

## Report on Workshop 14 at OOPSLA2002: Agent-Oriented Methodologies

The workshop was well attended by agent-oriented and object-oriented methodologists from around the world. Professor Brian Henderson-Sellers, from the University of Technology, Sydney in Australia, took the chair.

In the morning, several presentations were made as indicative of the papers accepted and placed on the website (<http://www.open.org.au/Conferences/oopsla2002/>). An introduction from the chair described how a metamodelling framework, such as that offered by the OPEN Process Framework, could offer a basic structure for hosting agent-oriented as well as object-oriented methodologies. This was followed by a paper describing an evaluation framework for AO methodologies and then some specific methodological examples. Here Prometheus and Tropos were used as exemplars although many other AO methodologies were represented in the group of eminent researchers attending the workshop.

Following the presentations, the group discussed a number of pertinent issues. In particular, the group looked at:

1. Agents – is this a new concept or an extension of an object-oriented way of describing the world? This topic led to productive debates about

terminology and concepts

whether agents were objects plus goals

whether Agent UML was an appropriate notation, it being an extension of an OO notation, or whether a brand new notation was necessary to describe the concepts in agents not found in objects

whether agent-oriented methodologies could be seen (or should be seen) as extensions of OO methodologies.

2. Co-existence of agents and objects

The group concluded that in a methodology, there should probably be a duality so that any proposed methodology should be flexible enough to support both paradigms.

3. Should agent methodologies converge? And, if so, is this the correct time. This topic was picked up again later in the discussion (see below)

4. What are good implementation strategies?

What agent-oriented programming languages are available? Are these good enough? Should the agent community encourage or facilitate the development of new programming languages which address agents more successfully than additions to existing OO languages such as Java.

The group then focussed its discussion on the issues of Industry Adoption and discussed, *inter alia*:

- Industry requires there to be a clearer explanation offered as to the benefits of agent technology. At present they appear reticent to adopt agent technology since no one can show where agents succeed and objects fail.
- Are multiple methodologies an obstacle? This was the case in the early days of the adoption of OO as a software development approach (i.e. beyond the use of

- programming). While the group agreed that this was probably not the current problem, they suggested that documented support *is* necessary (e.g. books through an internationally recognized publisher); that a consolidation of best of breed methodologies might be a clear signal to industry with advantages to the community of AO methodologists and that, perhaps most importantly, industry needs to be sure of some stability in the AO methodology “product”
- Is it necessary to express agents in more familiar terms?
  - How important is the provision of tool support?

In a summary session, the group identified the following Future Research Directions:

- Agents are the solution, but to what problem? In other words, no one who currently advocates agent technology has demonstrated what problem(s) agent technology uniquely addresses. This led to a solution being proposed of developing an exemplar problem to which both OO and AO methodologies could be applied. The idea would be to select a problem for which agents could be successful while objects would (likely) fail. It is clear that this would provide a boost to the notion that agent technology can be applied to situations with more success than objects (not all problems but a specific subset). A second contribution to this analysis would be a formal evaluation of multiple AO solutions.
- Facilitation of collaboration amongst AO methodologists. This meeting certainly was a step in this direction and has already led to many email and physical discussions between groups previously unknown to each other. Collaboration needs a proactive mindset on behalf of each methodology group – the antithesis of the solitary, competitive nature of methodology development in the early 1990s.
- Evaluation of the possibility and likely success (both from a research and an industry viewpoint) of incorporating consolidated methodologies into a process framework such as the OPF (OPEN Process Framework). This proposal is already being examined jointly by some of the attendees at this meeting.

### **Postscript**

This document and a white paper are to be found at the Workshop website at <http://www.open.org.au/Conferences/oopsla2002/>. Also available are hard copies of the proceedings (details for ordering on the website) containing the 12 accepted papers, fully reviewed by the Programme Committee.

A proposal to the OOPSLA Steering Committee will be made in mid-2003 for a Second International Workshop on Agent-Oriented Methodologies.