Service Offering
Requirements Engineering aaS

Why Requirements Engineering in an agile world?
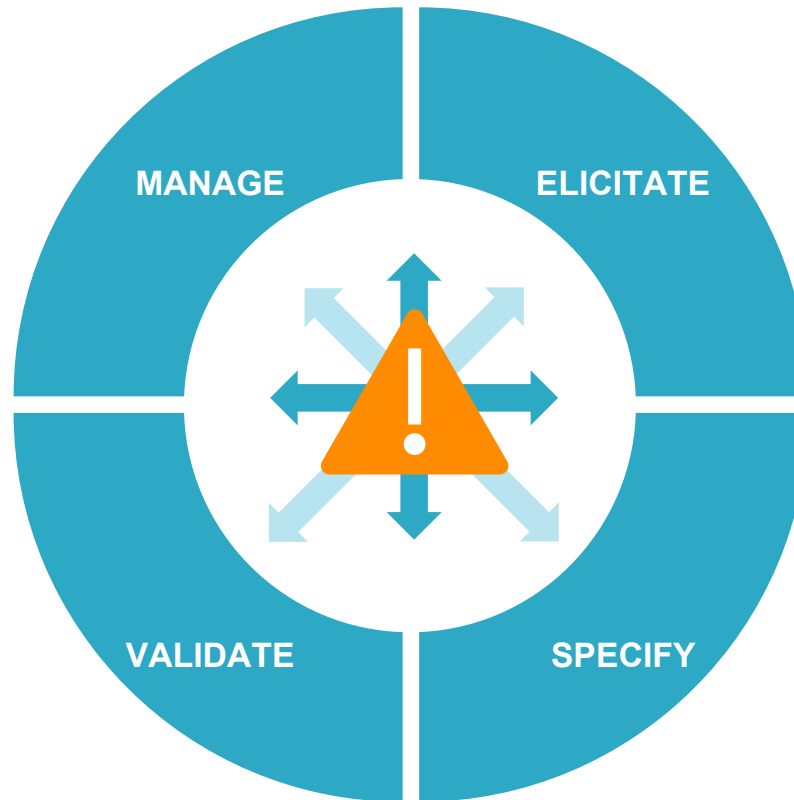
If agile development values …

- **Individual and interactions** over processes and tools,
- **Working software** over comprehensive documentation,
- **Customer collaboration** over contract negotiation,
- **Responding to change** over following a plan,

then what's the role of requirements engineering and why is it still needed?

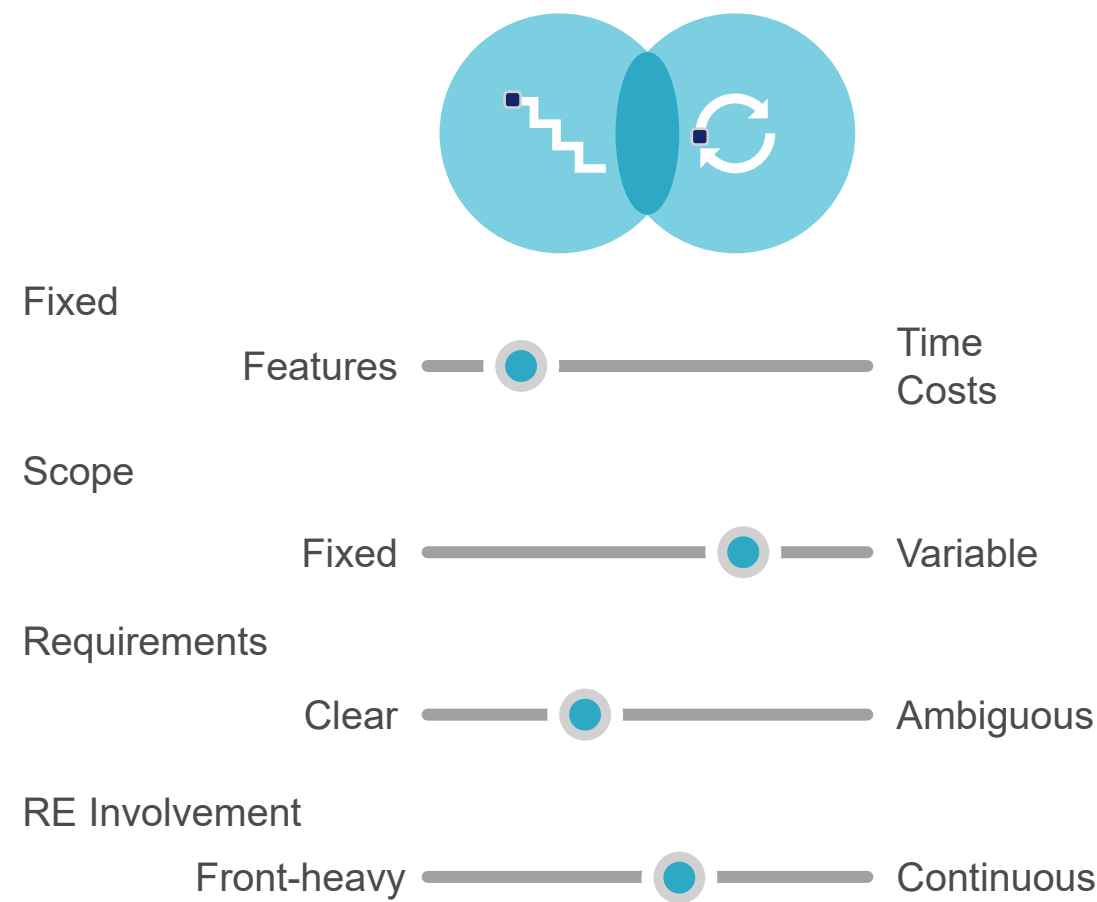Source: Beck, K., et al. (2001): Manifesto for Agile Software Development.

In effectively every agile or plan-driven project, various challenges arise in engineering and managing requirements.

- Efficiently administrate requirements in a central, accessible data store
- Provide various real-time, dynamic views for different stakeholders
- Create and maintain relations to spot dependencies and to ensure traceability
- Automate error-prone manual activities, e.g. versioning, archiving, and attribution

- Access and consolidate the existing diverse resources
- Adequately consider and involve all relevant stakeholders
- Capture all explicit and implicit requirements

- Obtain feedback in a structured and centralized manner and make it accessible
- Transparently process and incorporate feedback
- Collect and record approval; notify affected stakeholders about it

- Write comprehensible, unambiguous, and workable requirements
- Adhere to a defined standard of detail, verbalization, and form
- Consistently capture useful metadata
- Define meaningful test and acceptance criteria

MANAGE

ELICITATE

VALIDATE

SPECIFY

DETECON
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3

Requirements Engineering plays a vital role in both, traditional and agile projects and must be adjusted accordingly.

Fixed

Features ──●──── Time
Costs

Scope

Fixed ────●── Variable

Requirements

Clear ──●──── Ambiguous

RE Involvement

Front-heavy ───●─── Continuous

WATERFALL

The traditional, plan-driven waterfall approach fixes the scope and tries to estimate the necessary time and costs. It works best if the technology is well-understood and the requirements are clearly known in advance. Requirements Engineering is mainly done in the specification phase, usually resulting in a validated and approved product requirements document.

AGILE

Agile methods on the other hand fix time and costs and vary the scope accordingly. They work well in dynamic environment, i.e. requirements may change and can be flexibly reprioritized over time. Requirements Engineering is continuously involved in the project: After the creation of an initial product backlog, it runs together with all other project activities.

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Traditional Requirements Engineering is done prior to development and greatly influences the project's success by scoping and aligning well.

Product Req Doc Functional Spec Doc

Clarify Results Test

Manage Changes
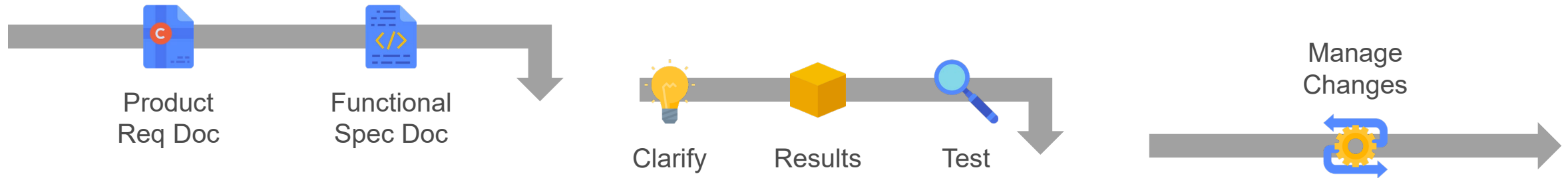
SPECIFICATION

- Diligently seek, capture, and consolidate requirements from available sources
- Analyze and validate if requirements are necessary and match stakeholders' needs
- Write the product requirements specification and align it with the functional specification document
- Critically assess the scope and the associated development effort – if necessary, narrow down the scope to avoid overscoping

DEVELOPMENT

- Clarify upcoming questions and remaining ambiguities, possibly revise the specification documents
- Support the functional test of the results as requirements are well known
- If necessary, negotiate scope adjustments to not risk the overall project goal

OPERATION

- Manage change requests along their complete cycle, i.e. from specification to operation
- Maintain documentation accordingly

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Agile Requirements Engineering runs parallel to development and is one main lever to optimize value creation.

Product Backlog   Quality Reqs   Ready

Specify & refine

Plan & prioritize

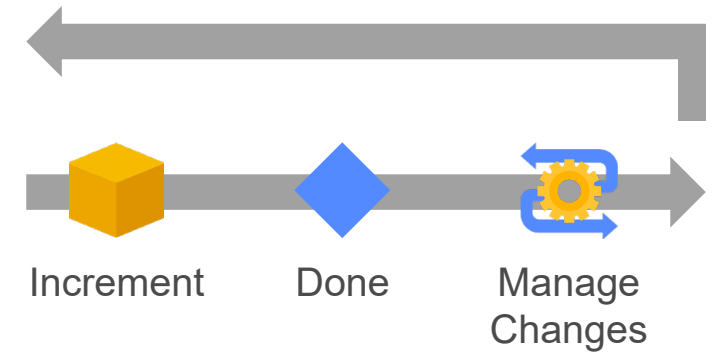Increment   Done   Manage Changes

INITIALIZATION

- Create an initial product backlog collaborating with relevant stakeholders
- Specify the most critical, fundamental requirements and meaningfully bundle them to comprehensive solutions
- Define quality requirements at the start, as they are difficult to catch up on later
- Provisionally prioritize requirements assessing effort, business value, and risk
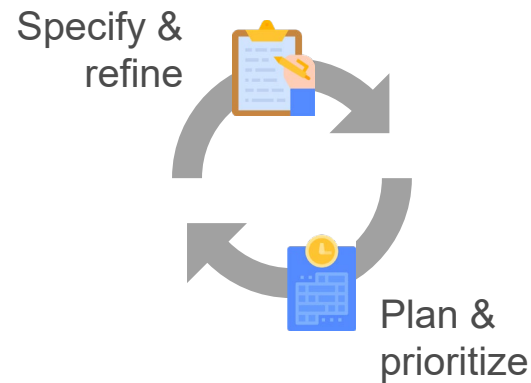
ITERATION

- Iteratively specify and refine requirements backed by real demand until they comply with the Definition of Ready (DoR) – mind that user stories are no workable functional specifications
- Analyze and meaningfully bundle requirements to reduce complexity, dependencies, and subsequent rework
- Ideally, write related tests upfront
- Plan iterations and flexibly re-prioritize

REVIEW

- Review and approve the developed increment according to the Definition of Done (DoD)
- Derive and document further requirements from the review
- Manage changes to already existing requirements

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Our Detecon approach to Requirements Management.
Setting a clear guideline for RM and practical support is the key to success.

Initialize	Specify	Manage

Waterfall or Agile? There is not good or bad, but a right and wrong in choosing your operations model.

We work with you to find the right project approach for requirements management. Whether market-based development or designs specifically for a single customer. Whether explorative or time- and cost-oriented development, through our experience and proven methods **we will find the right process model for you.**

Waterfall **Agile**
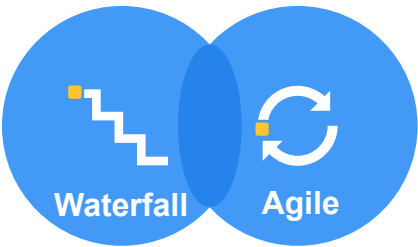
Define a clear subset of guide-lines for handling requirements during the project.

We create a **six pillars RE planning** for the project, which describes the procedure for handling requirements in an understandable way. Together with you, we align the RE setup to create an overarching understanding and **avoid later coordination problems**. Our delivieries in this project phase: .
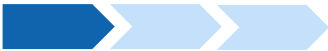
1. Processes	2. Tools
3. Info Model	4. Attribution
5. Prioritization	6. Tracing

Manage and maintain your requirements and Stakeholders.

Requirements management is not just a matter of planning and tools. The human component is much more important. We provide experienced requirements managers who **take care of the compliance and improvement of the requirements management in daily business.**

Manage Req. Intake & Outcome

Manage Validation & Alignments

Manage Specification

Manage Project Organization

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Our deliverables ensure a successful integration of requirements management in your project by applying the six critical guidelines of the RMP.

1. Processes

Define efficient RM processes which guide the **handling of new requirements** and additionally ensure to be prepared for **changing requests** during the development.

1. *Design RM processes along the dimension Specification, Illustration and Agreement*
2. *Ensure responsibilities are aligned and transparent*
3. *Enable processes for new and changing requirements*

2. Tools

Select the best tool for your requirements management. There are plenty of tools on the market, but is the most common tool also the suitable choice for your project?

1. *Process- and requirement attribute-based tool evaluation for the selection process.*
2. *Tool administration and constant adaption to project needs.*

3. Requirements Information Model

Commonly **requirements differ across the three dimensions functionality, user and architecture.** Hence each type requires different approaches for classification, level of detail and illustration.

1. *Design of a Requirements Information Model which defines the information level of detail for each stakeholder dimension.*
2. *Clear documentation of requirements type and format for functional and technical requirements.*
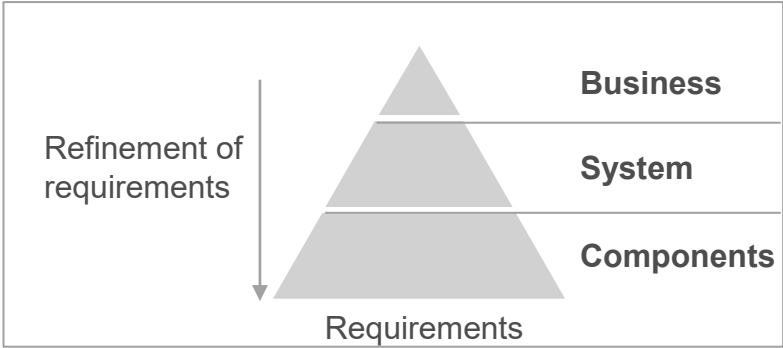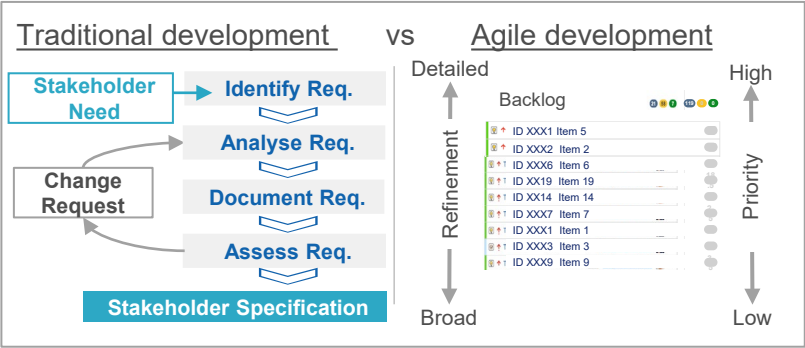
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4. Attribution

A "Must-have" to structure your requirements especially in projects with many stakeholders and complexity. Attributes add meta-information, which enables **control over the entire requirements stack and makes handling easy for everyone.**

1. *Defined set of relevant attributes per requirement type*
2. *Ensure actively maintained and used attributes by stakeholders.*

Exemplary

General   Agile   Versioning   People   Compliance   Links

Summary*   Free services for order

Component/s   CM9 ×

Priority   High

Business Scope   As a user I want to see which free services I get when I submit my order in order to make a decision easier.
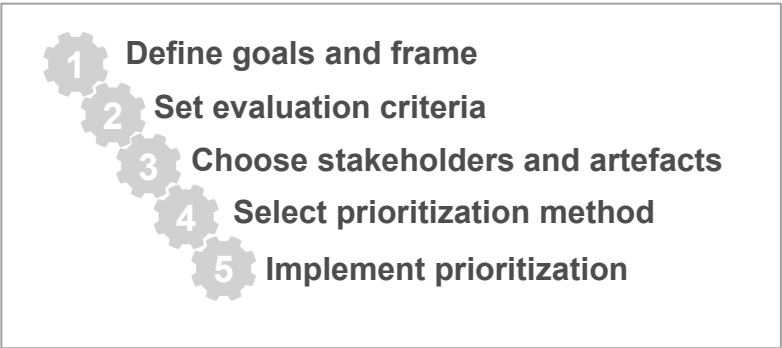
Story Points   5

5. Prioritization

How do you reach a common alignment between different stakeholder interests? A solid requirements management plan provides you with an **aligned framework to prioritize your developments** in best- possible interest of everyone.

1. *Provide a general prioritization process flow.*
2. *Provide a practical set of tools for requirement prioritization (e.g. Kano, Planning Poker, etc.)*

1. **Define goals and frame**
2. **Set evaluation criteria**
3. **Choose stakeholders and artefacts**
4. **Select prioritization method**
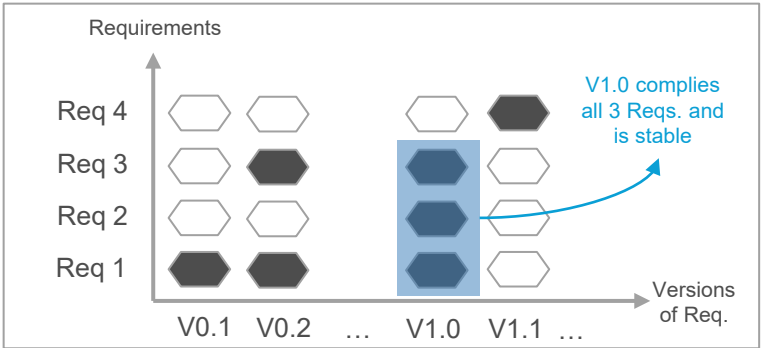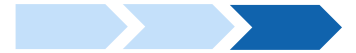5. **Implement prioritization**

6. Tracing

Shared information and stakeholder-based reporting are defined in the beginning of the management process and the RMP holds guidelines to ensure well-tracked requirements along the project.

1. *Enable cost/value-based tracking for the development process*
2. *Actively monitor quality and status of requirements in the project and arrange mitigation*

Requirements

Req 4
Req 3
Req 2
Req 1

V1.0 complies all 3 Reqs. and is stable

V0.1   V0.2   …   V1.0   V1.1   …   Versions of Req.

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Our hands-on Requirements Management Activities

Manage Requirement Intake & Outcome

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- Adequately consider and involve all relevant stakeholders

- Capture all explicit and implicit requirements

Manage Specification

- Write comprehensible, unambiguous, and workable requirements

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Manage Project Organization

- Efficiently administrate requirements in a central, accessible data store

- Provide various real-time, dynamic views for different stakeholders

- Create and maintain relations to spot dependencies and to ensure traceability

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Manage Validation & Alignments

- Obtain feedback in a structured and centralized manner and make it accessible

- Transparently process and incorporate feedback

- Collect and record approval; notify affected stakeholders about it

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Thank you.

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