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Towards a Framework for Law-Compliant Software Requirements

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What are requirements?

- **D, S |= R**
  - Pamela Zave, Michael Jackson: Four Dark Corners of Requirements Engineering. ACM Trans. Softw. Eng. Methodol. 6(1): 1-30 (1997)
- Domain Properties
  - things in the application domain that are true whether or not we ever build the proposed system
- Requirements (represented as goals)
  - things in the application domain that we wish to be made true by delivering the proposed system
- Specification (set of functions/tasks)
  - is a description of the behaviours the program must have in order to meet the requirements

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Motivation

- New laws, increased pervasiveness of IS
- Laws are increasingly source of requirements
- However law prescriptions are NOT stakeholders goals
  - Stakeholders ***want*** goals, whereas law prescriptions are ***imposed to*** stakeholders
  - Law prescriptions can contradict goals

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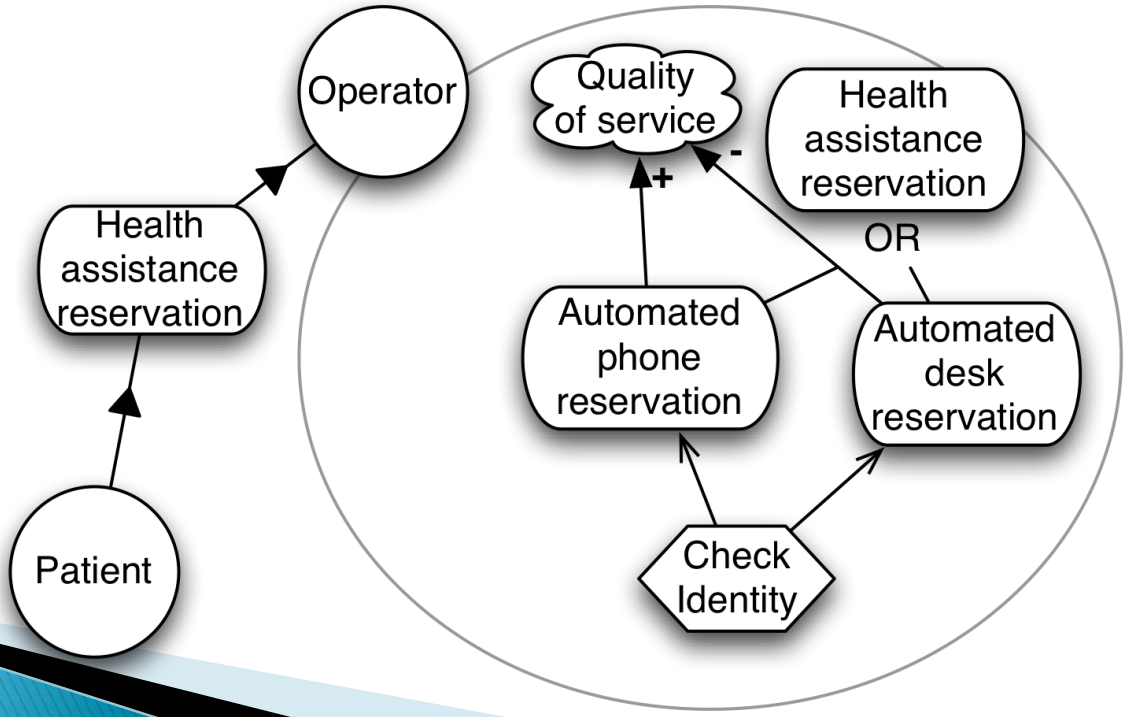
Problem statement

- D, R |= L
- **Intentional compliance**:
  - Laws give certain prescriptions, and stakeholders have the intention to satisfy the prescribed goal
  - Distribution of responsibilities, such that, if every actor fulfils its goals, then the compliance is ensured
  - Compliance is ensured by construction
- Needed: languages for modeling
  - Goals (i*)
  - Laws (Nomos)

Language for goals

- Domain: stakeholders, their goals and their organizational settings
  - Actor have goals and interact with each other to achieve them
- *i** (but any other GORE framework is suitable)



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The Nomos framework

- Nomos = A language + a method + a set of properties (e.g., intentional compliance)

- It allows to
  - **Reason** about how requirements are generated (select among alternatives)
  - **Check** properties of requirements models wrt. Laws

- Framework for systematically going from law prescriptions to requirements.
  - Nomos: L x R → R'

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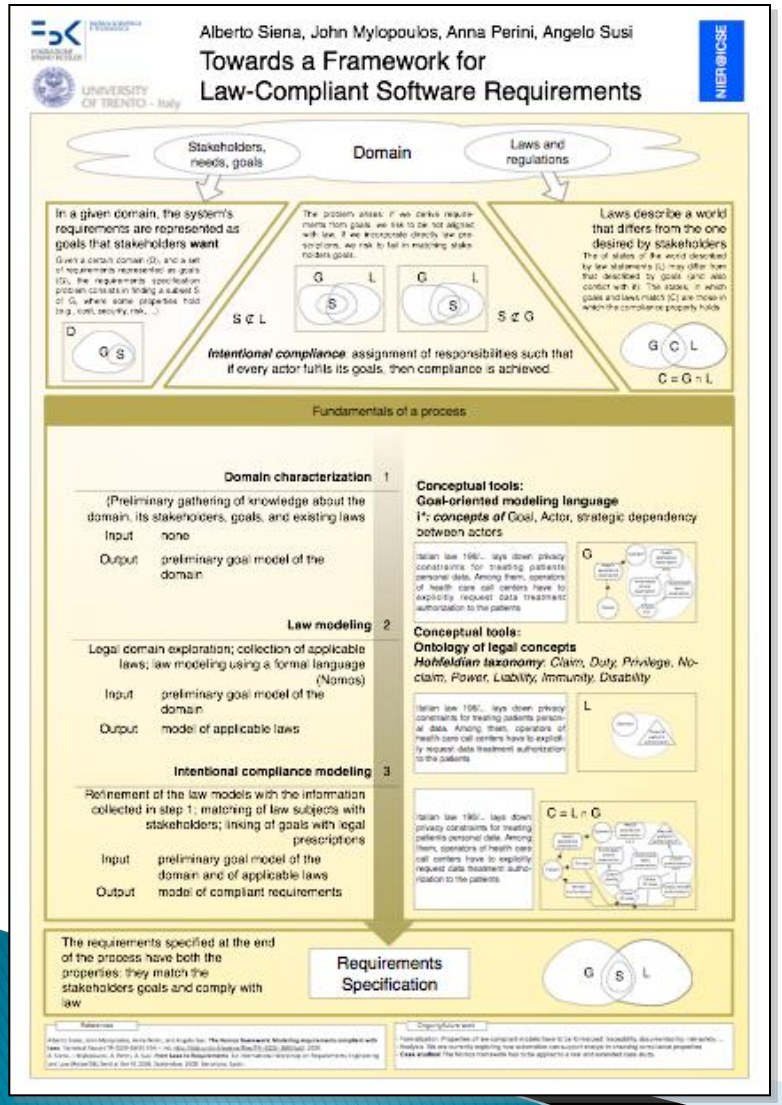
A process for law compliance

- Step 1 – Domain characterization
  - (Preliminary gathering of knowledge about the domain, its stakeholders, goals, and existing laws
- Step 2 – Law modeling
  - Legal domain exploration; collection of applicable laws; law modeling using a formal language (Nomos)
- Step 3 – Goal modeling
  - Refinement of the law models with the information collected in step 1; matching of law subjects with stakeholders; linking of goals with legal prescriptions



- A case study: application on Italian data protection law
- Current state of the work: the language, the process, the compliance properties

Thank you