

# VOLKSWAGEN

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## Looking through the eyes of Volkswagen – The Software Quality Perspective

Martin Becker



# Volkswagen Group



Volkswagen



SEAT



ŠKODA



BENTLEY



PORSCHE



Commercial  
Vehicles

SCANIA



VOLKSWAGEN FINANCIAL SERVICES

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47.296



1985  
Coincidence



2017  
Intention

“software is eating the world”

Marc Andreessen in The Wall Street Journal on August 20, 2011

## Trends

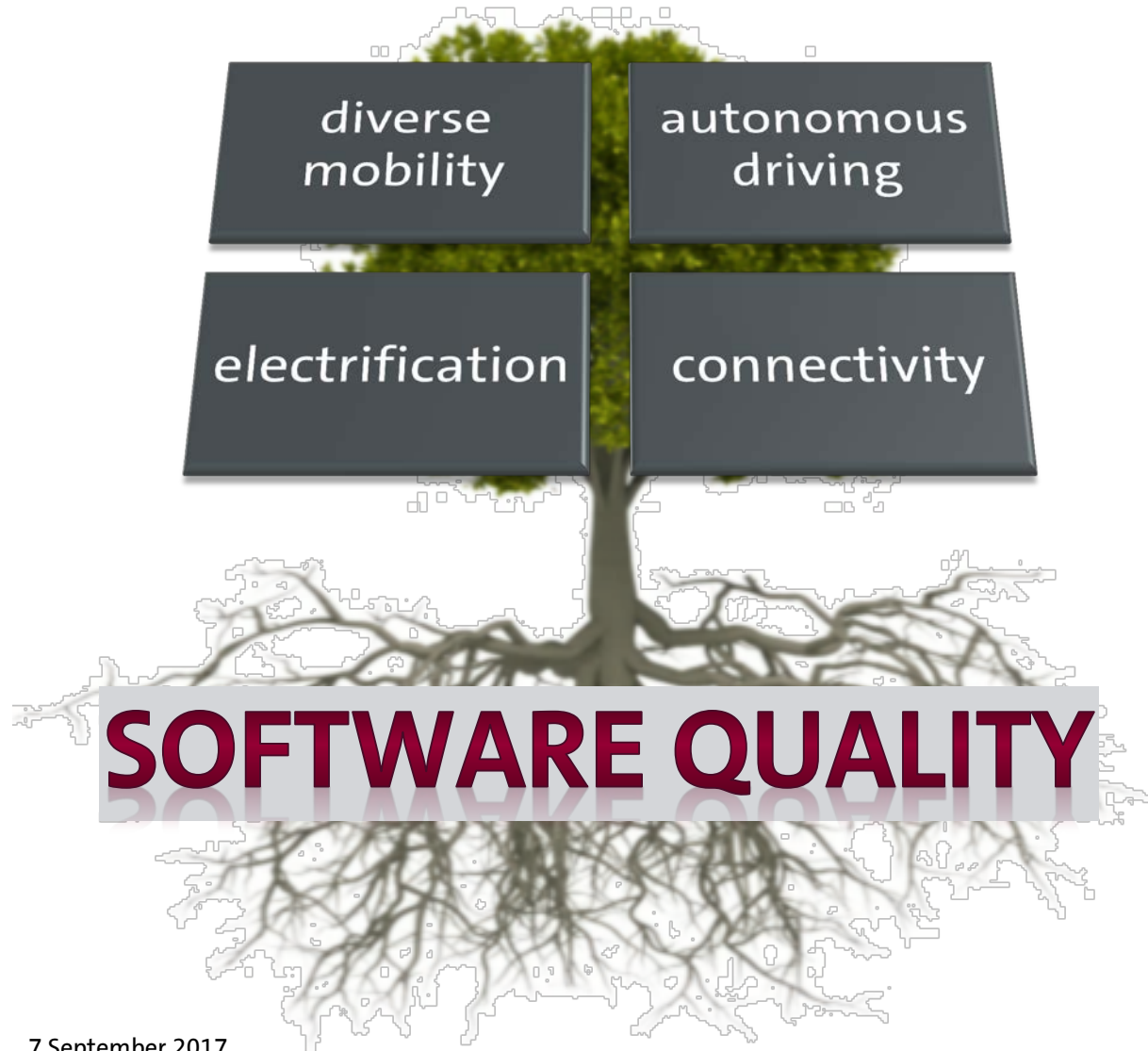
*diverse  
mobility*

autonomous  
driving

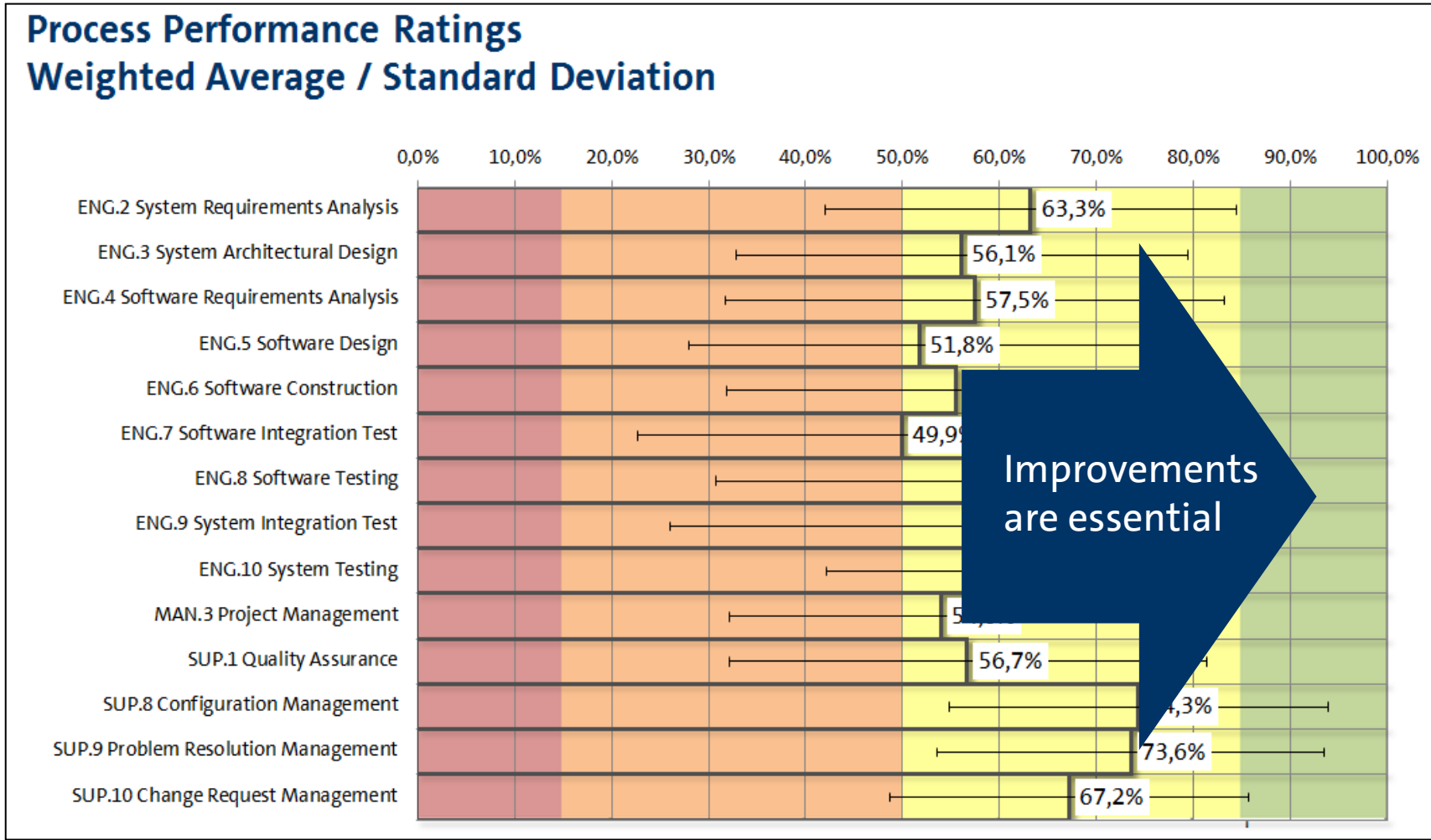
*electrification*

connectivity

## Big Trees Need Strong Roots

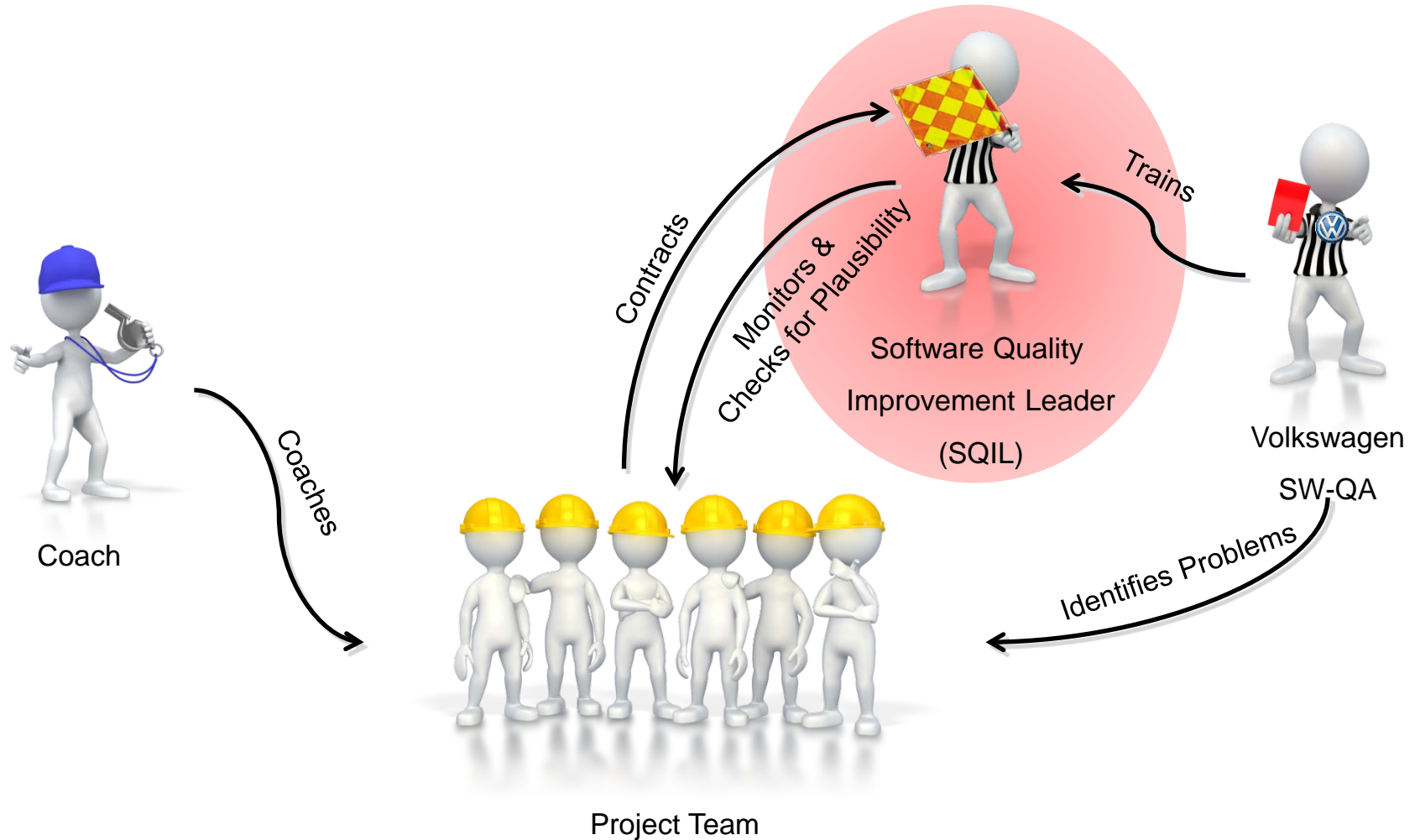


# Not yet in the Green Zone

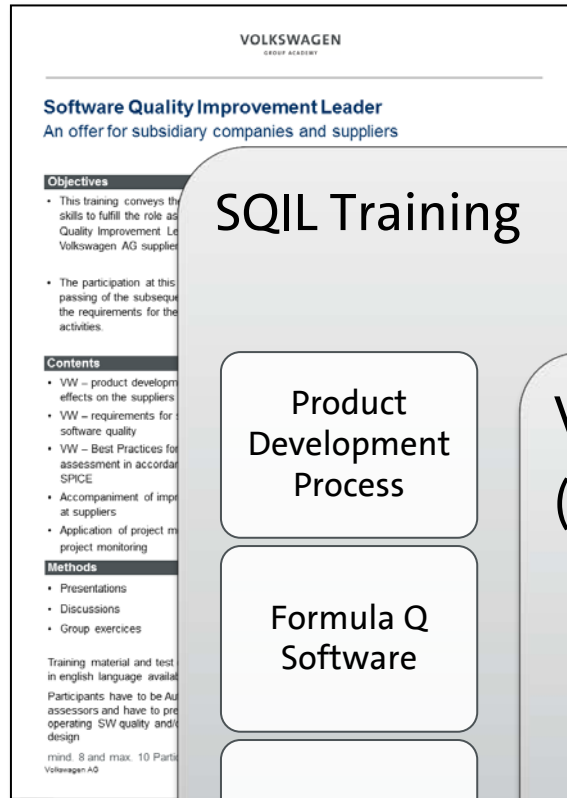


Ken Lai, Volkswagen AG, VDA Automotive SYS Conference 2017

# Software Quality Improvement Leader (SQIL) Role



# Software Quality Improvement Leader (SQIL) Training



## SQIL Training

Product Development Process

Formula Q Software

SQIL Role

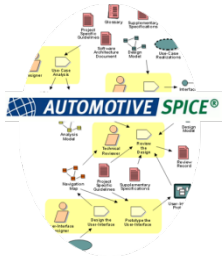
Volkswagen Group Basic Software Requirements  
(Konzern Grundanforderungen Software KGAS)

Automotive SPICE Assessor









**VDA** Verband der Automobilindustrie

**VDA QMC**  
Quality Management in the Automotive Industry

**Automotive SPICE®**  
Process Reference Model  
Process Assessment Model  
Version 3.0

Title: Automotive SPICE Process Assessment / Reference Model  
Author(s): VDA QMC Working Group 13 / Automotive SIG  
Version: 3.0  
Date: 2015-07-16  
Status: RELEASED  
Confidentiality: Public  
Revision ID: 470



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**Konzern Grundanforderungen Software**  
Die Grundanforderungen, die der Volkswagen-Konzern an im Fahrzeug verbaute und fahrerzugbezogene Software und deren Entwicklungsprozess(e) stellt.

Technische Entwicklung, Querschnittsstellenref: LAH 050.909

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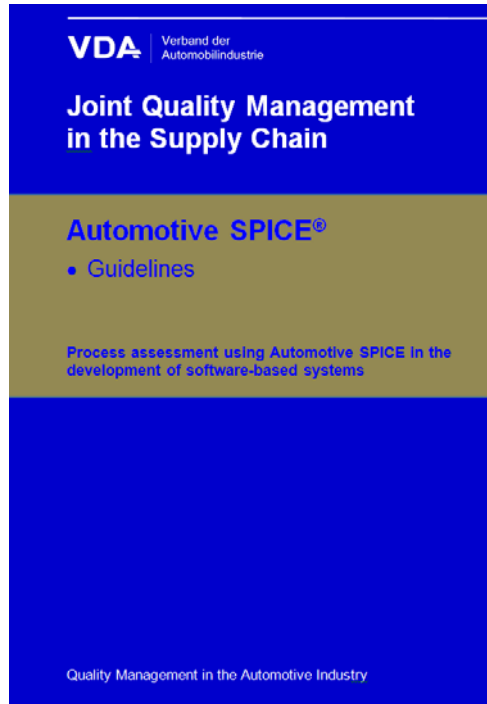
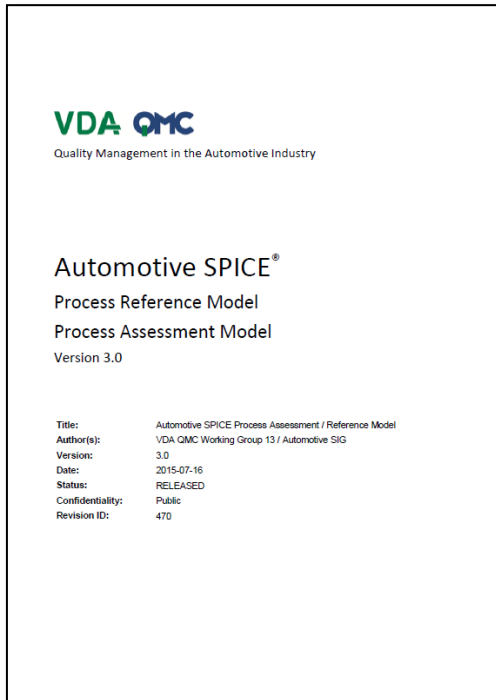
Erstausgabe: 06.09.2002  
Änderungsstand: 28.04.2017  
Lastenheftversion: 3.1  
Baseline: 3.15 ( )

Freigabe  
Siem, Jürg Tik (K-GGK-4) *02.05.2017*  
Datum Unterschrift



incl. Guideline

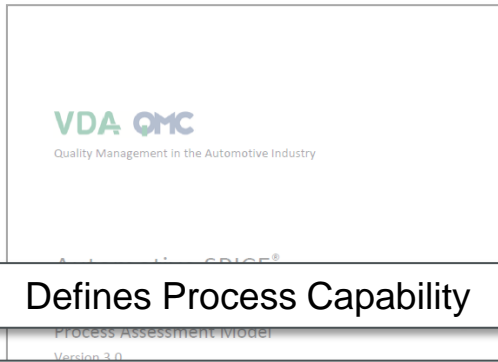
Volkswagen Group Basic Software Requirements  
(Konzern Grundanforderungen Software KGAS)



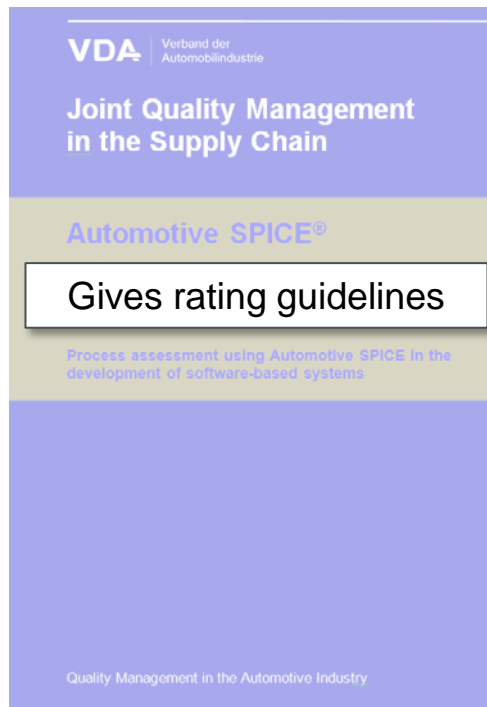
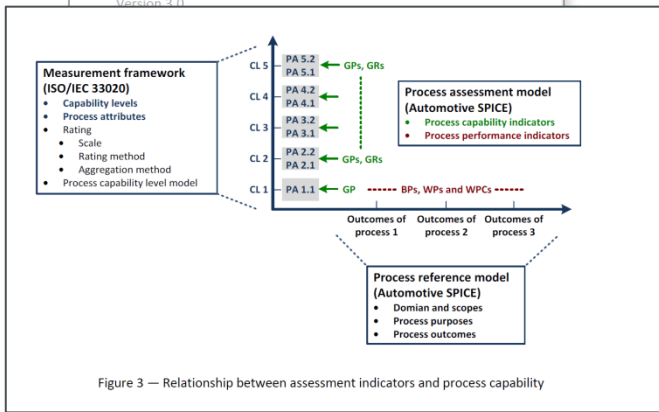
Rating Guideline

Volkswagen Group Basic Software Requirements

# Example 1 Capability Level

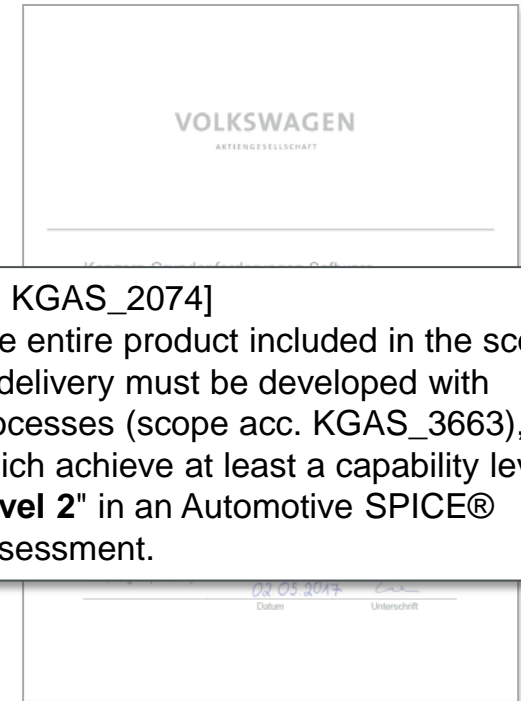


Defines Process Capability



Gives rating guidelines

Guideline

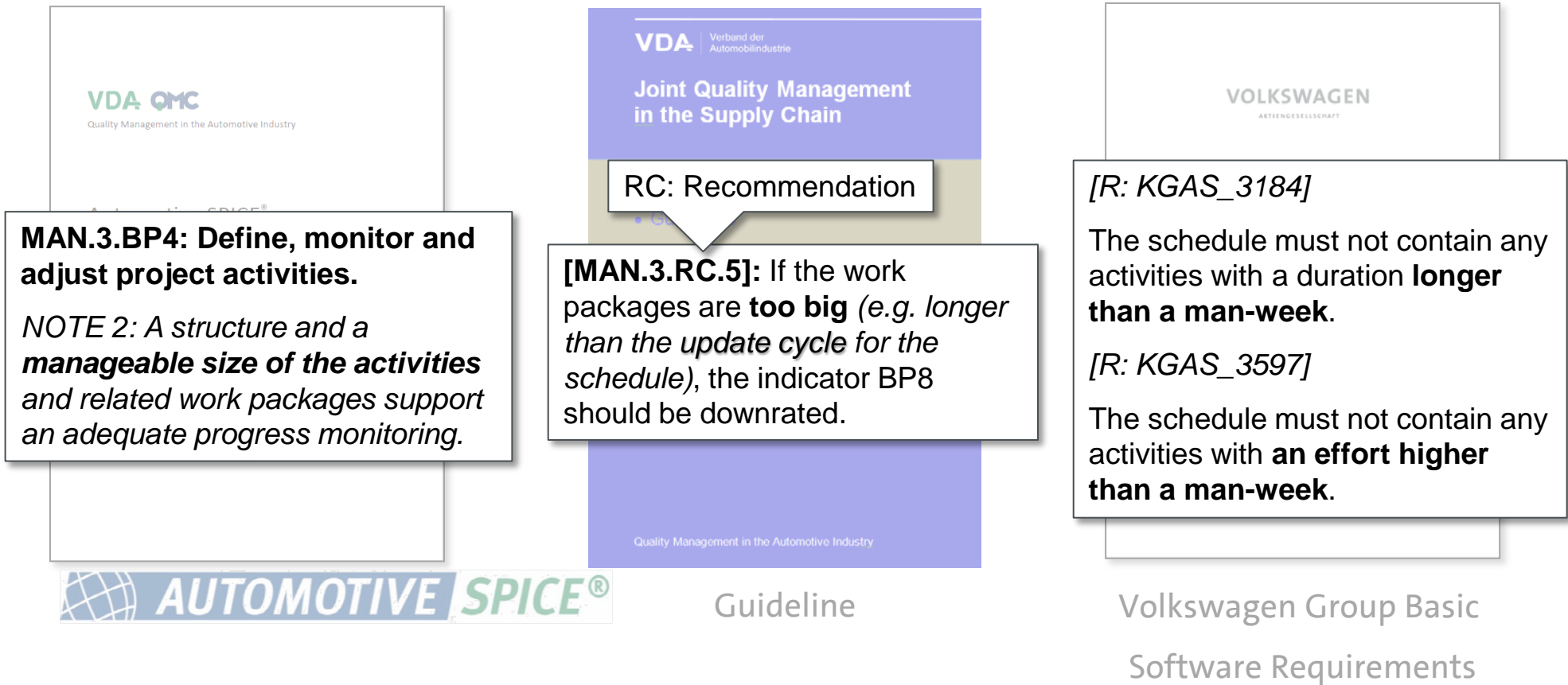


[R: KGAS\_2074]  
The entire product included in the scope of delivery must be developed with processes (scope acc. KGAS\_3663), which achieve at least a capability level "level 2" in an Automotive SPICE® Assessment.

Volkswagen Group Basic  
Software Requirements

## Example 2

### MAN.3 Project Management



## Example 3

### SWE.3 Software Detailed Design and Unit Construction



**SWE.3.BP3: Describe dynamic behavior.** Evaluate and document the dynamic behavior of and the interaction between relevant software units. [OUTCOME 3]

Compliance: Pass  
Revision ID: 470



**[SWE.3.RL.1]** If the software detailed design does not reflect **dynamic views**, the indicator BP3 shall be downrated.

Quality Management in the Automotive Industry

Guideline



[R: KGAS\_3301]

The software detailed design must contain the **dynamic behavior, including timing and scheduling, sequences and execution orders.**

Freigabe

Siem, Jang Ta (K-GOK-4)

02.05.2017  
Datum

Unterschrift

Volkswagen Group Basic  
Software Requirements

# Software Quality Improvement Leader (SQL)

## Goal



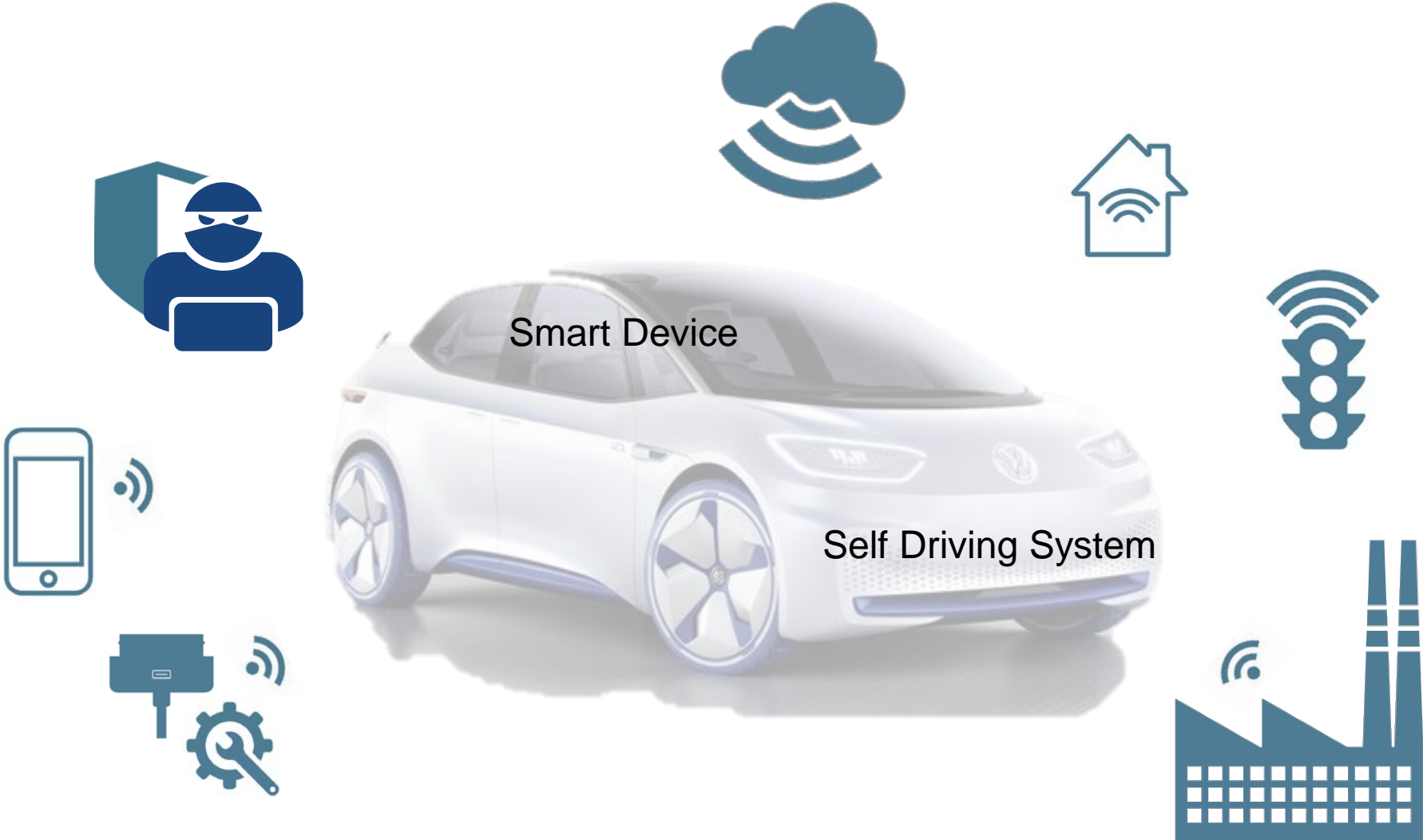
Measure

+



Share our mindset

Tomorrow (and today)





# VOLKSWAGEN

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## SQL 1<sup>st</sup> Community Meeting

- Share your experiences
- Discuss with other SQLs
- Change, what has to be changed

5th + 6th October 2017

Braunschweig, Germany

