Agent-based Modeling and Simulation for the Social Scientist

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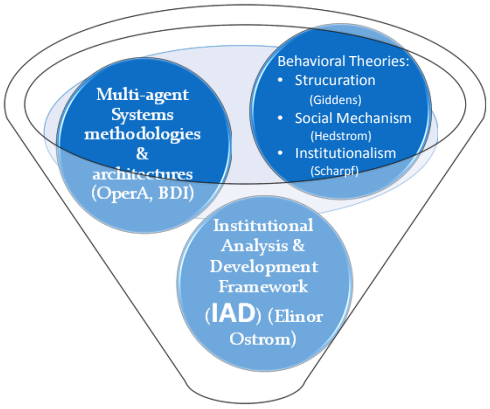
Objective

How can we build social structures in agent-based models and increase the utility of ABMS for policy analysis?

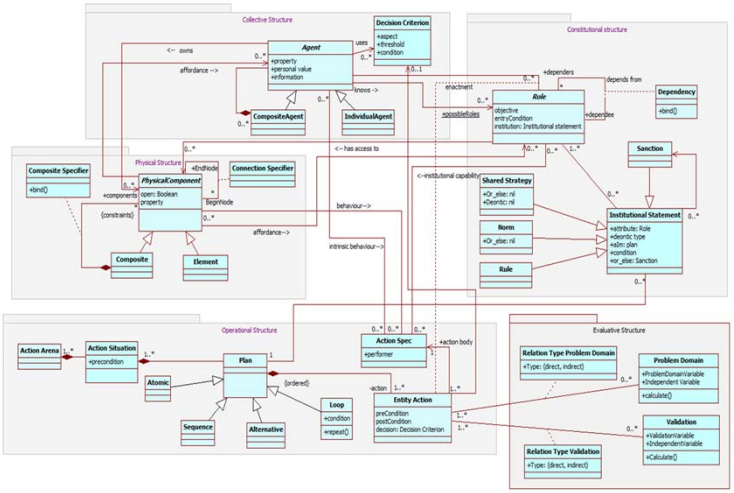
Sub-objectives

- Develop a conceptual framework for describing a socio-technical system.
- To support social scientists and policy makers with different levels of modelling expertise.
- To enable participatory ABMS.

Part I. Conceptualization Of Agent-based Models



MAIA



Part II. Formalized instrument for agent-based modeling

- The E-core Model and Eclipse Plugin
- Rules of generating automatic code
- Logical formalization of the institutional grammar

Evaluation

I. Meta-model Validation: Case Studies

E-waste | Wood-fuel | Bio-gas production | Consumer Lighting

II. Methodology & tool Validation

Case Studies:

Elderly Care | Cash Transfer

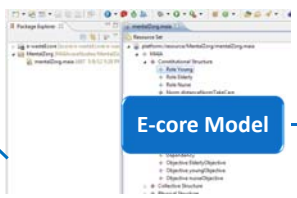
III. Comparison with others:

- Meta-models: INGENIAS, easyABMS, Plat Box Foundation
- Methodologies: INGENIAS, easyABMS
- Tools: Netlogo, Repast, SWARM ,SeSam, Ascape

Outcome

- Formal description, facilitates translation of concepts to code
- Based on MAIA meta-model

- Supports model development without programming knowledge
- In social science language
- Based on MAIA meta-model



XML code

Translator Software

XML code

Java code

Executable Simulation

Based on Translation Rules