

A bit of “Persona”,
a bit of “Goal”,
a bit of “Process”

...

a recipe for Analyzing *User Intensive* Software Systems

Chiara Di Francescomarino, Chiara Leonardi,
Alessandro Marchetto, Cu D. Nguyen, Nauman A.
Qureshi, Luca Sabatucci, Anna Perini, Angelo Susi,
Paolo Tonella, and Massimo Zancanaro

Fondazione Bruno Kessler – IRST CIT

Motivations

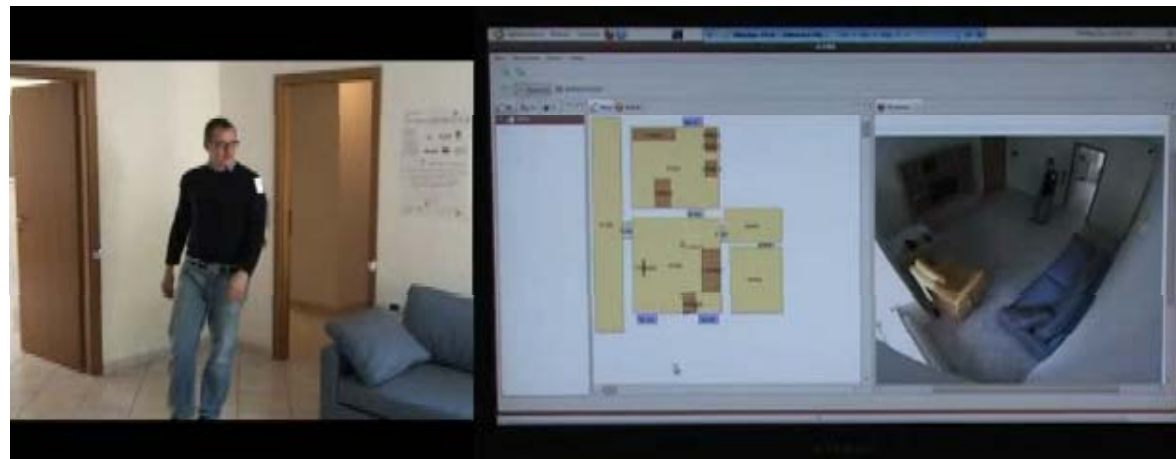
- ▶ **Two projects**
 - ▶ Ambient Aware Assistance (Healthcare domain)
 - ▶ Internet of Services (IoS)

- ▶ **Central role of the users in the design and evolution of “User intensive” (user-centric) systems**



Motivating domain: Ambient Aware Assistance (ACube project)

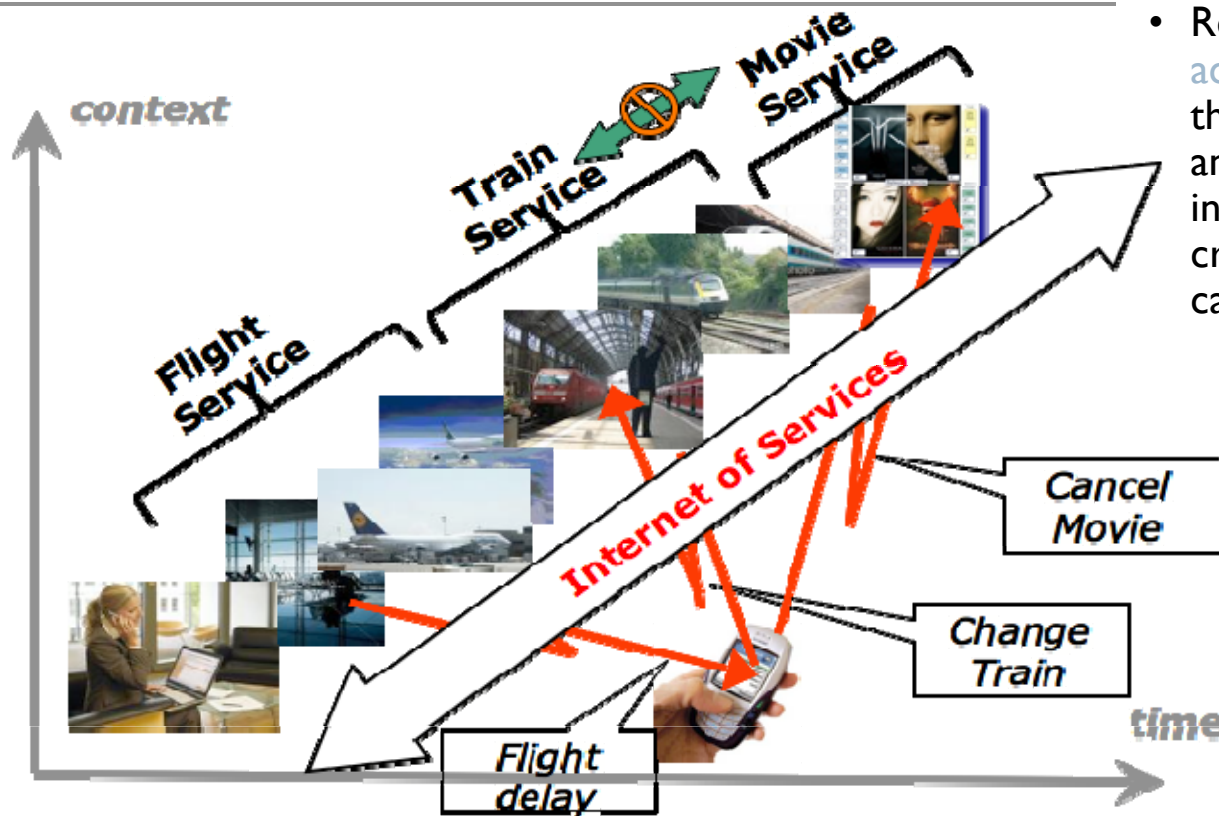
- ▶ System for monitoring and acting on nursing homes (Alzheimer patients and their caregivers)
- ▶ A very critical domain highly **user-centric**
 - ▶ The system should follow *each user* also forecasting her/his behavior
 - ▶ **Reactive** to events
 - ▶ **Ubiquitous** in the life space of patients and operators



[Leonardi et al. 2010]



Motivating domain: Internet of Services (Real services)



- Real Services: a combination of **actual** services and **software** services that: (i) provide electronic access to an actual service; (ii) inform the user in *real time* about events that maybe crucial for her (e.g. flight cancellation)
 - Tailored to each specific user ... **user-centric**
 - **asset-driven**, user's assets, such as time, money, social relations that are fundamental in our choices
 - **Ubiquitous ...**

[Marchetto et al. 2010]

Envisaged solution

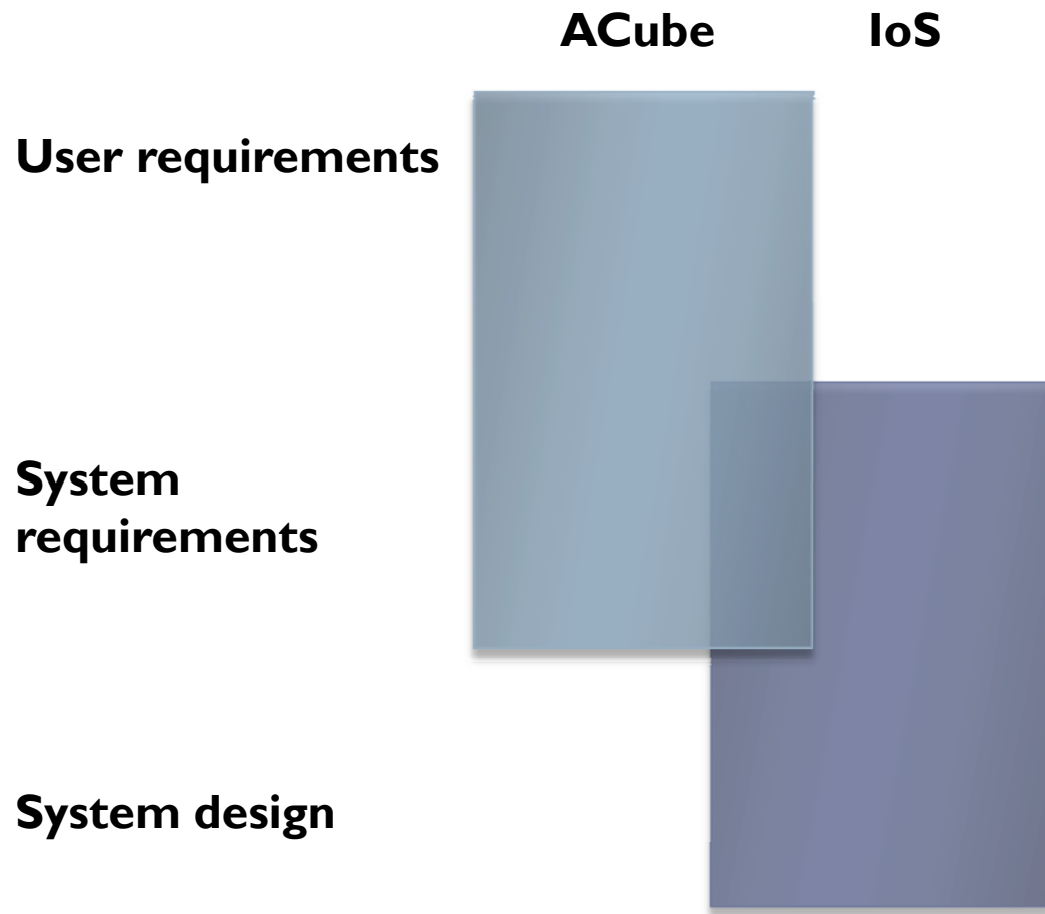
- ▶ **An integrated methodology in which**
 - ▶ user-centered design
 - ▶ goal-oriented representation and analysis (*as mediating artifact*)
 - ▶ process modeling

May cooperate for a continuous communication between users, requirements engineers, stakeholders and designers

To go from user needs, to requirements, to process design



ACube / IoS: use of goals in the process

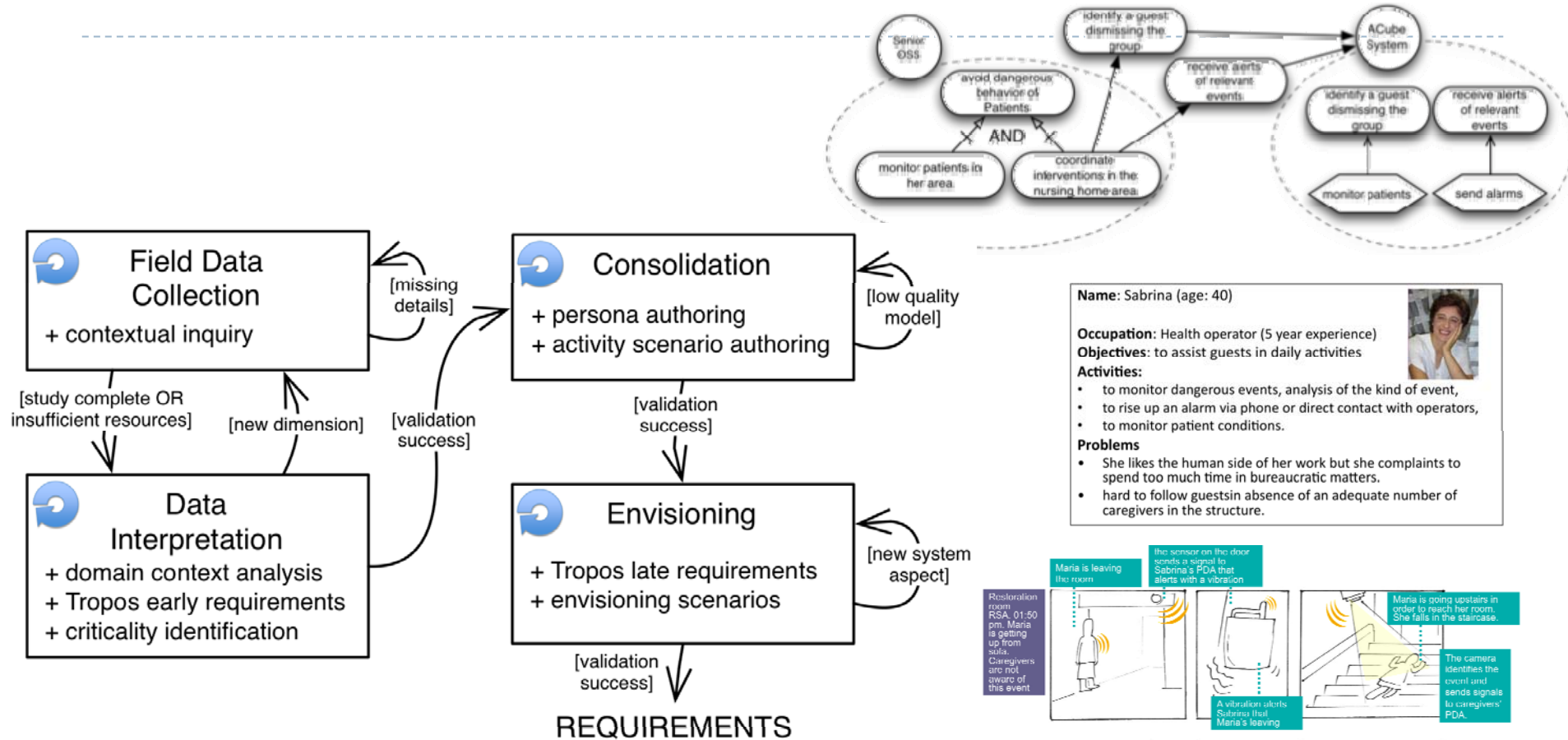


From user needs to requirements (through personas, actors/goals)

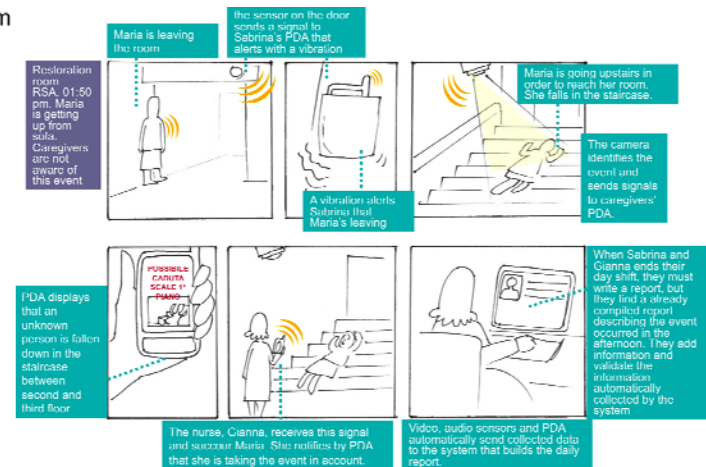
- ▶ Coupling the engineering perspective with a creative perspective typical of User-Centred Design (persona, scenario) approaches:
- ▶ Principles:
 - ▶ **early focus** on users, their tasks and their environment
 - ▶ the **active involvement of users** in the design process
 - ▶ the **incorporation of user-derived feedback into system design**
 - ▶ **iterative design** whereby a prototype is designed, tested and modified.



The proposed process (and ingredients)

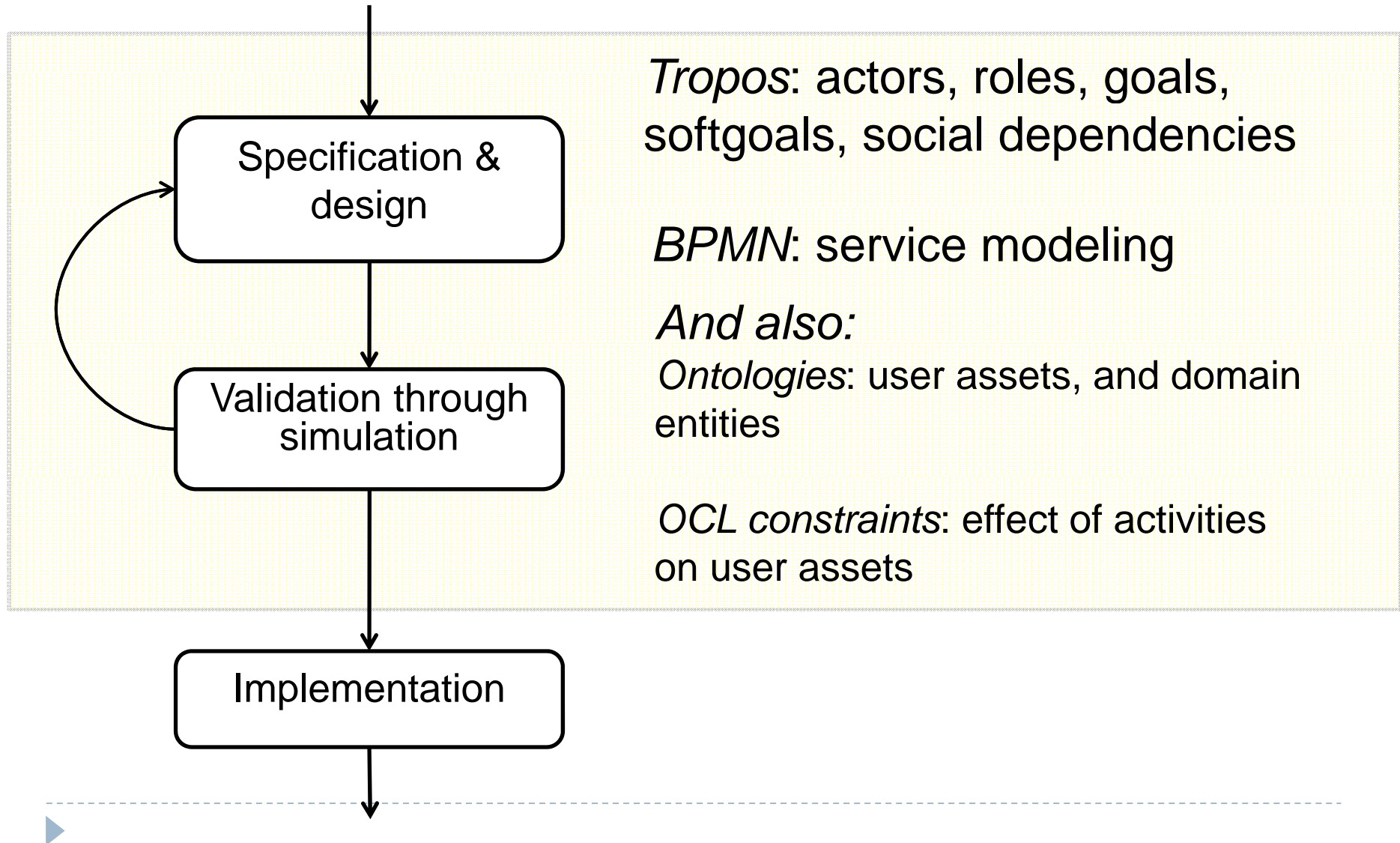


And Tropos Actor/Goal Models



► For the problems in the Tropos to visual Scenarios translation see Luca's talk on Friday (Ahab's leg)

From requirements to Real Services (through goals and processes)



Concepts from goals to BPMN

Goal Model element	BPMN Model element
Actor/User Role	Pool
Goal/Sub-Goal/Plan	Activities (i.e. Task/Subprocesses)
OR decomposition	Branch of activities (i.e. OR/XOR gateway and alternative flows)
Resources inside actor/role boundary	Data objects exchanged among activities in the same pool
Resources shared by actors	Data objects exchanged among activities in different pool



Ongoing/future work

- ▶ **Refining the UCD/GORE methodology**
 - ▶ better integrating goal orientation and user-centred design
 - ▶ refining the way to communicate models to users
- ▶ **Methodology for modeling /specifying IoS**
 - ▶ extended modeling of quality requirements and preferences
 - ▶ specifications of monitoring for qualities and preferences to drive self-adaptation at run-time



References

- ▶ Leonardi, C., Sabatucci, L., Susi, A., Zancanaro, M.: Ahab's leg: Exploring the issues of communicating semi-formal requirement to final users. In: Proceedins of CAiSE 2010. (2010)
 - ▶ Marchetto, A., Nguyen, C.D., Francescomarino, C.D., Qureshi, N.A., Perini, A., Tonella, P.: A Design Methodology for Real Services. In: 2nd International Workshop on Principles of Engineering Service-Oriented Systems, PESOS, May 2-8, 2010, Cape Town, South Africa. (2010)
 - ▶ Di Francescomarino, C., Ghidini, C., Rospocher, M., Serafini, L., Tonella, P.: Reasoning on semantically annotated processes. In: International Conference on Service-Oriented Computing. (2008)

 - ▶ **Inspiring works:**
 - ▶ Sutcliffe, A., Maiden, N., Minocha, S., Manuel, D.: Supporting scenario-based requirements engineering. IEEE Transactions on Software Engineering 24(12) (1998) 1072–1088
 - ▶ Pistore, M., Traverso, P., Paolucci, M., Wagner, M.: From Software Services to a Future Internet of Services. In: Towards the Future Internet - A European Research Perspective. IOS Press (2009) 183–192
-





Process and guidelines

