Exercise for the Lecture Requirements Engineering (Elite)
Summer Semester 2022
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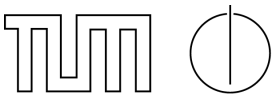

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Tutorial 2: Problem vs Solution, Quality Model

This exercise sheet covers the contents of the **1st and 2nd lecture**.

Exercise 1 Classification and Analysis of Requirements (Analysis)

Solve the following subtasks:

a) Classify the following text examples into: Functional Requirements, Quality Requirements, and Process Requirements.

b) For each example, mark a possible requirement source, a possible author, the stakeholders involved, the requirement rationale, and the actual requirement.

Text examples:

1. The system can be controlled easily and intuitively with the aid of two control elements. A button is used to discard hints. A switch is used to turn the system on or off.
2. The vehicle's radio frequency warning (RFW) system can then compare the intended direction of travel with the observed direction of travel. If the intended direction of travel and the vehicle's direction of travel match, the information is processed further; otherwise, the information is filtered out. The vision of the Radio Frequency Warning (RFW) system is to help drivers cope with the flood of information on the road with the help of radio frequency signals (hereafter RaSi).
3. The RFW system is intended to provide the user with an alternative to traffic signs that are visually difficult to see.
4. For the development of the RFW system the V-model XT shall be used to simplify quality assurance.
5. The supplier shall comply with the applicable standards and laws, even if they are not explicitly mentioned in the agreements. It should be noted that not only the laws applicable in Germany must be complied with, but also those of other EU countries.

Exercise 2 Creating and analyzing your own requirements: Jodel (Hands-on, Analysis)

Inform yourself about the business model and target audience of the app Jodel. Use your existing knowledge about this app as well as this article to figure out how content published in the app is moderated.
Create three requirements for a 'Moderation' module. Be sure to adhere to the characteristics of good requirements according to the quality model!

Next, have a partner analyze your requirements. The partner identifies the possible author (role), the affected stakeholders, the rationale as well as the actual requirement. Finally, discuss and compare your partner's findings to your intent.

Exercise 3 Analysis of Requirements for separation of problem and solution (Analysis)

When stakeholders describe requirements, they often put forward concrete solution proposals. Those can distract from the actual problem and unnecessarily restrict the solution space. As a requirements engineer, it is your task to question such proposed solutions in order to approximate an adequate problem description.

Consider the e-scooter: One stakeholder poses the specific request "The handle should be made of stainless steel". You as a requirements engineer question this specific request: "Why stainless steel?" and receive the answer: "Because it is easier to clean". From this, you deduce the requirement: "The handle should be easy to clean". During system design, the decision is made to use carbon because it is even easier to clean than stainless steel and is also cheaper.

Extract a possibly problematic solution constraint from the following statements. Reformulate these statements so that their solution space is not unnecessarily restricted:

- "The microwave oven should be equipped with a video camera that analyzes the food in the microwave and automatically adjusts the power intensity and duration from it."
- "The user should be able to choose the appropriate category from the drop-down menu via GUI."
- "A typical third party 'load balancer' shall distribute user requests to the different servers to ensure a response time below 2 seconds."
- "To avoid distracting the driver, the desired speed shall be adjustable via two buttons, + and −, on the steering wheel." "
- "The vehicle shall not accelerate at more than $2m/s^2$."
- "All new data fed into the system must be backed up once per hour." .
- "Before creating a new text entry, the character set to be used should always be queried."
- **Create 2 more examples that may include a solution constraint. Have your partner analyse them (or re-use your results of Exercise 2)**

Exercise 4 RE and Project Success (Discussion)

Consider the following hypotheses and discuss arguments for and against it.

The more time spent on RE activities, the greater the likelihood of project success.
or:
The less time spent on RE activities, the lower the likelihood of project success.

Exercise 5 Quality Standards (Understanding)

In the lecture, ISO/IEC/IEEE Std. 29148 was introduced as the quality model for requirements

a) What are advantages of a standardized quality model?

b) What are disadvantages of a standardized quality model?

c) For each aspect of ISO/IEC/IEEE Std. 29148, think about an example requirement violating it.