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(Updated MCIS and BCIS  
Hons suggested areas of  
student research)

Potential areas of supervision: Collaborative Computing, developing and evaluating collaborative technologies and virtual environments; Global Virtual Teams & Global Software Engineering (GSE); Computing Education Research (CER); Software Development/Software Engineering and professional practice, Risk Assessment and Software Development Impact Statements; The nature of research and the research process

### Specific current projects

#### 1) Tablet PCs and explanograms (with Dr Jacqui Whalley)

This project funded through an initial grant from Microsoft Research Asia, aims to incorporate a tablet PC as a mobile and general purpose capture platform for 'explanograms' cf. <http://explanogram.it.uu.se/>. The initial connectivity and compatibility between the tablet PC with its Microsoft software platform and the explanogram streaming server software, which is based upon open source technologies, has been achieved. Now this architectural design and development has been nearly completed, and a reasonably robust connection has been established, the effectiveness and usability of the tablets as general purpose mobile capture platforms will be investigated. In phase one work captured by individual students or educators will be linked to the explanogram server for storage and subsequent replay as required for the planned learning and research tasks. In phase two the functionality will be further enhanced and the value of the tablets for researching pair programming will be investigated. In phase three the design of the tablets as a mobile and collaborative platform will be investigated.

#### 2) Tablet PCs and explanograms – Moodle Linkages (with Dr Jacqui Whalley)

As noted above, the initial connectivity and compatibility between the tablet PC with its Microsoft software platform and the explanogram streaming server software, which is based upon open source technologies, has been achieved. However the ability to widely deploy the technology is restricted by limitations at the server level, both in functionality and support – the explanograms site at Uppsala (<http://explanogram.it.uu.se/>) is presently down and awaits repair, although a replica has been established on site here at AUT. This project would involve developing, testing and evaluating a Moodle plug-in (<http://www.moodle.org/>) to enable the tablets to interoperate with this well known open source virtual learning environment.

#### 3) Cybericebreaker enhancements

Enhancements to a Cybericebreaker using avatars in a virtual world. This project is an extension of a Java 3D application developed in 2001, in support of a research project involving collaboration between students working in global virtual groups. The application has been recently evaluated in a masters thesis [Hamrin, P., & Persson, M. (2010). *Exploring the Notion Of Space In Virtual Collaborations: Finding Prerequisites For Success In Virtual Teams*. Unpublished Master's Thesis in Information Technology Engineering, Uppsala University, Uppsala, Sweden <http://uu.diva-portal.org/smash/record.jsf?searchId=1&pid=diva2:291823>]. The enhancements could involve

1) developing and evaluating an analytical subsystem to monitor performance of the application and assist in diagnosing response time problems. Slow response times were noted during a collaborative trial with students from Uppsala University in Sweden in semester 2002, which seriously affected the usability of the application.

Alternative options could include design, implementation and evaluation projects :

- 1) redeveloping the application to operate within a web browser framework, or
- 2) integrating it in some way with the open source version of the Second Life virtual world or
- 3) redesigning and re-conceiving the application by porting it to a mobile phone platform

#### **4) Technology-Use Mediation in Global Software Engineering Teams**

The work by Clear [Clear, T. (2008). *Supporting the Work of Global Virtual Teams: The Role of Technology-Use Mediation*. Unpublished PhD Auckland University of Technology, Auckland. <http://hdl.handle.net/10292/650>] has proposed a theory of Collaborative Technology Fit which needs further development and refinement, in particular more work is needed on developing rubrics for calibrating the instrument scales. It is envisaged that the project would involve working with a new collaboration and conducting an analysis of the data associated with that, or working with the current historical corpus (comprising several thousand words in several hundred email and electronic postings) and refining the scales based on that data.

#### **5) Extended Bibliometric analysis of research performance in the computing disciplines using electronic databases and search engines.**

This project aims to explore the usefulness of modern electronic sources of research publications to augment the more traditional bibliometric analysis techniques by which research performance has traditionally been measured. The aim is to develop more appropriate forms of performance measurement for contemporary disciplines such as computing, in which conference publications rather than the traditional scientific journals are dominant forms of publication. A recent publication addressing some of the issues can be found at <http://bitweb.tekotago.ac.nz/staticdata/allpapers/2006/papers/45clear.pdf>.