Evolving a simulated system of enterprises with *jESevol* and *Swarm*

Pietro Terna, Dipartimento di Scienze economiche e finanziarie, Università di Torino, Italia

pietro.terna@unito.it

ABSTRACT

Based on *jES* (our java Enterprise Simulator) we have derived *jESevol*, or "Evolutionary java Enterprise Simulator". *jES* is a is a large Swarm-based package[1] aimed at building simulation models both of actual enterprises and of virtual ones. *jESevol* simulates systems of enterprises or production units in an evolutionary context, where new ones arise continuously and some of the old are dropped out.

Our environment is a social space with metaphorical distances representing trustiness and cooperation among production units (the social capital). The production is represented by a sequence of orders; each order contains a recipe, i.e. the description of the sequence of activities to be done by several units to complete a specific production.

Two units can cooperate in the production process only if they are mutually visible in our social network. Units that do not receive a sufficient quantity of orders, as well as the ones that cannot send the accomplished orders to successive units, disappear.

New enterprises arise, in the attempt of filling the structural holes (Burt, 1992; Walker et al., 1997) of our social network.

A complex structure emerges from our environment, with a difficult and instable equilibrium whenever the social capital is not sufficient.

REFERENCES

BURT R.S. (1992), *Structural Holes – The Social Structure of Competition*. Cambridge, MA, Harvard University Press.

WALKER G., KOGUT B., SHAN W. (1997), Social Capital, Structural Holes and the Formation of an Industry Network, in *Organization Science*. Vol. 8, No. 2, pp.109-25.

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[1] Download last version from http://web.econ.unito.it/terna/jes.