

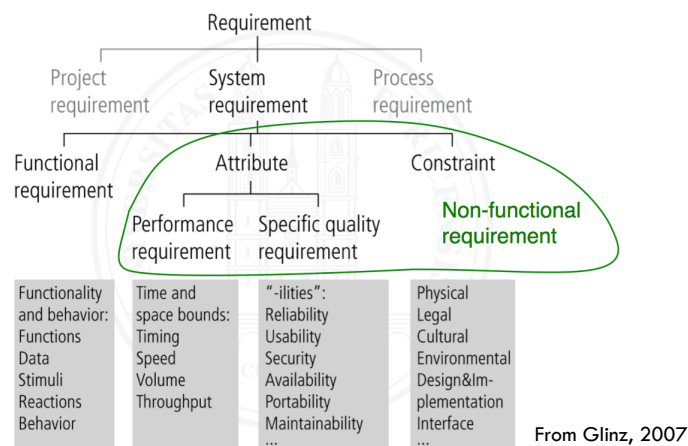
MODELING NON-FUNCTIONAL REQUIREMENTS USING SOFT GOALS

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Overview

- Introduction to non-functional requirements
- The big picture
- Techniques to model non-functional requirements
- Conclusion

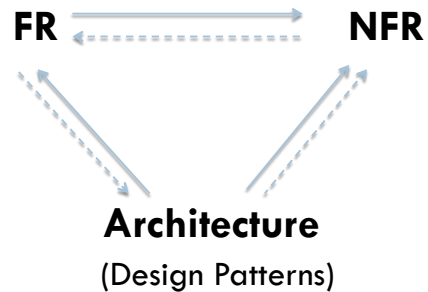
What are NFR?



Why is it important to model NFR?

- System success
- But difficult to deal with – hard to quantify – and often interact in competing or synergetic ways

Big Picture



Adopted from B. Paech. dotted lines: constraints, solid lines: realizes

Techniques to model NFR

- How to identify NFR?

→ Elicitation



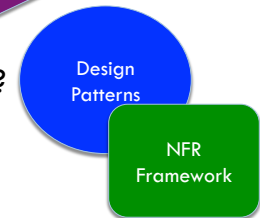
- How to describe NFR?

→ Documentation



- How to consider NFR in the design?

→ Design



The NFR Framework (NFRF)

- Non-functional requirements drive the overall design process
- Two basic means:
 - Softgoal Interdependency Graph (SIG)
Represents and records the design and reasoning process
 - Catalogues
Stores information about NFR and design knowledge

NFRF - Steps

- About 10 steps
- Can be reduced to:
 1. Analysis
 2. Operationalization
 3. Evaluation
 4. Relating to FR

NFRF - Example

- Functional Requirement:
 - Maintain customer accounts
- Non-Functional Requirements:
 - Good Performance for accounts
 - Good Security for accounts

NFRF – Analysis

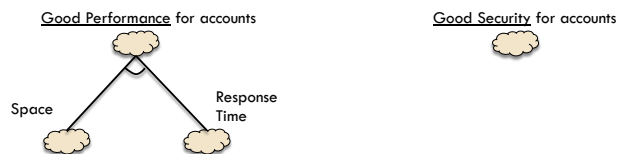
Good Performance for accounts



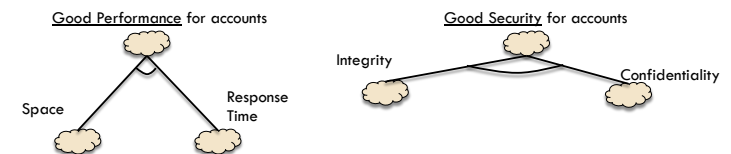
Good Security for accounts



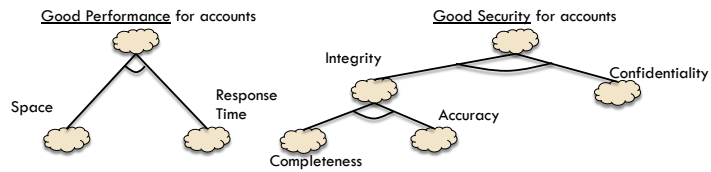
NFRF – Analysis



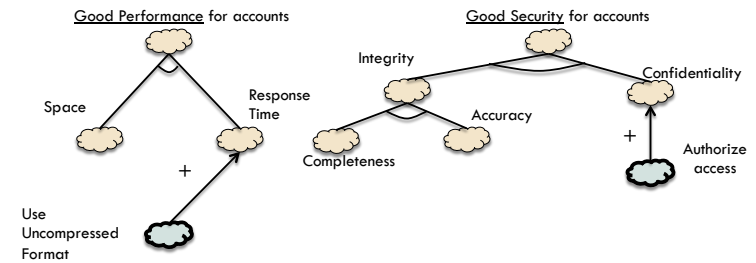
NFRF – Analysis



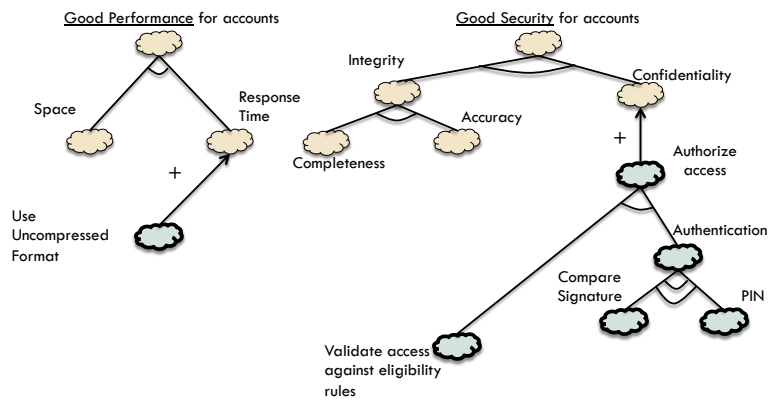
NFRF – Analysis



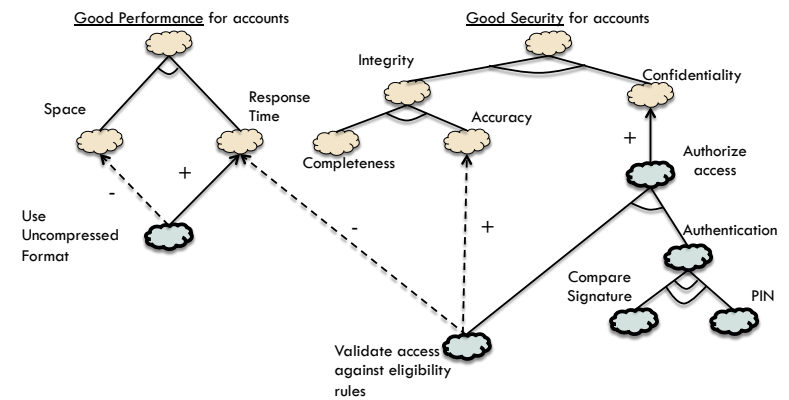
NFRF – Operationalization



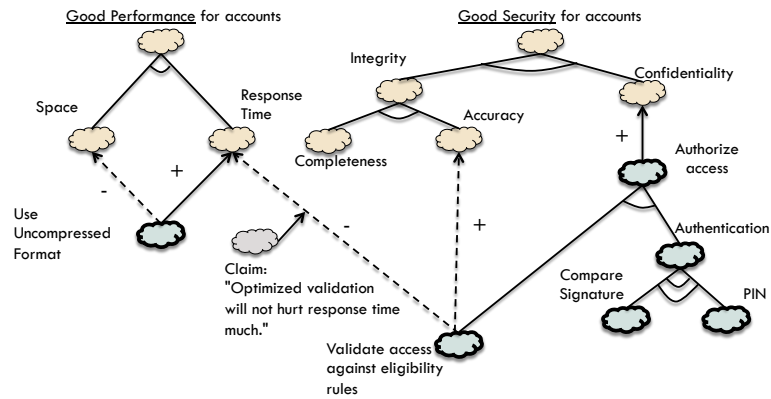
NFRF – Operationalization



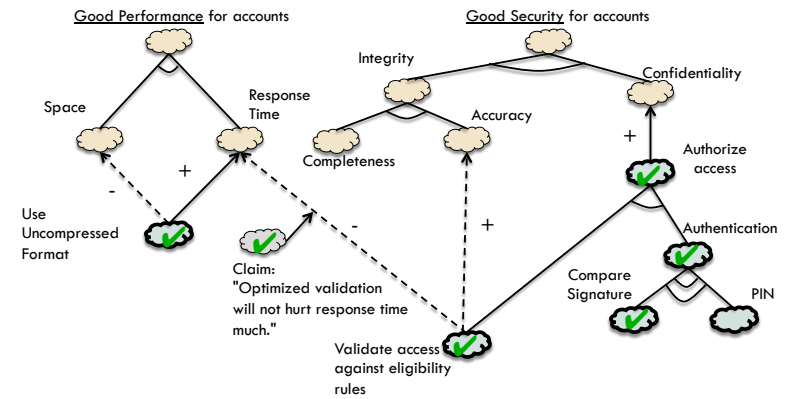
NFRF – Operationalization



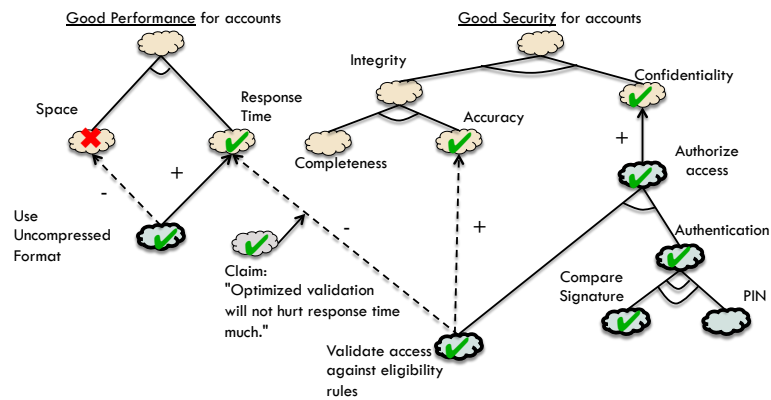
NFRF – Operationalization



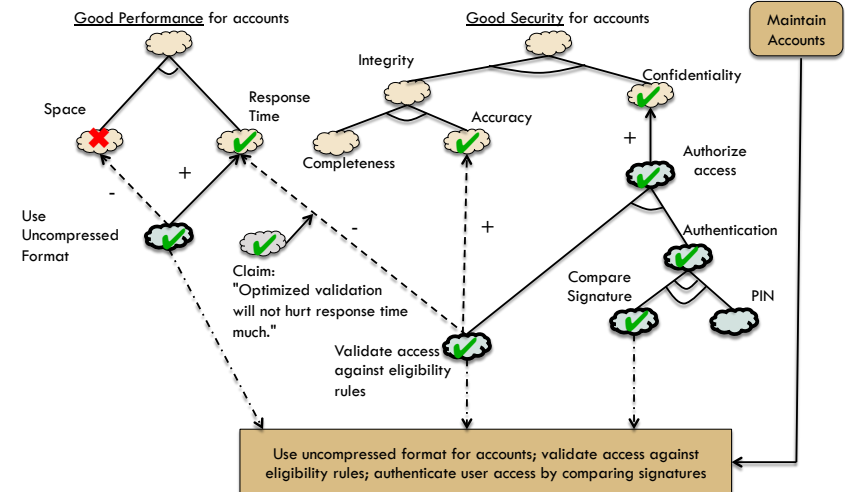
NFRF – Operationalization



NFRF – Evaluation



NFRF – Relating to FR



NFR and Design

- Systematic approach
- Make design decision visible
- Traceability

Conclusion

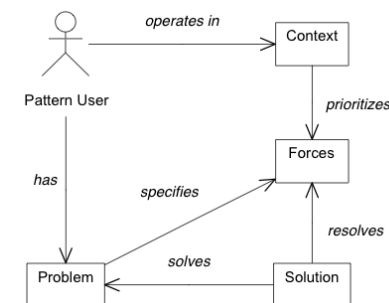
- It is important to consider NFR
- NFR Framework is a fundamental approach to systematically model NFRs
- Try to treat FR, NFR, and Architecture together

Questions



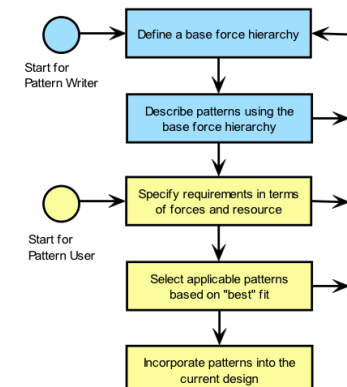
Architecture alignment

□ Design Pattern



From M. Weiss

□ Design Process



NFRF - Critique

- NFR $\neq$ soft (weich)