

# How to ensure that OEMs, suppliers and assessors speak the same language?

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# Bernhard Sechser



intacs®

- Principal Assessor & Instructor
- Member of the Advisory Board
- Head of the Regional Representatives

More than **28 years** practical experience in Automotive domain as

- Software & System Developer
- Quality Manager
- Processes & Tools Responsible
- Trainer, Coach & Consultant

VW Software Quality Improvement Leader (SQIL)

Functional Safety Expert on ISO 26262

Cybersecurity “Rookie” on ISO 21434 and ASPICE

Co-founder and CEO of **Process Fellows GmbH**





## FACTSHEET



Founded 2018

Headquarter  
Ebermannstadt,  
Germany



ISO 9001 certified



Highly qualified process  
experts with international  
professional experience

intacs® certified  
Automotive SPICE®  
assessors



Several VW certified  
consultants (SQIL = Software  
Quality Improvement Leader)



More than 18 000 hours  
experience in Automotive  
SPICE® assessments

intacs® certified  
Automotive SPICE®  
instructors for  
assessor trainings

### TRAINING

### CONSULTING AND COACHING

### ASSESSMENTS

**WORLD WIDE**

*various SPICE models, assessor trainings  
(> 1000 Provisional / Competent assessors trained)*

*Functional Safety and  
Cybersecurity, Systems Engineering*

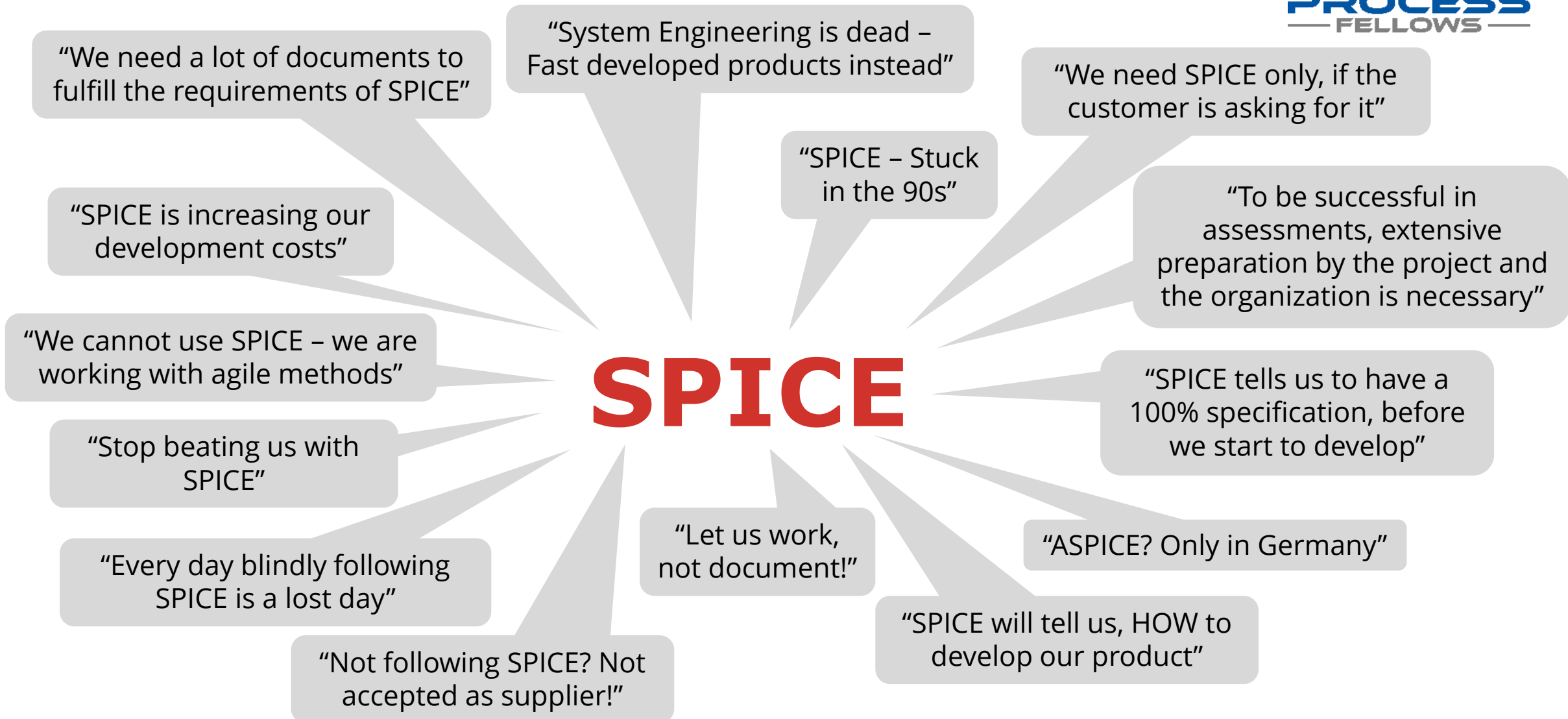
*Systems Engineering,  
Functional Safety and  
Cybersecurity*

*Organizational Change,  
including (A)SPICE, SQIL, ALM  
and Process Management*

*Agile Frameworks and  
Project Management for  
international standards*

**TOPICS**

# Populism: Intuition versus Rationality



# Populism: Intuition versus Rationality





# Agenda

- The History of SPICE and intacs®
- The World of Models and Extensions
- Our Target Groups: OEMs, Suppliers, Assessors
- First experiences with Automotive SPICE® 4.0
- The intacs® Training Scheme – 3-Levels-Qualification
- Summary



# The History of SPICE and intacs®



# The History of SPICE and intacs®

## SPICE Roadmap since 1993



### Remark:

- This is only an excerpt
- In parallel, several „extensions“ as well as process assessment models for various domains were elaborated



# The History of SPICE and intacs®

## iNTACS e.V. – Foundation 2006



**iNTACS was founded as  
non-profit association**



# The History of SPICE and intacs®

## iNTACS e.V. – Board Members 2006



- Mr. Alan Bellinger, UK
- Mr. Peter Bölter, Germany
- Mr. Antonio Coletta, Italy
- Mr. Lars Dittmann, Germany
- Mr. Alec Dorling, UK
- Prof. Dr. Bernd Hindel, Germany
- Mr. Yoshinori Iizuka, Japan
- Mr. Ho-Won Jung, South Korea
- Dr. Richard Messnarz, Ireland
- Mr. Eddie Morgensson, Danmark
- Mr. Terry Rout, Australia
- Mr. Clenio Salviano, Brazil
- Mr. Jean-Martin Simon, France

# The History of SPICE and intacs®

## iNTACS e.V. – Regional Representatives



### Overview of Regional Representatives

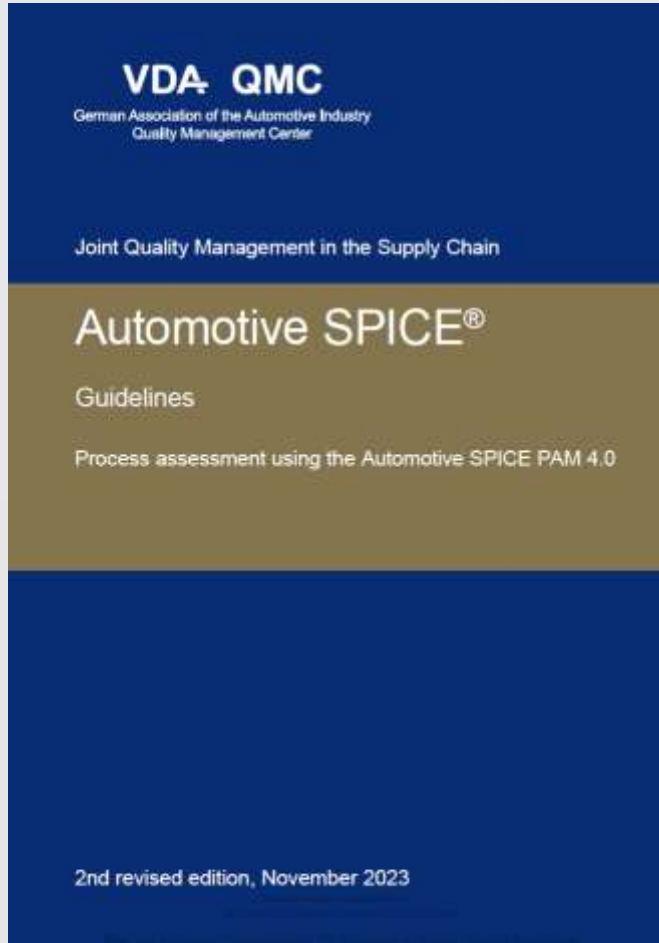
Details can be found here: <https://intacs.info/cc-regional-representatives>





# The History of SPICE and intacs®

## iNTACS e.V. – Motivation



VDA QMC as owner of the Automotive SPICE® Process Assessment Models defines (among other things):

- Setting requirements for the qualification of assessors and updating the existing procedures, training materials and examinations. This will be done in collaboration with the international assessor certification scheme (intacs®) to accompany the release and roll-out of this publication.
- Acceptance of valid qualification schemes for assessors is carried out by the quality management board of the VDA QMC. Currently, the intacs scheme is a valid and accepted qualification scheme.

Source: Automotive SPICE® Guidelines v2.0, November 2023

# The World of Models and Extensions



# The World of Models and Extensions

## Process Assessment Models and Model Extensions



### Process Assessment Models (PAM)

- are intended for use when performing conformant assessments of the process capability on the basis of defined processes.
- contain a Process Reference Model in the Process Dimension with a set of processes that were developed and tailored considering the specific needs of an application domain.
- contain a Measurement Framework used for the Capability Dimension definition to rate the capability of the processes.
- are developed in accordance with the requirements of ISO/IEC 33004.

### Model Extensions

- are typically used in conjunction with a Process Assessment Model.
- define a set of additional processes on the Process Dimension.
- do not necessarily contain their own Capability Dimension definition, but will use the Measurement Framework of the conjunct PAM.



# The World of Models and Extensions

## intacs®-accepted Process Assessment Models



intacs® supports any domain with Process Assessment Models that fulfill the requirements of ISO/IEC 33004.



**ISO/IEC TS 33061:2021**  
**PAM for software life cycle processes**



# The World of Models and Extensions

## intacs®-accepted Process Assessment Model Extensions



Model extensions are typically used in conjunction with a Process Assessment Model.



For an overview of currently supported models and model extensions, please have a look on <https://www.intacs.info/spice-center/>

# Our Target Groups: OEMs, Suppliers, Assessors





# Our Target Groups

## OEM view



As the **software-defined vehicle** (SDV) will be the only sensible approach to fulfill the needs of **OEMs and its (end) customers**, the following strategy will be implemented:

- All products that include software-based systems and functionality must be developed according to **state-of-the-art** standards. In Automotive domain **Automotive SPICE®** is such a standard, accepted by nearly all OEMs and suppliers over the world.
- As additional regulations for, e.g., Functional Safety or Cyber Security expect a proper basis for systematic development, ASPICE 4.0 will be one **entry criterion for higher safety or security** level expectations.
- To ensure the **comparability** of supplier's project quality, a common evaluation model will be used by most OEMs. The development of **each single (sub-)system** must fulfill the evaluation criteria.
- To evaluate the development quality of **potential suppliers** and partners to support the selection of those, a **simplified ASPICE PAM (Potential Analysis)** will be used for a shortened and efficient gap analysis.
- To fulfill **legal regulations** for vehicles on development level, e.g., regarding Cyber Security, Software Updates, or Artificial Intelligence, **extensions** will be added to ASPICE 4.0.

# Our Target Groups

## Supplier view



**Suppliers** understood that software development will be an essential part of their portfolio to survive on this market. Therefore, many of them follow this strategy:

- Improving the quality management system by implementing a global quality assurance strategy including ASPICE 4.0 for development for **continuous improvement to become a learning organization**.
- Performing internal and external **evaluations** and assessments based on ASPICE 4.0, not only in those projects where a customer is asking for it, but in general by performing spot checks **among all projects** of the organization according to the strategy.
- **Avoiding the modification of** already **well-implemented processes**, methods and tools based on previous versions of ASPICE that do not lead to any product risks.
- Combining the requirements of different standards (ASPICE, Cyber Security, Functional Safety) in **one audit program to reduce the effort** for multiple audits and assessments in the same project.

# Our Target Groups

## Assessor view



**Assessors** evaluate the quality of implemented processes to ensure the reduction of systematic faults in development. In order to be able to do that, they need certain knowledge and capabilities.

The **International Assessor Certification Scheme** (intacs®) defined a strategy to ensure high quality assessments:

- Understanding the changes and new concepts in ASPICE 4.0 by attending the mandatory **Upgrade trainings** provided by intacs®
- Assembling **assessor teams** with members from affected subject domains (system, software, hardware, machine learning, cyber security, mechanical engineering, ...)
- **Observing** new lead assessor candidates by highly experienced lead assessors and instructors.
- Exchanging knowledge and experience between assessors all over the world by **regular communication**, e.g., during Gate4Spice events, with support by intacs® Regional Representatives.



# Our Target Group: Thousands of Assessors



## Trend

28.08.2024: 7451 active assessor licenses

2023: +29 %

2022: +14%

2021: +15%

2020: +11%

2019: +29 %

2018: +28 %

2017: +32 %

2016: +46 %

2015: +21 %

2014: +31 %

2013: +27 %

2012: +26 %

2011: +39 %

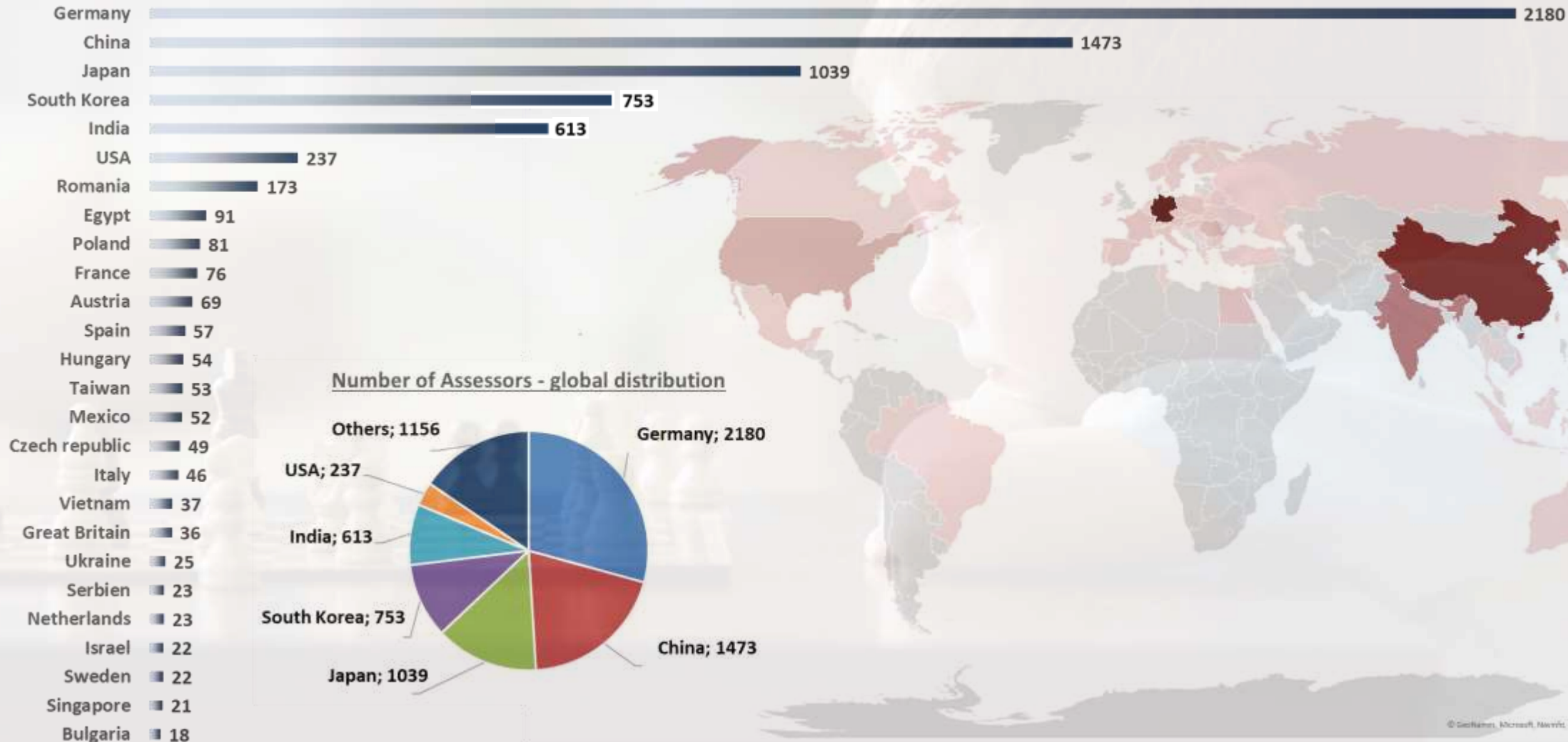
2010: +19 %

2009: +27 %



Source: VDA QMC, 28 August 2024

# Our Target Group: Thousands of Assessors – Worldwide



Source: VDA QMC, 28 August 2024

# First experiences with Automotive SPICE® 4.0





# First experiences with Automotive SPICE® 4.0 (1)



- Less Base Practices (regarding VDA scope) – Less effort?
  - Same content in both versions, content just combined in less base practices to be rated.
  - More effort for assessors to justify the rating regarding specific weaknesses. They have to ensure that all related information is respected.
- No more “process context categories” – Where is the product risk?
  - A precise definition of the Assessment Input and Purpose is of vital importance.
- No rating rule algebra – Brain necessary again?
  - No “flatlining” of other processes just because one (input) process might be rated weak.
  - It remains the responsibility of the lead assessor to decide on the final rating value considering the actual context, gathered objective evidence, and identified process risk.

# First experiences with Automotive SPICE® 4.0 (2)



- No strategies on level 1 – Makes achievement easier?
  - Term “strategy” is avoided, but strategy-related content like criteria, techniques, and sequences are added to other Base Practices of Capability Level 1.
  - To achieve a Capability Level 1 is not easier, just different.
- Check consistency – Without review or documentation?
  - If you have no idea what else to do beside a documented review, just continue doing this.
- Broken symmetry of the V model – New requirements for projects?
  - No new requirement, just a clarification of unclear SWE.4 and SWE.5 assignments for assessors.
- New process groups (Hardware, Machine Learning, Validation) – New assessor skills?
  - Yes, additional skills will be necessary for assessors and project team members.

# First experiences with Automotive SPICE® 4.0

## Influences on assessor qualification and assessments



- **Changes in PAM concepts may lead to process changes in organizations because of misinterpretations.**
- **Guideline revision with “weaker” rules may increase the risk of getting non-comparable assessment results.**
- **Gap between project team and assessor viewpoints and opinions may increase because of different interpretations.**
- **More complex PAM structure increases effort for well-trained assessors.**

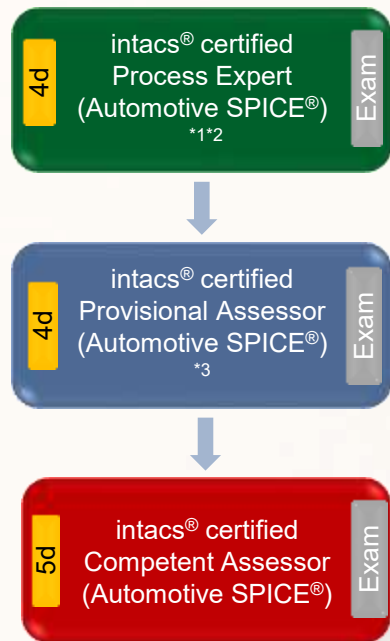


# The intacs® Training Scheme – 3-Levels-Qualification



# The intacs® Training Scheme – 3-Levels-Qualification

## Reducing complexity and supporting modularity



\*1 includes Base / System / Software processes without HWE and MLE, emphasizes Process Improvement

\*2 includes all Guideline aspects regarding content

\*3 includes all Guideline aspects regarding rating rules



# The intacs® Training Scheme – 3-Levels-Qualification intacs® Certified Process Expert



intacs® certified  
Process Expert  
(Automotive SPICE®)

## Objectives:

- **Detailed model knowledge** of the Automotive SPICE® v4.0 PAM
  - Interpretation of the VDA Automotive SPICE® **Guidelines** v2.0 **regarding content**
  - Support the **process improvement** in the organization and the proper preparation of the people (not only for assessments)
- Process Experts shall play an important role for the organization/project in **Process Improvement** (SPICE) in the same way as assessors play an important role in **Capability Determination** (SPICE) during an assessment.



# The intacs® Training Scheme – 3-Levels-Qualification

## intacs® Certified Provisional Assessor



intacs® certified  
Provisional Assessor  
(Automotive SPICE®)

### Objectives:

- **Deepening of model knowledge** of the Automotive SPICE® v4.0 PAM
  - Interpretation of the VDA Automotive SPICE® **Guidelines** v2.0 **regarding rating rules**
  - **Internal evaluation** of projects from the organization
  - Contribution in **official assessments** as a Co-Assessor
- Entry point for becoming an **Automotive SPICE® assessor**, by carrying out internal evaluations independently and assisting with official assessments.

# The intacs® Training Scheme – 3-Levels-Qualification

## intacs® Certified Competent Assessor



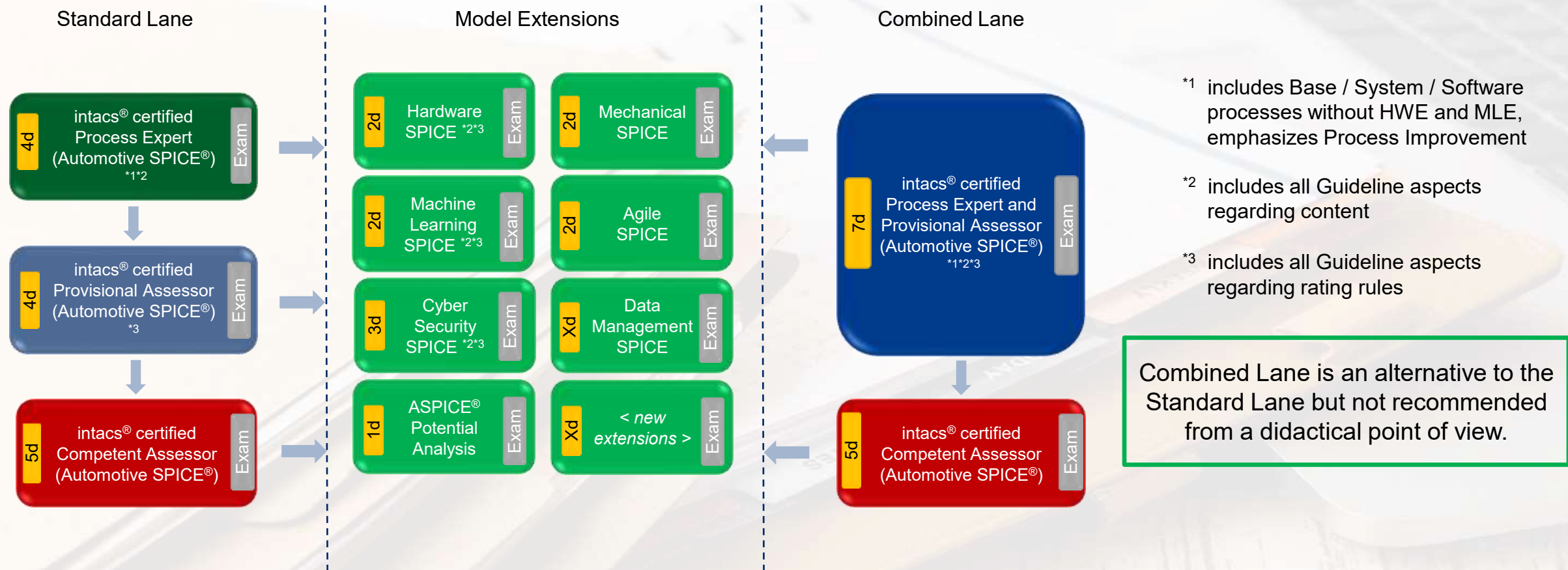
intacs® certified  
Competent Assessor  
(Automotive SPICE®)

### Objectives:

- **Advanced assessor skills** and understanding of Automotive SPICE® v4.0 PAM
  - Application of the VDA Automotive SPICE® **Guideline v2.0 in all situations**
  - **Acting as a Lead Assessor** in intacs® and VDA accepted official assessments
- Becoming an experienced and responsible **Lead Assessor** for Automotive SPICE®, that understands and guides less experienced people.

# The intacs® Training Scheme – 3-Levels-Qualification

## Reducing complexity and supporting modularity





# Summary



# Summary

How to ensure that OEMs, suppliers and assessors speak the same language?



- **(Automotive) SPICE® is a world-wide state-of-the-art standard of WHAT is expected, not HOW!**
- **Not only assessors must be trained in understanding the content and meaning of the models but also process and quality experts within the companies.**
- **The unique intacs® training scheme for assessor and expert education ensures comparable assessment results as well as consistency between assessor view and assessee view.**
- **For the most important domains (system, software, hardware) SPICE is the perfect basis for further standards like Functional Safety or Cyber Security.**
- **The world-wide SPICE community continues to support, improve and learn from each other !**

## Thank you very much !



# DO YOU HAVE ANY QUESTIONS?

## **Bernhard Sechser**

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Member of the intacs® Advisory Board  
Head of intacs® Regional Representatives

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