

Proposal for MAMS Testbed Federation Mini-Grant Scheme Application

Application Content

The project proposal should include narrative addressing the selection criteria, including the following:

1. The institution, the persons/group applying for the grant, and the persons/group conducting project tasks;
2. Project goals, objectives and deliverables;
3. Sections addressing their category (see page 3) and each of the selection criteria;
4. High-level summary of project schedule and resourcing;
5. Risks and contingencies.

The total length of the proposal should not exceed four (4) A4 pages.

1. The institution, the persons/group applying for the grant, and the persons/group conducting project tasks

Institution: Deakin University

Persons applying:

1. Professor Wanlei Zhou, Chair of Information Technology and Associate Dean (International), Faculty of Science and Technology, Deakin University. Phone: 03-9251 7603, Fax: 03-9251 7604, Email: wanlei@deakin.edu.au.
2. Dr Wei Shi, Research Fellow, School of Engineering and Information Technology, Deakin University. Phone: 03-9251 7737, Fax: 03-9251 7604, Email: shiwei@deakin.edu.au.
3. Mr Robert Ruge, System Manager, School of Engineering and Information Technology, Deakin University. Phone: 03-5227 1319, Fax: 03-5227 2028, Email: Robert@deakin.edu.au.

Persons conducting project tasks:

1. Professor Wanlei Zhou (Project Manager)
2. Dr Wei Shi
3. Mr Robert Ruge
4. Programmer / research assistant (hired through the grant money).

Funding requested: \$40,000.

2. Project goals, objectives and deliverables

The School of Engineering and Information Technology has in the past few years developed a repository of e-lectures (video lectures and voice lectures with synchronised powerpoint presentations) for many units. These e-lectures are currently made available to eligible Deakin students (both on and off campus students) and staff. In addition to this repository, we have also developed a number of tools to capture, classify, store, and retrieve these e-lectures through the Internet.

The *goals* of this project are to develop a shibboleth enabled authentication framework to facilitate access to this repository of e-lectures across higher education institutions, and to continuously refine the tools to more efficiently and more effectively capture, classify, store, and retrieve these e-lectures through the Internet.

The project will result in the following *deliverables*:

1. A mechanism for shibboleth enabled, authenticated retrieval to the e-lecture repository over the Internet.

2. More efficient and effective mechanisms to capture, classify, and store the e-lectures over the Internet.

3. Sections addressing their category (see page 3) and each of the selection criteria

R1. Potential of the proposal to promote the growth of the Testbed Federation for Australian Research Effectiveness (e.g. value of the service and number of potential users for an SP, size & membership of the IdP user-base, etc);

Universities in Australia and around the world are adopting E-Learning as a means for providing higher education to students as it provides greater accessibility to education for an increasingly diverse student population. A set of national repositories of e-lectures will provide the following advantages:

- It will enable academics to exchange their best practice in education. Learning from e-lectures provided by their peers, university lecturers will be able to improve their own teaching skills, and ultimately, students will benefit.
- The repositories will become a permanent resource that can be used and re-used by students, especially off campus students, at their convenience, and the ability to revisit the information enables students to take further notes or re-confirm the facts presented by the lecturer, or supports the memorisation processes and therefore the retention of facts.
- Australian universities have enrolled increasing numbers of international students who have English as their second language; the existence of the e-lectures will be seen as a means for these students to review lecture material they did not understand the first time through, to add to or amend notes they had taken in the lecture or to take lecture notes from any lectures they had missed. Students can continuously access the lecture to listen to the content presented until they feel they understand the content.

The impact of this project will be huge. Currently, the e-lecture repository is accessed by around 2000 students and 100 staff of the School of Engineering and Information Technology. We plan to extend the access first to the 5000 students and 300 staff in the Faculty of Science and Technology. Through the support of this grant, we will be able to extend its access to lecturers and students of authenticated universities around Australia. Furthermore, some public and model e-lectures will be open for public access. We believe lecturers in many Australian universities will be attracted to this service, and we see the project leading to these institutions joining the Federation as IdPs.

The project can be categorised as being category B:

Combination of valuable SP + part of institution IdP, both in Federation level 2.

R2. Relevance to Backing Australia's Ability & Systemic Infrastructure Initiative goals (see <http://backingaus.innovation.gov.au/> & <http://tinyurl.com/7fwb8>)

This project is relevant to Backing Australia's Ability and Systemic Infrastructure Initiative goals since it provides for innovative approaches that link and expand access to shared facilities – e-lecture repositories among users of multiple universities.

R3. Technical excellence of the proposal;

First of all, users of the e-lecture repository will have various access rights. For example, owners of a particular e-lecture unit will have the right to update its content; lecturers of a particular institution will have the right to retrieve a wide range of e-lectures; students of a particular institution will have the right to retrieve a limited range of e-lectures (for example, the enrolled and relevant e-lectures); and public will have the right to retrieve a further restricted range of e-lectures. Implementation of the e-lecture repository and its secured and authenticated retrieval mechanism with such a complicated user base will provide MAMS with a sophisticated case and will also enhance the local experiences in creating and providing cross-institutional services.

Secondly, this project will improve the methods which are currently used to capture, classify, and store the e-lectures over the Internet. These improved mechanisms can be applied to similar projects to better capture, classify, and store multimedia content.

R4. Relevant experience of the proposed project team.

The researchers have excellent track record and are very active in two areas related to this project: e-learning and IT security. For example, in the last 4 years, Professor Wanlei Zhou and colleagues of his research group have published more than 30 papers in e-learning. The following 3 PhD students working in the area of e-learning and supervised by Professor Zhou will submit their PhD theses in 2006:

- Naomi Augar, PhD candidate, Thesis title: “Supporting Community, Culture and Collaboration with Emerging E-Learning Technologies”, thesis to be submitted on July 10, 2006.
- Ruth Raitman, PhD candidate, thesis title: “Collaboration in the Online E-Learning Environment”, thesis to be submitted on August 31, 2006.
- Elicia Lanham, PhD candidate, thesis title: “Cultural Issues in Online Learning”, thesis to be submitted on 31 September, 2006.

Professor Wanlei Zhou and his research group are also active in research on IT security. For example, in the past 4 years, Professor Zhou and colleagues of his research group have published more than 30 papers in IT security. The following PhD students working in the areas of IT security are supervised by Professor Wanlei Zhou:

- Yang Xiang, PhD candidate, Topic: “A Distributed Defense System for Defense Against Distributed Denial-of-Service Attacks,” thesis to be submitted in January 2007.
- John Casey, PhD candidate. Topic: “Towards the Building of an Efficient, Reliable and Secure Data Grid,” thesis to be submitted in early 2007.
- Leanne Ngo, PhD candidate, Topic: “Security Management for Small to Medium Size Enterprises,” Thesis will be submitted in late 2007.
- Ashley Chonka, PhD candidate, Topic: “Protecting Web Services from Distributed Denial of Service Attacks”, He started in December 2005.

R5. Relevant project management experience

Professor Wanlei Zhou and Dr Wei Shi have successfully managed a number of research and development projects funded by various funding agencies, such as ARC, AusIndustry, VPAC, and a host of others. Mr Robert Ruge has been the System Manager for School of Engineering and IT for more than 10 years and has successfully managed many industry-scale projects.

R6. Involvement with the MAMS project to date

Professor Wanlei Zhou first contacted the MAMS programme manager in February 2006 and expressed interest to join the project via the mini-grant scheme, but missed the first round. We have decided to join the second round once it is available.

R7. Commitment to continue to contribute to the Federation as an SP and/or IdP until at least the end of 2006.

We will commit ourselves to contribute to the Federation as an SP and IdP until at least the end of 2006. We are also able to commit to the Federation beyond the end of 2006.

R8. Proposal does not duplicate work already expected from funding received

The project does not duplicate the work already expected from funding received.

4. High-level summary of project schedule and resourcing

Phase 1: July to October 2006, Implementation.

- Development of Federated identity and access management tools using shibboleth to access the existing e-lecture repository service.
- Implement the level 2 Testbed Federation.
- Revise the existing retrieval mechanism to become shibboleth enabled, authenticated retrieval to the e-lecture repository over the Internet.
- Improve the existing mechanisms for capturing, classifying, and storage of e-lectures over the Internet, making them more efficient and effective.

Phase 2: November to December 2006: Evaluation and refinement.

- Evaluation of the e-lecture repository through trials by various types of users (owner lecturers, lecturers, students, and public). Feedback from these users are collected and analysed.
- Refinement of the e-lecture repository based on the feedback and trials.
- Complete the final project report and comply with all funding requirements.

The \$30,000 will be used to hire a programmer to implement the shibboleth enabled authentication framework to facilitate access to the e-lecture repository of across higher education institutions, and to improve the tools to more efficiently and more effectively capture, classify, store, and retrieve these e-lectures through the Internet. Another \$10,000 will be used to hire a research assistant to create a web-based survey / feedback site, collect and analyse the feedback, and to form criteria for the refinement of the e-lecture repository.

5. Risks and contingencies

Finding the right programmer / research assistant with the right skills set may carry certain risk. This risk could be contained in two ways. First, the research group led by Professor Wanlei Zhou has a number of research students who are capable of acting as the programmer / research assistant. A few months of working in the project will have insignificant negative impact on their completion date. Second, the School of Engineering and Information Technology has around 200 Master of Information Technology students, many of whom are studying the IT Security specialisation and who would have adequate skills to complete the programming and analysis tasks.