MODELING NON FUNCTIONAL REQUIREMENTS OF THE SYSTEM

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OVERVIEW OF THE PROJECT

- Introduction and Motivation
- Explanation of the schemes used to classify non-functional requirements (NFR’s)
- Notation for modeling non-functional aspects of a system in OPM
  - Illustration of modeling NFR’s in the use case system
- Conclusions
Non-functional requirements define the overall qualities or attributes of the resulting system.

Non-functional requirements place restrictions on the product being developed, the development process, and specify external constraints that the product must meet.

Examples of NFR include safety, security, usability, reliability, performance requirements and more.
There is no a clear distinction between functional and non-functional requirements.

Whether or not a requirement is expressed as a functional or a non-functional requirement may depend:

– on the level of detail to be included in the requirements document.

– the degree of trust which exists between a system customer and a system developer.

• Example of security requirement expression as FR:
  The system shall include a user authorization procedure where users must identify themselves using a login name and password. Only users who are authorized in this way may access the system data.
CLASSIFICATION OF NFRs

- Product requirements
  - Specify the desired characteristics that a system or subsystem must possess.
  - Most NFRs are concerned with specifying constraints on the behaviour of the executing system.
  - Some product requirements can be formulated precisely, and thus easily quantified
    - Performance
  - Others are more difficult to quantify and, consequently, are often stated informally
    - Testability
Study Case – Developing new product in Flavor & Fragrance industry

Requirement - The responsibility for developing system new product must be well defined.

This is a accountability (part of testability) requirement which means that every new product have to be assigned to single developer who is responsible for all development process.
OPM REPRESENTATION – TESTABILITY IN NFRs - bottom-up illustration
OPM REPRESENTATION – NFRs IN SYSTEM
Study Case – Developing new product in Flavor & Fragrance industry

Requirement – Product documentation must be in proper language.

This is a communicativeness (part of testability) requirement which means that every form in Product development portfolio must have version in English.
Product requirements are often conflict. Example in software system:

A requirement for a certain level of performance may be contradicted by security requirements which use processor capacity to carry out complex algorithms - **Conflict**

Example in Study Case:

A requirement for a certain level of accountability may be contradicted by flexibility requirements which requires multiple responsibility of development process - **Conflict**
Possible solution for resolving conflicts
- attaching priority to the conflicting NFRs

The process of arriving at a trade-off in these conflicts depends on:
- The level importance attached to the requirement
- The consequence of the change on the other requirements and,
- The wider business goals
**Benefits**

- The OPM stays unchanged – (no additional modeling features required).
- Hierarchical representation – a useful tool for modeling NFR’s (proved to be efficient in most articles we have read).
- Modeling of NFR in this way, provides us with ability to detect conflicts between different NFR’s at the early project stages.
**CONCLUSIONS**

**Disadvantage**

- Conflict resolving may require reconciliation of other functional and non-functional requirements of the system.
Thank you for your time