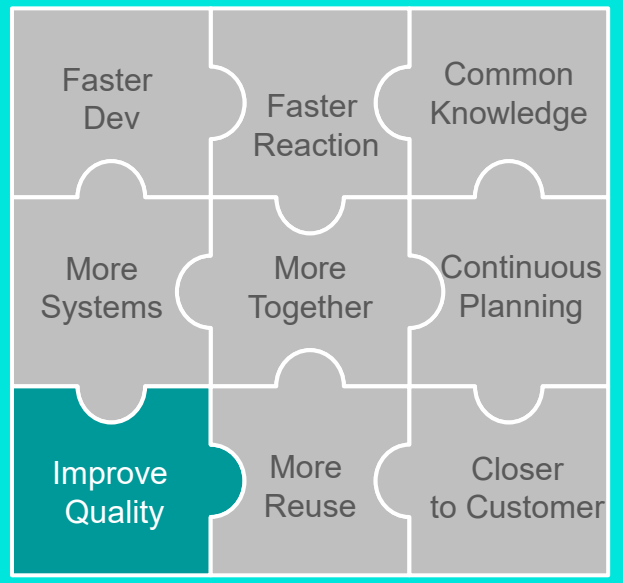

RE Activities / RE Process

What activities are recommended in general?

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“I'll go and find out what they need
and the rest of you start coding!”

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RE Reference Process

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RE Reference Process

<P.M90	Product idea created
P.M90	Portfolio update
P.M150	Requirements release
Q.P.M200	Decision for realize
P.M230	Product concept verified
P.M240	Ready for test

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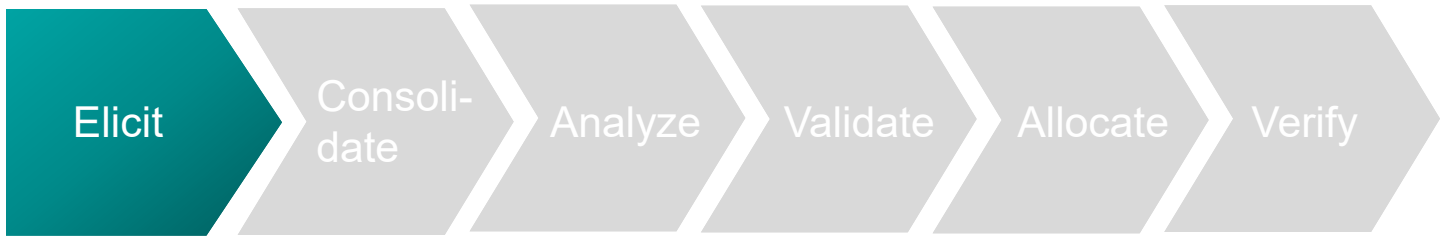
RE Reference Process - Elicit



- Define system boundaries
- Define stakeholders
- Define method for elicitation
- Elicit requirements
- Document requirements
- Link requirements to source

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Definition of stakeholders

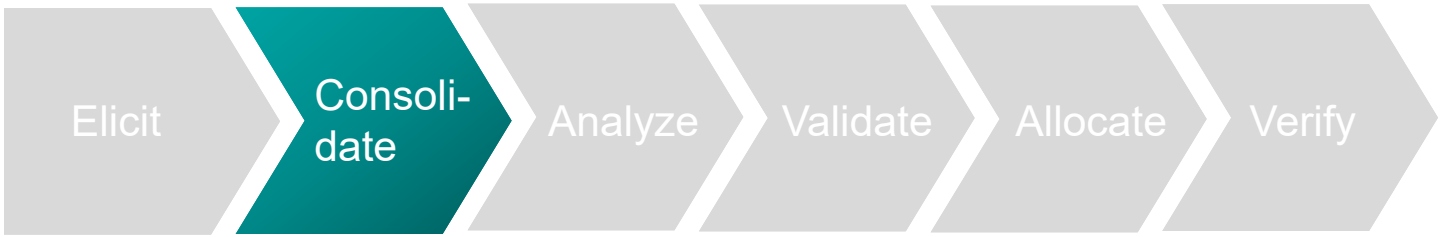
- Stakeholders are all persons or institutions involved who have an interest in the development process or in the use of the product or who are simply affected by it.
- Their input is crucial to ensure that the solution meets both functional and non-functional expectations.
- Typically involved are Sales, maintenance and service personnel, management, suppliers and partners but also standardization committees, works councils and legislators.

Applicable methods for elicitation

- Workshop
- Interview
- Questionnaire
- Brainstorming
- Mind mapping
- On-Site-Customer
- Field observation
- Apprenticing
- System analysis of the previous system
- and much more.

- Care should be taken to ensure that the market requirements are described from the user's perspective (User story pattern).
- What additional options does the user have (“As electrician I can ...")?
- Which application enables this additionally required functionality?
- What is the benefit for the user?
- It is helpful to document the source of the requirement.

RE Reference Process - Consolidate



- Structure requirements
- Break down high-level requirements
- Solve inconstancies and filter requirements
- Identify the MVP requirements and high-risk requirements
- Prioritize requirements
- Allocate requirements to product versions (planning)

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Consolidate more in detail

Market requirements can be recorded by very different people with different backgrounds and perspectives. The existing "collection" of requirements must therefore be consolidated. This means

- Carrying out structuring and classification
- Removing inconsistencies
- Removing redundant requirements
- Removing requirements that cannot be implemented
- Adding missing information to the individual requirements
- Deriving new requirements from existing market information
- Merging or grouping interdependent requirements
- Identifying requirements that have a major impact on functionality and costs
- Prioritizing the requirements in terms of market relevance
- In the case of the stage concept: allocation to the first product stage;
- No detailing for requirements of the subsequent stages

Methods for evaluating the requirements

- MoSCoW method: must-have, should-have, could-have, won't have
- Weighted evaluation and scoring models
  (e.g., Weighted Scoring Method)
- WSJF (Weighted Shortest Job First)
- House of Quality (part of Quality Function Deployment, QFD)
- Kano model
- ...

RE Reference Process - Analyze

- Analyze requirements feasibility – starting with solution concepts
- Define business data
- Elaborate requirements
- Check and improve quality of requirements
- Define acceptance criteria for requirements

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Analyze more in detail

- Check that the requirements do not narrow down solution possibilities too far
- Check whether the requirements are absolutely necessary to reach the targets.
- Analyze requirements with respect to feasibility in its environment using available system resources
- …with respect to defined system limitations and the influence on other systems or interfaces to them Identify and define restrictions and constraints.
- …to determine whether they cover the use cases defined
- …to determine whether they cover the application scenarios defined
- Check whether the requirements contain enough information to create test cases.
- Check that the requirements are complete with respect to compatibility with all inputs and reactions/responses, interfaces, legal provisions, design, user interfaces, stability, and performance.
- Improve requirements in terms of their linguistic quality and terminology
- Check that each requirement can be uniquely identified (e.g. via a code or number).
- Check that the requirements and their sources are not available in different documents or structures

Analyze

Define Business data/detect

For example, by the following methods

- Marketing study
- Portfolio analysis
- Success factor analysis
- Indicator systems
- Profitability analysis
- Utility analysis
- Benchmarking
- Risk analysis

Conditions elaborate in more detail

Many derived features can arise from one customer requirement.

Different display methods can also be used :

- Use case diagram
- Sequence chart
- State machine
- Activity diagram
- Storyboards

RE Reference Process - Validate

- Double check quality of requirements according:
  Necessary, unambiguous, complete, consistent
  (See also training unit: Quality of requirements)
- Confirmation by all stakeholders, that requirements satisfices customer needs

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Validation vs. Verification

Verification

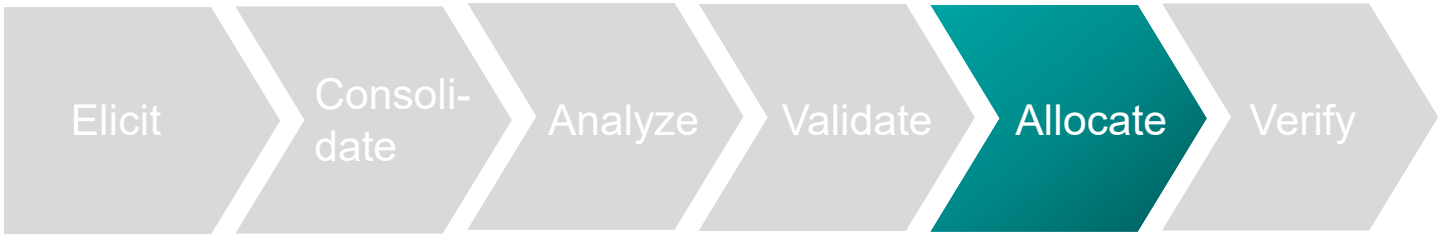
… checks if the product was built according to specifications and technical requirements.

Verification

… checks if the final product effectively meets user needs and operates as intended in the actual application environment.

Both verification and validation are embedded into SI EP quality management system, with clear roles, responsibilities, and checkpoints throughout the product lifecycle. We use internal documentation templates and process guidelines that align with the definitions provided in ISO 9000, ensuring that quality is maintained both during and after development.

RE Reference Process - Allocate



- Solution Design and Development in general
- Allocate requirements to product versions (Adaption if required)
- Start with requirements development for next version

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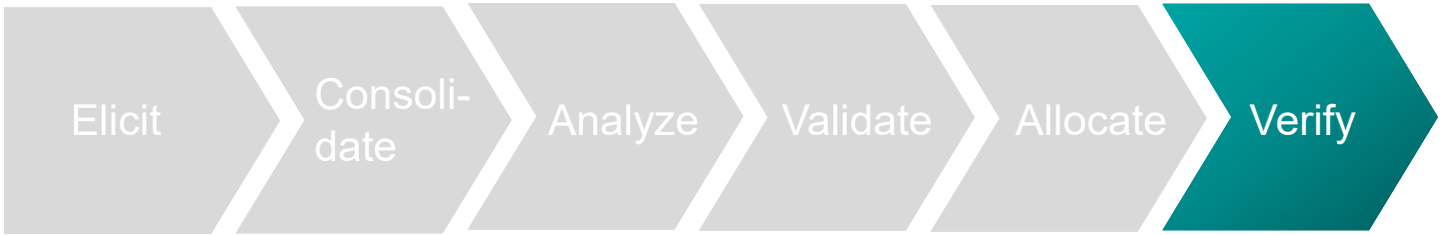
RE Reference Process - Verify



- Finalize technical descriptions (features and test cases)
- Link realization and test cases with requirements
- Check traceability and coverage of test cases
- Verify and validate realized product / function group

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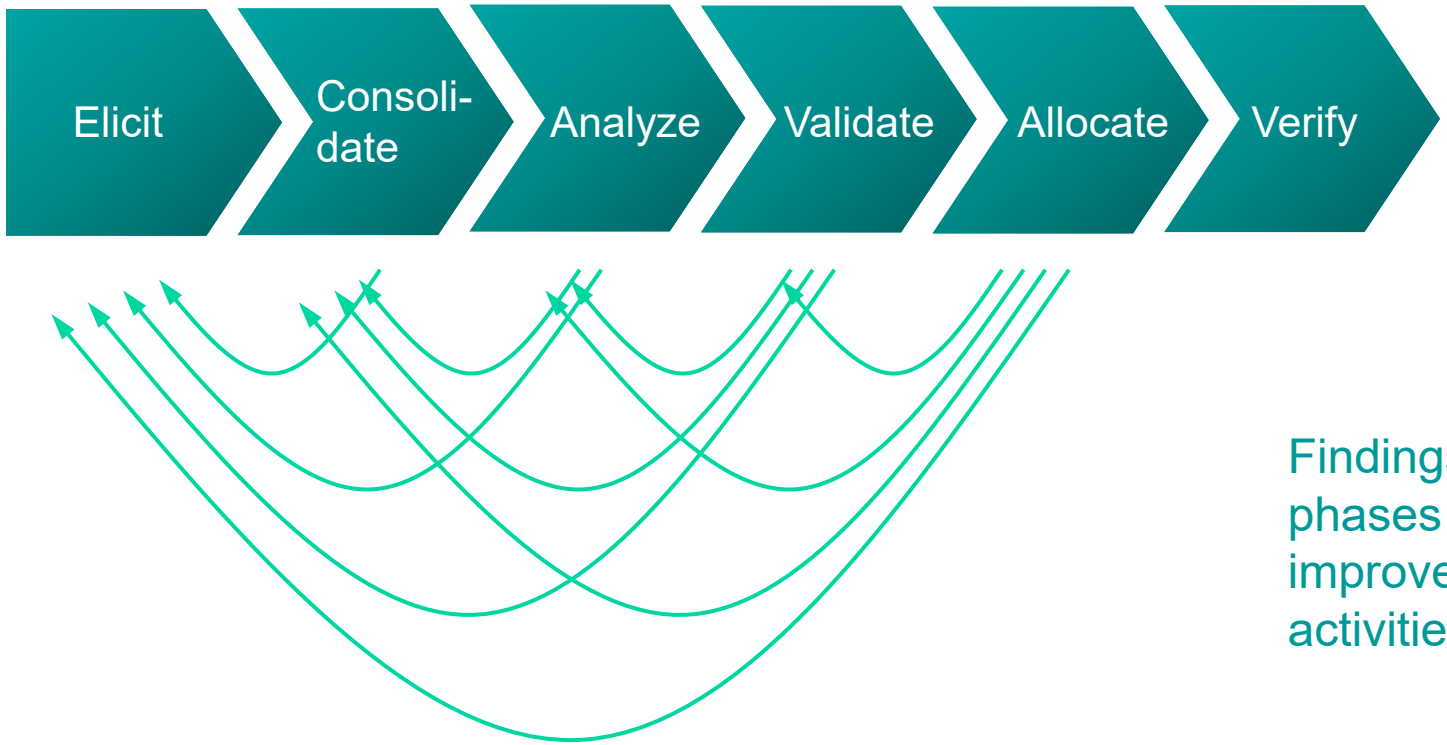
RE Reference Process



Findings in later phases can result in improvements to earlier activities

So, we go for a more agile approach …

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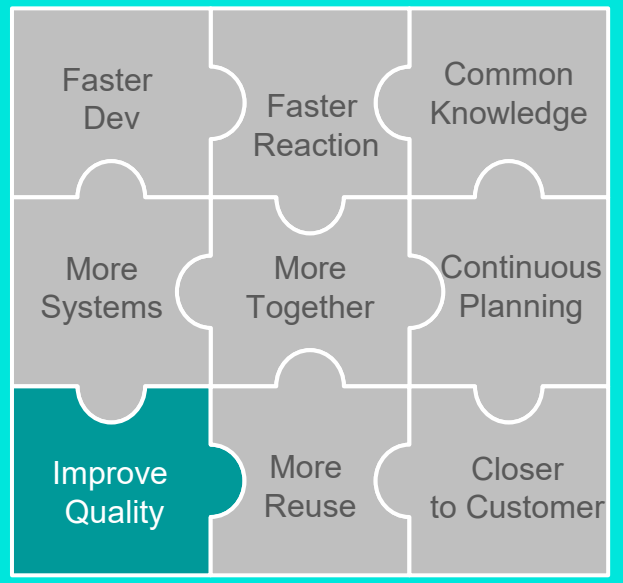

RE Activities / RE Process

What activities are recommended in general?

Q&A

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