Requirements engineering pre itSMF Slovensko

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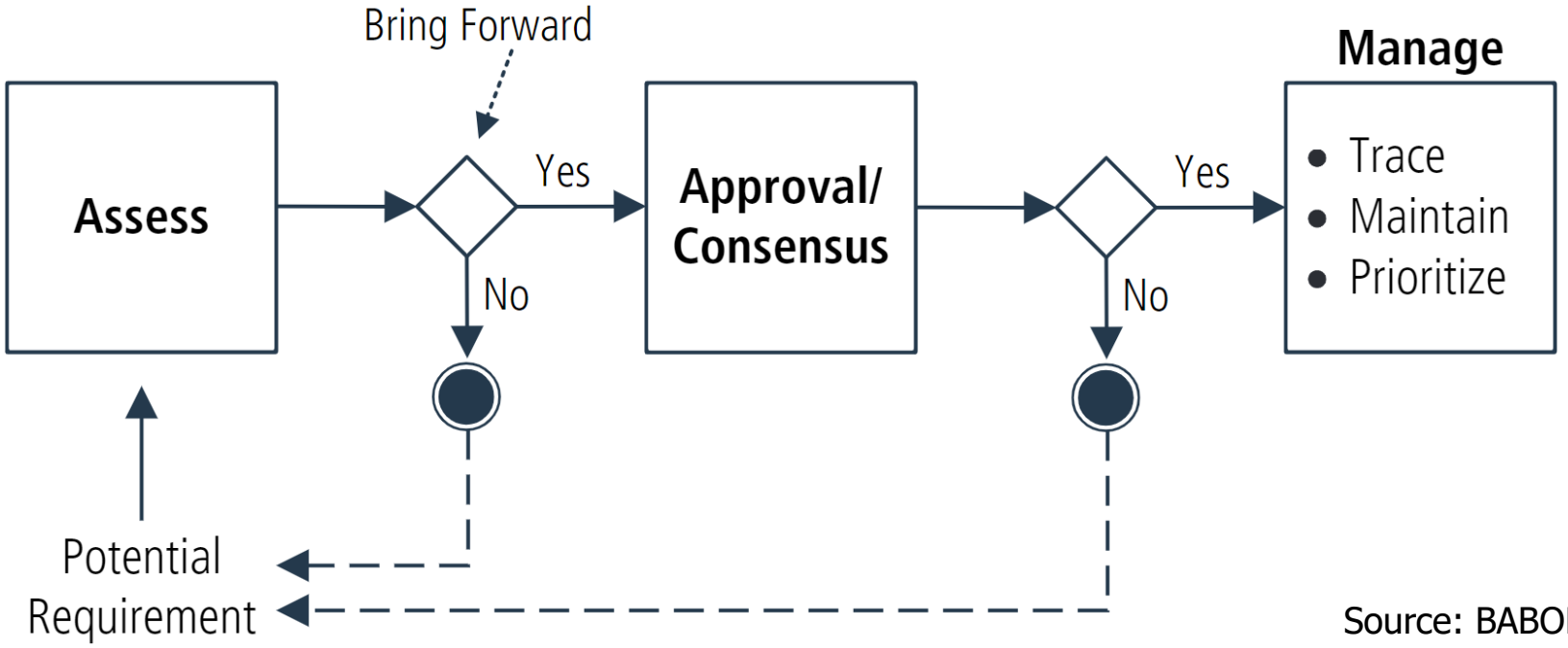
Requirements engineering

- Understanding and documenting the requirements of the business, users and all other stakeholders
- continues through the development of a solution, and
- ends when a solution and the requirements that represent it are retired.

Managing **lifecycle** of each requirement



Source: BABOK®v3

Requirements engineering

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- Analysis of the current and required business processes results in functional requirements met through IT services
- Major types of requirements for any system:
  - Functional requirements
  - Management and operational requirements
  - Usability requirements

Functional requirements

- Describe the results a service is intended to do
- Can be expressed as tasks or functions
- Specifying through different methods (e.g. Use case model) or data-flow diagram

Use case model:

- Main purpose: Establish the **boundary** of the proposed system and fully state the functional **capabilities** to be delivered to the users
- Goal-oriented set of interactions between service and different actors
- An actor may reflect a class of user's roles or other services and their requirements
- They describe a service's functionality on a level that's understandable for both business and IT
- They can serve to specify the SLAs

Waste: 45% of Functionality is never used

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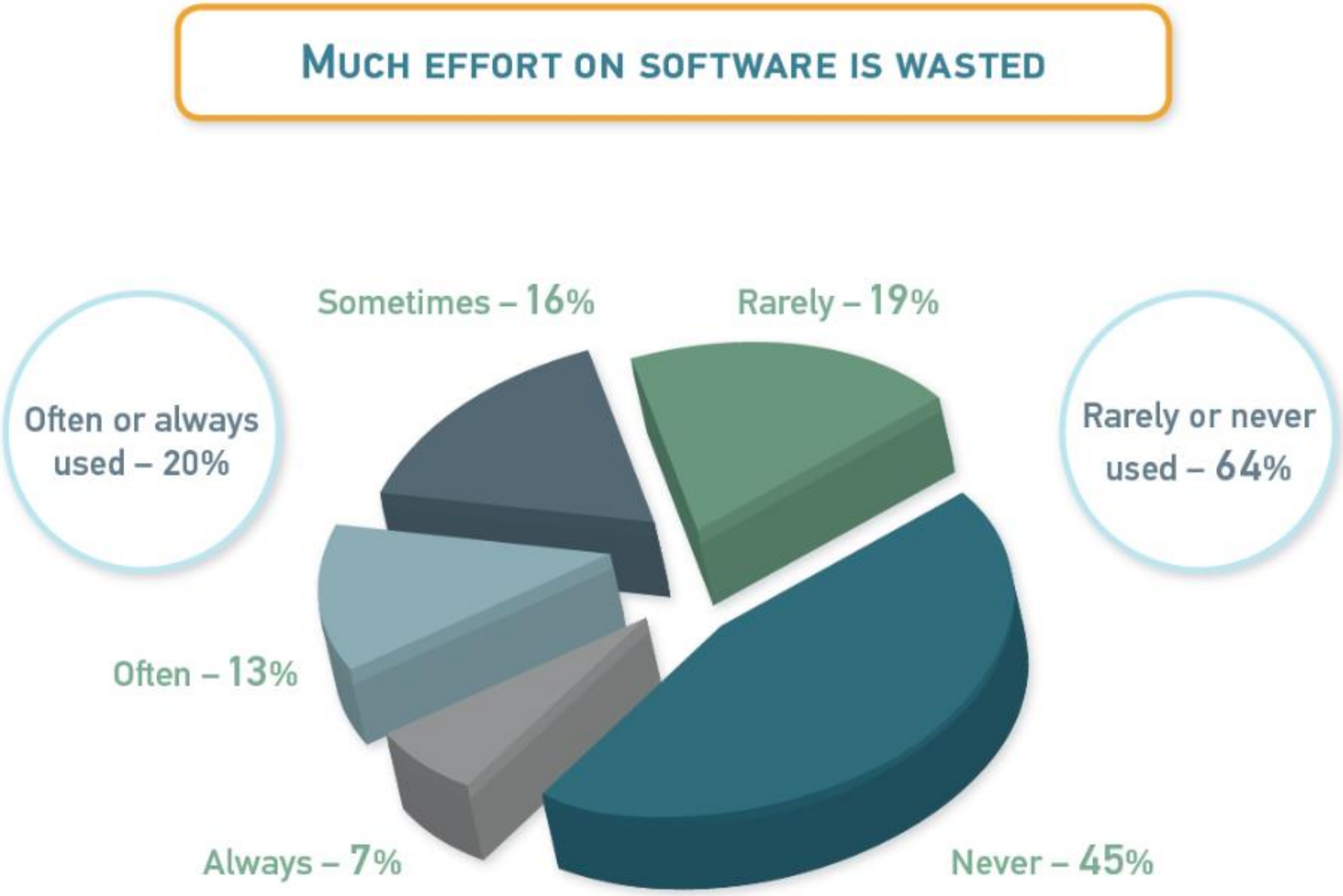

Source: Standish Group Report at XP Conference 2002 by Jim Johnson

Management and operational requirements

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- Manageability
- Efficiency
- Availability and reliability
- Capacity and performance
- Security
- Installation
- Continuity
- Controllability
- Maintainability
- Operability
- Measurability and reportability

Usability requirements

Ensuring that the service meets the expectations of its users (→ user-friendly). To achieve this:

- Establish performance standards for usability evaluations
- Define test scenarios for usability test plans and usability testing

Selected helpful techniques 1/2

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- Business Rules Analysis
  - used to trace business rules to requirements that they support, or rules that support requirements.
- Functional Decomposition
  - used to break down solution scope into smaller components for allocation, as well as to trace high-level concepts to low-level concepts.
- Process Modelling
  - used to visually show the future state process, as well as tracing requirements to the future state process.
- Scope Modelling
  - used to visually depict scope, as well as trace requirements to the area of scope the requirement supports.
- Data Flow diagrams
  - used to identify information flow that may be similar across the enterprise in order to facilitate reuse.
- Data Modelling
  - used to identify data structure that may be similar across the enterprise in order to facilitate reuse.
- Document Analysis
  - used to analyze existing documentation about an enterprise that can serve as the basis for maintaining and reusing requirements.
- Use Cases and Scenarios
  - used to identify a solution component that may be utilized by more than one solution.
- User Stories
  - used to identify requirements associated with the story that may be available for reuse
- Backlog Management
  - used to compare requirements to be prioritized. The backlog can be the location where the prioritization is maintained.

Source: BABOK®v3

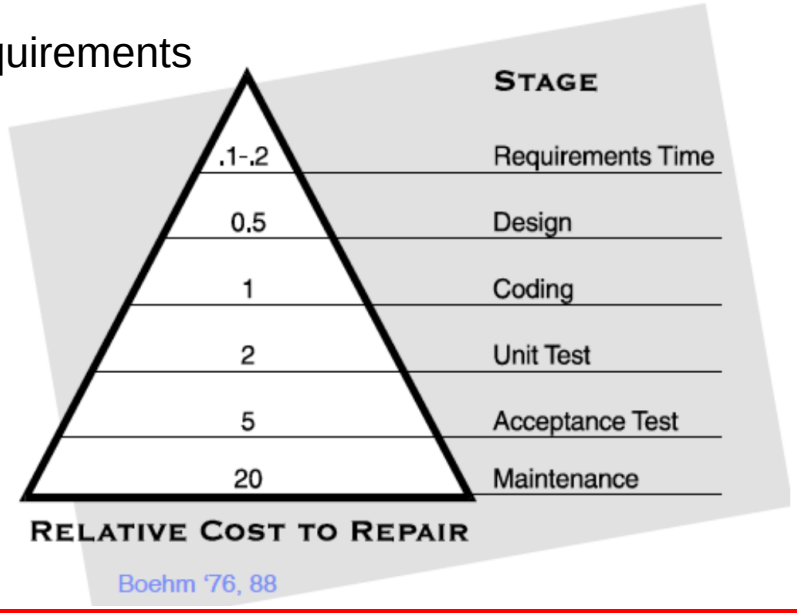
Selected helpful techniques 2/2

- Business Cases
  - used to assess requirements against identified business goals and objectives to determine importance.
- Decision Analysis
  - used to identify high-value requirements.
- Estimation
  - used to produce estimates for the basis of prioritization.
- Financial Analysis
  - used to assess the financial value of a set of requirements and how the timing of delivery will affect that value.
- Interviews
  - used to gain an understanding of a single or small group of stakeholders' basis of prioritization or priorities.
- Risk Analysis and Management
  - used to understand the risks for the basis of prioritization.
- Workshops
  - used to gain an understanding of stakeholders' basis of prioritization or priorities in a facilitated group setting
- Business Cases
  - used to justify a proposed change.
- Interface Analysis
  - used to help business analysts identify interfaces that can be affected by the change.
- Acceptance and Evaluation Criteria
  - used to define approval criteria.
- Reviews
  - used to evaluate requirements.

Source: BABOK®v3

Difficulties and challenges

- Tight timescales and tight budgets
- A large proportion of errors (over 80%) are introduced at the requirements phase
- Very few faults (fewer than 10%) are introduced at design and development – developers are developing things right, but frequently not developing the right things
- Most of the project time is allocated to the development and testing phases of the project
- Lest than 12% of the project time is allocated to requirements
- Not defined or poorly defined actors
- Disuse of tacit user knowledge



Requirements engineering: Solutions

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- Defining of actors:
  - Persons who represent three broad stakeholder groups: The business, the user community and the service development team
- Dealing with tacit knowledge:
  - User pass on during development their explicit knowledge but they can not easily articulate knowledge of procedures and data that is at the front of their minds.
  - Elements that cause problems and misunderstandings are e.g.
    - Skills
    - Taken-for-granted information
    - Front-story/back-story
    - Future systems knowledge
    - The difficulty of a common language
    - Intuitive understanding
    - Organizational culture

Documenting requirements

- The requirements document includes a catalogue of requirements
- Each requirement is documented using a standard template and it is supplemented by models, diagrams and other appendices.
- Before the requirements are formally entered into the catalogue, they are subject to careful scrutiny.
- Once the document is considered to be complete, it must be reviewed by business representatives and confirmed to be a true statement of the requirements, at this point in time.
- Important is that they are well-defined, clear and complete!

Content requirements list:

  - Requirement ID and owner (responsible)
  - Source (business area/user/document that requested the requirement)
  - Priority (must have, should have, could have, won‘t have)
  - Requirements catalogue
  - Models for determining the scope and supporting models
  - Glossary

Requirements and outsourcing

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- The aim is to select standard packaged solutions wherever possible
- All the activities of business requirements are done in-house
- Requirements analysis is an iterative process – the requirements will change during the period the application and service are being developed
- Typical requirements outsourcing scenarios:
  - Low-level requirements specification
  - High-level requirements specification