Evaluation of Health Information Systems

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Evaluation of Health Information Systems

Many reasons to be interested in evaluation:

- What the impact was: does it help or does it harm?
- What the impact was: as the return of investment
- What the impact was: as to rectify our strategy

What to evaluate? How to evaluate?

Challenge of Heterogeneity in Health Information Technology/System

From health technology to health information technology

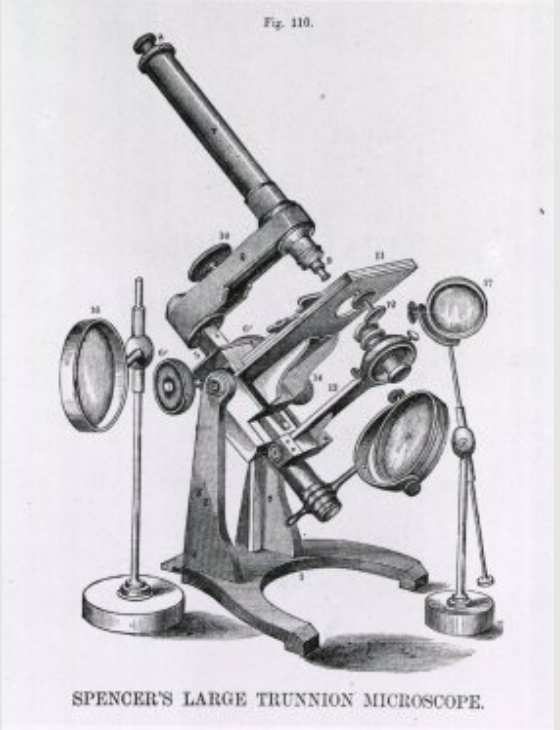
Informatics = Information + Automatic

Even focusing on informatics, still there exists

a heterogenous set of technologies

and systems

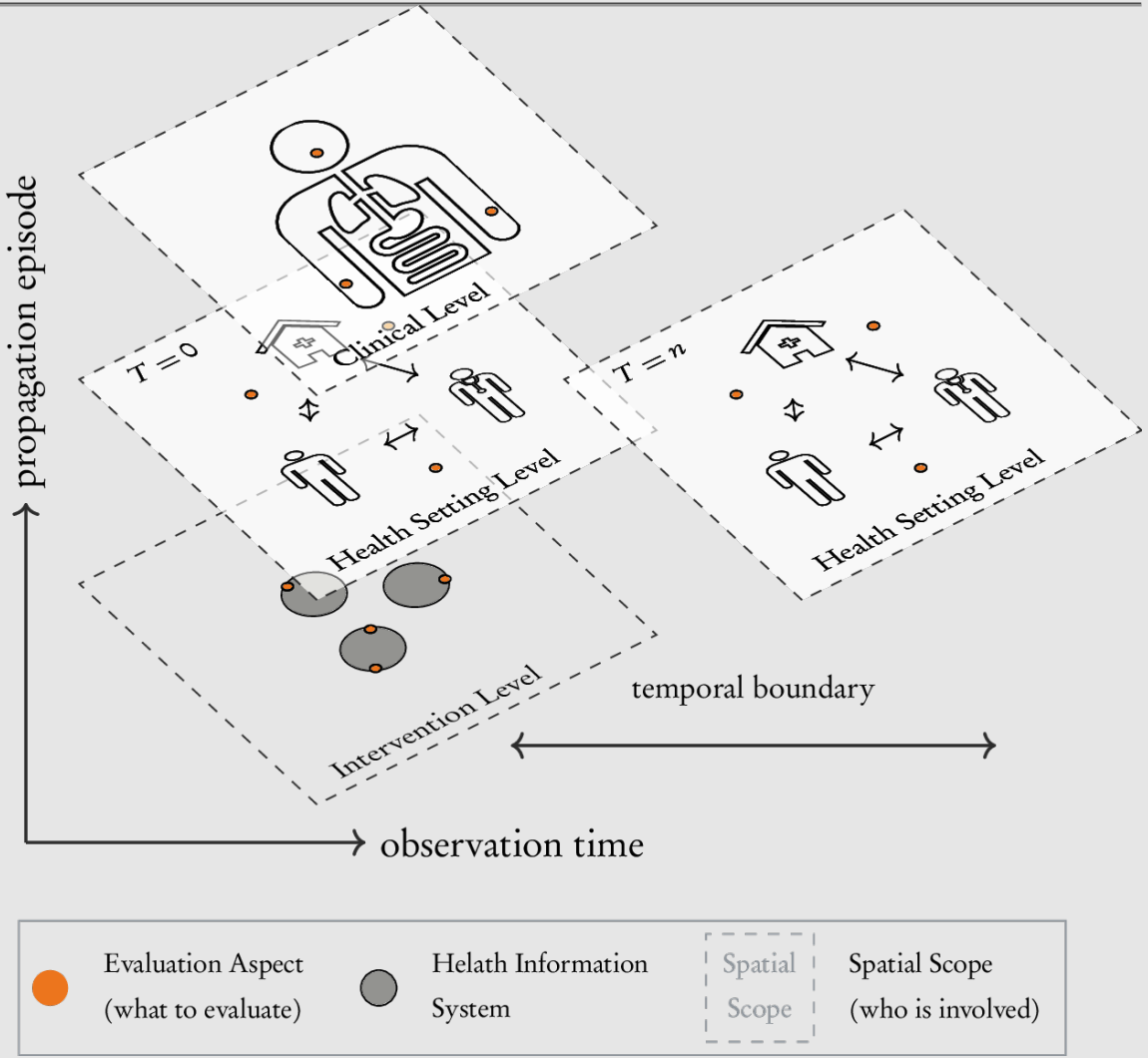
Technology vs. System



Challenges of What to Evaluate

Propagation of the impact, from intervention to the final receiver

- What episode?
- What scope?
- When?
- What depth?



What to Evaluate?

Based on Models (top-down)

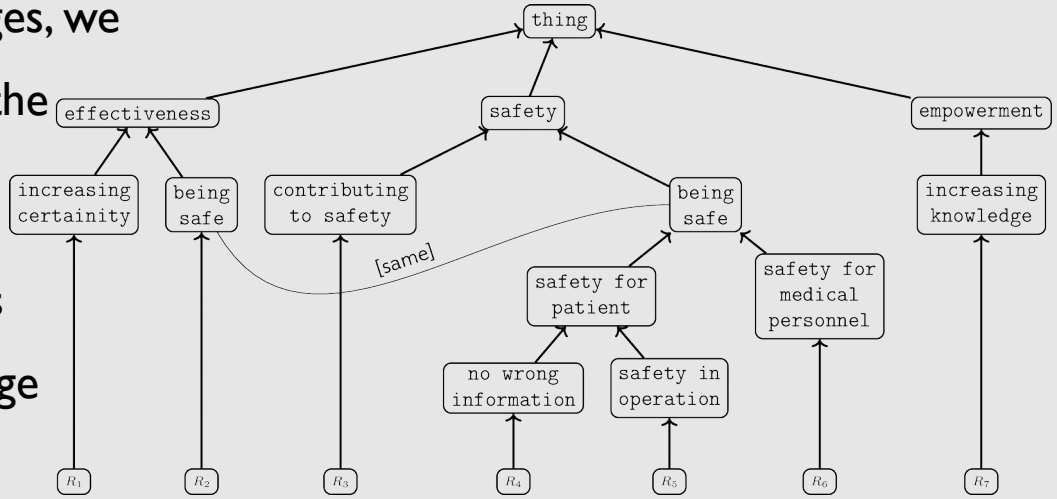
- Technology adoption, acceptance, fit: TAM, TAM2, TIAM, FITT, ...
- Experts opinion: HTA core model, MAST,...

User-Requirement Elicitation (bottom-up)

Can we combine both of them?

Possible Solution: Using Ontologies

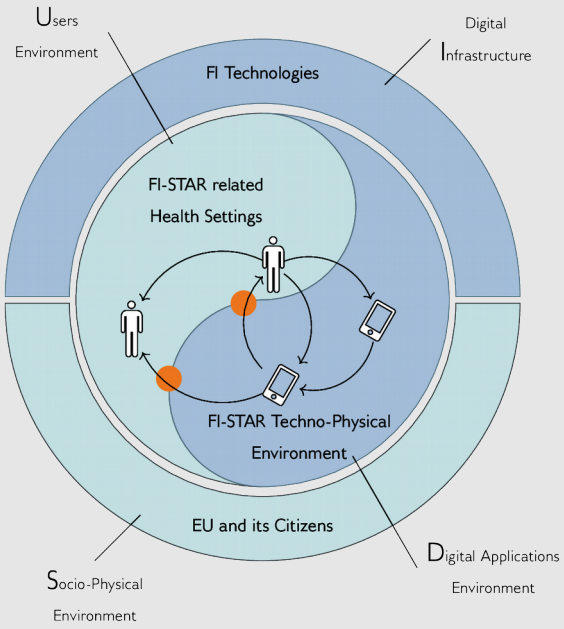
- Through the network of words, i.e. languages, we already have captured and communicated the most complex things
- Ontology: Formal specification of concepts and their relations in a domain of knowledge
- Ontologies are networks by their nature
- The network structure plus being specific in concepts and their relations makes ontologies *computing-friendly*

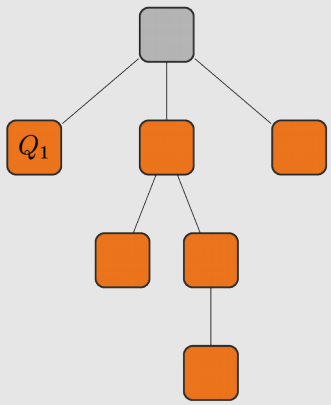


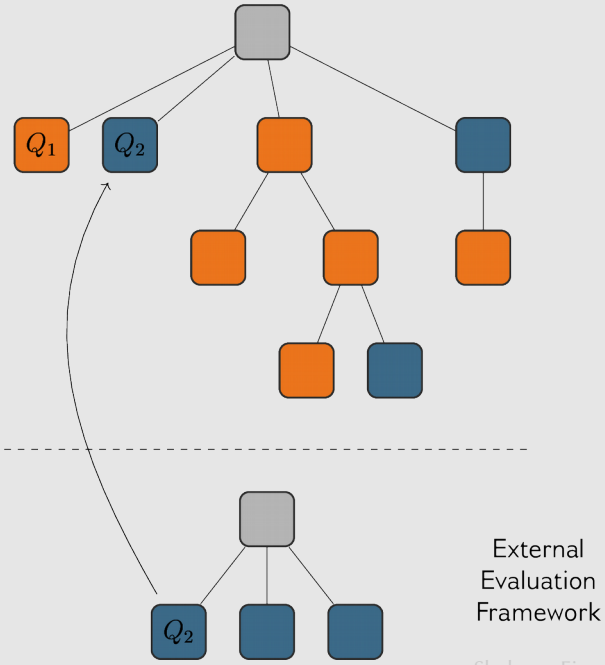
Research Context: the FI-STAR Project

- An EU-FP7 project, part of FI-PPP
- 7 e-health applications
- Trials for Future Internet (FI) technologies
- 87 patients, 30 health professionals
- Evaluation aspects (what to evaluate) need to be common among use-cases

The UVON Method (Study I)







External
Evaluation
Framework

quality attribute

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Quality Aspects Extracted From FI-STAR

- Ten quality aspects appeared on the top of the ontology (extracted from requirement documents and combined with MAST), with their children as details
- Two questionnaires (both for patients and professionals)
- General acceptance by case-owners (n=7+1) and respondents (n=117)

Accessibility	Efficiency
Adhereability	Effectiveness
Affordability	Empowerment
Authenticity	Safety
Availability	Trustability

L_1	Does the application increase *efficiency* by reducing ...	Strongly Agree	Agree	No Idea	Disagree	Strongly Disagree
L_2	Complexity or number of tasks?	◯	◯	◯	◯	◯
	Number of reworks?	◯	◯	◯	◯	◯
	Time consumed?	◯	◯	◯	◯	◯

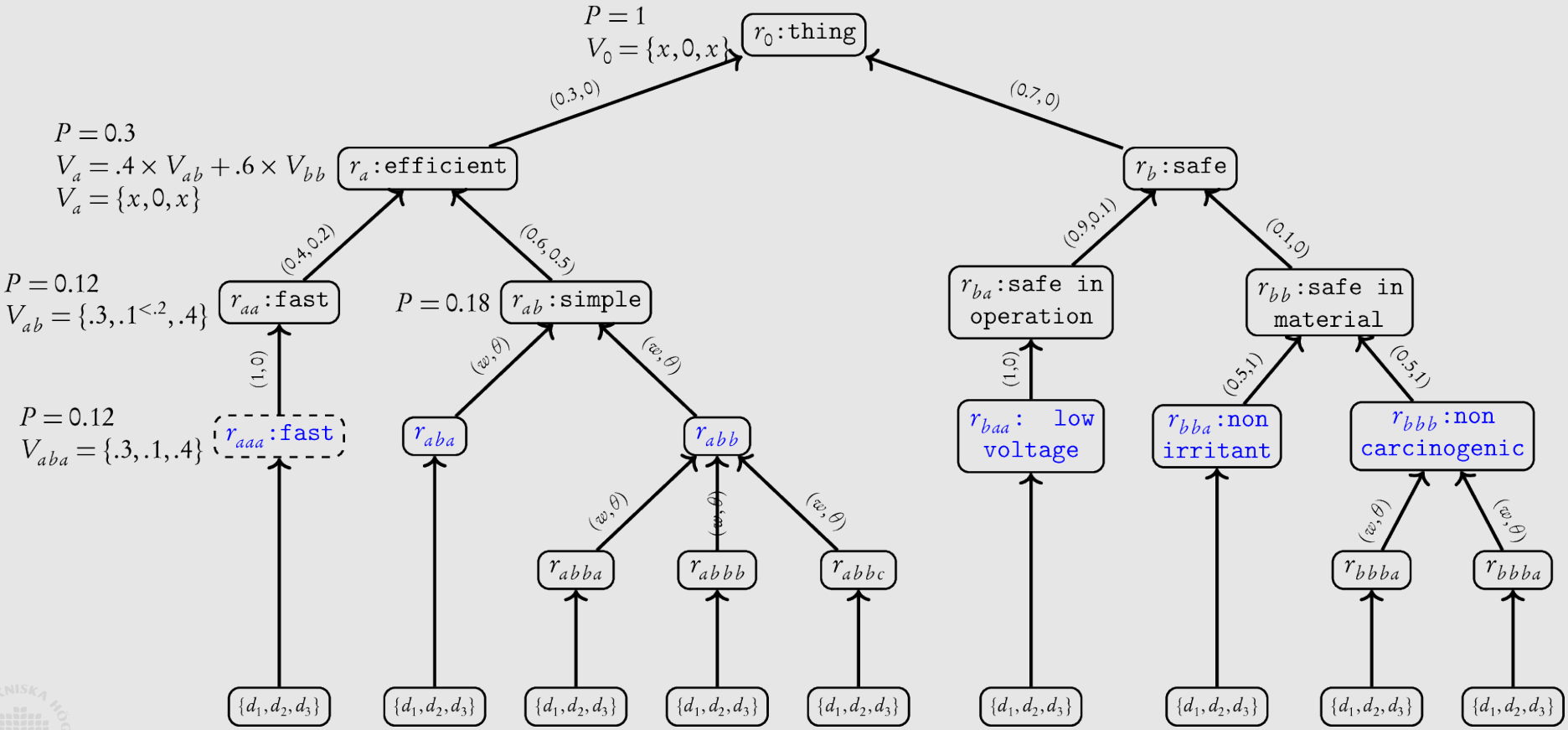
The UVON Extended (Study II)

Each quality attribute in the ontology has a value

Each relation has a weighting value

Each relation has a threshold value

The UVON Extended (Study II)



Thanks!

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