Learning agent organisations: studies on collaborative modelling, performance management and learning capacities of networks of collaborative agents
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ABOUT THE DISSERTATION

As a physicist with strong interests in computer science and software engineering, I am fascinated by learning and collaborating systems. I shared these interests with the Innovation division of the Logica corporation and worked in parallel on my PhD research at the University of Amsterdam.

Working on the border of science and industry offered me a chance to get a grant\(^1\) from the Dutch Organisation for Scientific Research, which enabled me to combine my work at Logica with my research activities.

In this dissertation I describe my research on the learning capacities of agent organisations. The focus is on the contribution of local learning mechanisms to global task-handling performance improvements. I have studied the aspects of learning and collaboration in organisations from a theoretical as well as a practical point of view. The research originated from industrial interests in the domains of grid computing and collaborative business networks. I have developed distributed software that supports network performance management. Grid infrastructures, collaborative business networks, as well as the supporting software systems, are being regarded as organisations of collaborative agents. In that perspective I studied practical and fundamental questions about organisational learning processes in networked systems.

The dissertation is the result of building bridges between academic and industrial worlds. I use grammar induction techniques commonly known in the field of machine learning and applied the work in the fields of grid-computing and collaborative network organisations. I worked in the area of multi agent systems and developed software in Java. Within the context of this work, I founded an innovation expertise team inside the Logica corporation. The group is engaged with scientific prototyping and delivers industrial contributions to Dutch and European research projects.

I enjoyed initiating and maintaining fruitful connections between various scientific research fields and industrial areas.

Wico Mulder, Eelde, the Netherlands, March 2011

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\(^1\) The work was granted by a ‘NWO Casimir grant’ in 2005 under the name ‘Assist: maintenance of dynamic IT infrastructures by means of collaborative organisations using adaptive information services’.