OHB

MANAGING STAKEHOLDER EXPECTATIONS AND IN-HOUSE PROCESSES
| IN A COMMON MODEL INCLUDING MAPPING TO S4S

OHB SYSTEM AG

FRANK MÖHLE / 27. SEPT. 2023

Overview

1. S4S: after the assessment…

2. Understanding Stakeholder Needs

3. Building a Common Process Data Model

4. Conclusions and Lessons Learnt

S4S ASSESSMENT

ECSS Q-ST-80C section 5.7 "Assessment and Improvement"

- Conformance with ISO/IEC 15504 (Part 2) needed

- Assessment results as feedback to improve processes

- Monitor and control effectiveness of processes

S4S assessment

- Small Scope, as starting point

- → overview of strengths and weaknesses

- → recommendations + proposed actions for improvements

- Actions based on not achieved indicators (=elements of the S4S reference model)

- → needs grouping, sorting, prioritizations

Very Relevant input, but a lot of postprocessing work.

ASSESSMENT: LESSONS LEARNT
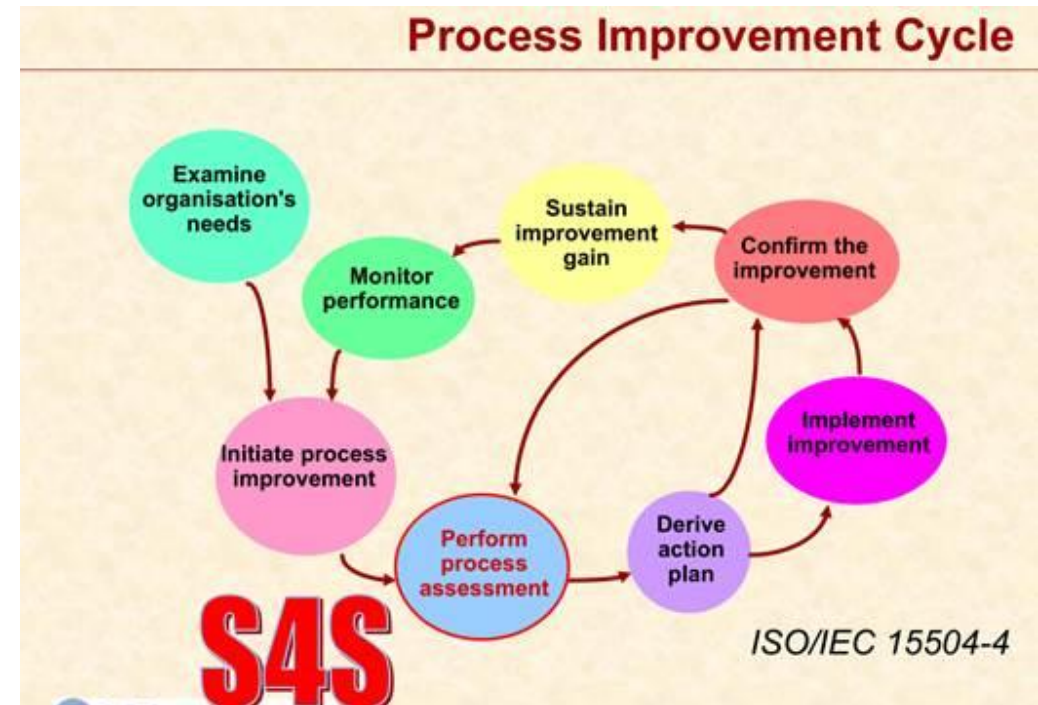
Intention: improve processes bases on Interviews/assessments, using S4S as the "golden model"

- 1st Step: Provide assessment recommendations to teams for improvement. Problem: "translation" into real actions for the team

- 2nd Step: Translate S4S "reference model" based actions into "OHB Language". Problem: Teams still struggled to understand relation to current processes

- 3rd Step: Enhance translated S4S interview recommendations with "expected benefits" for the team. Problem: What does it really mean "benefits for the team"
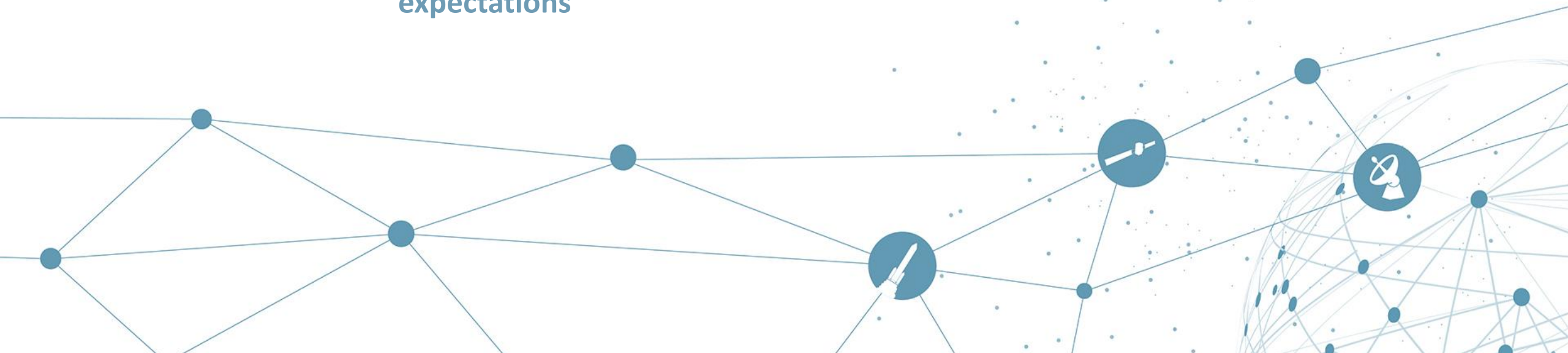
Conclusions

- There are different "stakeholders" for single processes

- Process improvements need to consider the expectations from all involved stakeholders

NEW OBJECTIVES

„We have learned a lot from the questions and feedback.

Now we need a tool which helps to fulfil the different stakeholder expectations"

STAKEHOLDERS AND EXPECTATIONS

WANTING SUPPORT FOR …..

SW Team Lead

- Strategy and vision for SW products
- On-Boarding / Guidance for new team members
- Checking implementation of strategy
- Compliance to standards

SW Team Member

- Guidance for daily work
- Understanding context (and dependencies) of daily work
- Understanding how to use Tools and Infrastructure

Project Teams

- Support Proposals
- Support Project implementation
- Guidance for tailoring
- "How-To" for daily work
- Clear view on compliance

Quality

- Harmonization of activities
- Increasing efficiency and effectiveness
- Utilize lessons learnt
- Achieve S4S level 3
- Maintain Certifications

Strategic Level

- Support multiple standards
- Support in-house product developments
- Simple integration of new standards
- Cost-effective and efficient project implementation

BUILDING A COMMON MODEL
SUMMARY OF STAKEHOLDER NEEDS

Summary: Stakeholder needs

- Views are different for each stakeholder

- Necessary information has a lot of commonality

- Automation needed, to avoid (repeating) manual work

- Compliance information shall be available without extra effort

- Allow to quickly understand potential impact of tailoring

- Use process buildings blocks (common SW activities)

- Support for regular compliance checks (partly automated)

- OHB already has a commonly used Wiki (Confluence)

OHB Guide:
Software construction

- Technical work
- Inputs, outputs
- How to manage
- How to ensure quality

Complete?

Consistent?

Traceable?

Use OHB Language

tailoring in Projects

Compliant?

Traceable?

SoC

Standards Language

impact of Tailoring

S4S:
Software construction

- Objectives
- Level 1: Base practices, Inputs, Outputs
- Level 2: managed (performance, work products)
- Level 3: …

E-40
- 5.5 SW Design and Implementation
- Annex: DRDs

Other standards

DERIVING A DATA MODEL

DESIGN DECISIONS

**OHB Guide:
Software construction**

- Technical work

- Inputs, outputs

- How to manage

- How to ensure quality

Complete?

Consistent?

Traceable?

Use OHB Language

tailoring in Projects

Design Decisions

- Architecture: common data model

- Include traceability to standards (compliance)

- Separate logic from content

  − the data model shall allow easy integration of "future standards"

- Include "generic" and "tailored" instances of data

- Front-End: Confluence

Compliant?

Traceable?

SoC

Standards Language

impact of Tailoring

**S4S:
Software construction**

- Objectives

- Level 1: Base practices, Inputs, Outputs

- Level 2: managed (performance, work products)

- Level 3: ...

E-40
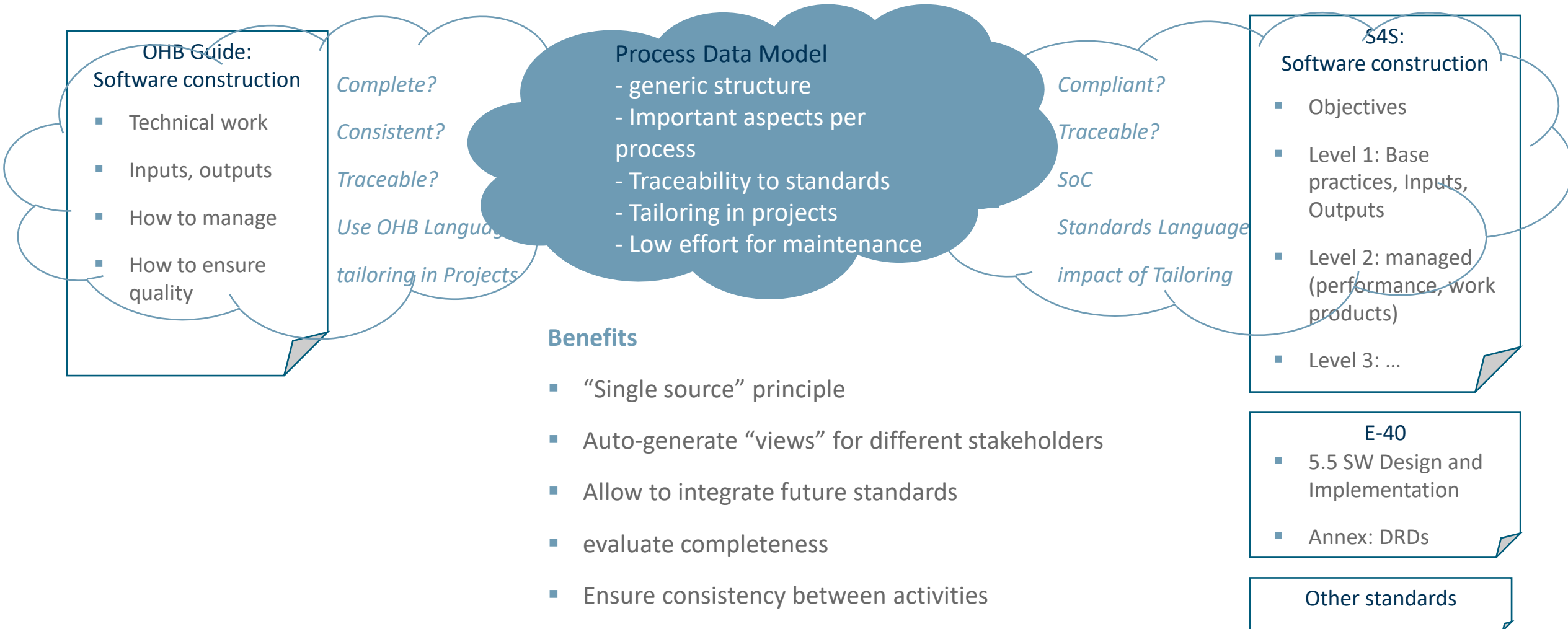- 5.5 SW Design and Implementation

- Annex: DRDs

Other standards

DERIVING A DATA MODEL

PROCESS DATA MODEL

**OHB Guide:
Software construction**

- Technical work
- Inputs, outputs
- How to manage
- How to ensure quality

Complete?

Consistent?

Traceable?

Use OHB Language

tailoring in Projects

Process Data Model
- generic structure
- Important aspects per process
- Traceability to standards
- Tailoring in projects
- Low effort for maintenance

Compliant?

Traceable?

SoC

Standards Language

impact of Tailoring

**S4S:
Software construction**

- Objectives
- Level 1: Base practices, Inputs, Outputs
- Level 2: managed (performance, work products)
- Level 3: …

E-40
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Other standards

Benefits

- "Single source" principle
- Auto-generate "views" for different stakeholders
- Allow to integrate future standards
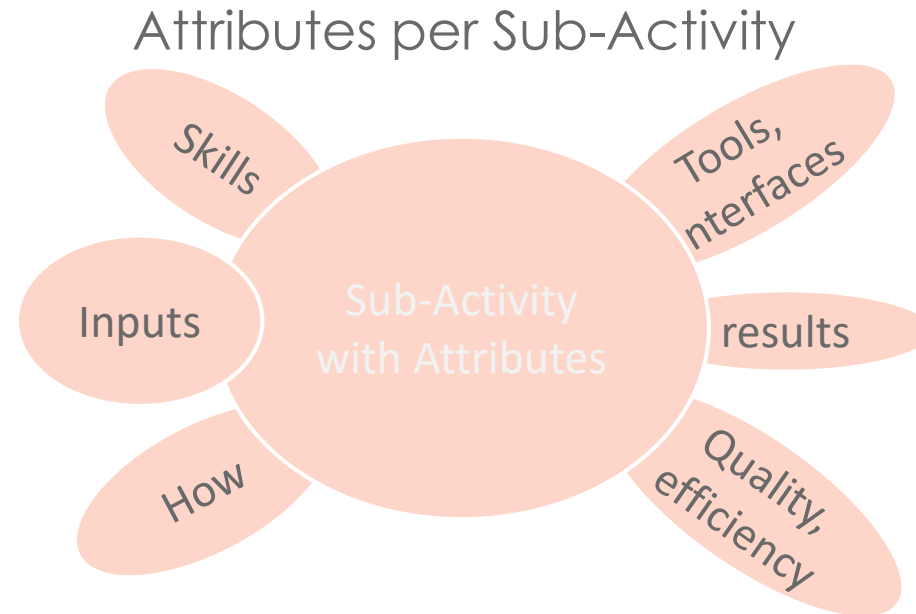- evaluate completeness
- Ensure consistency between activities

Sub-Activities (for each turtle)

- **Input** Handling

- **Output** Handing

- **How** the activity should be performed

- **Who** performs the task

- **Measure** performance / quality

- **With what**: tools/environment

Turtle Diagram
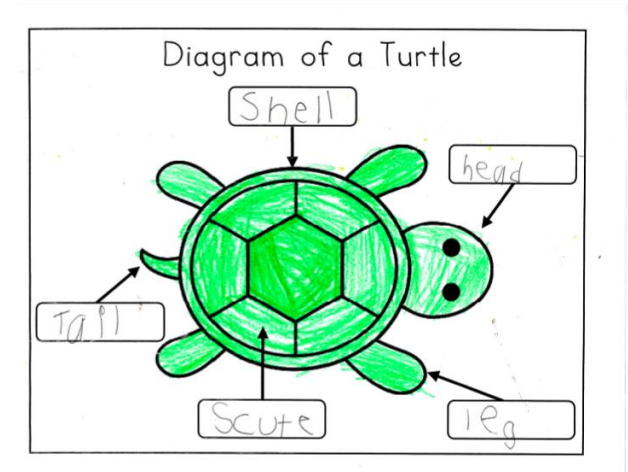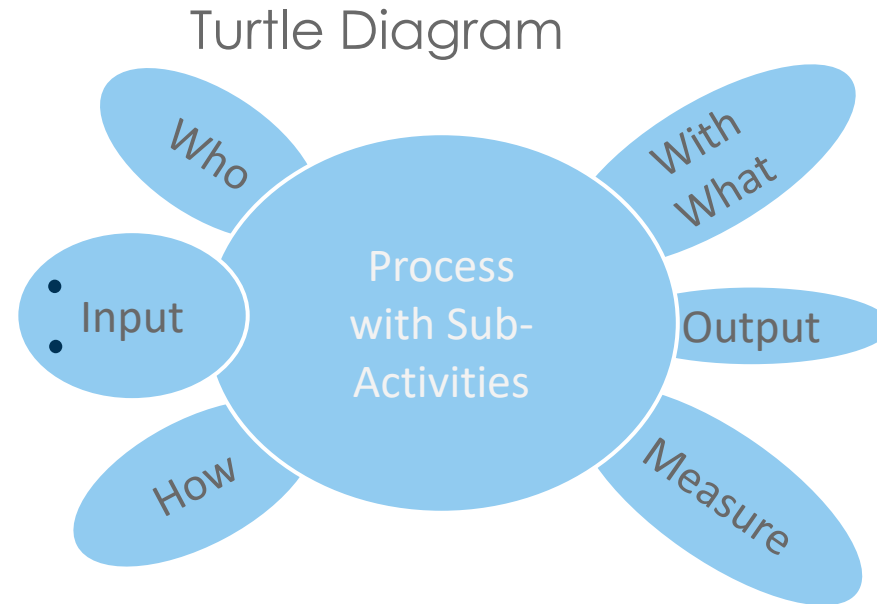
PROCESS DATA MODEL: ATTRIBUTES
PER SUB-ACTIVITY

Attributes per Sub-Activity

Skills

Tools, interfaces

Inputs

Sub-Activity
with Attributes

results

How

Quality, efficiency

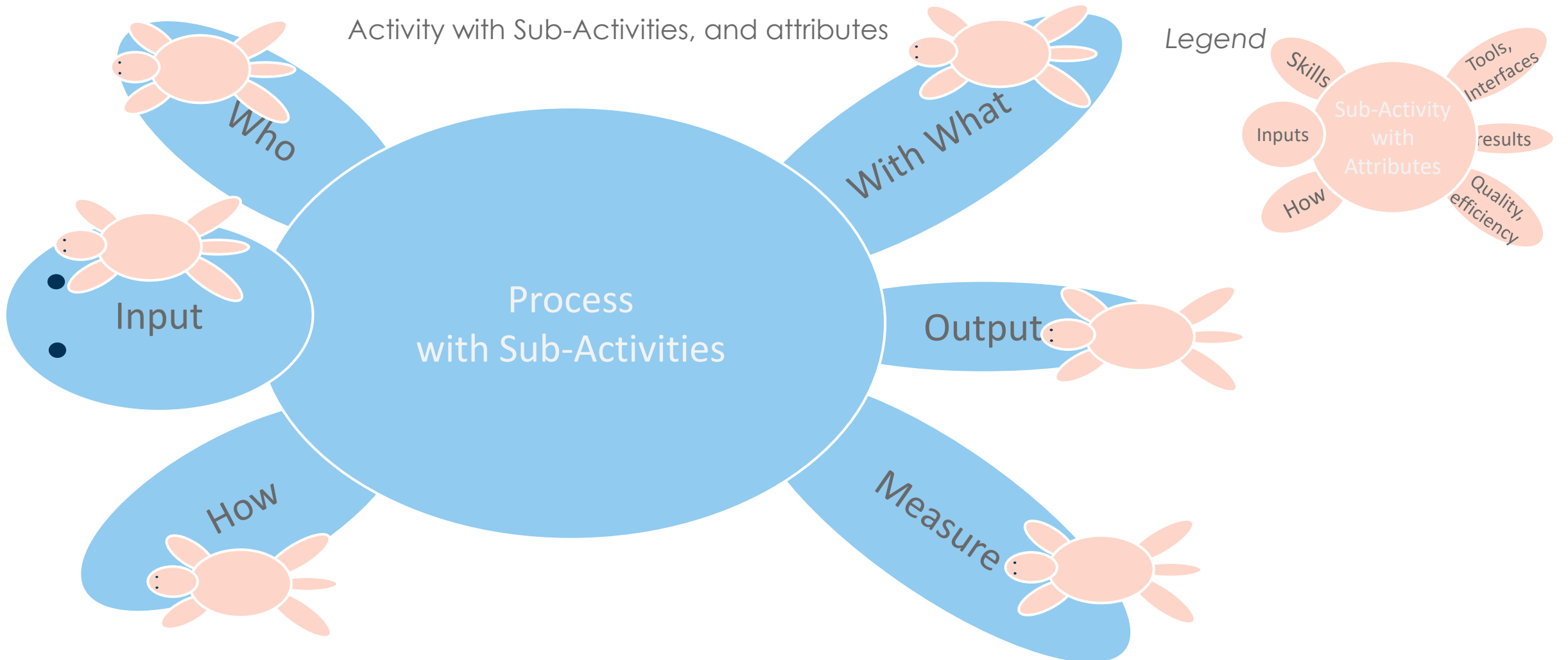Single "Turtle" does not provide enough details

- Refinement needed, to capture details requested by standards

- Attributes enable traceability standards

- Attributes repeat for each sub-activity

Attributes are used to auto-generate views

- Definition view for process owners

- How-to for daily work

- Traceability and compliance to standards

OHB

Activity with Sub-Activities, and attributes

Legend

Who

With What

Input

Process
with Sub-Activities

Output

How

Measure

Sub-Activity
with
Attributes

Skills

Tools,
Interfaces

Inputs

results

How

Quality,
efficiency

DATA MODEL: STRUCTURE

OHB

How to describe each activity

Activity Breakdown

Attributes

> **Attributes per Sub-Activity**
> *needed for each activity*

For each activity: sub-activities and attributes (buildings blocks)

Generic Activities

Sub-Activities

> **Generic Expectations**
>
> **Generic Traceability**

> Generic Expectations
> Generic Traceability

Traceability

Standards

Tailored Instances for projects and products

Tailored Activities

example: SW Construction for product

> **Tailored "Answers"**

> (activities in project 2)

> (activities in project 3)

Tailored Answers

SoC
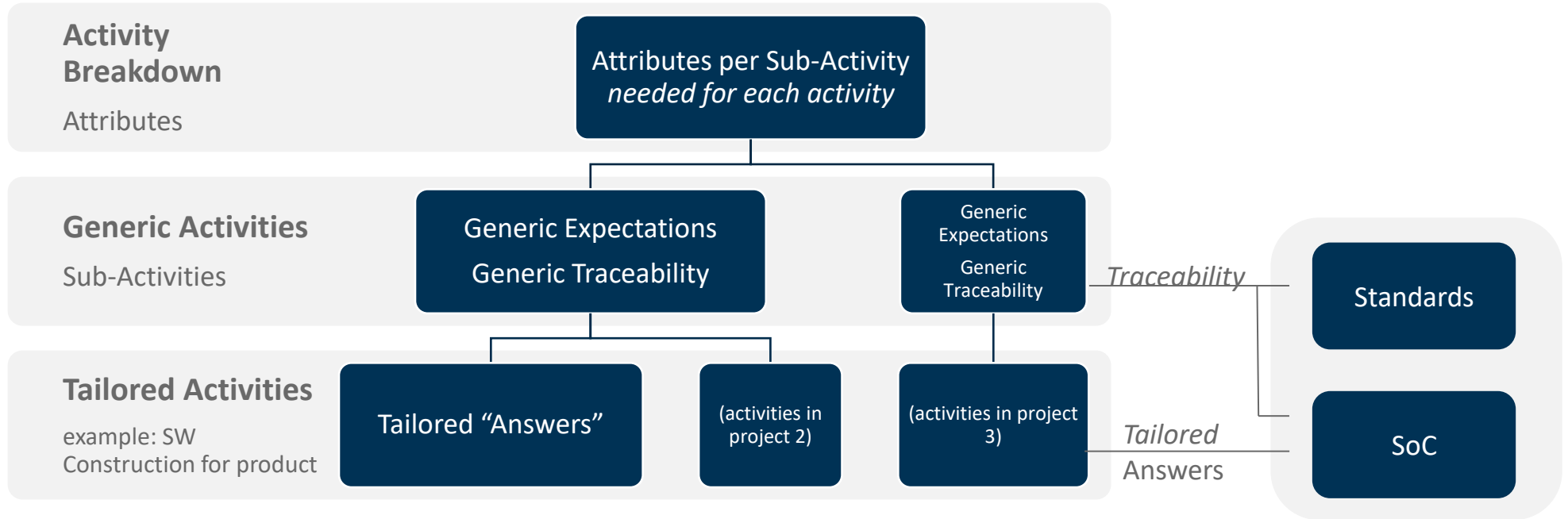
> **›** **Common Area in Confluence (Wiki) with auto-generated pages**

SUMMARY AND CONCLUSION

Stakeholder analysis

- Stakeholders identified, and expectations understood

- Guideline for daily use: S4S needs + Team needs = benefit

Process Data Model

- Process data model defined

- Proof of concept with pilot processes

- Implemented in Confluence ("Excerpt Include" for single source data)

Results and Benefits

- Initial effort (developing process data model and prototyping) is higher

- Cost-efficient application on OHB processes - fostering systematic improvements

- Faster rollout of new "Generic Activities" and "Tailored Activities" is possible now

- Adding new activities => assessing existing guidelines (completeness, consistency) and requesting improvements

- Adding new standards is simplified – only mapping needs to be added

MANAGING STAKEHOLDER EXPECTATIONS AND IN-HOUSE PROCESSES IN A COMMON MODEL INCLUDING MAPPING TO S4S

FRANK MÖHLE, SOFTWARE PRODUCT ASSURANCE WORKSHOP 2023, ESAC, SPAIN, 25-28.09.2023

THANK YOU!

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BREAK-DOWN OF USER REQUIREMENTS

FOR THE COMMON DATA MODEL

OHB

Support for project planning and implementation

- Need a guide for tailoring of daily work (incl. budget/quality/schedule)

- On-Boarding support

- Verification of tailoring should be possible

- Easy access for all project team members

- Prefer already available tool environments

Guidance for daily work

- Need a "what-to-do" guide for daily work

- On-Boarding support

- Expected work results (documents, content, …)

- Interfaces: where to get inputs, who needs my results

- Inform about company standard tools

- include into existing tools (don't produce "yet another tool")

Support SW team leaders and process owners

- Checklist to simplify process definition and updates

- On-boarding

- Support for harmonization across projects, simplify planning

- Traceable to generally applicable standards; verification of standards compliance

- Easy adjustments for new products / projects

- Integrate into already available tools

Compliance to standards

- Clearly identify inputs, outputs, roles, interfaces, tools

- Allow mapping of generic activities to daily work tasks

- Information about compliance to standards (S4S, etc); achieve S4S level 3

- Possibility to review and adjust compliance statements (manually)

- Full visibility and easy access for all internal stakeholders