# Definition of a Domain Specific Language for the co-simulation of microgrids powered by hydrogen

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Context: With the notion of energy transition, new systems are proposed to address energy issues. Microgrid are one of them. Local smartgrid, they often use several renewable energy sources and make possible to manage energy variations locally and automatically. This new systems, too complex to be deployed, have to be studied by simulation.
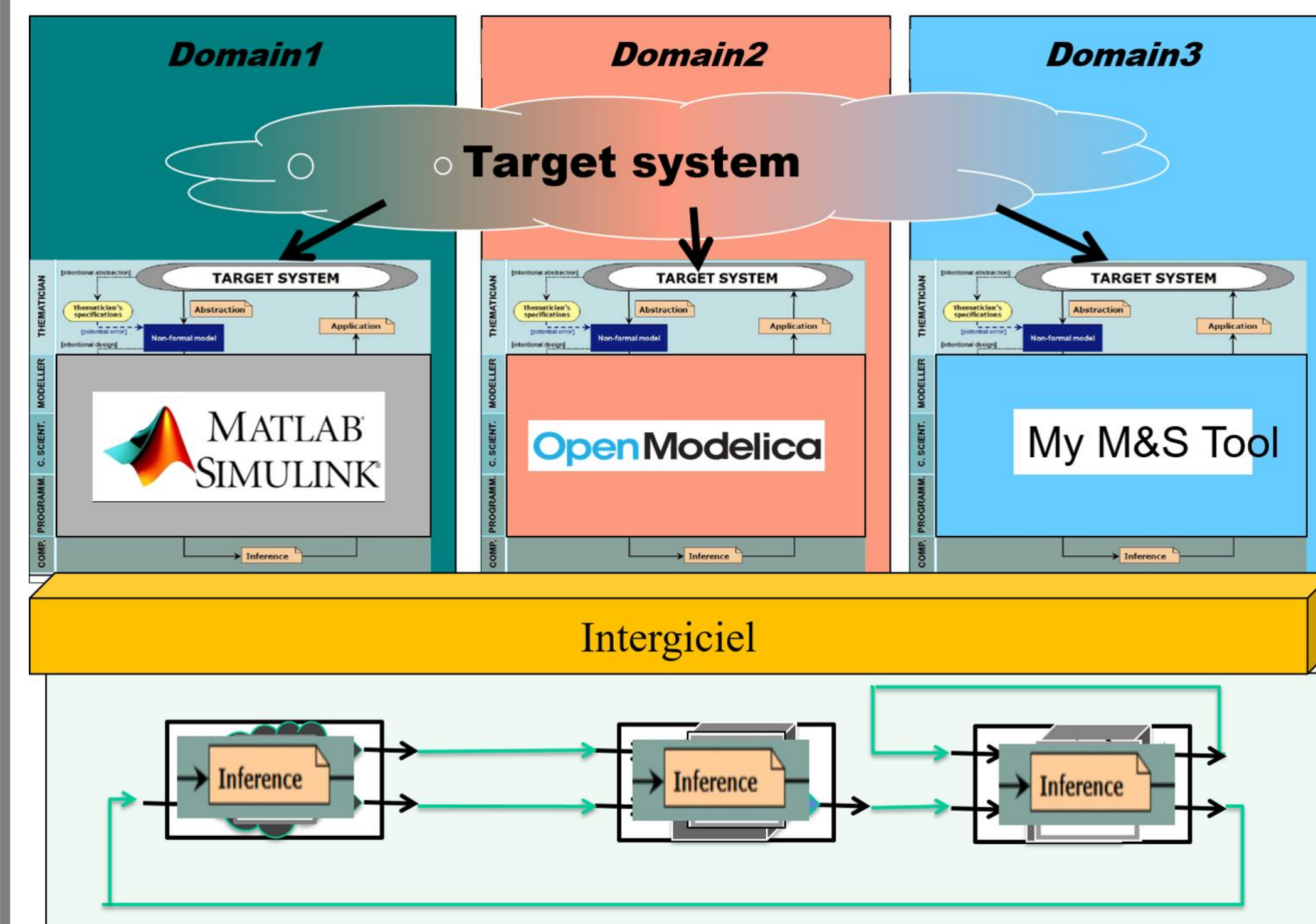
Microgrid
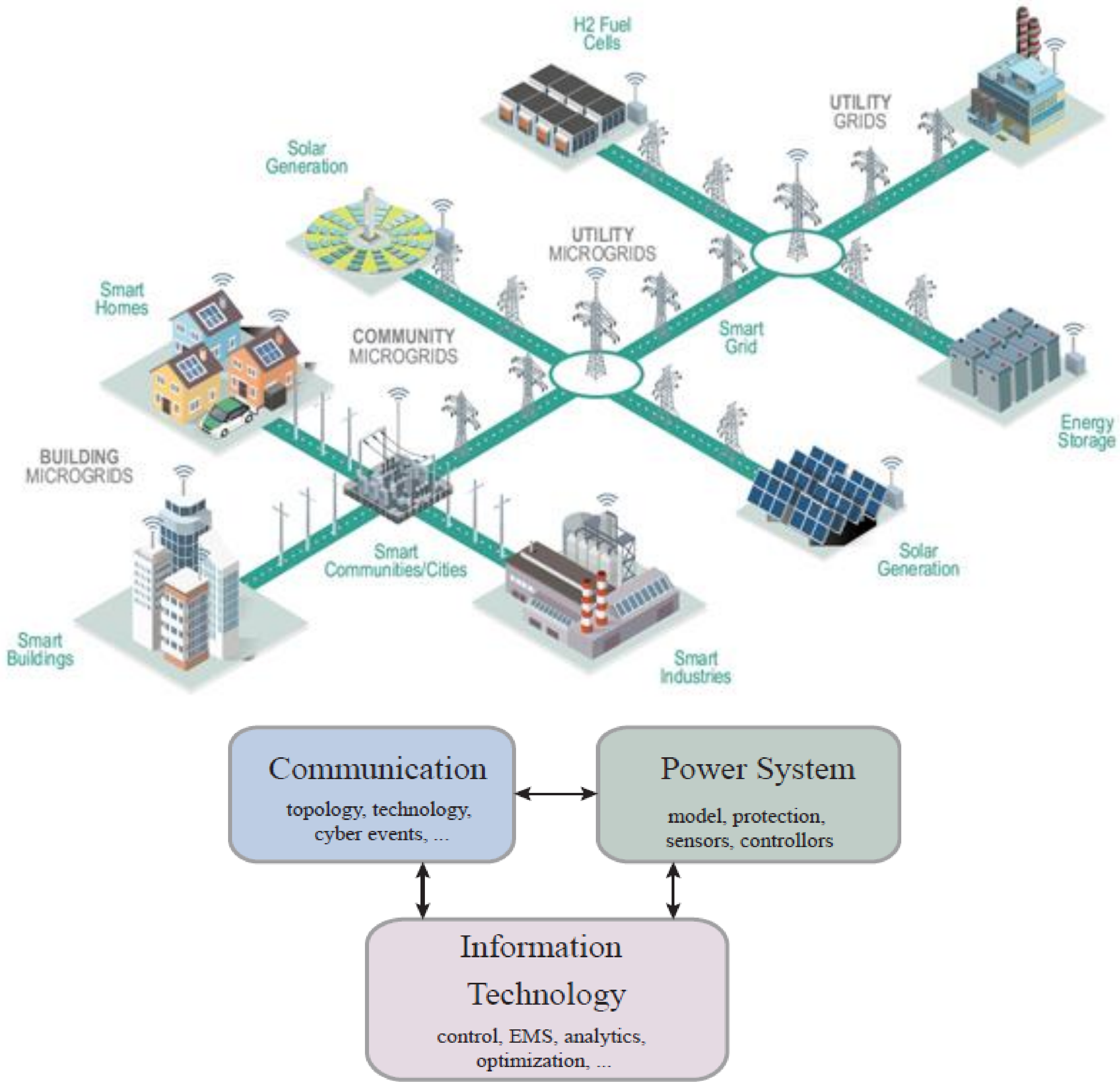
Study by simulation

Process Modélisation and Simulation (M&S)
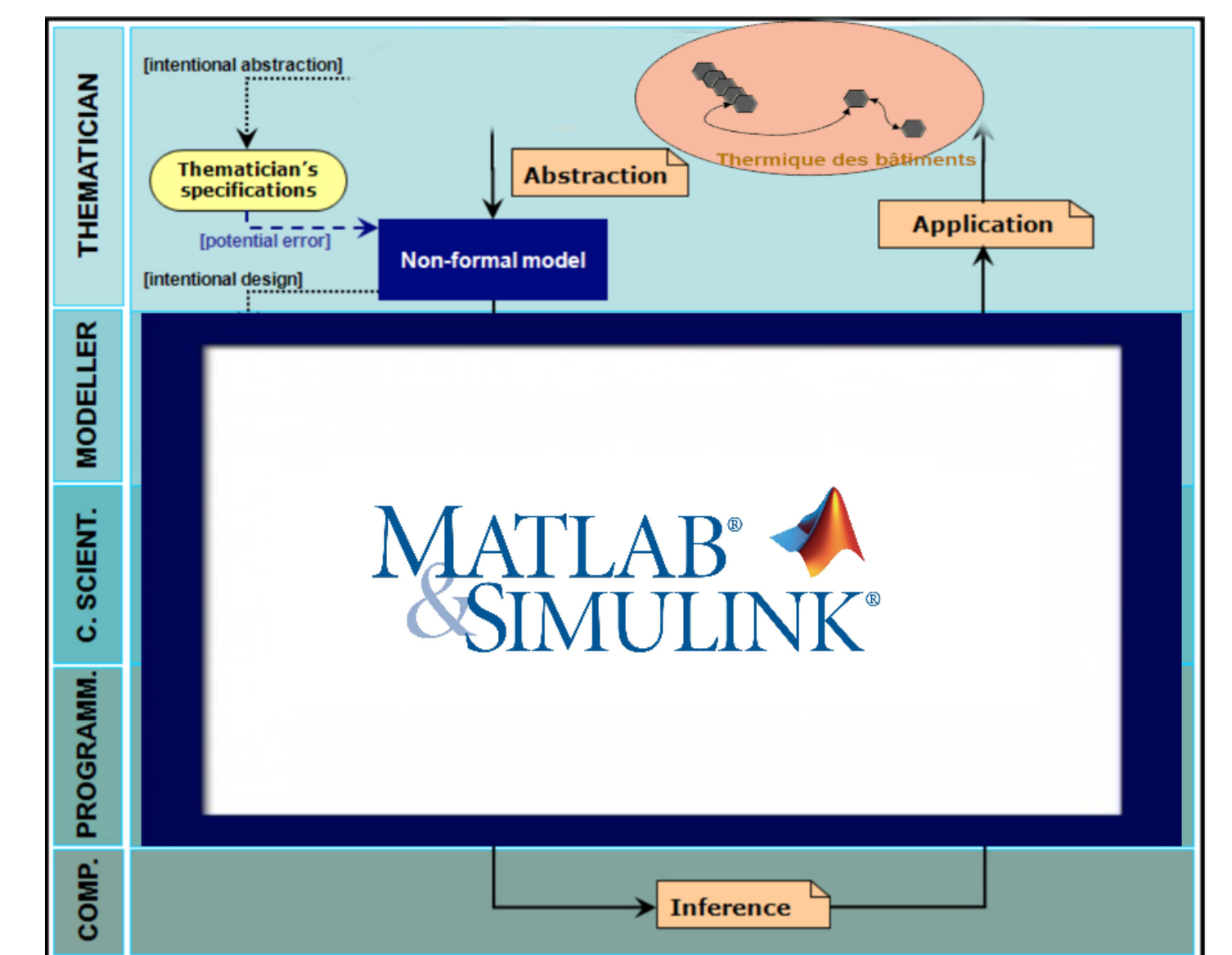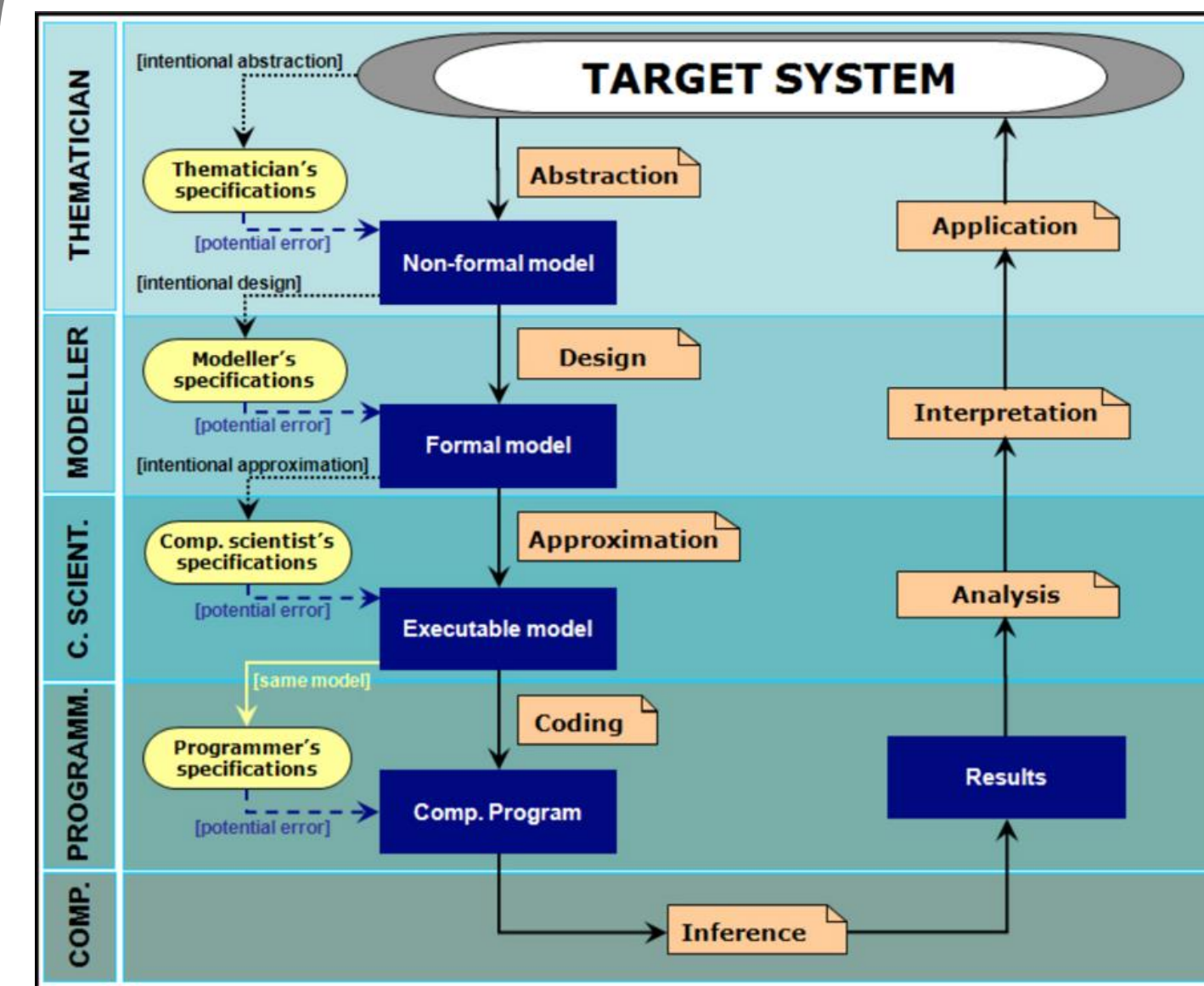
Co-simulation

Heterogeneities of:
- Domains
- Formalisms
- Tools

Co-simulation is the set of theories and techniques that allow the simulation of complex systems through the composition of simulators.

Still too complex to be used by microgrid expert, in terms of understanding and usability, my job is to create a language (called DSL) that allows them to use co-simulation, through a friendly interface, without preoccupying with the issues related to it.

Work in progress:

- Case study to understand what is simulation of microgrid
- Define an ontology and terms of the language
- First step of the « friendly » interface (Current work)
- Use by microgrid expert
- Iteration
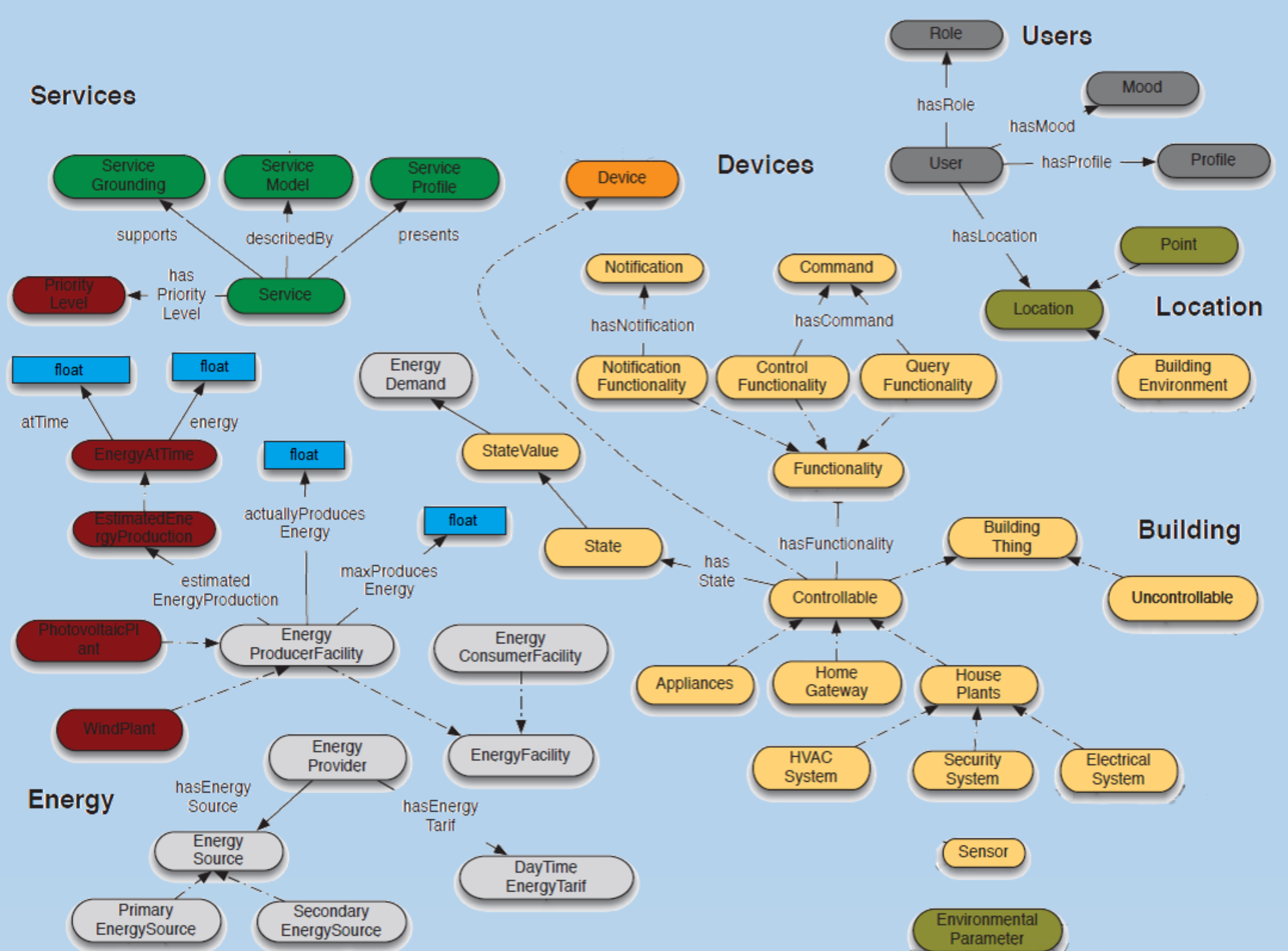
Schema of an ontology:
Inspired fnom *Ontologies for Smart Homes and Energy Management: an Implementation-driven Survey;* Grassi and al, 2013 Workshop on Modeling and Simulation of Cyber-Physical Energy Systems (MSCPES). IEEE, 2013.