

Interaction Rules and their Role in Collaboration Software.

by

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Statement Of Originality

This thesis contains no material which has been accepted for a degree or diploma by the University or any other institution, except by way of background information and duly acknowledged in the thesis, and to the best of my knowledge and belief no material previously published or written by another person except where due acknowledgement is made in the text of the thesis, nor does the thesis contain any material that infringes copyright.

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The publications of the work undertaken in the course of this research are the following:

Kildare, RA (2004) Ad-hoc on-line teams as complex systems: agents that cater for team interaction rules. In: *7th Asia-Pacific Conference on Complex Systems*, December 6th-10th, 2004, Cairns, Australia.

- Mr. Robert Kildare (100%) is the primary author. He proposed the initial research question, conducted the research and prepared the material for publication.

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- Jacky Hartnett (10%) and Dr Raymond Williams (10%) of the School of Computing and Information Systems, University of Tasmania, both provided general guidance and editing advice as supervisors.

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Statement of Ethical Conduct

The research associated with this thesis abides by the International and Australian codes of human and animal experimentation, the guidelines of the Australian Government's Office of the Gene Technology Regulator and the rulings of the Safety, Ethics and Institutional Biosafety Committees of the University.

Abstract

The need for on-line teamwork has increased - particularly in transnational collaborations and in regional and rural areas, where distance and time prohibit easy face-to-face communication. On-line collaboration, however, exacerbates the forces that cause difficulties in face-to-face teams. This research identified a facility for creating and monitoring rules of interaction as a useful component for supporting virtual collaboration. Investigations in the disciplines of team psychology, sociology, education, computer supported collaborative work and computer supported collaborative learning, contributed to the design of the facility. Its value was examined in real-life venues and by teamwork experts.

Communities build structures devoted to norms of interaction, making these norms overt and regulating interaction. The creation of this social capital is deeply linked to notions of trust, which has been identified as a major contributor to successful virtual teams.

There has been little attention paid to providing software support for the sociological aspects of collaboration. Because (virtual) teams are complex, the patterns of interaction that suit a particular team may or may not be predictable, making the creation of software difficult. The sociology underlying community development and the social psychology of team interaction suggest the need for an interaction rule facility and the principles upon which the design should be based. Interaction rule software would further optimise the performance of virtual teams by nurturing trust and may be of assistance in training potential virtual team members in the behavioural issues of on-line collaboration.

Can we design software to further develop levels of trust in on-line teams by emulating societal structures of behaviour regulation? A prototype was developed and deployed in educational scenarios to explore this question. The implementation of Phreda, an editable interaction rule facility, addressed a major difficulty in current research; the inability to determine which team member behaviours are important and what they signify.

The rule module positively influenced behaviour. Although team members could construct and manipulate rules, they did not do so voluntarily. Indications were that the participating teams were not sufficiently remote, independent and virtual to make full use of the module.

Experts concluded that being involved in Phreda processes would increase member commitment and hence trust. Its effective use should be early in a team's life for team-critical behaviours and involve all members. Recommended rules can be helpful. Team knowledge gained during the process of rule construction, was seen to be more important than the corresponding artefacts. By using the rule module, members would learn what was behaviour was important, (and hence the meanings of the rule artefacts) and gain skills in the process of establishing team norms.

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