

**Cover sheet for proposals** (*All sections must be completed*)

**JISC Core Middleware: Early Adopters Programme**

**Name of institution/organisation** University of Exeter

**Name of proposed project** Project SWISh - *South West Implementation of Shibboleth*

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**Length of Project**

12 months

**Project Start & End Dates**

1<sup>st</sup> May 2005 – 30<sup>th</sup> April 2006

**Total Funding Requested from JISC**

£ 49,050

**Total Institutional Contributions**

£ 24,033

**Outline Project Description**

The SWISh Project seeks to implement a Shibboleth pilot service at the University of Exeter involving registered members of the University based in Exeter, within the Peninsula Medical School and the Peninsula Allied Health Collaboration, and at the Combined Universities in Cornwall campus in Cornwall. It will also investigate possible integration with the University portal, being developed by our XPort project, and its potential to interact with other campus services, including our VLE service and the Library Management System (produced by Innovative Interfaces). The SWISh Project will explore and disseminate the issues arising from these developments and will run through a number of phases, widening the implementation of Shibboleth across partner institutions and collaborations in the south west.

## **SWISh – South West Implementation of Shibboleth**

### **A. Introduction**

#### **1. Background**

The University of Exeter has been utilising Athens, the access management service from Eduserv, for many years. During the summer of 2002 I.T. Services introduced a simple Directory Service using LDAP (Lightweight Directory Access Protocol) for the authentication of students on open access PC clusters. Over time the LDAP service, running a version of OpenLDAP software, took on other roles, including authentication for helpdesks, student voting, the residential student network (ResNet), backup services and web proxies.

In early 2004 it was decided to review the Directory Service, and to assess its possible extension and development to increase its value to the University as a whole. A service development project was set up, under the chairmanship of Steve Grange, entitled ‘University Wide Directory Services 2004 (UWDS2004)’ and membership included staff of I.T. Services (including Bill Edmunds) and the Library (Ian Tilsed). Additional input was invited from members of the University administration, with particular regard to staff and student registration.

The terms of reference included the exploration of single sign-on (the use of the same username and password across all I.T. facilities) and the viability of implementing Athens DA, as well as the assessment of the LDAP schema. The deliverables of the UWDS2004 project were varied, including improvements to information flow and procedures, and the installation of a new server on which to run the Directory Service. Work on the LDAP schema involved the adoption of the eduPerson schema, in preparation for the support of Shibboleth accounts in the future. It was also decided to develop and support our own Exeter Schema, in addition to eduPerson, to enable us to represent all the data that we might require.

Athens DA was implemented in September 2004, following the installation of the new server and the implementation of the new LDAP schema. Moving from a self-registration scheme, for some 8000 Athens accounts, to a system that utilised existing login credentials has been, and continues to be, a significant exercise that has prompted further review of information flow requirements, data exchange procedures and integration with other campus developments regarding single sign-on. Whilst the implementation of Athens DA has been a success and whilst the UWDS2004 group has formally ended, much work continues to be carried out to refine the procedures and processes for future years by the UWDS2004 personnel.

The implementation of single sign-on across all I.T. facilities has gathered pace since the reporting of UWDS2004, with several new initiatives and developments:

- The Library has recently purchased a module for its Library Management System (produced by Innovative) that will permit the Library to control access to personalised services through authentication via the LDAP, thus removing the need for users to remember both their Library card number and a PIN. The module is awaiting installation by the suppliers (probably in late Spring 2005).

- The University has been awarded a grant under the CampusEAI initiative, with a total value of \$1,050,000 in consultancy, hardware and software, to implement a portal for the University. The project, entitled XPort, is for five years, with the initial implementation of services for students planned for the summer of 2005. As part of this project Oracle Internet Directory (OID) is being investigated as a possible replacement for OpenLDAP (for details of Project XPort see appendix A).
- The VLE service, based on WebCT, is also contributing to the move towards single-sign on with the implementation of LDAP authentication this spring, thus removing the need to remember a further set of login credentials.
- The Acorn Project, within I.T. Services, is investigating the provision of managed desktops throughout the University. This has numerous strands looking at the provision of associated filestore and, in relation to access management, the use of Active Directory.

In strict terms, the increasing use of LDAP authentication for a variety of I.T. facilities is not a full implementation of single sign-on, but rather the use of one common set of credentials, more akin to ‘single transferable sign-on’. The next stage of development, already incorporated into the XPort project, is to investigate and implement a true single sign-on, with the login information being exchanged within the varied facilities with minimal requirement to login repeatedly. Shibboleth implementation is a natural extension of this, in that it offers a means by which campus identity and access management infrastructures can be utilised to authenticate individuals and then pass the information about them to resource sites, thus enabling those sites to authorise access as appropriate.

## 2. Inter-Regional Context

The work on increased use of LDAP, the revision of the schema, and the implementation of Athens DA has not been confined to the University of Exeter. The University is an integral part of three other institutions or projects within the south west, all of which teach students registered with the University of Exeter:

- **Peninsula Allied Health Collaboration (PAHC)**  
The Peninsula Allied Health Collaboration is a partnership between the University of Exeter, the University of Plymouth, The College of St Mark & St John, St Loye's School of Health Studies and the Devon & Cornwall Workforce Development Confederation. The Collaboration is a first wave site for modernising education within the NHS “Meeting The Challenge” strategy. Phase one of the shared learning programme involving Occupational Therapy, Podiatry and Speech & Language Therapy students commenced in September 2002. The project now also involves degree students in Radiography, Adult Nursing, Mental Health Nursing and Midwifery.
- **Peninsula Medical School (PMS)**  
The Peninsula Medical School is one of two new medical schools that opened to students in academic year 2002/2003. This was part of a major expansion of medical undergraduate education in the United Kingdom. Peninsula Medical School is a joint project by the Universities of Exeter and Plymouth in association with National Health Service partners and is physically located in both Exeter and Plymouth. The medical students are jointly registered with both universities.
- **University of Exeter in Cornwall (UEC)**  
The University of Exeter in Cornwall is located at the Tremough campus near Falmouth

in Cornwall. The campus is shared by students from the University of Exeter and Falmouth College of Arts (FCA) and is the focus of the CUC (Combined Universities in Cornwall) initiative. Through the CUC, the European Union and the UK government have invested more than £60 million in new higher education facilities in Cornwall. Over £50 million of this investment has been in academic facilities at Tremough. The CUC is not a university but a collaborative partnership between Higher and Further Education providers in Cornwall.

All students registered with the University of Exeter at the organisations above are entitled to access all of the University of Exeter I.T. facilities, including electronic resources. Registration and LDAP authentication thus extends far beyond the campuses in Exeter and any changes in access management will have a far-reaching effect.

### **3. Proposal Summary**

The SWISH Project seeks to implement a Shibboleth pilot service at the University of Exeter involving registered members of the University based in Exeter, within the PMS and PAHC collaborations, and at the CUC campus in Cornwall. It will also investigate possible integration with the University portal, being developed by our XPort project, and its potential to interact with other campus services, including the VLE and the Library Management System. The SWISH Project will explore and disseminate the issues arising from these developments and will run through a number of phases, widening the implementation of Shibboleth across the south west and across I.T. facilities.

The proposed operative dates are 1<sup>st</sup> May 2005 – 30<sup>th</sup> April 2006, with preparations and a recruitment process beginning prior to that period.

## **B. Project Description**

### **1. Outline**

By 1<sup>st</sup> May 2005 it is anticipated that a Computing Development Officer will be in post and ready to proceed with the project proper. The SWISH project will have five distinct phases:

- i. We will establish a Shibboleth server and develop the means by which the service may be offered to users. It will also establish the necessary data flows between relevant University departments.

Deliverables: A fully functioning Shibboleth server and interface, together with manuals, protocols and documentation describing the installation process, the organisational and administrative issues and the user interface. Technical tools, if any arise as part of the installation process.

- ii. We will implement a pilot service to a small constituency of Exeter-based users (both student and staff) and subsequently explore and refine the resulting service.

Deliverables: Documentation detailing the integration of the Shibboleth service, together with user assistance materials, as well as evaluation data to support the success of the effort.

- iii. We will further refine the Shibboleth service, expand the first pilot to a greater constituency, and extend the pilot to valid constituencies in the PMS, PAHC and CUC initiatives.

Deliverables: Further documentation and evaluation data, including an assessment of the service in a multi-agency partnership, and across a wide geographic area.

- iv. We will investigate the possible use of Shibboleth in relation to the University portal, being developed by our XPort project, and its potential to interact with other campus services, including the VLE and the Library Management System.

Deliverables: Documentation of methods, including case studies. Technical tools and pilot service(s) if possible and appropriate.

- v. We will disseminate the findings of the project as widely as possible and engage in relevant consultations and discussions to support the wider implementation of Shibboleth in UK higher education.

Deliverables: A project website (adhering to relevant web and accessibility standards), project documentation and manuals, case studies arising from the pilots and a workshop event, together with presentations at conferences.

## **2. Evaluation**

The project will be managed by a very experienced team of specialists covering both technical aspects and the interaction with users. As part of formal project meetings (held at least monthly), the current progress will be evaluated as a distinct agenda item. In addition, all feedback received during the lifetime of the project, including communications from within the project team and pilot user groups, will be evaluated as part of the final report. The pilot user groups will be surveyed during the phases, to permit further refinement of the service, and will also be revisited towards the end of the project to determine specific attitudes and experiences in relation to the implementation as a whole.

## **3. Dissemination**

The project will result in a final written report which will detail the various phases including evaluative material, core issues, problems and solutions, and areas for further exploration. The report, and associated case studies, will be made publicly available via the SWISH Project website and also via JISC. Technical materials, including any toolkits developed during the implementation, will be made available via the project website. A self-financing open workshop in Exeter at the close of the project will further promote the findings and encourage future involvement in the wider Shibboleth and access management community.

## 4. Risks

With a project of 12 months the inherent risks are less than for a longer term project. However, some risks, and means by which they may be minimised, are identifiable:

- *the loss of the project staff* - as well as facilitating the recruitment of a quality candidate, the salary proposed will provide an encouragement for the appointee to remain with the project for the duration;
- *conflicts with other projects* – with a considerable amount of work being undertaken in related areas with the University, there is the risk that some of the aims and deliverables could come into conflict; this is being addressed by including a leading member of the XPort team on the project board and ensuring that there is regular consultation between all parties.
- *Technological risks* – owing to the nature of Shibboleth and the fact that the project is designed to explore implementation issues, there is a risk that the adoption of Shibboleth may not be totally successful. However this will contribute as much to the learning and discovery process as a successful implementation. Therefore, whilst the risk will be minimised where at all possible, a failure of the technology should not necessarily be quantified entirely as a negative experience.
- *legal risks* – due attention must be given to our legal and contractual obligations with regard to electronic resource access, as well to the award contract; this will be addressed by induction training at the outset of the project, ensuring that both the context of the exercise, and the definitions involved, are well grounded within an understanding of our commitments.

## 5. Sustainability

The work carried out during the project will not be in isolation. As has already been described, the project is a natural extension of ongoing work towards a single sign-on for I.T. facilities, including access to electronic resources. In this respect, members of the Library and I.T. Services are already engaged in related work. Given the level of documentation expected of the project, and its integration with other developments, such as that of the portal, it is fully expected that a level of continuity will be established, thus enabling existing staff to continue the work beyond the duration of the funding. Indeed, as has already been indicated in the introduction, preparations have already begun for the introduction of Shibboleth, particularly with regard to schema planning, thus providing a solid foundation upon which to proceed.

## 6. References

- Chillingworth, Mark (2004) Future of Athens uncertain as JISC backs Shibboleth. *Information World Review* No. 204, pp.3
- Covey, Denise (2003) The need to improve remote access to online library resources: filling the gap between commercial vendor and academic user practice. *Portal: Libraries and the Academy* Vol. 3 No. 4, pp.577-599
- Innovative Interfaces Inc. (2003). Innovative to implement E-Commerce features, joins Shibboleth Project. *Advanced Technology Libraries* Vol. 32 No. 9, pp.7
- Internet 2, Shibboleth (2001). <http://www.internet2.edu/middleware/shibboleth>
- Needleman, Mark (2004) The Shibboleth authentication/authorization system. *Serials Review* Vol. 30 No.3, pp.252-253

Robiette, Alan (2003). Managing access to electronic information: progress and prospects. *Serials* Vol. 14 No. 3, p.301-4

## C. Budget

### 1. Justification of Support Requested

The project requires the provision of a Computing Development Officer on the academic related pay scale to conduct the implementation and assessment of the Shibboleth technology. This staffing cost is the major expenditure component. The post will be graded at the top end of ALC Grade 2, in order to attract a high calibre candidate with the requisite skills, namely familiarity with Java programming and web development, together with knowledge of LDAP, and experience of Athens and the Further/Higher Education context. Project management and presentational skills will also be highly desirable.

A sum is requested for the purchase of a server, and relevant software and support, to host the Shibboleth service, together with a PC for the Computing Development Officer. A smaller sum is requested for consumables.

With regard to institutional contributions, the overheads are costed at 46% of the total staff cost. In addition there is the cost of time given by staff elsewhere in the institution, conservatively estimated at a total of 336 hours, together with overheads, again at 46%.

A significant sum is requested for travel costs to reflect both attendance at meetings elsewhere in the UK and travel between partner sites, in the later stages of the project, in Devon and Cornwall. Dissemination costs include the setting up of a website, the production of reports and the associated costs of a workshop day in the south-west towards the end of the project. A small sum is requested to cover the extra costs of recruiting a high calibre appointee to the south-west, in terms of advertising and relocation expenses.

### 2. Expenditure of Funds

Costing to appoint: Spine point 13 ALC Grade 2. Duration 12 months. Salary scales as agreed for 01/08/04. An inflation factor of 3% has been added for the subsequent pay award due on 1st August 2005. Dates 01/05/05 to 30/04/06.

Spine Point	Date of Salary Scale	Salary	Duration on this scale	No. of months	Cost	Cost Breakdown			
						Salary	SuperAnn.	NI	Total
Pt 13	01/08/04	35,452			0				
	01/05/05	35,452	01/05/05 – 31/07/05	3	8863.00	7282.00	1019.25	561.75	8863.00
	01/08/05	36,516	01/08/05 – 31/04/06	9	27386.79	22501.50	3149.48	1735.81	27386.79
			Total	12	36249.79	29783.50	4168.73	2297.56	36249.79
			% of FTE	100%	<b>36,249.79</b>				

**Equipment & Associated Costs**

Server	3000	
PC	1000	
Software	200	
Consumables	100	
Server Support	3200	<b>7,500</b>

**Travel & Subsistence** **2,500**

**Advertising & Relocation Costs** **800**

**Dissemination & Evaluation** **2,000**

**TOTAL COST:** **£49,049.79**

**3. Institutional Contribution**

<i>Description</i>	<i>Unit Cost</i>	<i>Nos.</i>	<i>Total</i>
Institutional overheads of project post - at 46% of total cost			16674.90
Staff time of project team - meetings, dissemination etc.	15.00 / hour	240	3600.00
Additional staff time	15.00 / hour	96	1440.00
Institutional overheads of existing staff - at 46% of cost			2318.40

**TOTAL CONTRIBUTION:** **£24,033.33**

**D. Key Personnel**

**Bill Edmunds**

Bill Edmunds, the University Webmaster, joined the University in 1979 and chairs the University Web Technical Support Group and serves on the University Web Steering Group. He is currently involved in the development of the University Directory Service. This includes extending the scope and use of the existing LDAP service to include eVision, WebCT, Library and AthensDA integration. He is also actively leading the replacement of the University Web Service. This involves a move towards a load balanced, resilient cluster connected to the University Storage Area Network (SAN). His other roles include Security and System Administration of the main University systems, including support of MIS systems, and administration of the University Server Backup Service. Operating Systems include: UNIX (Solaris/Linux/Irix), Windows NT, Netware. Skills include: Perl, PHP, C, SQL/MySQL, HTML, JavaScript, UNIX scripting.

### **Steve Grange**

Steve Grange, Systems Administrator, has been with the University since 1971, initially employed as an operator, latterly as the large systems team leader. His work involves being responsible for the installation and maintenance of over 60 servers housed in the Universities machine room. These servers are running a variety of operating systems including UNIX (Solaris, Linux and Irix), Windows (NT4, W2K) and Netware. His group is responsible for the registration and maintenance of over 20,000 users and includes provision of e-mail, web, system and PC backup, high availability systems, disaster recovery and MIS services. He has been involved as a team member and project leader on service development projects including the replacement of the Universities e-mail and Web services, the acquisition and implementation of a SAN, and the review of Directory services at Exeter University.

### **Martin Myhill**

Martin Myhill is currently Deputy Librarian at the University of Exeter and has been employed in a professional library context for over 20 years. He has been a member of the management teams for externally-funded projects totaling over £5 million including the highly successful EU-funded and pan-European Telematics for Teacher Training (T3) Project (1996-9) where he was the work package leader for all library aspects. More recently he coordinated Project MARCO - a substantial, three year TEMPUS project which rebuilt the History resource and curriculum in Mongolia via the Teacher Training system following the collapse of Russian hegemony. He has also been active in similar projects in Russia, Uzbekistan and the Ukraine. He coordinates library automation systems for the University Library, and is the author of over twenty books and professional articles.

### **Ian Tilsed**

Ian Tilsed is the Computing Development Officer in the University of Exeter Library and Information Service, a post held since 1995. He is the departmental webmaster and is also involved in the management of electronic resources, particularly with regard to access management and technical support, and of the Library IT infrastructure. He is the Athens Administrator for the University and has been closely involved with the implementation of Athens DA. He is also a member of the University Web Steering Group, the University Web Technical Steering Group and the University E-Learning Working Party. He has been active in several EU-funded TEMPUS projects since 1995, most notably in Russia and Mongolia. He has authored seven articles and book chapters, has held several editorial board positions and sits on BSI DISC Subcommittee IDT/2/7 - computer applications in information and documentation.

### **Anna Verhamme**

Anna Verhamme is a Project Manager at the University of Exeter and currently manages a number of IT projects, including the portal project XPort and the E-Commerce project. The E-Commerce project aims to provide an enhanced payment service to the University's customers and incorporates on-line payment for student transactions, car parking, ResNet registration fees and the on-line topping-up of printing account. Between 2000 and 2003 Anna was a key member of the student records implementation team. During this systems replacement project she successfully managed the administrative staff's expectations and a shift in University culture. She also designed a training and implementation plan, which was used to implement the system successfully to over 250 staff distributed over 20 administrative departments on 3 campuses. Anna graduated with a Masters from the University in 1998.

## **Project SWISh – Appendix A**

### **Project XPort**

Project XPort is a five year project, which has been made possible in part through a grant provided by CampusEAI. The objective of the project is to deliver a University wide portal initially aimed at students, staff and University associates, but which later will encompass applicants, alumni and ad-hoc user groups (e.g. conference participants).

Five phases have been identified:

- Phase 1: development of a prototype portal service; investigation into the longer term issues relating to the provision of a portal service; and the set-up of the appropriate processes to resolve these. Phase 1 is subdivided into six work-streams, of which the ID Management work-stream focuses on the technologies used for transferable sign-on, single-sign-on and federated sign-on (Shibboleth).
- Phase 2: migration of prototype portal service to pilot portal service, which will be made available to all staff, students and University associates.
- Phase 3: implementation of a production portal providing students, staff and associates with Single Sign On (SSO) access to the University's information resources, transaction-based services and collaborative tools (I.T. facilities and Library resources, student and staff administrative systems, internally available teaching and learning resources and externally provided services and resources), with 24x7 availability and off-campus access.
- Phase 4: investigation into and piloting of portal service aimed at applicants, alumni and ad-hoc user groups. It is anticipated that Shibboleth will play a crucial role in the ID management of the ad-hoc user groups.
- Phase 5: implementation of production portal for alumni, applicants and ad-hoc user groups

The initial phase of the project is well underway and has been divided up in a number of work-streams of which the Identity management and security work-stream is most relevant in the context of this bid.

The objectives of the Identity Management Work-stream are to:

- To have a workable Single Sign On mechanism for the prototype portal
- To have an ID management solution in place which will authorise and authenticate prototype portal users
- To investigate the options relating to the directory service used by the portal
- To recommend how the directory service should be structured in the context of a portal service

- To recommend how the user and user-group data in the portal directory service will be kept up-to-date
- To investigate authentication and authorisation processes in a portlet context
- To produce a security recommendation for the prototype release and to analyse security issues relating to the pilot and production phases of the portal service
- To investigate the use of Shibboleth as an authorisation and authentication mechanism for access to external services (e.g. E-Commerce Service provider)

Project XPort has been made possible in part through a grant provided by CampusEAI. The CampusEAI grant runs over five years and has a total value of \$1,050,000, in software, hardware, professional services, support services, and CampusEAI membership.

The Campus EAI Consortium is a community-source consortium and was founded in November 2003 by a number of leading Universities in the U.S.A. (including University of Nevada, Las Vegas, Kansas State University, Washington State University, Case Western Reserve University, Embry-Riddle Aeronautical University, Bradley University, California Lutheran University, Foothill De Anza Community College District, Virginia Commonwealth University, and the University of Montana.)

The Consortium is a community of American, Australian and British Universities who work together to develop portlet services aimed at the HE sector. The Consortium takes ownership of the portlets and tools developed by the member institutions, and ensures the developments are documented, tested and quality assured before they become available to all Consortium members. With this “community-source” model the Consortium deals with the major disadvantages faced by open-source communities.

The Consortium has decided to move towards Shibboleth supported solutions and will be implementing the solution in the next 6 to 12 months. The Universities who will be leading on the development within the CampusEAI consortium are Ohio State University and University of Texas-Pan American.