Kokkuvõte, Kuldar Taveter

NÕUETE JÄLGITAVUS
(REQUIREMENTS TRACEABILITY)
Documenting requirements artefacts

Diagram showing relationships between artefacts such as Identifier, Description, Requirements artefact, Criticality, Priority, Risk, Goal, Scenario, Solution-oriented requirement, and their associated relationships like "has", "contributes to realisation of", "derived from", and "example of satisfaction".
Pre- and Post-traceability

- **Pre-traceability** – of requirements artefact to its predecessor artefact
  - To its source or origin

- **Post-traceability** – from a requirement to its successor artefacts
  - Architecture, implementation, test cases, and etc.
Traceability Model

- **Traceability artefact**
  - **part of** 0..1
  - 0..*
  - 1..*
  - source

- **Traceability relationship**
  - destination
  - 0..*
  - 0..*

- **Goal**
- **Scenario**
- **Solution-oriented requirement**

- **Constraint**
- **Precondition**

- **Condition**
  - **Content**
  - **Abstraction**
  - **Evolution**
  - **Miscellaneous**
Traceability Types

- Part of
- Source
- Destination

Traceability Artefact:
- Goal
- Scenario
- Solution-oriented requirement

Traceability Relationship:
- Constraint
- Precondition
- Condition
- Content
- Abstraction
- Evolution
- Miscellaneous
Traceability Types

• Condition
  – **Constraint** – a solution-oriented requirement can be a constraint of another solution-oriented requirement
  – **Precondition** – the precondition realising a functional requirement might be that the hardware meets a specific performance requirement
Traceability Types

• Content
  – **Similar** – two associated requirements are similar in content
  – **Compares** – $A_1$ represents the result of comparison of artefacts $A_2 \ldots A_n$
  – **Contradicts** – inconsistency in the requirements artefacts
  – **Conflicts** – realisation of requirement A may hinder (but does not necessarily exclude) the realisation of requirement B
Traceability Types

- **Abstraction**
  - **Classifies** – A classifies $B_1 \ldots B_2$
  - **Aggregates** – A is an aggregation of a set of other artefacts $B_1 \ldots B_2$
  - **Generalises** – artefact is a generalisation of (one or) several other artefacts
Traceability Types

• Evolution
  – **Replaces** – artefact B was replaced by artefact A
  – **Satisfies** – if artefact A is realised in the system, artefact B is realised as well
  – **Based on** – artefact A has influenced the definition of artefact B
  – **Formalises** – artefact A is a formal documentation of artefact B
  – **Refines** – artefact A defines the artefact B in more detail
  – **Derived** – artefact A was derived based on a set of other artefacts
Traceability Types

- **Miscellaneous**
  - **Example of** – artefact contains exemplary aspect of a set of artefacts
  - **Verifies** – e.g., test artefact is used to verify/validate the requirement artefact
  - **Rationale** – one artefact documents the justification of another artefact
  - **Responsible for** – a stakeholder is responsible for associated artefact
  - **Background** – used to assign a background information (e.g., requirement documented using some standard)
  - **Comment** – any kind of information related to a requirements artefact
Example
1. “Based on” documents that the associated goal is based on the text fragments of a predecessor artefacts (e.g., fragment of the minutes of the interview)
2. “Conflict” documents that a conflict between textual **scenario** and the **goal** definition exists.
3. "Formalises" documents that the model-based scenario formalises the associated textual scenario.
4. “Classifies” between the model-based scenario and the associated text, solution-oriented requirements document that the solution-oriented requirements are classified by the scenario
5. “Refines” documents that the statechart refines the associated textual requirement
6. "Satisfies" documents that the depicted requirements of the solution-oriented requirements model is realised if a specific component in the system architecture is realised.
Documenting Traceability Relationships
Documenting Traceability Relationships

- Textual references

R2-17: For selecting the trip destination, the navigation system shall display the last ten trip destinations.
[based_on→R1-17] [...]
Documenting Traceability Relationships

• **Textual references**

R2-17: For selecting the trip destination, the navigation system shall display the last ten trip destinations.  
[based_on→R1-17] [...]

• **Hyperlinks**

R2-17: For selecting the trip destination, the navigation system shall display the last ten trip destinations.

hyperlink (type: conflicts)

R3-11: The system shall not store any information about the destinations of previous trips.
Documenting Traceability Relationships

- **Traceability Matrix**

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<table>
<thead>
<tr>
<th>Source artefacts</th>
<th>Goal 1</th>
<th>Goal 2</th>
<th>Goal 3</th>
<th>Goal 4</th>
<th>Goal 5</th>
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<tr>
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Documenting Traceability Relationships

- Traceability Graphs
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Take Home