

After more than 10 years of publishing the first edition of my research agenda I felt that it's time for an update. My current research can be subsumed under the umbrella of "collaboratively creating artificial labs for better understanding current and future human and mixed human/robot societies". I am a strong advocate of agent-based simulation, but I am also open to other approaches. My poster provides references to my previous and ongoing work, identifies current gaps, and offers ideas for future collaborations.

My research aligns towards standardisation of methods and towards considering future scenarios of human/robot interactions in an operational and service oriented context. Wherever possible, I aim to introduce techniques from computer science, and in particular software engineering, to come up with a more structured and transparent approach to simulation modelling. I also embed simulation into other analysis tools to enable these to consider uncertainties in a more transparent way.

Data Governance

- Rigour and transparency in ABM data use (RAT-RS) [JP36; CP50; PO28; CDLE5; BC9]
- Qualitative + quantitative data analysis and preparation [ERN2]
- Synthetic populations

Plugins

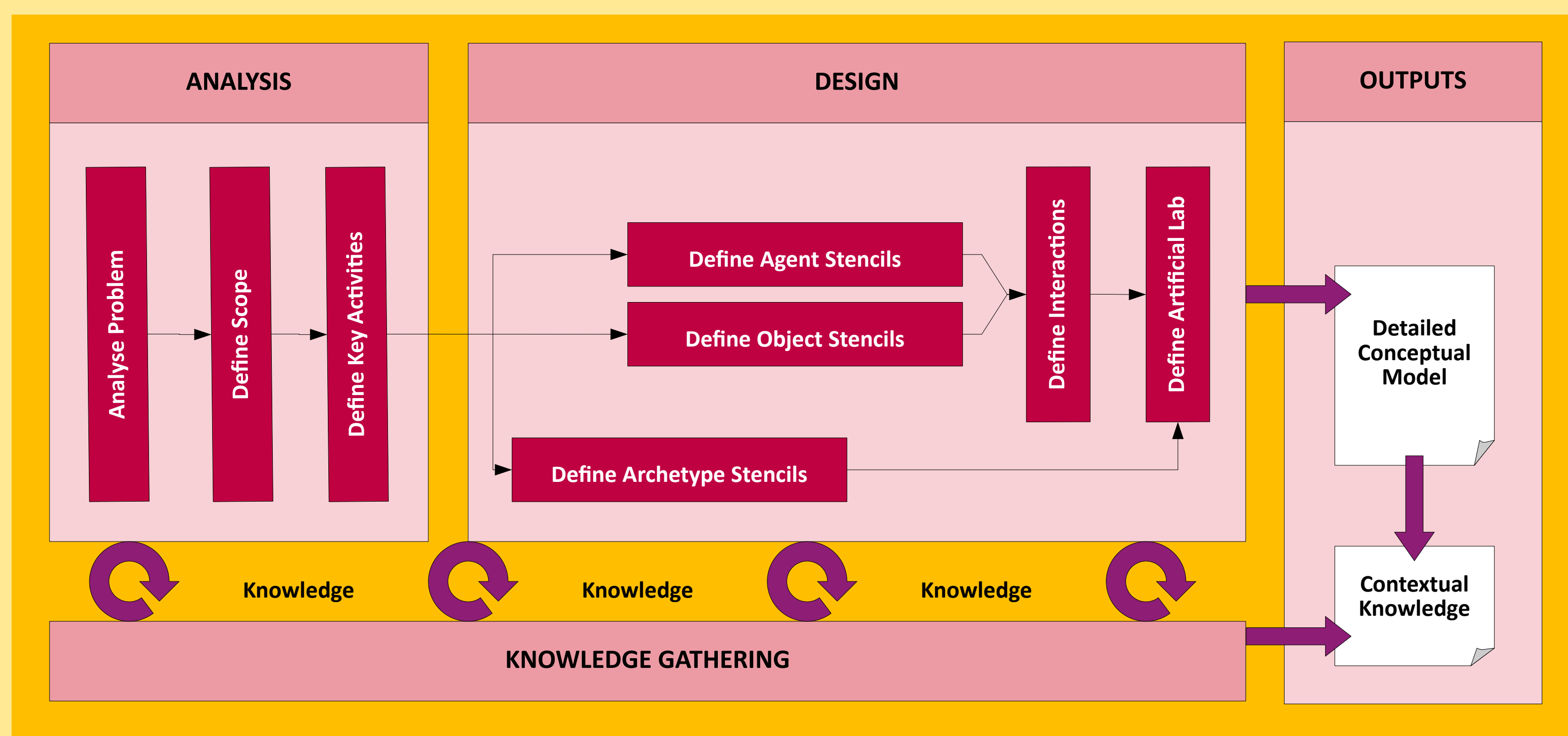
- Activity Reward/Penalty plugin
- Social Norms plugin
- Trust plugin
- Emotion plugin
- Empathy plugin
- SDS/DES plugin
- Domain-related plugins

Implementation Concepts

- MAS design pattern [CP39]
- Implementation framework database (literature review)
- SFM [CP30]
- BDI
- Cognitive Proactive AI Platform (COPAIP) [TBA]
- Collaborative platform [UP]
- Applications
- Trust framework [UP]
- Test-driven simulation [CP22]

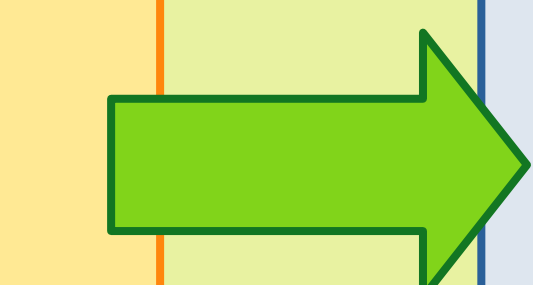
Engineering Agent-Based Social Simulation (EABSS) Framework

- Conceptual modelling (with and without literature support) [JP14; CP51; PO25; BC7; BC6; WP3; UP]
- Co-creation (participatory modelling) with all stake holders [JP31; JP29; CP41; PO26; CDLE4; CDLE2]
- Focus group mode vs individual mode with changing roles
- 2 h version vs 8 hour version (different entry points)
- De Bono: "Thinking Hats" (Socrates vs Confucius)
- Use of Unified Modelling Language (UML) [CP23; BC3]
- For discussion, creating personas, building conceptual models [PO24; PO23]
- Combining ABM with other methods (e.g. SDS/DES) [JP28; CP36; PO21]



Experimentation Concepts

- Hypothesis testing
- Sensitivity analysis [JP27]
- Optimisation



External Concepts

- Related to experimentation
 - Linking Multi-Criteria Decision Making (MCDM) and ABSS [JP17; CP17; PO13; BC5; BC4]
 - Multi-Attribute vs Multi-Objective
 - Surrogate Optimisation [JP38; CP52]
 - SimHeuristics
- Related to implementation
 - Distributed Simulation [TBA; TBA; CP47]
 - Use of Reinforcement Learning in the Context of Simulation

For full references, please refer to my publication website at <http://www.cs.nott.ac.uk/~pszsps/publications.html>

Abbreviations used:
 • JP = Journal Papers (Refereed)
 • CP = Conference Papers (Refereed)
 • PO = Posters and Conference Presentations
 • CDLE = Conference Panel Discussions and Live Experiments
 • ERN = Essays & Research Notes
 • BC = Book Chapters
 • WP = Working Papers
 • TBA = Papers currently under review
 • UP = Unpublished material



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