ISO/IEC 15504 Practices in German Automotive Industry
or “How to SPICE up your Life”

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Who is Method Park?

**Product**

stages

Solution for integrated process management

**Engineering**

Software development from the requirement to the test for components or overall systems

Domains: Automotive, Machine Construction / Automation, Governmental / Public, Healthcare, IT, Defense

**Consulting/Coaching**

for the following topics
- Software Process Improvement
- CMMI®, SPICE®, Automotive SPICE®
- AutoSAR, Functional Safety
- Requirements Management
- Project and Quality Management
- Software Architecture & Design
- Software Testing

**Training**

Wide range of seminars in the division software and system development

Accredited by the following organizations: SEI, ISTQB, ISQI, intacs, IREB
intacs™ (International Assessor Certification Scheme)

- Independent and legally registered non-profit organization
- Open and transparent operations of honorary members
- Global presence, multilingual

Main objective

Ensuring high quality assessment performance through

- setting training and certification standards for ISO/IEC 15504 assessors
- setting standards for maintaining assessor competence
- promoting assessment models & community interactions

http://www.intacs.info
Who is Bernhard Sechser?

- Study of Computer Science, Friedrich Alexander University, Erlangen-Nuremberg
- Software Maintenance, Siemens AG, Erlangen
- Continental AG, Nuremberg (Automotive domain):
  - Developing Embedded Software
  - Performing Quality Assurance Activities
  - Defining Software and System Development Processes
  - Conducting internal and external SPICE Assessments
  - Head of Quality Management System Integration
- Consultant for SPICE & Safety, Method Park Software AG, Erlangen
- Principal SPICE Assessor ISO 15504-5 and Automotive SPICE®
- Member of the intacs Advisory Board
- Head of the Special Interest Group “Safety” at ASQF, Erlangen
- Co-author of “Software Engineering nach Automotive SPICE”
What is ISO/IEC 15504?

ISO/IEC 15504 – Process Assessment

Part 1
Concepts and Vocabulary

Part 2
Performing an assessment

Part 3
Guidance on performing an assessments

Part 4
Guidance on use for process improvement capability assessment

Part 5
An exemplar process assessment model

Part 6
An exemplar system lifecycle process assessment model

Part 7
Assessment of organizational maturity

Part 8
An exemplar assessment model for IT service management

Part 9
Target Project Profiles

Part 10
Safety Extensions
What is ISO/IEC 15504?

### Primary Life Cycle Processes

**Acquisition Process Group (ACQ)**
- ACQ.1 Acquisition preparation
- ACQ.2 Supplier selection
- ACQ.3 Contract agreement
- ACQ.4 Supplier monitoring
- ACQ.5 Customer acceptance

**Supply Process Group (SPL)**
- SPL.1 Supplier tendering
- SPL.2 Product release
- SPL.3 Product acceptance support

**Engineering Process Group (ENG)**
- ENG.1 Requirements elicitation
- ENG.2 System requirements analysis
- ENG.3 System architectural design
- ENG.4 Software requirements analysis
- ENG.5 Software design
- ENG.6 Software construction
- ENG.7 Software integration
- ENG.8 Software testing
- ENG.9 System integration
- ENG.10 System testing
- ENG.11 Software installation
- ENG.12 Software and system maintenance

**Operation Process Group (OPE)**
- OPE.1 Operational use
- OPE.2 Customer support

### Supporting Life Cycle Processes

**Support Process Group (SUP)**
- SUP.1 Quality assurance
- SUP.2 Verification
- SUP.3 Validation
- SUP.4 Joint review
- SUP.5 Audit
- SUP.6 Product evaluation
- SUP.7 Documentation
- SUP.8 Configuration management
- SUP.9 Problem resolution management
- SUP.10 Change request management

### Organizational Life Cycle Processes

**Management Process Group (MAN)**
- MAN.1 Organizational alignment
- MAN.2 Organizational management
- MAN.3 Project management
- MAN.4 Quality management
- MAN.5 Risk management
- MAN.6 Measurement

**Process Improvement Process Group (PIM)**
- PIM.1 Process establishment
- PIM.2 Process assessment
- PIM.3 Process improvement

**Resource and Infrastructure Process Group (RIN)**
- RIN.1 Human resource management
- RIN.2 Training
- RIN.3 Knowledge management
- RIN.4 Infrastructure

**Reuse Process Group (REU)**
- REU.1 Asset management
- REU.2 Reuse program management
- REU.3 Domain engineering
What is ISO/IEC 15504?

A Process Assessment Model

- is based on one or more process reference models
- contains detailed process descriptions

- is the basis for the collection of evidences and for the evaluation

**measurement framework (part 2):**
- capability levels
- process attributes
- rating scale

**Process reference model**
- domain and scope
- processes with purpose and outcomes

**Process assessment model**
- Maturity Levels
- Processes
Aspects of SPICE
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- SPICE up your Colleagues
- SPICE up worldwide
- SPICE up yourself
- SPICE up your Projects
- SPICE up your Management
- SPICE up your Customers
- SPICE up your Organization
- SPICE up Automotive
- SPICE up your Processes
SPICE up your Processes
SPICE up your Processes

- Project Management
- Quality Management
- Quality Assurance
- Configuration Management
- Change Management
- Problem Resolution
- Functional Safety Management

Contract Acquisition and Review
- Project start-up
- Project planning

PA 43001 Product development
- System requirement analysis
- System design
- Iterations
- System level

PA 43002 Software engineering
PA 43003 Hardware engineering
PA 43004 Construction engineering

PA 43001 Product development
- Start-up of series
- Initial sample
- Qualification
- End of procurement process

Status review 1..n

Development review

Series review

Qualification review

Procurement review

System requirement analysis System design System integration test System test System level Iterations

Source: Continental AG
SPICE up your Processes

Which processes do we need?

What happens with the process feedback?

Do we have usable processes?

How shall we model our processes?

Can we manage our processes?

Source: Continental AG
SPICE up your Management
SPICE up your Management

Source: Continental AG
SPICE up your Management

Do they know what SPICE means?

Do they understand the benefit of processes?

Should we only present success stories but also failures?

Will they sponsor activities for process improvement?

Source: Continental AG
SPICE up your Organization
SPICE up your Organization

metric

example

standard

activity

measures

product

milestone

phase

organisation role

process role

organisation

tool

method

training

template/ example/ checklist

is input/output/reviewed/released

is performed in

initiates/is responsible/cooperates/is informed

is recommended

is recommended

is recommended

is responsible/cooperates/reviews/releases

Source: Continental AG
SPICE up your Organization

What is a “SPICE Level 3“?

What is an „Organization“?

Is it possible to have a standard process?

Source: Continental AG
SPICE up worldwide
SPICE up worldwide

Different languages – different worlds?

What about „Connected processes“?

Can we have the same basis: SPICE?

Model server location X

Standard Model

location specific Model 1

location specific Model 1

location specific Model 2

location specific Model 2

Project A

Project B

Project C

Project D
SPICE up your Projects
SPICE up your Projects
SPICE up your Projects

- Shall we use processes from scratch?
- Are there enough resources available?
- Which tool chain shall we use?
- Can we copy / reuse a successful project?
- Which tailoring steps do we need?
- Are the templates suitable?
SPICE up your Colleagues
## Process Role: Software Requirements Engineer

### Activities

**Initiator of:**

**Responsible for:**
- Identify Software Requirements
- Analyse Software Requirements
- Categorise and Priorise Software Requirements

**Cooperating in:**
- Check System Requirements
- Check Software Requirements
- Check Software Requirements Test Specification

**Informed in:**

### Products

**Responsible for:**
- Software Requirements: [not created]
- Safety Requirements Specification Subsystem (SRS-Subsystem)

**Cooperating in:**
- Review Report of the System Requirements
- Review Report of the Software Requirements
- Safety Requirements Specification Subsystem (SRS-Subsystem)
- Review Report of the Software Requirements Test Specification

**Review of:**

**Recommended trainings**
- Continental Development Processes and Tools - Processes
- Continental Development Processes and Tools - Document Handling
- Continental Development Processes and Tools - MKS

**Release of:**

**Associated roles**

**Role description**

**Tasks and Responsibilities**
SPICE up your Colleagues

- Did they have enough process training?
- Do they know their role specific project activities?
- Can they switch between different roles?
- How can we include them in process improvement activities?
- How can quality assurance support them?
- Do we give them also a positive feedback?
- Can they switch between different projects?
SPICE up your Customers
SPICE up your Customers
SPICE up your Customers

Who is a customer?

Are all customers the same?

How do the requirements look like?

Which kind of customers do we have?

What is their demand?

Source: Continental AG
SPICE up Automotive
SPICE up Automotive

Source: Automotive SPICE®
What means „SPICE: Software or System?"

Can we manage the bidirectional traceability?

What is the role of Quality Assurance?

Source: Automotive SPICE®
SPICE up yourself
SPICE up yourself

SoQrates

GATE4SPiCE
German Assessor Team for SPiCE

ASQF
Arbeitskreis Software-Qualität und -Fortbildung e.V.

intacs.info
International Assessor Certification Scheme™
SPICE up yourself

Where can we exchange experiences?

Where can we meet us?

What about variants of SPICE?

How can we perform “good” assessments?
Summary
Summary

SPICE up your Colleagues

SPICE up worldwide

SPICE up your Projects

SPICE up yourself

SPICE up your Management

SPICE up your Customers

SPICE up Automotive

SPICE up your Processes

SPICE up your Organization
Thank you for your attention

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