

Data Management SPICE

Because your data deserves more flavor than your office coffee

Thomas Sievers @ intacs

Christian Hübscher @ UL Solutions

@ Process Insights Europe 2025

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<https://chatgpt.com/g/g-2fkFE8rbu-dall-e>

Data Management **SPICE**

01

Motivation

Evolving and maturing an ASPICE®-compatible model for data management to streamline data related processes, boost data quality, and reduce data management risks.

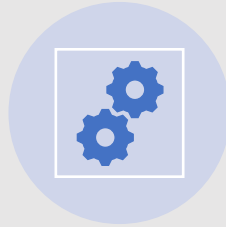
Establish capable and mature processes for data management with seamless integration to other extensions and standards, e.g., for machine learning, IT service management, and engineering.

Where we come from - Data Enthusiasts

Thomas Sievers



We are passionate about enhancing data management processes by implementing best practices that ensure data quality, integrity, and security.



We believe that well-structured data processes drive better decision-making, improve operational efficiency, and support long-term business success.

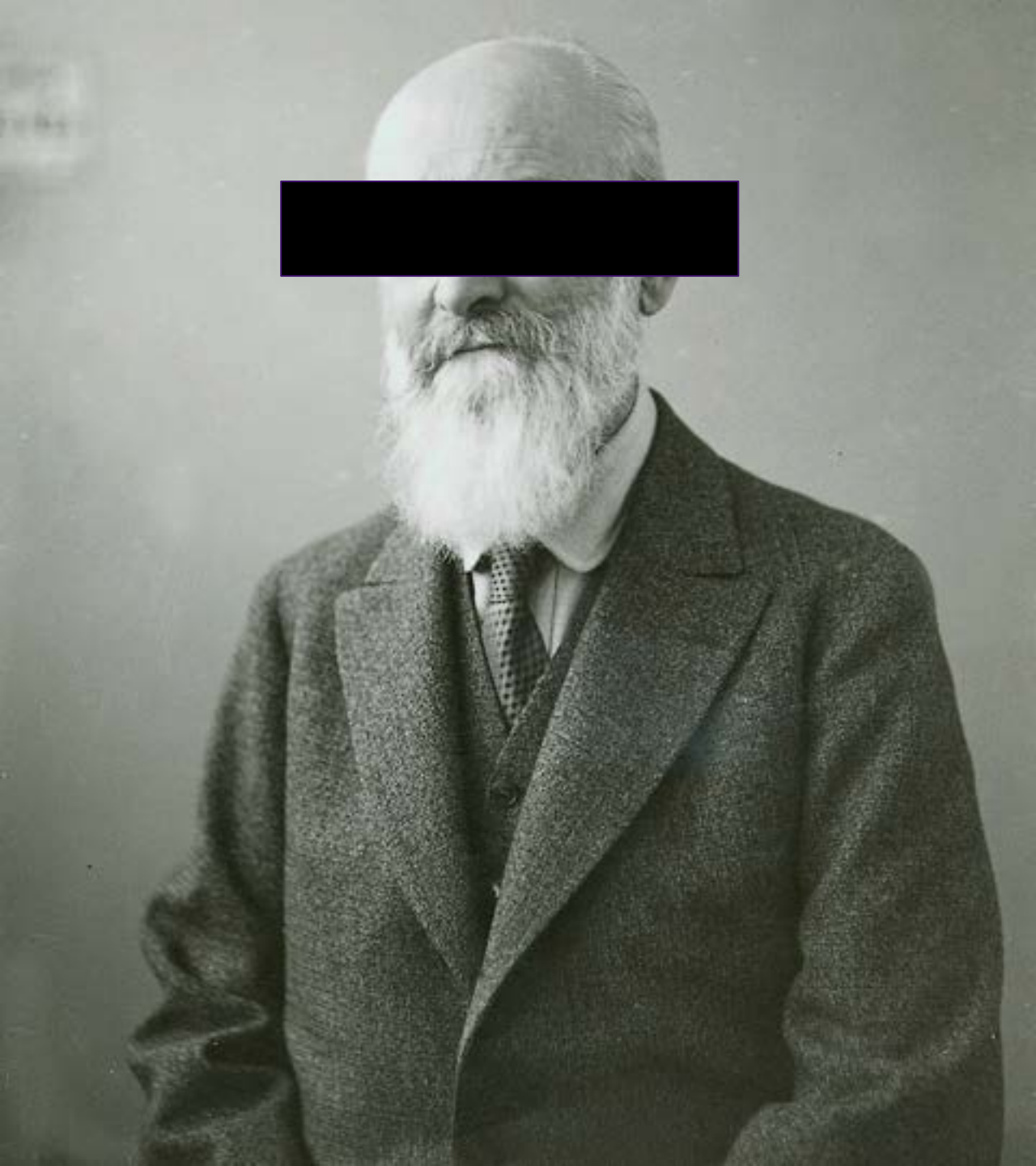


Our enthusiasm lies in exploring innovative approaches, aligning with industry standards, and continuously improving data strategies to meet evolving challenges.

Christian Hübscher



Pictures: KI generated by <https://www.befunky.com/create/sketcher/>



Where the company comes from
the founder Robert Bosch

“We should all strive to improve on the status quo: none of us should ever be satisfied with what has been achieved, but should always endeavor to do better.”

Robert Bosch, 1861–1942



Asking AI to create a funny cartoon of the person Robert Bosch.

Next Data challenges ahead!

Data Quality: Ensuring high-quality, consistent, and reliable data amidst increasing volume, velocity, and variety.

Data Security and Protection: Addressing stringent regulations (e.g., GDPR, CCPA) and protecting data against sophisticated cyber threats.

Scalability in Data Management: Handling the rapid growth of data in diverse formats while maintaining performance and accessibility.

AI/ML Integration: Balancing the adoption of AI/ML systems with the need for explainability, bias mitigation, and robust training data and validation data.

Interoperability and Integration: Achieving seamless integration of diverse data sources and systems in hybrid and multi-cloud environments.

These challenges reflect the dynamic nature of the data management landscape. Organizations must adapt and act to address these issues as technology and data related trends evolve.

Data Management SPICE – Motivation

More specific – what are the challenges in training AI?

1. Data Quality and Cleaning
2. Data Bias
3. Data Availability and Volume
4. Data Protection and Security
5. Domain-Specific Variability



Data Management SPICE – What's next?

Content for today

Introduction



Usage of the model



Best practices



Go for ASPICE® 4.x



Next level education



Conclusion



02

Short introduction

What has been done so far and where we are.



Introduction to Mobility Software Purchasing Quality

Emerging Data Suppliers

**Innovation & Niche
Specialization**

1

Agility & Flexibility

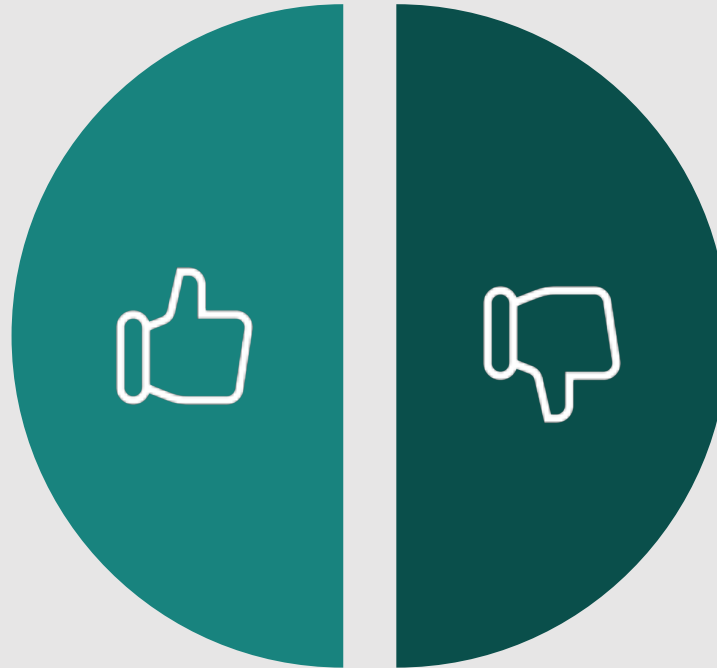
2

**Collaborative
Approach**

3

Cost Efficiency

4



1

**Limited Automotive
Experience**

2

Scalability Challenges

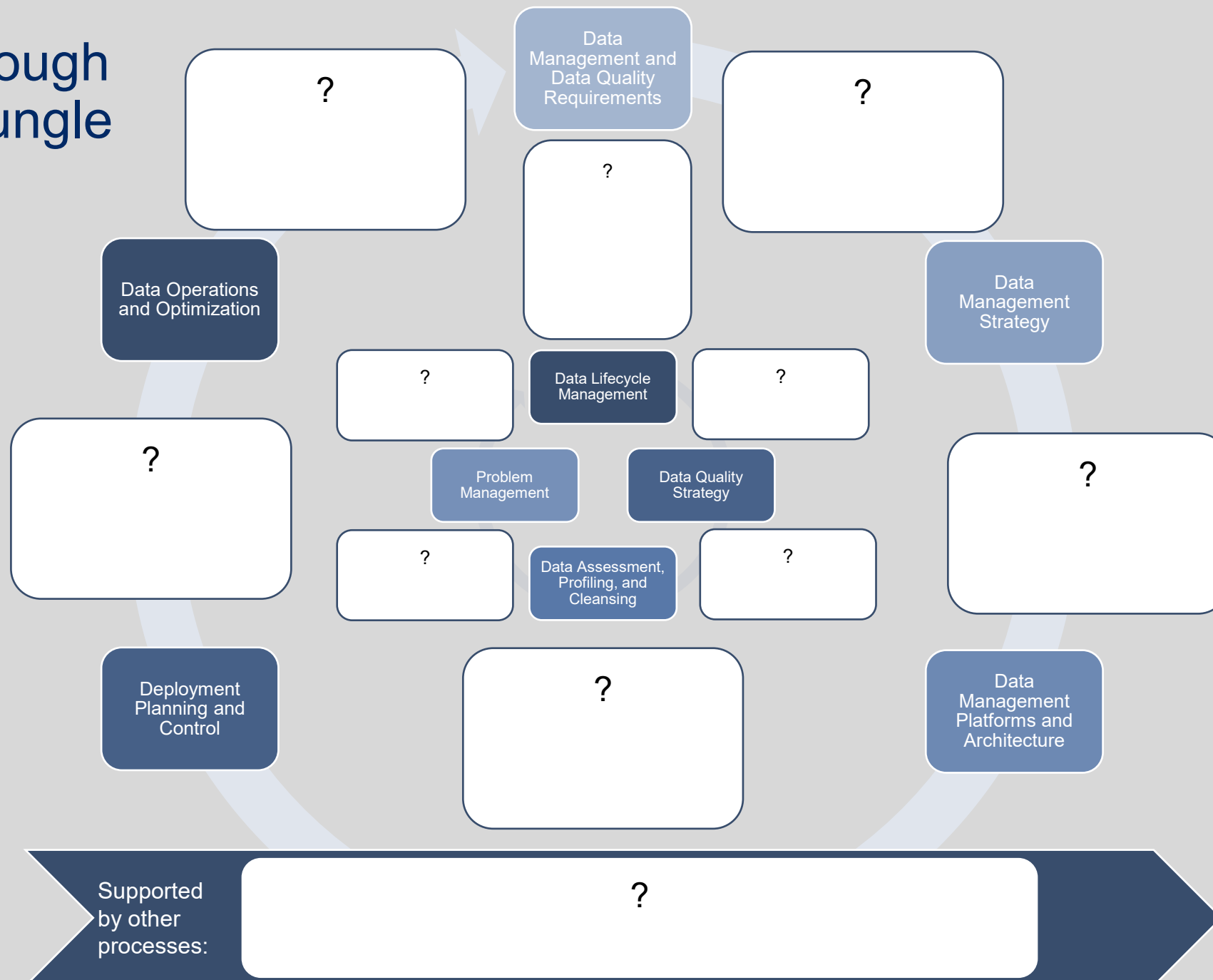
3

Risk Management

4

Integration Complexity

A path through the data jungle



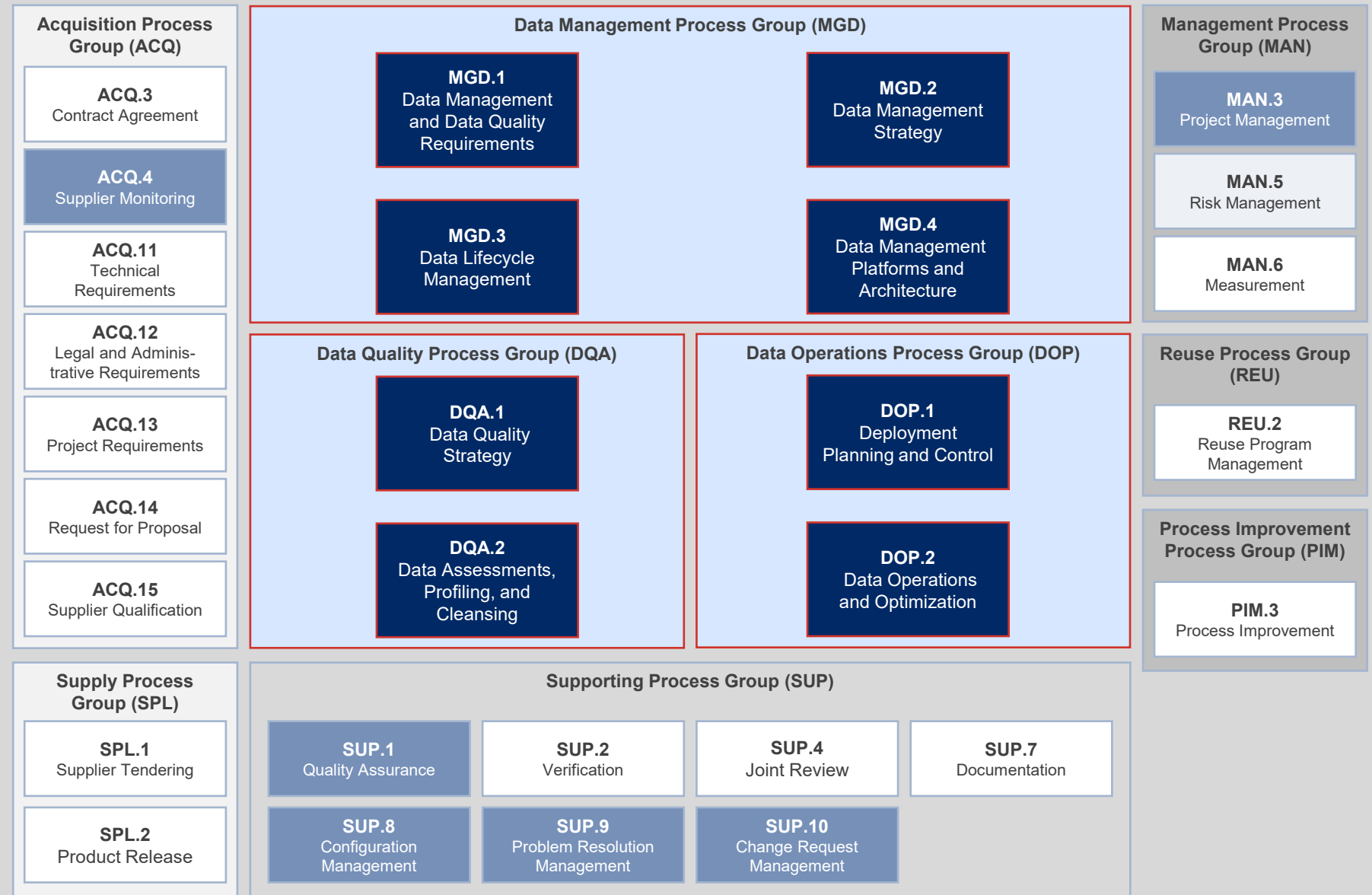
Do you know?



Data Management SPICE v1.1

in context of
Automotive SPICE® 3.1

update for context
Automotive SPICE® 4.x
on the way



Data Management SPICE

Access to the PAM

Data Management SPICE v1.1

in context of

Automotive SPICE® 3.1



Automotive SPICE® v3.1
Primary Life Cycle Processes
Supporting Life Cycle Processes
Organizational Life Cycle Processes
VDA Process Scope

**Data Management
SPICE v1.1**

Data Management Processes



After login to Intacs® to webpage

<https://intacs.info/component/rsfiles/files?folder=SPICE%2BDocuments%252FDataManagement&Itemid=104>

03

Usage of the model

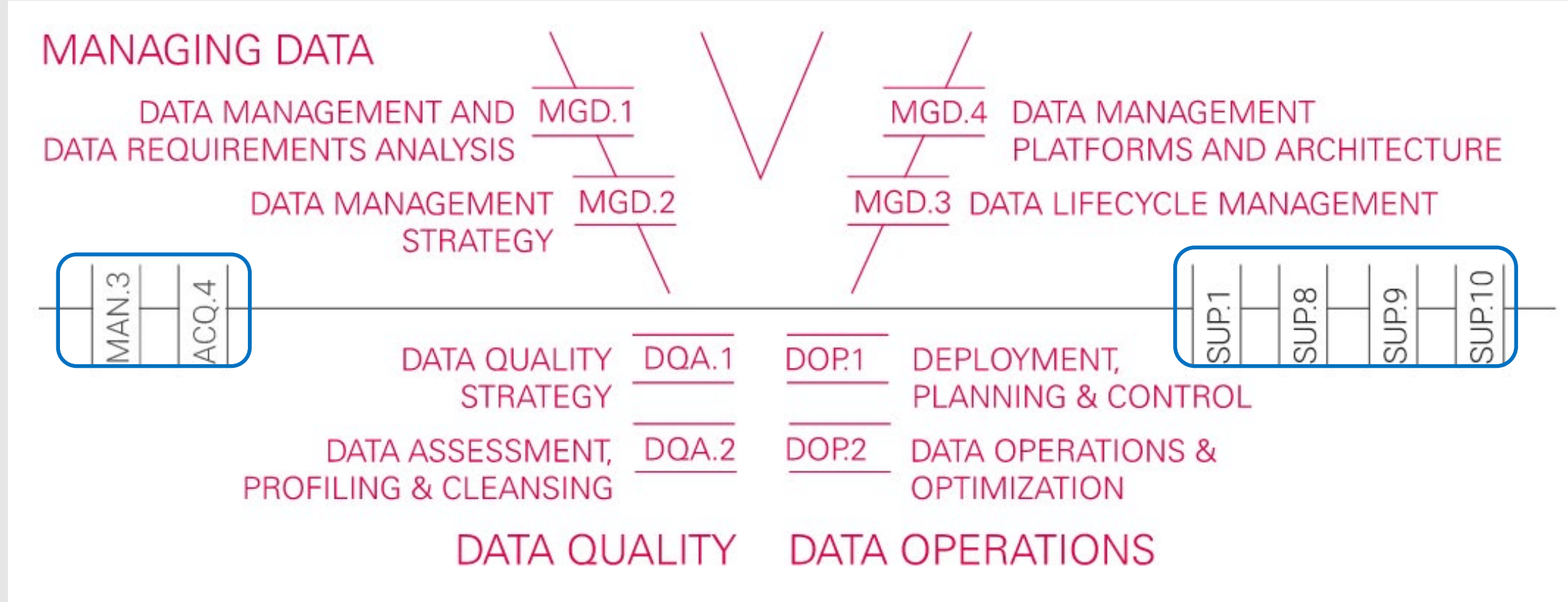
How to use the model as standalone or as plug-in with other PAMs?

And what about e.g. Safety and Security?



Usage as standalone model

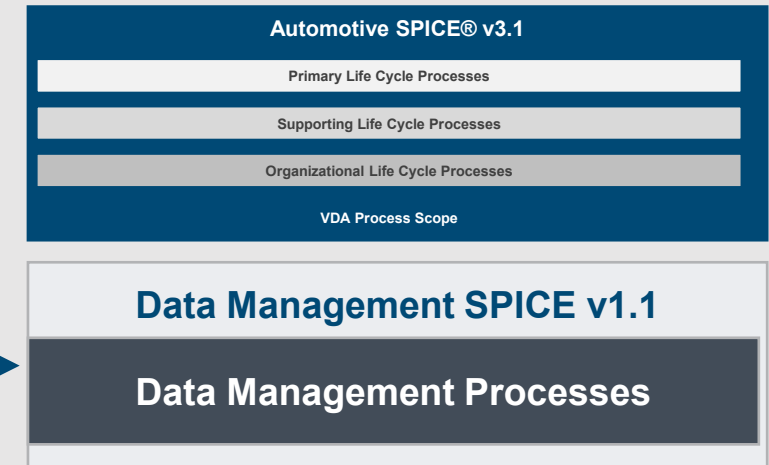
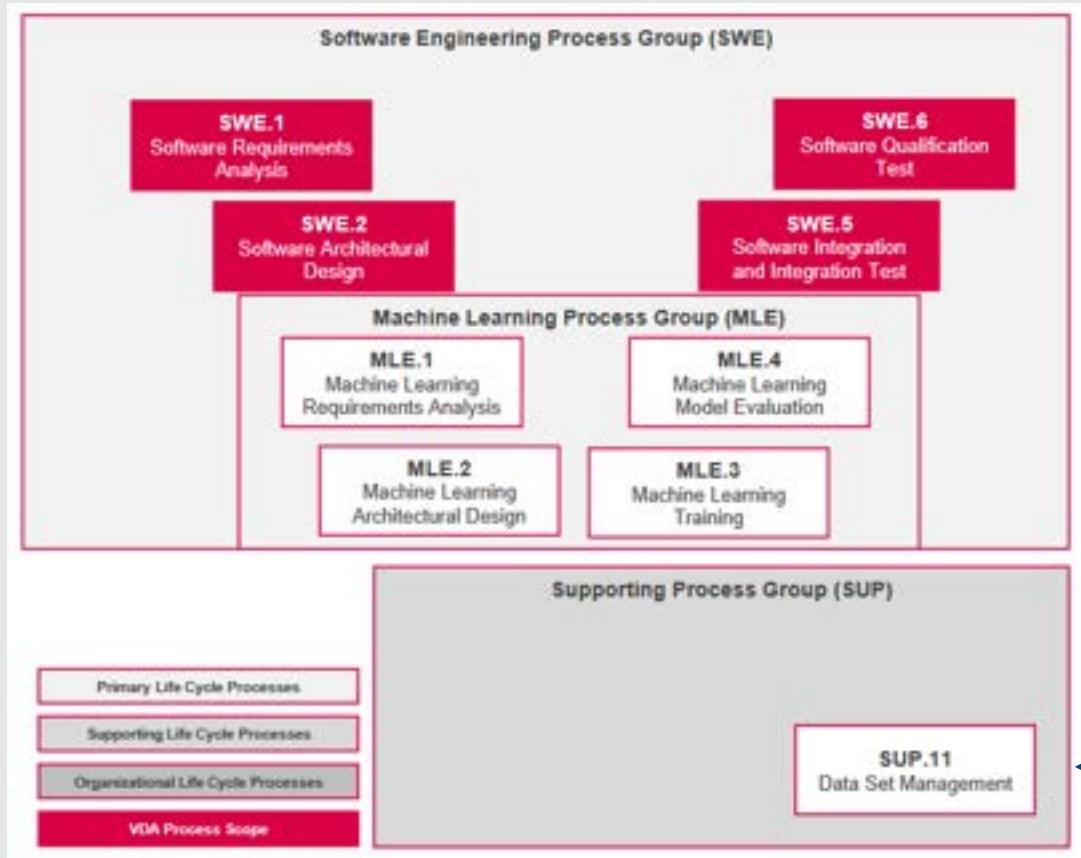
without the need for additional dependencies



Source: Kugler Maag CIE by UL-Solutions, the plug-in replaces or supplements the software-specific processes of the Automotive SPICE® model.

Usage as plug-in model

Interfaces to other PAM's – e.g. machine learning



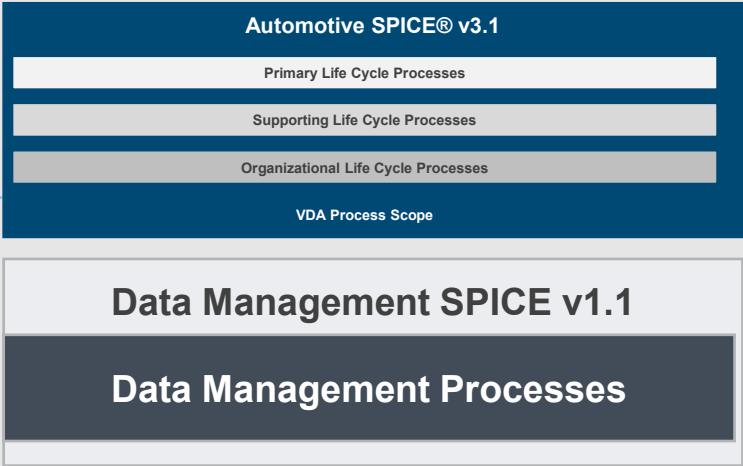
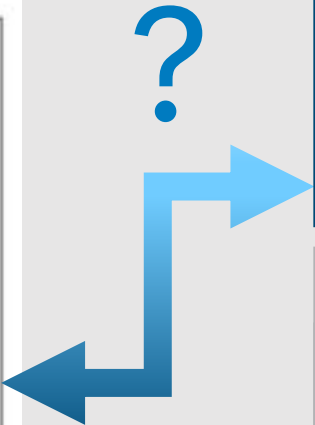
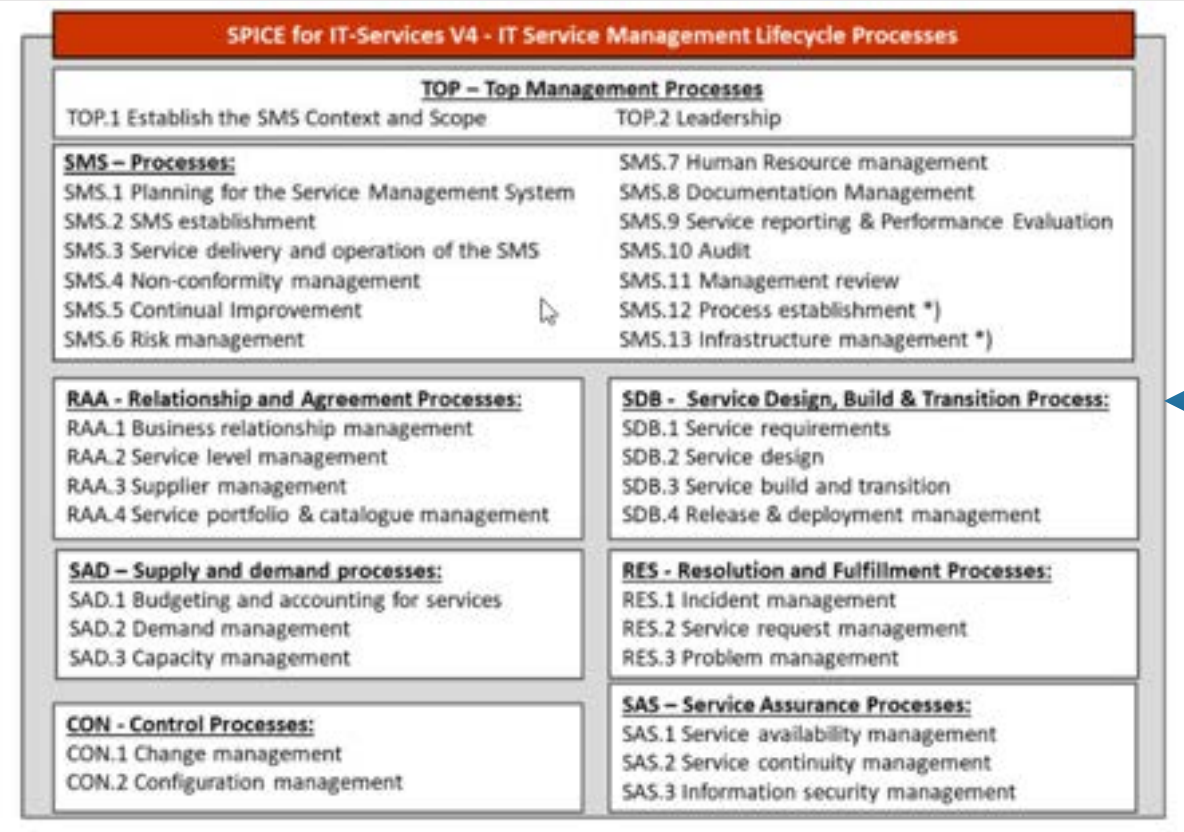
Machine learning processes focus on evaluating how well models can make accurate predictions or classifications, as well as how well they perform in real-world scenarios. Data management can help to create and manage the right sets of data for teaching machine learning models in complex environments.

Source: Kugler Maag CIE by UL-Solutions, VDA Sys 2022 presentation: "SPICE for Machine Learning"

Source: intacs™ certified Automotive SPICE® Data Management SPICE Training | © 2023, version 0.0.1

Usage as plug-in model

Interfaces to other PAM's – e.g. SPICE for IT-Services?



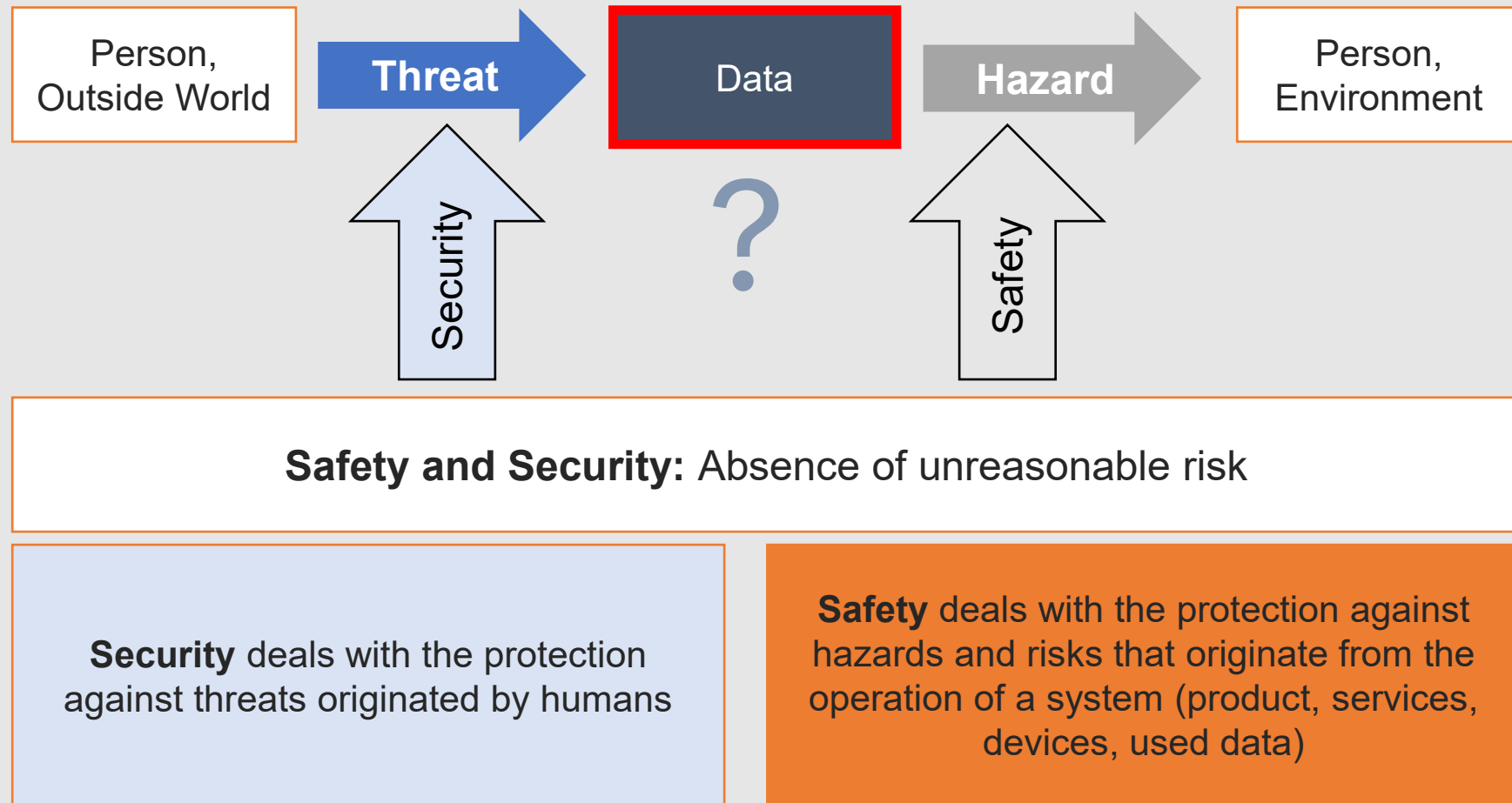
IT service processes focus on how well an organization's IT services are meeting the needs of its users. This can involve evaluating the effectiveness of IT service management processes, such as incident management, problem management, change management, and service level management. To manage data well, most organizations make use of an effective IT infrastructure.

Source: INTACS®, SPICE for IT-Services – Process Reference- and Assessment Model Version 4.0 June 11th, 2022

Source: intacs™ certified Automotive SPICE® Data Management SPICE Training | © 2023, version 0.0.1

What about safety and security?

... handled as requirements for data management and data quality



04

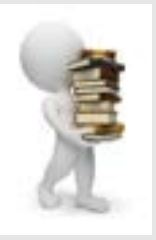
Best practices

A helping hand



Best practices

Lending a helping hand



Interpretation help and interface descriptions to relevant processes (e.g. support) **are available.**

- Motivation
- General considerations
- Rating and recommendations
- Interpretation help by example

To be discussed:

- Best practices, core questions helpful/needed?

Best practices

Motivation and general considerations

Motivation

- ... the ability to have complete **visibility** over your data
- ... it can improve **decision-making**
- ... helps to **eliminate redundancy**
- ... helps **reduce data loss and manipulation**
- ... managing data can improve **compliance**
- ... managing data can **improve organizational efficiency**



General considerations

- Outcomes of the processes are also valid for data management development or environment
- The way these results are achieved may vary
- Work products and their life cycles are typically sliced differently
- Activities may be planned, estimated and clustered differently
- The processes MAN.3, ACQ.4, SUP.1 and SUP.8-10 are addressed

Best practices

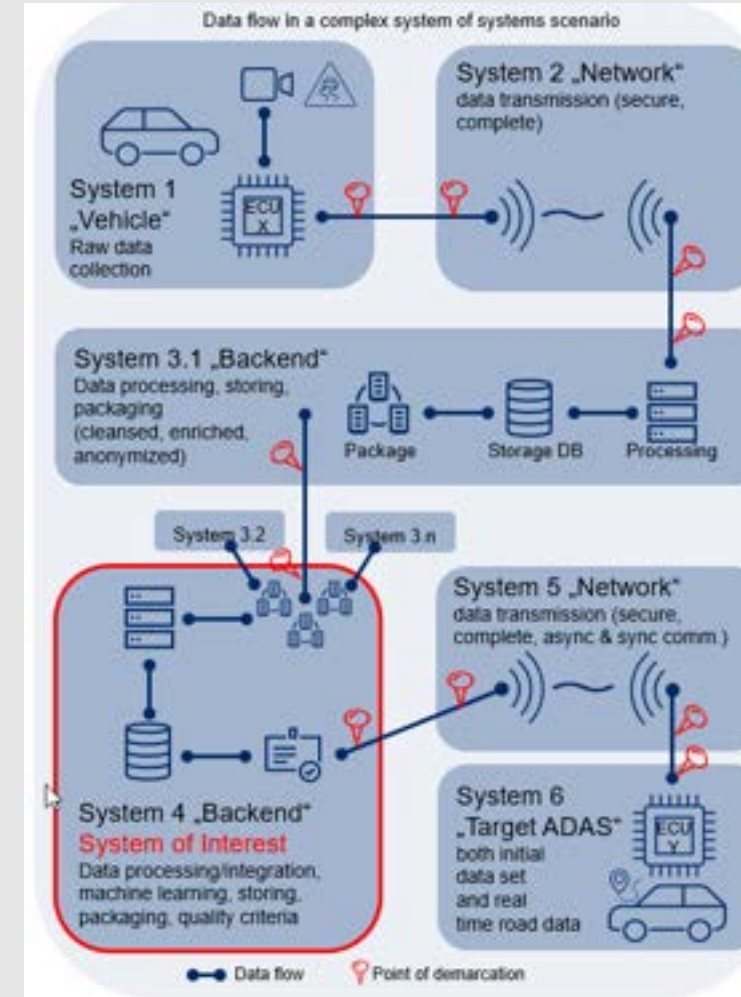
Rating, additional recommendations and interpretation help

Rating & recommendations

- each of the 8 process groups contains a figure and additional descriptions:
 - consistency within the specific group
 - connections to other groups
 - relations with other BPs in the same group

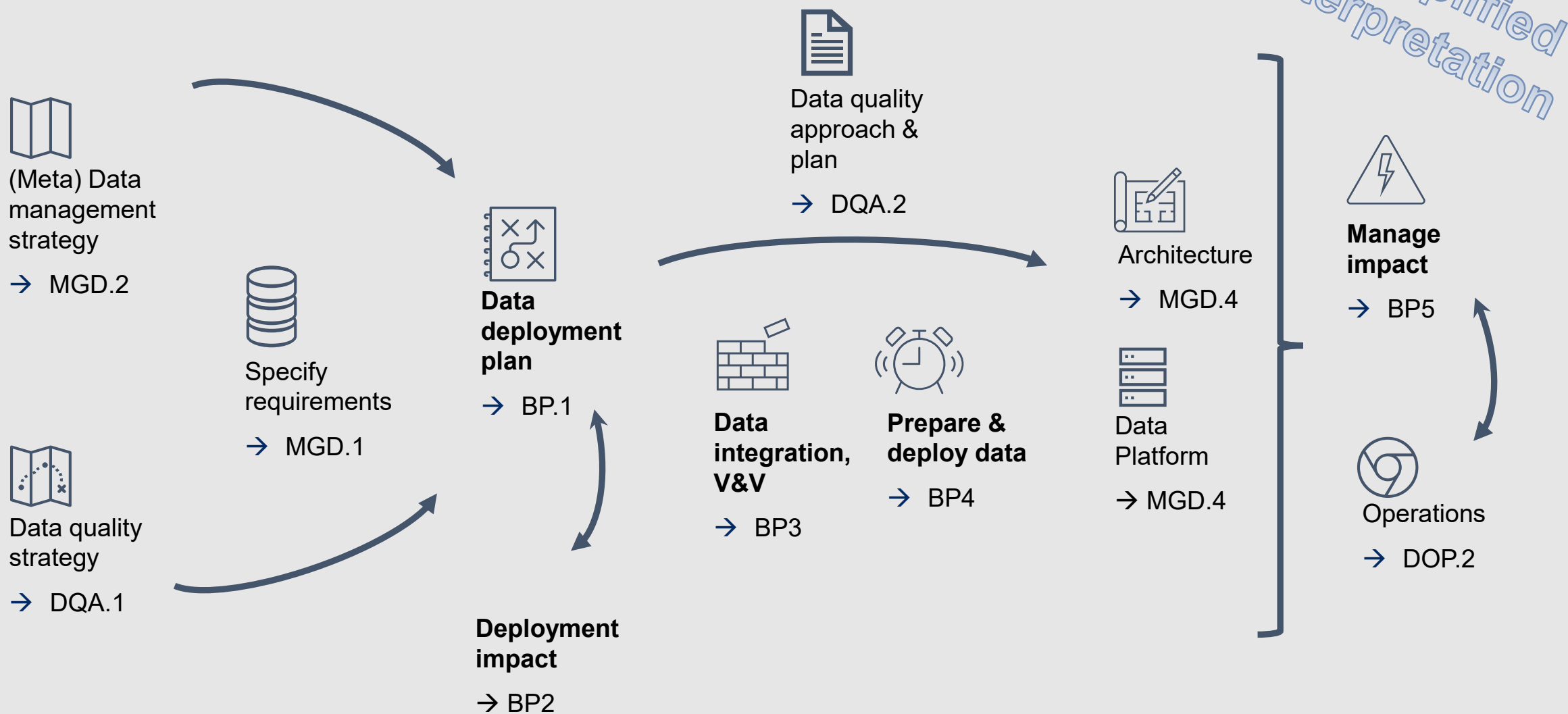
Interpretation

- **33 out of 81 pages** in the PRM/PAM contain interpretation support:
 - for each BP within a process group a written interpretation description
 - a real-world example is used to give guidance



Source: intacs™ certified Automotive SPICE® Data Management SPICE Training | © 2023, version 0.0.1

Overview of DOP.1 Base Practices



Best practices

Best practices, core questions helpful/needed?

Do we need more / own interpretation guideline / appendix like Blau-Gold-Band for DMS?

Do we need a summary of best practices, core questions (e.g. like CMMI DMM did)?

If one question is to answered by yes, what is the next step?

Example – Data Quality Strategy



Some Core Questions

- How does data quality support our strategic objectives?
- What are the key business processes and outcomes that depend on high-quality data?
- Who are the primary internal and external stakeholders relying on our data?
- What specific data quality requirements and expectations do these stakeholders have?
- Who is responsible for ensuring data quality across the organization?
- How do our data governance policies incorporate stakeholder feedback and organizational priorities?
- More? **Yes of course!**

Best practices

First draft steps prepared, further, to come



Driven by Experience

Why Data is Not Software

05

Outlook

...working on the next generation model (aligned with V4.x)

New definition for data management

Data Management is the

- set of all
 - processes,
 - approaches, and
 - resources
- for handling the value of the resource “data”
- across the data lifecycle
- for an intended purpose
- for a given scope of an organizational unit.

e.g., policies, process descriptions, process assets, role descriptions, measurement... any asset supporting the governance, implementation, and improvement of data management related work in the given scope.

An approach describes objectives, priorities, and high-level activities to achieve the intended purpose described in the business case.

Resources encompass skilled people, needed tools, algorithms/techniques, supporting platforms / data bases / infrastructure to operate data management activities and provide value/content.

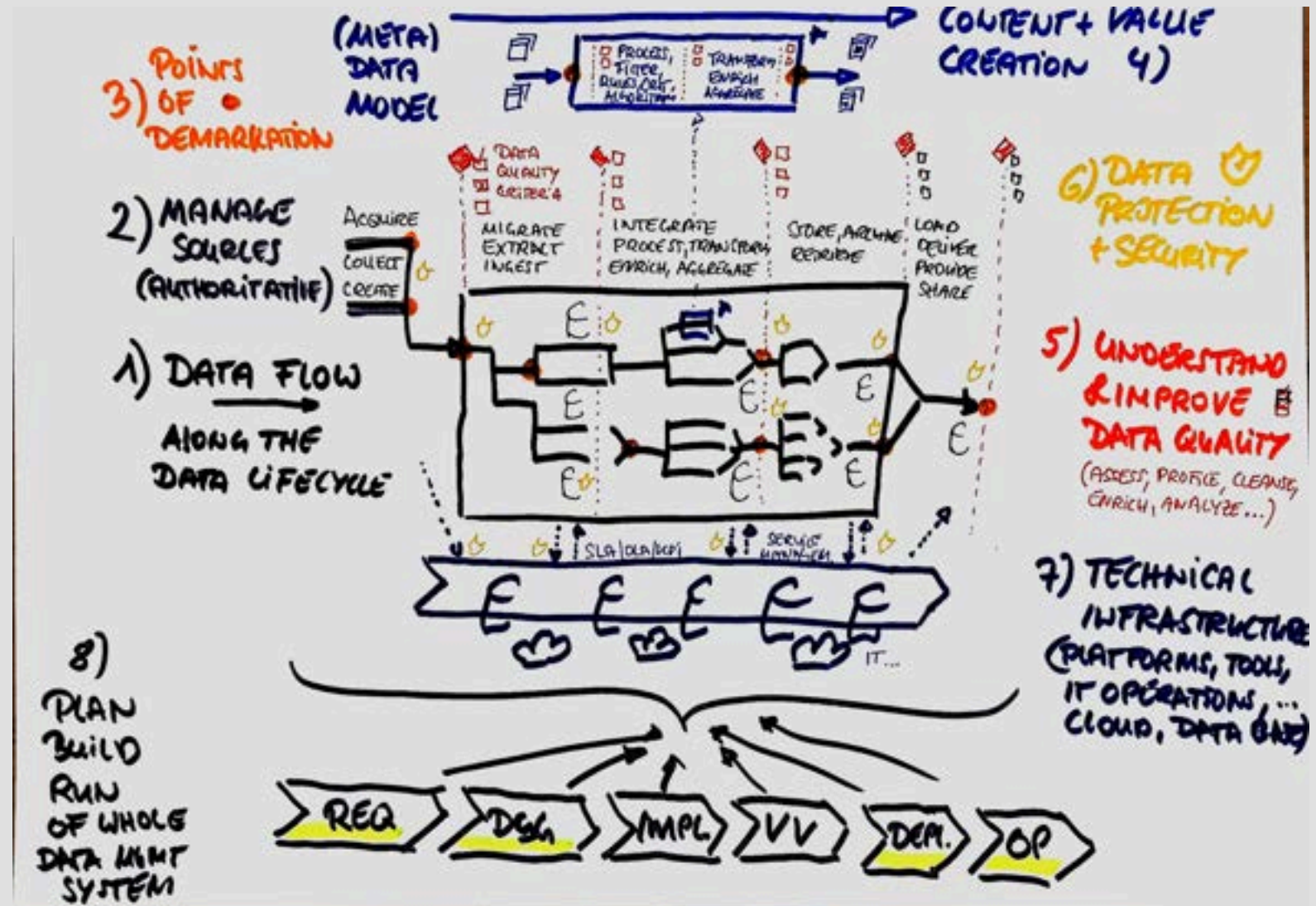
The term "data" implies that you consider the management of any relevant kind of data, data sets, master data or meta data in the given scope. Sources of data could be people, processes, and technology (e.g., from sensors).

The chosen data lifecycle serves as constraint for all data management related activities; typical lifecycle phases address the collection/creation/acquisition, processing, release/delivery/usage, storage (+ archiving/retention), and deletion/disposal of data.

The intended purpose is used in building and operating specific services related to data. It is the primary reason for which a data management activities are initiated, and it drives the specification of requirements and the expected data quality. It is essential that all data management related activities are performed with their intended-purpose in mind to ensure they meet legal/regulatory requirements and perform their function effectively.

Scoping is a conscious and recorded selection of an organizational unit (e.g., product, program, project, part of an organization), applicable processes, and their intended capability level.
For ease of reading, we use the term „project“ when talking about implementing data management activities within the selected organizational unit.

Focus on the data flow



Learning nugget from pilots

Things to look for in a data quality strategy



06

Next level education

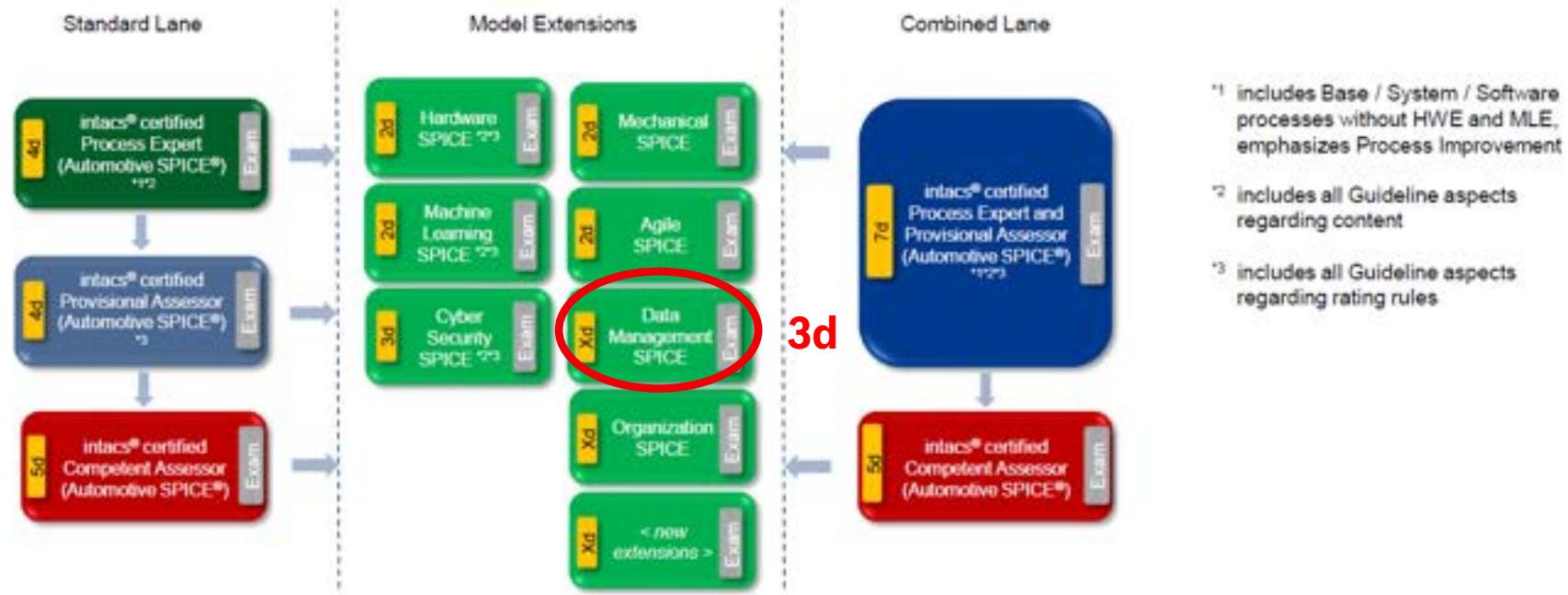
Go for higher level assessor grade in “Data Management SPICE”



Next level education

Like to be a competent assessor for Data Management SPICE?

intacs® Training Architecture from October 1st, 2024



07

Conclusion

... and other takeaways



Good intentions by data people

**e.g., Data Executives, Data Owners,
Governance Managers, Data
Stewards and more**



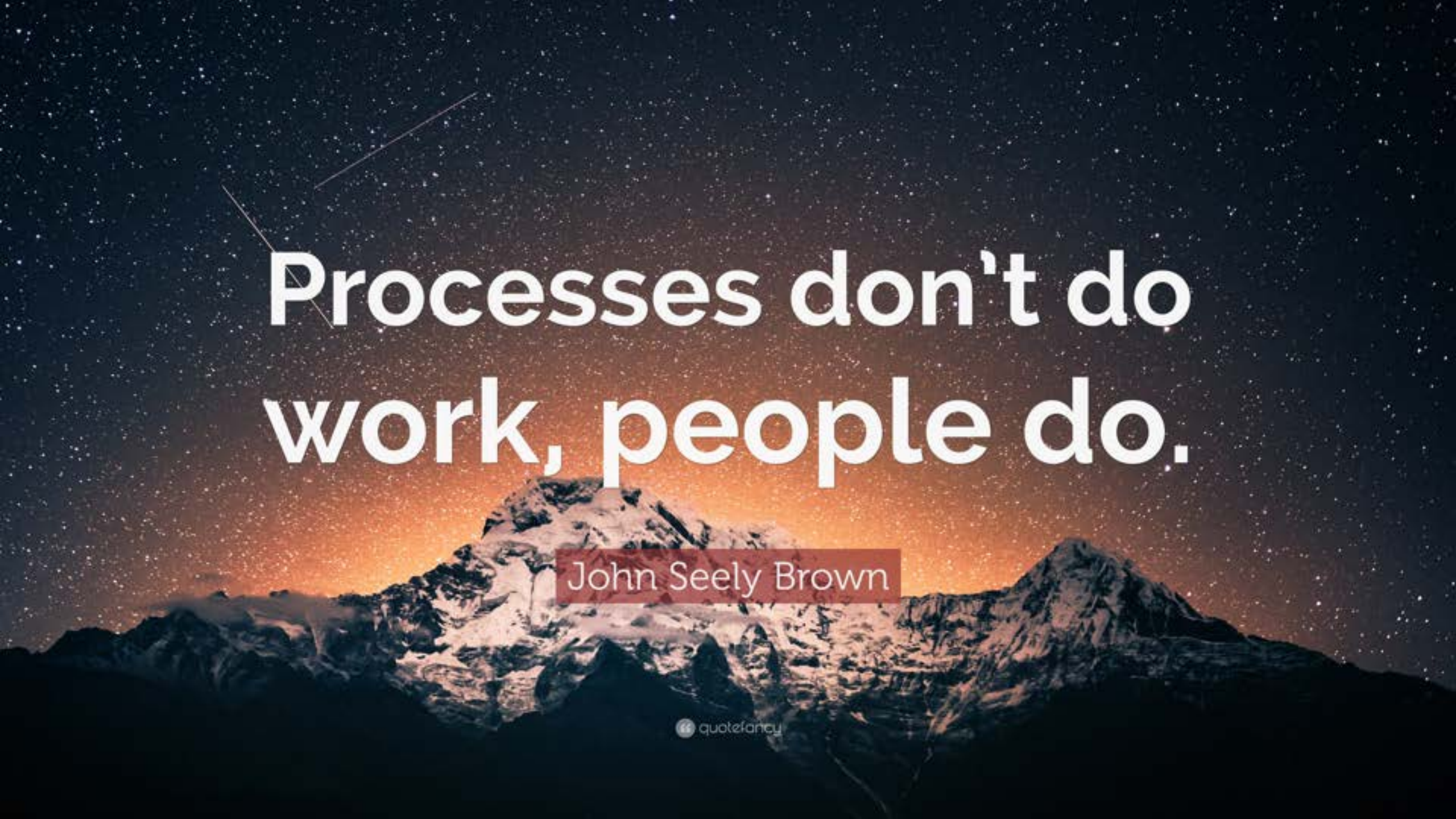
... hampered by the feeling of just more documentation

when talking about process conformity and compliance (by misapply an additional process model)

Did we lose the focus?



“Data Management SPICE” is not the solution, but it will help to find a path and guidance in the data jungle!



Processes don't do
work, people do.

John Seely Brown

Data Management SPICE – lesson learned

Who is responsible for quality?



- **“Everyone is responsible for quality!” - You can't prescribe quality.**
- **Data engineers usually know best, which process/method/tool is helpful, and which not!**
- **Only change the process:**
 - **If it is not beneficial to our business**
 - **Or too complex to handle**
- **Get guidance from pragmatists, i.e., someone who can align “real life” with process improvement (customer, legal, functional, non-functional, ...)**



Looking Ahead

Conclusion

Renewed commitment to data content and quality, reflected in every aspect of our collaborations.

Work together to find effective solutions to meet market standards and customer requirements.

Engineering leadership works with stakeholders to align data management efforts with organizational goals, emphasizing governance, streamlined processes, and continuous improvement.



Data **content and quality** is essential for any software functionality. Missing adjustment between device software release and related data leads to inefficiency, delay and task forces to prepare audits.



Data Management SPICE:

- Find track and guidance in the jungle of data.
- Allow projects to concentrate on their core tasks.
- Ensure a rapid onboarding of new data and harvesting of the advantages.

Questions, need support?



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Thank you !

Change your perspective ...



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Experience



- Practical Experience
- >20 years (ENG & Q)
- Supplier Management
- Preventive Quality
- Reactive Quality

Data Q Book



- Managing domain specific quality requirements for Data (world wide)

Data Management



- Leading @ iNTACS® Working Group Data Manage SPICE

Thomas Sievers

Purchasing Quality and Technology
Data for Mobility Solutions
located in Hildesheim



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Strategy and Focus

- **CHANGE-thinking® and Change Management**
- **Evaluation & improving the capability of business and IT processes**
- **Agile and digital transformation**
- **Measuring the degree of digitalization**

Processes and methods for service and development organizations

- **Design and deployment of process capabilities and process orientation**
- **Model based improvement e.g., with CMMIsm and SPICE (Principal Assessor & Instructor)**
- **Agile Coaching (e.g., SAFe, SCRUM)**

Managing with KPIs Project and requirements management

- **Managing with KPIs**
- **Data management governance & strategy**
- **Project management**
- **Swiss Island® Project management simulation**
- **Agile requirements management**

