Distributed Agent-based Models meet Multi Agent Systems:
Exploring Contracting Protocols in a Simple Market Model

Riccardo Boero*, Gianluigi Ferraris**, Matteo Morini***, Michele Sonnessa****
Networked Modelling Team, LIASES, University of Torino.

Within the Nemote (NEtworked MOdelling TEam) activities, we are investigating new methodologies to implement distributed simulations of social phenomena.

Considering the huge literature and the many tools developed by Computer Scientists about Multi Agent Systems, the issue here considered is how software and concepts coming from that field can be usefully exploited by ABMs practitioners.

Thus we focus on a MAS/ABM integration, in particular exploring the possibility to exploit interaction protocols (eg. FIPA [1]) and MASs tools (eg. JADE [2]).

Reviewing ABM literature it prominently emerges how agents interaction structures have historically been implemented in an heterogeneous way, making knowledge transfer, and results replication, quite problematic. Would it be possible to overcome such problems by employing formal interaction protocols developed by computer scientists?

Contract Net Protocols (henceforth CNPs) have been used in MASs in order to implement distributed systems. When implementing distributed simulation, does that entail a potential advantage too?

In order to give tentative answers to the previous questions a simple market model has been developed in Jade, with distributed agents, where contracting happens sticking to the FIPA protocol.

Additionally, market peer-to-peer interactions provide an excellent metaphor/analogy of a distributed system, almost trivial to implement. In order to relax the "event sequentiality" constraint agents have been delocalized onto different physical nodes, in order to allow an asynchronous and independent operation.

[1] http://www.fipa.org
[2] http://jade.cselt.it ; http://jade.tilab.it

* boero@econ.unito.it , ** ferraris@econ.unito.it , *** matteo.morini@unito.it , **** sonnessa@di.unito.it