Molecules of Knowledge

Molecules of Knowledge (MoK for short) is a model for knowledge self-organisation, exploiting the biochemical metaphor for its basic abstractions, and biochemical coordination as its coordination model.

As far as the basic MoK abstractions are concerned, in MoK knowledge atoms are generated by knowledge sources in shared spaces — compartments —, self-aggregate to shape knowledge molecules, and autonomously move toward knowledge consumers, whose actions (either epistemic or not) are represented as enzymes.

As far as the MoK computational model is concerned, MoK features biochemical tuple spaces for the creation, aggregation, diffusion and consumption of knowledge atoms and molecules.

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Technology

Current MoK implementations are based on the TuCSoN coordination technology. Since they are used for tests and experiments, they are not publicly available, yet.

Main URLs

- MoK on APICe <http://mok.apice.unibo.it>
- MoK on FaceBook <http://www.facebook.com/MoleculesOfKnowledge>
- MoK on Google+ <http://plus.google.com/112442088826421613805>

About MoK

Books

- Stefano Mariani. Coordination of Complex Sociotechnical Systems: Self-organisation of Knowledge in MoK.

Papers
Foundations

• Stefano Mariani, Andrea Omicini. Molecules of Knowledge: A Novel Perspective over Knowledge Management. Proceedings of the Doctoral Consortium of the 12th Symposium of the Italian Association for Artificial Intelligence, CEUR Workshop Proceedings 926, 15 June 2012
• Stefano Mariani, Andrea Omicini. Molecules of Knowledge: Self-Organisation in Knowledge-Intensive Environments. Intelligent Distributed Computing VI, Studies in Computational Intelligence 446, 2013

Social action

• Stefano Mariani, Andrea Omicini. MoK: Stigmergy Meets Chemistry to Exploit Social Actions for Coordination Purposes. Social Coordination: Principles, Artefacts and Theories (SOCIAL.PATH), 3-5 March 2013
• Stefano Mariani, Andrea Omicini. Anticipatory Coordination in Socio-technical Knowledge-intensive Environments: Behavioural Implicit Communication in MoK. AI*IA 2015, Advances in Artificial Intelligence, Lecture Notes in Computer Science 9336, 23-25 September 2015

Expressiveness

• Stefano Mariani. Parameter Engineering vs. Parameter Tuning: the Case of Biochemical Coordination in MoK. From Objects to Agents, CEUR Workshop Proceedings 1099, 2-3 December 2013

MoK-News

• Stefano Mariani, Andrea Omicini. Self-Organising News Management: The Molecules of Knowledge Approach. Self-Adaptive and Self-Organizing Systems Workshops (SASOW), 2012

Theses

• Molecules of knowledge: a new approach to knowledge production, management and consumption
• Molecules of Knowledge: architettura, implementazione ed esempi

Student Projects

• RSS-based sources of knowledge in MoK-News