMC Working Group 13

00 Agenda

VDA QMC
Verband der Automobilindustrie
Qualitäts-Management-Center

1. Intro
2. Status and Roadmap
3. Automotive SPICE® V4.0
4. Automotive SPICE® Guidelines V2.0
5. Transition and next Steps
6. Summary

01

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Report from Working Group 13

Introduction – Albrecht Wlokka

VDA QMC
Verband der Automobilindustrie
Qualitäts-Management-Center

- Consultant @ Bosch
- Software process improvement
- Software quality management support and governance
- Automotive SPICE coordination w/w
- Head of VDA PG 13

Report from Working Group 13

The Team

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- Members from OEMs, Tier 1 and Tier 2
- Optimal combination of experience plus fresh ideas
- Including assessors, instructors and process developers

- Antenori, Sandro (Continental)
- Bergmann, Lukas (Volkswagen)
- Burstika, Tim (BMW)
- Dornseiff, Manfred (ZF)
- Engländer, Tino (Continental)
- Fehérvári, Attila (Saneon)
- Hamann, Dirk (Schaeffler)
- Harman, Balacs (Valeo)
- Herzog, Bernhard (VDA QMC)
- Klostermann, Marc (Infineon)
- Lackmann, Philipp (Volkswagen)
- Lai, Ken (Schaeffler)
- Leonhardt, Barbara (AUDI)
- Löschberger, Cornelia (Webasto)
- Mandic, Irenka (Magna)
- Merettig, Ralf (Volkswagen)
- Metz, Pierre (Brose)
- Morenzin, Jan (VDA QMC)
- Mucha, Matthias (AUDI)
- Müller-Ott, Teresa (VDA QMC)
- Ostermann, Martin (Ford)
- Schmitt, Jörg (Bosch)
- Schölzke, Manfred (Opel)
- Springer, Dominic (Audi)
- Topf, Michael (ZF)
- Vanamali, Bhaskar (KMC)
- Westerhoff, Volker (Hella)
- Wlokka, Albrecht (BOSCH)
- Zimmer, Jörg (Mercedes)

02

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Work Packages and Status

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- PAM Automotive SPICE v4.0
- Expert review
- Provide material for intacs trainings
- Automotive SPICE Guidelines v2.0 for all processes in Automotive SPICE v4.0
- Automotive SPICE für Cybersecurity
- Automotive SPICE für Potenzialanalyse

⊕ in planning
◔ draft
◑ in progress
◕ ready for external review
● completed

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Yellow Book and PAM Baseline

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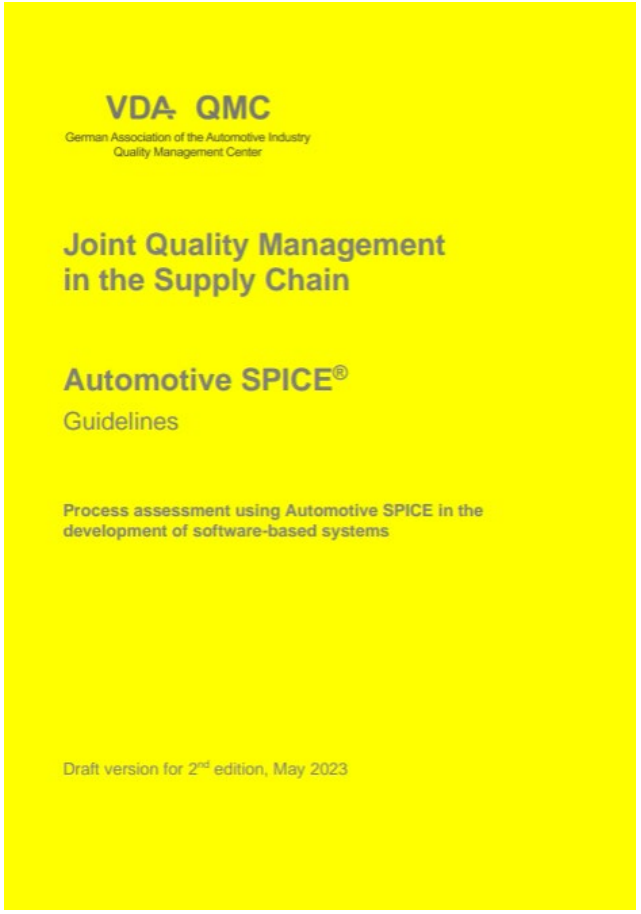
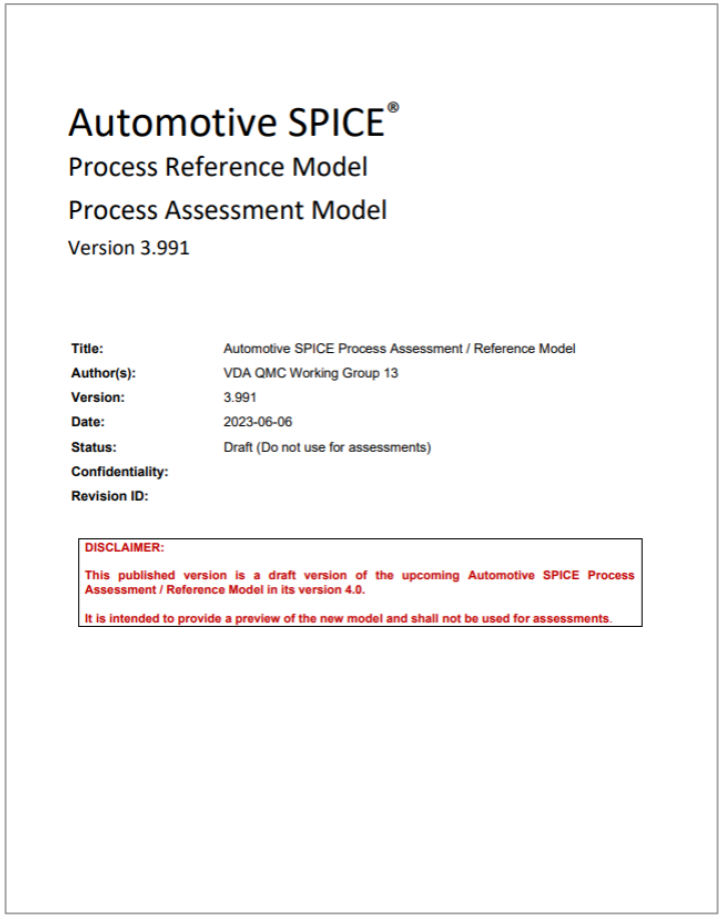


- Yellow book available since 5-June-2023
- Feedback phase ends on 5-Sep-2023
- Use dropdown list to address issues
- Feedback will be ignored when:
  - No proposal is given
  - Dropdown list is not used

- PAM baseline
  - Is provided to understand the rules in the guideline
  - is not subject for review



03

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1. Intro

2. Status and Roadmap

3. Automotive SPICE® V4.0

4. Automotive SPICE® Guidelines V2.0

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Automotive SPICE® PAM 4.0 - Main Changes

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- Addition of relevant processes and process groups
- Rework of all processes in the PAM
- Measurement framework updated (based on 33020:2015)
  - Planning-related aspects shifted completely to Level 2
  - Restructuring of Level 3 GP
- Set of indicators
  - Base Practices (BP)
  - Information Item (II) (replaces Output Work Products)
  - Information Item Characteristic (IIC) (replaces Work product characteristics)
- Notes with implicit requirements or checklist-like enumerations are revised or rephrased or removed
- New layout
- Traceability BP re-integrated into the consistency BP
- More consequent usage of terms (e.g. “Verification”, “metric”, “measure”, “risk”)

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Automotive SPICE® PAM 4.0 – Process Overview

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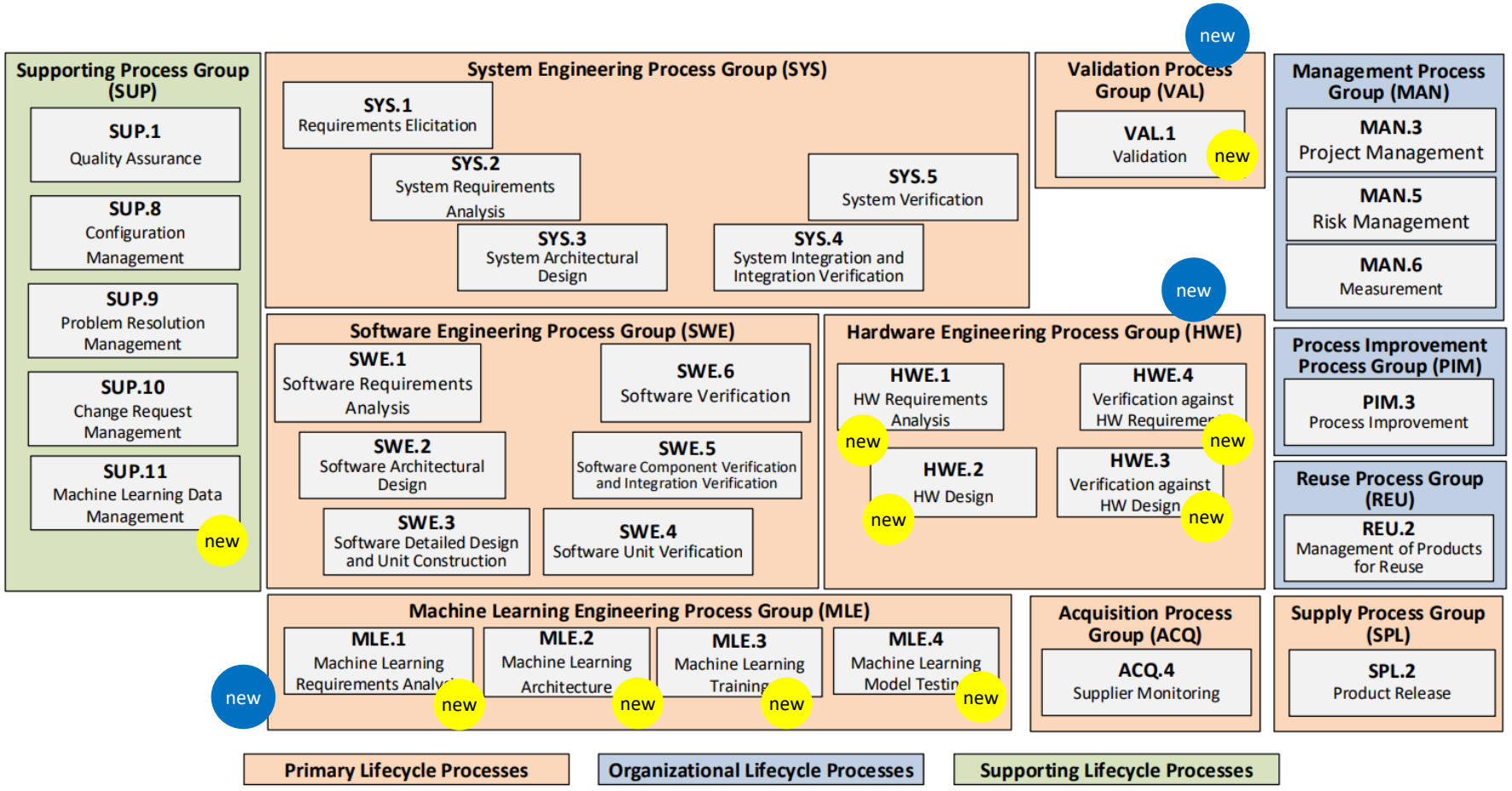

3 additional process groups new

10 additional processes new

10 processes removed

(SPL.1, SUP.2, SUP.4, SUP.7,ACQ.3, ACQ.11 -15)

2762 comments processed

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Automotive SPICE® PAM 4.0 - Layout

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Process group color code

BP and IIC to outcome relationship

GP and IIC to achievement relationship

No space

4.9. Management process group (MAN)

4.9.1. MAN.3 Project Management

Process ID
MAN.3
Process name
Project Management
Process purpose
The purpose is to identify and control the activities, and establish resources necessary for a project to develop a product, in the context of the project's requirements and constraints.
Process outcomes
1) The scope of the work for the project is defined. 2) The feasibility of achieving the goals of the project with available resources and constraints is evaluated. 3) The activities and resources necessary to complete the work are sized and estimated. 4) Interfaces within the project, and with other projects and organizational units, are identified and monitored. 5) Plans for the execution of the project are developed, implemented and maintained. 6) Progress of the project is monitored and reported. 7) Adjustment is performed when project goals are not achieved.

Base practices
MAN.3.BP1: Define the scope of work. Identify the project's goals, motivation and boundaries.
MAN.3.BP2: Define project life cycle. Define the life cycle for the project, which is appropriate to the scope, context, and complexity of the project. Define a release scope for relevant milestones. *Note 1: This may include the alignment of the project life cycle with the customer's development process.*
MAN.3.BP3: Evaluate feasibility of the project. Evaluate the feasibility of achieving the goals of the project with respect to time, project estimates, and available resources. *Note 2: The evaluation of feasibility may consider technical constraints of the project.*
MAN.3.BP4: Define and monitor work packages. Define and monitor work packages and their dependencies according to defined project life cycle and estimations. *Note 3: The structure and the size of the work packages support an adequate progress monitoring.* *Note 4: Work packages may be organized in a work breakdown structure.*

MAN.3 Project Management	Outcome 1	Outcome 2	Outcome 3	Outcome 4	Outcome 5	Outcome 6	Outcome 7
Output Information item							
08-53 Scope of work	X						
08-54 Feasibility analysis		X		X			
14-10 Work package			X	X	X		
-52 Communication evidence		X	X				
Change request							X
1 Consistency evidence		X					X
2 Corrective action						X	X
lation path				X		X	X
08-56 Schedule			X		X		X
14-50 Stakeholder groups list				X			
15-06 Project status report				X		X	
Base Practices							
BP1: Define the scope of work	X						
BP2: Define project life cycle	X	X					
BP3: Evaluate feasibility of the project		X					
			X	X	X		X
		X	X				X
			X				X
			X		X		X
						X	X
			X	X	X		X
						X	X

PA 3.2 - Process oyment process attribute	Achievement 1	Achievement 2	Achievement 3	Achievement 4	Achievement 5
Output Information Ite					
10-00 Process description	X				
15-54 Tailoring documentatio	X				
14-53 Role assignment		X	X		
13-55 Process resource and infrastructure documentation				X	
03-06 Process performance information					X
Generic Practices					
GP 3.2.1 Deploy a defined process	X				
GP 3.2.2 Ensure required competencies		X	X		
GP 3.2.3 Ensure required resources				X	
GP 3.2.4 Monitor the performance of the defined process					X

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Automotive SPICE® v4.0 - Main Changes

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PAM 3.1					
Process	BPs	Process	BPs	Process	BPs
ACQ.4	5	MAN.3	10	SPL.1	8
SPL.2	13	MAN.5	7	ACQ.3	7
SYS.1	6	MAN.6	11	ACQ.11	10
SYS.2	8	SUP.1	6	ACQ.12	10
SYS.3	8	SUP.8	9	ACQ.13	15
SYS.4	9	SUP.9	9	ACQ.14	8
SYS.5	7	SUP.10	8	ACQ.15	5
SWE.1	8	REU.2	8	SUP.2	5
SWE.2	9	PIM.3	9	SUP.4	8
SWE-3	8			SUP.7	8
SWE.4	7				
SWE.5	9				
SWE.6	7				
	VDA Scope		127	Total	265

PAM 4.0					
Process	BPs	Process	BPs	Process	BPs
ACQ.4	5	MAN.3	10	HWE.1	6
SPL.2	8	MAN.5	7	HWE.2	7
SYS.1	4	MAN.6	6	HWE.3	6
SYS.2	6	SUP.1	7	HWE.4	6
SYS.3	5	SUP.8	8	MLE.1	6
SYS.4	5	SUP.9	7	MLE.2	7
SYS.5	7	SUP.10	6	MLE.3	5
SWE.1	6	REU.2	6	MLE.4	7
SWE.2	5	PIM.3	8	SUP.11	6
SWE-3	5			VAL.1	5
SWE.4	5				
SWE.5	7				
SWE.6	5				
	Former VDA Scope		99	Total	199

PAM v4.0:

Former VDA scope:

99 vs 127 BP

In total:

199 vs 265 BP

Based on current draft Automotive SPICE v3.992

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Automotive SPICE® v4.0 – Measurement Framework Level 2

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PA 2.1	Performance Management Attribute	PA 2.2	Documented Information Management Attribute
GP 2.1.1	Identify the objectives and define a strategy for the performance of the process	GP 2.2.1	Define the requirements for the work products
GP 2.1.2	Plan the performance of the process	GP 2.2.2	Define the requirements for storage and control of the work products
GP 2.1.3	Define resource needs	GP 2.2.3	Identify, store and control the work products
GP 2.1.4	Identify and make available resources	GP 2.2.4	Review and adjust work products
GP 2.1.5	Monitor and adjust the performance of the process		
GP 2.1.6	Manage the interfaces between involved parties		

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Automotive SPICE® v4.0 – Measurement Framework Level 3

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PA 3.1	Process Definition Attribute	PA 3.2	Process Deployment Attribute
GP 3.1.1	Establish and maintain the standard process	GP 3.2.1	Deploy a defined process
GP 3.1.2	Determine the required competencies	GP 3.2.2	Ensure required competencies
GP 3.1.3	Determine the required infrastructure	GP 3.2.3	Ensure required resources
GP 3.1.4	Determine suitable methods to monitor the standard process	GP 3.2.4	Monitor the performance of the defined process

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Automotive SPICE® v4.0 - Main Changes

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	PAM 3.1	PAM 4.0	Diff [%]
Processes	32	32	
CL.1 (BP)	265	199	-66 [-25%]
CL.2 (GP)	352	320	-32 [-9%]
CL.3 (GP)	352	256	-96 [-27%]
Total (BP+GP)	969	775	-194 [-20%]
	126 WPC	116 IIC	

Based on current draft Automotive SPICE v3.992

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Automotive SPICE® v4.0 – Changes for Efficient Use of PAM

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- New process layout
- Tables for better overview about relationship of practice to outcomes and information items to outcomes
- Terminology at beginning of PAM (not in Annex C)
- Unused abbreviations, terms and IIC (WPC) removed
- Consistent use of terms (metric, measure, measurement, risk, activity, task and many more)
- Process name excluded from purpose statement
- Phrase “As a result of successful implementation of this process:” removed from “outcomes” section

04

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Automotive SPICE® Guidelines 2.0 - Purpose

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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

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Automotive SPICE® Guidelines 2.0 - Overview

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Part 1 Interpretation and rating guidelines

1. Application of interpretation and rating guidelines
2. Key concepts and overall guidelines
3. Rating guidelines on process performance (level 1)
4. Rating guidelines on process capability level 2
5. Rating guidelines on process capability level 3
6. Understanding capability level 4 — new
7. Understanding capability level 5 — new

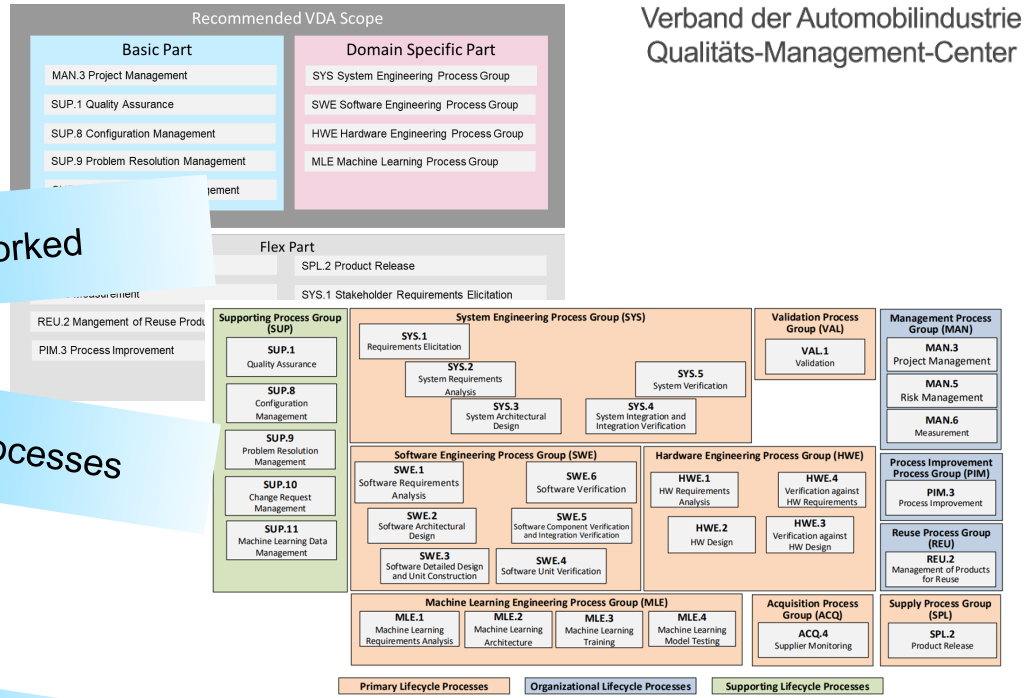
Part 2 Guidelines for performing the assessment

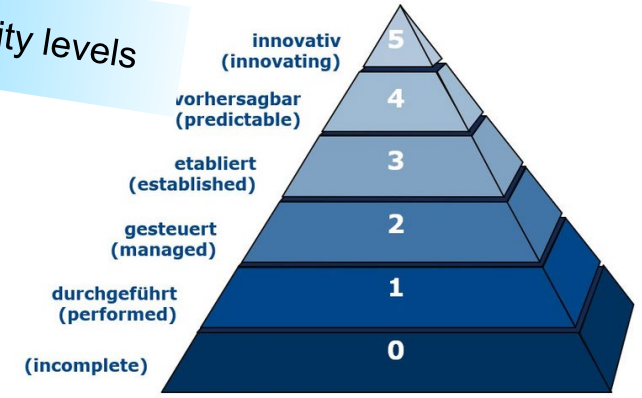
8. Documented assessment process
9. Improvement process
10. Recommendations fro performing an assessment
11. Requirements relating to assessor qualification

reworked

All processes

All capability levels





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Automotive SPICE® Guidelines 2.0 - Main Changes

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Stronger emphasis on guidance for assessors to understand the context of the assessed organization

Only rating rules for guidance

- 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

Concept of „Process context categories“ removed

- Every weakness detected in an assessment bear a risk for the product
- Every assessment shall assign same rating to the same finding
- Diverging ratings may come from scope definition
- The PAM provides indicators for systematic approach and for completeness

Focus on disjunctive evaluation of processes

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Recommended VDA Scope

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Recommended VDA Scope

Basic Part	Domain Specific Part
MAN.3 Project Management	SYS System Engineering Process Group
SUP.1 Quality Assurance	SWE Software Engineering Process Group
SUP.8 Configuration Management	HWE Hardware Engineering Process Group
SUP.9 Problem Resolution Management	MLE Machine Learning Process Group + SUP.11
SUP.10 Change Request Management	

Flex Part

MAN.5 Risk Management	SPL.2 Product Release
MAN.6 Measurement	SYS.1 Stakeholder Requirements Elicitation
REU.2 Management of Reuse Products	VAL.1 Validation
PIM.3 Process Improvement	ACQ.4 Supplier Monitoring

Rules:

- Sponsor / Auftraggeber defines the Scope
- Recommended VDA Scope is a recommendation – not a must
- Basic Part plus one process group from the domain specific part as a minimum
- Examples
  - former VDA Scope = Basic + SYS + SWE
  - Electronic dev. = Basic + SYS + HWE
  - Software Only = Basic + SWE
- Processes from Flex Part are selected based project specific context

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Automotive SPICE® Guidelines 2.0 - Main Changes

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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)		**499**

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	4
		SYS.2	10	SUP.1	11	HWE.4	4
		SYS.3	1	SUP.8	9	MLE.1	1
MDB	7	SYS.4	4	SUP.9	8	MLE.2	1
AGE	6	SYS.5	4	SUP.10	14	MLE.3	2
DEX	16	SWE.1	9	REU.2	3	MLE.4	2
		SWE.2		PIM.3	4	SUP.11	1
		SWE.3	3	L2	29	VAL.1	3
APA	6	SWE.4	4	L3	51		
		SWE.5	4	L4			
		SWE.6	4	L5			
	40		49		162		29
						Total	**280**

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Automotive SPICE® Guidelines 2.0

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Advantages of Automotive SPICE® Guideline v2.0

- Improved reproducibility by
  - Focus on understanding of the process context of the organization
  - Clear rules
  - No more „recommendations“
  - Reduction of interpretable content
- Rules are given for all processes in PAM 4.0
- No rules that repeat the PAM indicators

05

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1. Intro

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6. Summary

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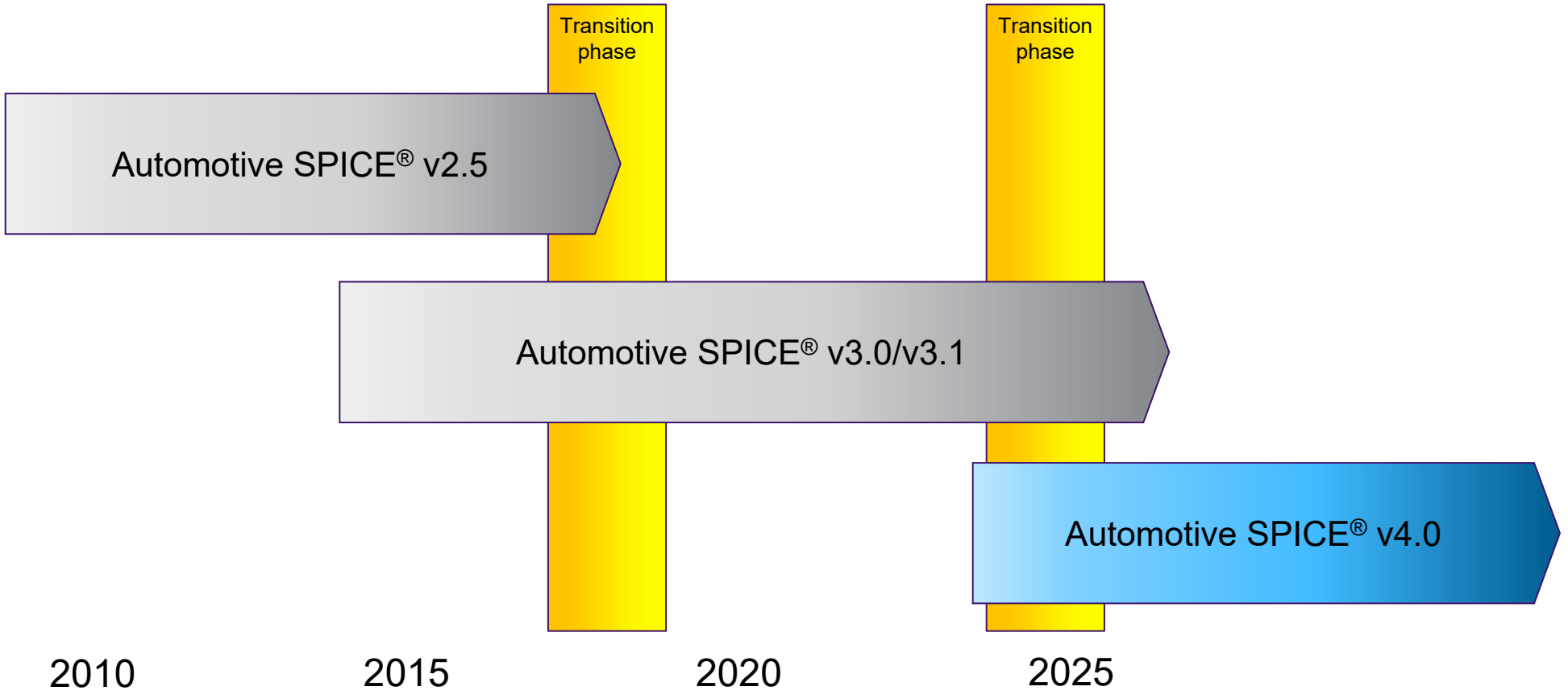
Automotive SPICE® v4.0 and Automotive SPICE® Guidelines v2.0 – Transition



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Automotive SPICE® v4.0 and Automotive SPICE® Guidelines v2.0 – Transition

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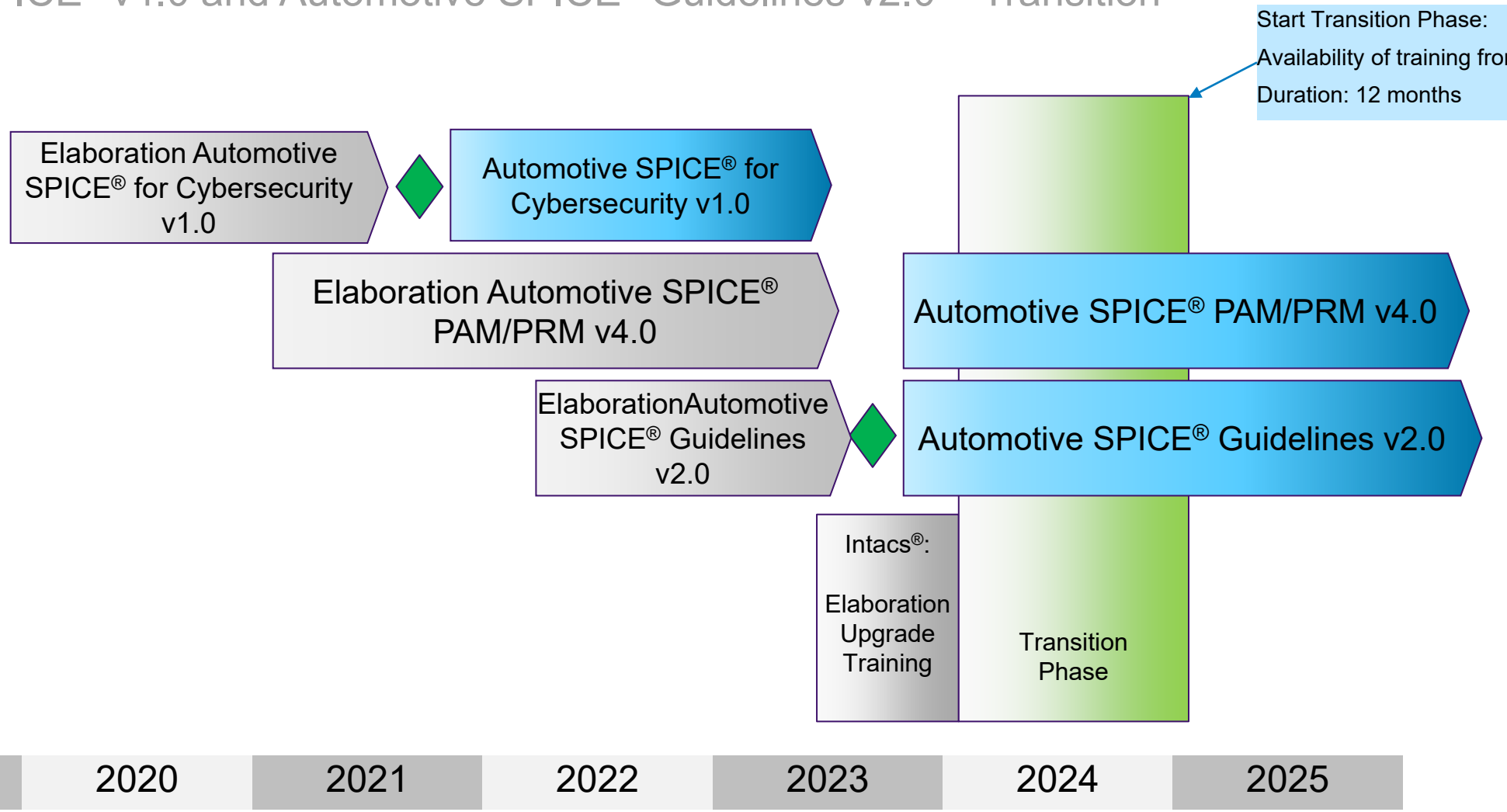

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Automotive SPICE® v4.0 and Automotive SPICE® Guidelines v2.0 – Transition

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Training Concept during transition phase

Lead Assessor for v3.1 (competent & prinicpal)	Active Instructor for competent training	Provisional Assessor for v3.1	Provisional Assessor for v3.1 to become Competent	Candidate Assessor
+ Upgrade 3 Tage	**Train the Trainer upgrade**	**No upgrade only payment for renewal**	**Competent Training PAM 3.1 w/o Guidelines 1.0 + Upgrade 3 Tage**	**Provisional Schulung 3.1 mit Prüfung**
	Train the Trainer for PAM 4.0 and Guidelines incl. VAL, MF, HW und MLE		Existing become criteria to be fulfilled	
Training for PAM 4.0 and Guidelines incl. VAL , MF, HW und MLE Evidence of competence	Training for PAM 4.0 and Guidelines incl. VAL , MF, HW und MLE Evidence of competence		Training for PAM 4.0 and Guidelines incl. VAL , MF, HW und MLE Evidence of competence	
PAM 4.0 Lead Assessor (competent and principal)	**PAM 4.0 Instructor for upgrade training**	**Provisional Assessor**	**PAM 4.0 Competent Assessor**	**Provisional Assessor**

MF = Measurement Framework

VDA QMA 11.05.2023 | AK 13

Roadmap

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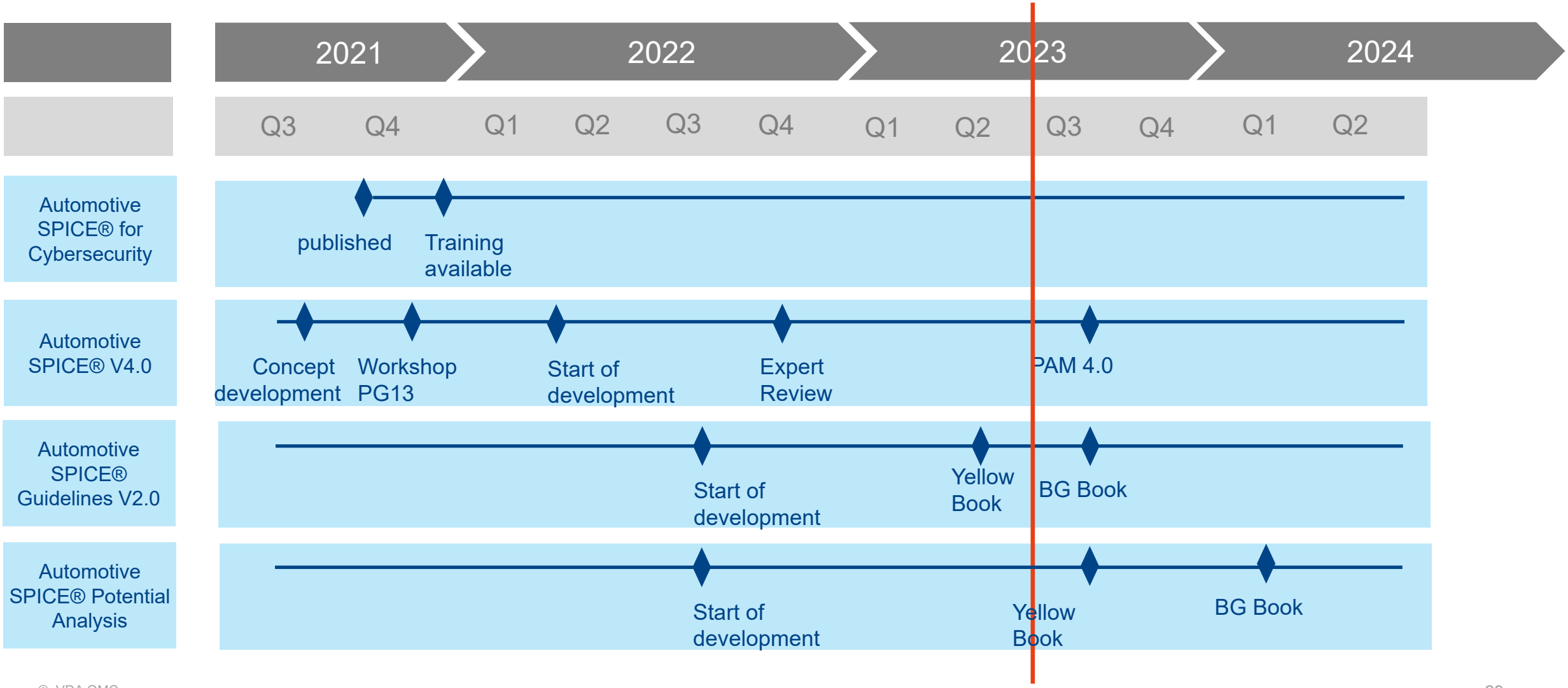

VDA QMA 11.05.2023 | AK 13

Next Steps

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Automotive SPICE® Potential Analysis Process Assessment Model (PAM)

- Preparation yellow book; planned approval QMA meeting 09/2023

Automotive SPICE® for Cybersecurity

- Adoption according to new concepts in Automotive SPICE® 4.0

Automotive SPICE® Guideline

- Processing feedback
- Approval blue-gold book; QMA meeting 09/2023
- Preparation of upgrade Trainings with intacs®

Future Topics

- Code metrics, VDA LiSA,
- Training concept for Assessors
- Evaluate PAM enhancements
- Support of other project groups regarding software topics

06

VDA QMC
Verband der Automobilindustrie
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Automotive SPICE® v4.0 and Automotive SPICE® Guidelines 2.0 Summary

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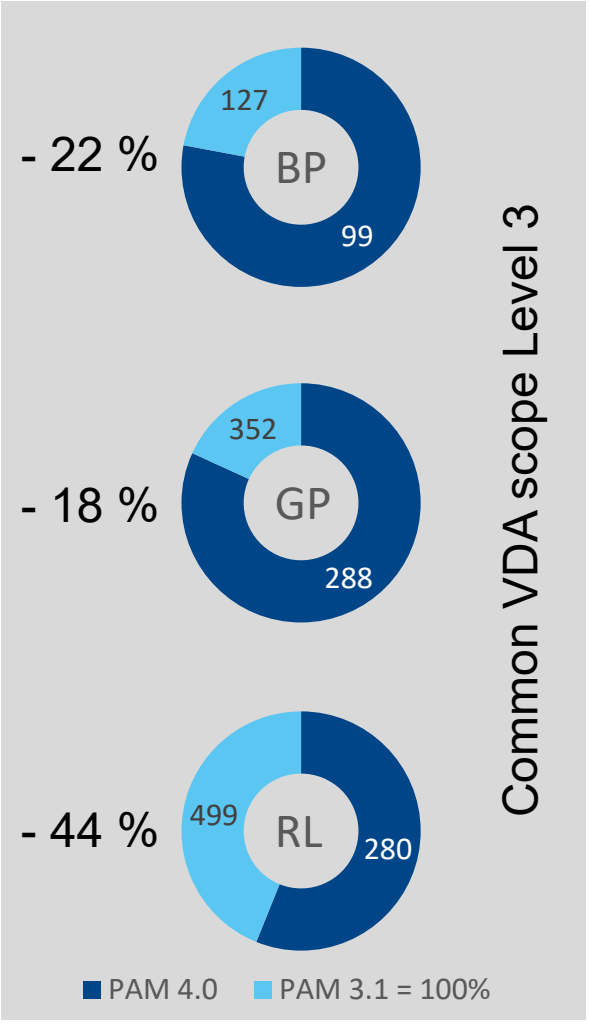
Automotive SPICE® v4.0 and Automotive SPICE® Guidelines 2.0 together

- Improve the efficiency and reproducibility of assessments by
  - Clear indicators
  - Focus on understanding of the process context of the organization
  - Clear rules
  - Reduction of interpretable content
  - Avoiding redundant evaluations
- Address better the elimination of potential weaknesses



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Automotive SPICE® v4.0 and Automotive SPICE® Guidelines 2.0 Summary

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Assessments with

Automotive SPICE® v4.0 and Automotive SPICE® Guidelines 2.0 will be

- More helpful
- More efficient
- More reproducible

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Thank you