JISC DEVELOPMENT PROGRAMMES

Project Document Cover Sheet

PROJECT PLAN

Project

Project Acronym	SWISh	**Project ID**	
Project Title	SWISh (South West Implementation of Shibboleth)		
Start Date	01 June 2005	**End Date**	31 May 2006
Lead Institution	University of Exeter		
Project Director	Alasdair Paterson (University Librarian) Sue Brooks (Director, I.T. Services)		
Project Manager & contact details	Ian Tilsed E-Mail: i.j.tilsed@exeter.ac.uk Tel: 01392 263882		
Partner Institutions			
Project Web URL	http://www.exeter.ac.uk/swish		
Programme Name (and number)	Core Middleware: Early Adopters (JISC 11/04)		
Programme Manager	Anna Borda		

Document

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Author(s) & project role	Ian Tilsed, Project Manager Nick Johnson, Project Officer
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SWISh Project Plan

Overview of Project

1. Background

During 2004 the University of Exeter implemented several initiatives regarding middleware and authentication/authorisation systems for access to electronic resources. Building on the LDAP directory service that was first installed in 2002, I.T. Services developed a new schema involving the adoption of the eduPerson, together with a new Exeter schema to reflect local requirements. This revised infrastructure then enabled the installation of Athens DA – moving from a self-registration scheme to a system that utilised existing login credentials, thus simplifying access to electronic resources.

The middleware infrastructure, together with the experience of successfully implementing Athens DA, provides a solid foundation upon which to investigate true 'single sign on' and the implementation of a solution based on Shibboleth is a natural extension of this work. A successful Shibboleth implementation would offer a means by which campus identity and access management infrastructures could be utilised to authenticate individuals and then pass the information about them to resource sites, both within and without the institution, thus enabling those sites to authorise access as appropriate.

With the JISC investigating Shibboleth as a possible successor to Athens, the primary activity of the project will be to pilot an authentication/authorisation system for electronic resources based on Shibboleth. A secondary activity will be to explore the use of Shibboleth within the institution, with possible integration with the University portal, the institutional VLE and the Library management system.

2. Aims and Objectives

Aim

The aim of the project is 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 (PMS) and the Peninsula Allied Health Collaboration (PAHC), and at the Combined Universities in Cornwall (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 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.

Objectives

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.

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.

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.

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.

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.

3. Overall Approach

A key issue is the distinction between identity provision (the technical solutions) and service provision (organisational and legal solutions). The two areas have differing priorities, resourcing issues and approaches. With that in mind, it is anticipated that the early adopter project will proceed in four phases, with a documentation and dissemination phase interwoven throughout:

1. Installation and implementation of a Shibboleth service for access to electronic resources
2. First pilot – to a select group of users on campus
3. Second pilot – to an extended constituency on campus and also in the PMS, CUC and PAHC
4. Integration investigation – primarily in relation to the XPort project, the institutional VLE and the Library Management System

Whilst the work is necessarily technical, a study of the information flow requirements for the service will be integral to the project – an example where service provision underpins identity provision and is therefore mission critical.

Critical to the project overall is the availability of resources, to which the University holds subscriptions, that are Shibboleth compliant. The availability of the Shibboleth-Athens Gateway from Eduserv Athens provides a stop-gap until such time as organisations, such as MIMAS and EDINA, release their Shibboleth compliant resources – the majority of which are scheduled to coincide with the intended pilots of SWISh. Allied to this is the wider issue of a UK federation, an issue that JISC is addressing at the moment, as well as the necessity, at the current time, for Shibboleth to handle multiple federations.

As part of the second pilot, the project will necessarily have to address, in detail, the issues regarding federations for a geographical dispersed grouping. This work may result in the idea of a wider federation for the South West, to address collaborative arrangements as other institutions in the area implement Shibboleth. Whilst the feasibility and appropriateness of such a federation is within the scope of this project, the implementation of such a federation is not, given the financial and legal implications of such a development.

4. Project Outputs

The key to the project is the successful implementation of a Shibboleth service and its integration into the wider University credential management structure. The data flow requirements will need to be assessed and the possibilities for further use of Shibboleth within a wider institutional 'Single Sign On' strategy will be explored. Four main areas of deliverables can be identified:

Pilot Shibboleth Service
The primary purpose of the project is to implement a Shibboleth service, integrated with an existing institutional authentication system and attribute authority for University of Exeter users. The pilot service will draw from this community a number of people who will act as users of Shibboleth services established by MIMAS, EDINA and other Service Providers (SPs) as part of the wider Core Middleware Programme. As the pilot is extended to University of Exeter members in the Peninsula Medical School, the Peninsula Allied Health Collaboration and the Combined University in Cornwall, the community of live users will be expanded, in order to consider the regional and cross-institutional issues of implementation. Consideration of the data requirements by Service Providers may also produce a further output, namely an institutional Attribute Release Policy.

Documentation & Dissemination

This 'early adopter' project has, at its core, dissemination as well as implementation. As an 'early adopter' it is paramount that our experiences are accurately recorded across all areas. Documentation is therefore a core output. A content management system will be used to maintain a variety of documentation covering installation, integration and use within the remit of this project. As the project progresses, members of the team will disseminate progress to other colleagues within the University, across the South West region (in conjunction with our pilot collaborators) and nationally. A project website will be established to hold documents and provide guidance for those considering Shibboleth within their own establishments.

Technical Tools

As Shibboleth is implemented within the University of Exeter, it is likely that technical tools will be developed, in a variety of forms, to expedite the process, integrate Shibboleth into existing infrastructure and manipulate data flows as required. Whilst many of these tools will be specific to the technical landscape within the University of Exeter, some of the technical principles will be transferable and, as such, will be documented and tools provided as appropriate.

Wider Shibboleth Use within Campus Services

The use of Shibboleth is not confined to authenticating and authorising users to access subscription-based electronic resources. The project is a natural extension of long-running developmental work on campus identity and access management infrastructures within the University of Exeter. In addition, the University has recently been awarded a grant under the CampusEAI initiative to implement a portal for the University. As part of this XPort project Oracle Internet Directory (OID) has been set up to be 'seeded' by, and synchronised with, the OpenLDAP. With the implementation of true 'Single Sign On' on campus being a central strategic aim, it is appropriate that Project SWISh considers the use of Shibboleth within this wider campus context. This exploration will form a further distinct output and also ensure a wider appreciation of Shibboleth capabilities within the institution.

5. Project Outcomes

The main outcome of the project will be the exploration of the technical, procedural and attribute management issues related to the implementation of Shibboleth within a higher education (and collaborative) context, and the dissemination of the developments and findings that the new middleware will provide.

The work will inform wider developments in authentication and ID management within the University and may also influence possible use of Shibboleth and related middleware in the wider further and higher education community. The project deliverables will also contribute to the wider discussion initiated by the JISC regarding a successor to the Athens access management service.

Several key staff within the institution will be 'exposed' to the development of the Shibboleth service and will, inevitably, become more aware of the organisational and technical issues regarding access to electronic resources. This greater understanding can be identified as an indirect outcome.

6. Stakeholder Analysis

Stakeholder	Interest / stake	Importance
University of Exeter (all staff and students)	Authentication infrastructure	High
Partner Institutions (PMS, PAHC, CUC)	Authentication infrastructure	High
Online Hosts	Implementation of middleware	High
Other Institutions & Projects	Advice / working example	Medium

7. Risk Analysis

Risk	Probability (1-5)	Severity (1-5)	Score (P x S)	Action to Prevent/Manage Risk
Staffing	2	4	8	Re-hire; use alternate staff within the University of Exeter.
Organisational	1	3	3	As the Project Sponsors hold senior University positions, this is unlikely to rise as an issue.
Technical	2	2	4	Implementation of a new infrastructure may not be totally successful. However, a key element of the project is the discovery process, which itself will form a positive deliverable via documentation. Work together with MATU and develop links with other 'early adopter' projects.
External suppliers	1	4	4	It is evident that external online hosts are working to 'shibbolise' content, with availability within the timeframe of this project.
Legal	1	3	3	Ensure compliance with appropriate licences, both for resources and software, although the latter is essentially open source. The security of the data held within the attribute store will be monitored and enforced by existing DP policies and legislation.
Conflicts with other projects	1	3	3	Close co-operation with other University projects; the project manager of the XPort portal project is on the SWISh team.

8. Standards

The standards used in Project SWISh will be the latest stable Shibboleth version, that is known to be stable on RedHat Enterprise 4 and that is compliant with OpenLDAP v3. We expect this to be Shibboleth v1.3 because it:

- supports SAML v2.0,
- work with recently developed utilities such as an GUI ARP editor

No changes to standards are expected to be made.

9. Technical Development

All application installation and configuration sequences will be captured and recorded in a content management system (CMS). This will be particularly important in understanding how to write instructions for the project website. Dependencies on version numbers of applications will be easier to diagnose using this methodology. This CMS will form the heart of the project website.

A Change Management Tracking System will be used to ensure that any changes to system settings

are planned, approved and scheduled. This will become increasingly important as each phase of the project is required to be more robust.

A CVS code repository will be used to version control and archive all locally generated script development. These are expected to be utilities for capturing protocol traces, measuring performance, sorting errors and alerting of faults.

Installation, configuration and validation of component packages will follow Shibboleth guidelines at all times.

10. Intellectual Property Rights

There is no intellectual property, in the project deliverables, which is owned by a third party.

All software components are open source and will be available subsequently under the same arrangement.

Project Resources

11. Project Partners

There are no formal project partners. However, the latter stages of the project will involve liaison with a few (mainly library) staff in the Peninsula Medical School (PMS), the Peninsula Allied Health Collaboration (PAHC) and the Combined Universities in Cornwall (CUC) campus in Cornwall, as the pilot service is extended to University of Exeter members at those institutions.

12. Project Management

Project Manager

Ian Tilsed, Computing Development Officer in the Library and Information Service.

It is anticipated that approximately 10% - 20% of the Project Manager's time will be spent on project management over the 12 months. He will undertake the day-to-day project management functions, liaising with the JISC and overseeing the Project Officer. The Project Manager will chair the meetings of the Project Team and the Project Management Committee and produce the minutes.

Project Team

Bill Edmunds	*University Webmaster*	w.edmunds@exeter.ac.uk
Steve Grange	*Systems Administrator*	s.l.grange@exeter.ac.uk
Nick Johnson	*SWISh Project Officer*	nick.johnson@exeter.ac.uk
Martin Myhill	*Deputy Librarian*	m.r.myhill@exeter.ac.uk
Anna Verhamme	*XPort Project Manager*	a.j.g.a.verhamme@exeter.ac.uk
Ian Tilsed	*Computing Development Officer*	i.j.tilsed@exeter.ac.uk

The Project Team will meet at least fortnightly, with the technical members of the team being in daily contact as appropriate.

Project Management Committee

The Project has two sponsors at senior University level:

- Dr Sue Brooks, Director of I.T. Services
- Mr Alasdair Paterson, University Librarian

The Management Committee will consist of the two sponsors, together with the Project Team. The Management Committee will meet quarterly, to ensure that the work of SWISh is placed within the strategic framework of the University.

Other Reporting Relationships

Various individuals on the Project Team will report on project progress to a variety of committees:

Committee	Line of Reporting
Library Electronic Resources Committee	Ian Tilsed
University Web Steering Group	Ian Tilsed
University Web Technical Steering Group	Bill Edmunds & Ian Tilsed
XPort Project Board	Anna Verhamme

Training needs will be identified as the Project progresses and, where necessary, the services of the Middleware Assisted Take-Up (MATU) service at Eduserv will be utilised.

13. Programme Support

There are no specific areas where support is requested at the current time. However, as the Project progresses, the team will consult the Programme Manager and MATU as appropriate.

14. Budget

The project budget is attached as Appendix A.

Detailed Project Planning

15. Workpackages

The workpackage document is attached as Appendix B.

16. Evaluation Plan

Timing	Factor to Evaluate	Questions to Address	Method(s)	Measure of Success
Phase 1: 31 Aug 2005	IdP server operational and prototype SP server operational to selected group	IdP and SP stable operation? Fundamental protocol operation successful? Scale of SP subprojects? Scalability of project to whole university? AA editing/management tool requirements.	Document system. Train users and cutover to small group for use. Performance load tests.	Repeatable successful daily use of service. Log analysis, error analysis by code or user fault. Does load test fail in predictable way?
Phase 2: 09 Dec 2005	Successful implementation for library	Success of large scale user account migration/import? Successful design of AA for library? User comprehension of new login interface?	Import library user accounts to AA and populate with credentials. Further webserver tutorials and creation of complaint	Identification of reasons for login/authorization failures. Web server log analysis to see most visited tutorial/help pages.

		Expected load increase on server within in expectations? Scope of addition of further SP?	handling system. User questionnaire.	Measuring access times for different SPs.
Phase 3: 28 Feb 2006	Successful implementation for PMS and PAHC	Political/organizational integration of AA data from off-campus	Negotiation and creation of AA data.	Stability and completeness of AA
Phase 4: 31 May 2006	Successful implementation for CUC, Exeter XPort and/or WebCT	Capability to integrate with commercial LDAP packages.	Identify constraints and requirements, devise integration plan, execute it.	Analysis of call centre requests, web help page requests, service response times and usage.

17. Quality Assurance Plan

Timing	Compliance With	QA Method(s)	Evidence of Compliance
Nov 05 – Feb 06	Fitness for purpose	Presence of errors, user activity, service validity. Load testing. Project Management Committee review.	Adoption by library users. Activity and error log verification help desk request monitoring, traffic analysis.
Nov 05 – Feb 06	Best practice for processes	Rebuild server with new Shibboleth versions with reference to local site documentation. Documentation of all local scripts. Adherence to formal SSADM project methodology. CVS repository of local scripts. Change management tracking system for service alterations Integrated Help Desk support. Project Management Committee review.	Latest version of Shibboleth running. Repository for local scripts. Help Desk documentation and procedures upgraded. Change management system with archive of updates.
Nov 05 – Feb 06	Adherence to specifications	Compliance with Project Plan. Regular reporting and discussions with JISC and MATU.	Approval of plans and milestones.
Nov 05	Adherence to standards	Use of the latest release of Shibboleth, SAML, OpenLDAP. Liaison with MATU.	Upgradeability to new releases of software.
May 06	Accessibility legislation	AA formal design and approval procedures	Signed legal agreements.

18. Dissemination Plan

Timing	Dissemination Activity	Audience	Purpose	Key Message
2005-06	Website Documentation	UK & International	Provide 'how to' guides, technical tools & reports.	Progress of project and lessons learnt.
2006	Articles in journals	UK - HE & FE	Introduce Shibboleth in a Library setting. Describe Shibboleth installation and requirements.	Our experience, 'do's and don'ts' and possibilities for the future.
2005-06	Talks at events and discussions with colleagues	UK	Report on progress of project.	Progress of project and lessons learnt.
Spring 2006	Workshop in Exeter	UK - HE & FE	To sum up project findings and disseminate results and expertise.	How to setup, maintain and use a Shibboleth service.

19. Exit/Sustainability Plan

Project Outputs	Action for Take-up & Embedding	Action for Exit
Shibboleth service	Integrate into infrastructure as a production service. Document & map maintenance schedule. Review resilience. Identify internal funding for support.	Transfer to production status; address maintenance requirements
Reports, Guides & Tools	Publicise within UK HE and FE	Publicise and make available online via project website & MATU. Provide performance data.

Project Outputs	Why Sustainable	Scenarios for Taking Forward	Issues to Address
Scoping for the possibility of a South West Federation	Move beyond project scope federation to full SW federated construct.	Discussions with SW institutions	Legal and licensing framework.
Campus Single Sign On	Key IT strategy	Working with campus service providers; XPort project.	Centralised attribute store; avoidance of credential duplication.

Appendix A. Project Budget

	JISC Contribution Requested			Institution Contribution			Total
	YR1	**YR2**	**YR3**	**YR1**	**YR2**	**YR3**	
Staff *(list all staff with FTEs and salary scale range)*							
Project Manager 0.2 FTE				7,250			7,250
Project Officer 1.0 FTE	36,250						36,250
Other institutional staff				5,040			5,040
Travel & Subsistence	2,500						2,500
Equipment	7,500						7,500
Dissemination activities	1,000						1,000
Evaluation activities	1,000						1,000
Other							
Advertising & Relocation	800						800
Institutional Overheads				18,993			18,993
Total	49,050			31,283			**80,333**
Total requested from JISC	49,050						**49,050**

Appendix B. Workpackages

WORKPACKAGES	Month	1	2	3	4	5	6	7	8	9	10	11	12
1: Project Management		X	X	X	X	X	X	X	X	X	X	X	X
2: Shibboleth IdP		X											
3: Web Service Interface			X	X									
4: 1st Pilot Service				X	X	X	X	X					
5: 2nd Pilot Service						X	X	X	X	X	X	X	X
6: Campus Integration									X	X	X	X	X
7: Dissemination		X	X	X	X	X	X	X	X	X	X	X	X

Project start date: *01-06-2005*

Project completion date: *31-05-2006*

Duration: 12 months

Workpackage and activity	Earliest start date	Latest completion date	Outputs (clearly indicate deliverables & reports in bold)	Milestone	Responsibility
YEAR 1					
WORKPACKAGE 1: Project Management **Objective: to ensure that the project runs to schedule and budget, and to liaise with JISC**					
1. Project Plan		30/06/05	**Project Plan**	*	IJT, NJ
2. Reporting			Reports as required by JISC		IJT, NJ
3. Financial Reporting			Reports as required by JISC		IJT
4. Financial Administration			Monitoring of budget with I.T. Services		IJT
5. Final Project Report	01/04/06	31/05/06	**Final Project Report**	*	IJT, NJ

Workpackage and activity	Earliest start date	Latest completion date	Outputs (clearly indicate deliverables & reports in bold)	Milestone	Responsibility
6. Team Meetings & Management Committee	01/06/05	31/05/06	Minutes from meetings		IJT, NJ, WE, SG, MM, AV, ATP, SB
WORKPACKAGE 2: Shibboleth IdP with InQueue <u>Objective</u>: successful login by all pilot service users					
7. Basic Authentication	01/06/05	20/06/05	Login via InQueue for local test users	*	NJ
8. LDAP Authentication	20/06/05	30/06/05	Login via InQueue for all Exeter users	*	NJ
WORKPACKAGE 3: Web Service Interface <u>Objective</u>: unambiguous portal for pilot service users					
9. Define scope of service	01/07/05	04/07/04	Project goals, objections, assumptions & restrictions		NJ, WE, IJT
10. Conduct interviews	05/07/04	06/07/05	Summarised content from interviews		NJ
11. Document & analyse current system	07/07/05	08/07/05	Functional description		NJ
12. Define requirements	12/07/05	12/07/05	Set of ranked system objectives & physical requirements of new system		NJ
13. Identify constraints	13/07/05	13/07/05	Refined scope of service		NJ
14. Identify trade offs	13/07/05	13/07/05	Comparative tabulation of implications for users & administrators		NJ
15. Defining inputs & outputs	14/07/05	18/07/05	Data flow description		NJ
16. Code & build interfaces	19/07/05	22/07/05	Modules programmed	*	NJ
17. Test & implement	25/07/05	29/07/05	Conclusion of interface trial	*	NJ
18. Review	01/08/05	01/08/05	**Main web service review**		NJ, WE, IJT

Workpackage and activity	Earliest start date	Latest completion date	Outputs (clearly indicate deliverables & reports in bold)	Milestone	Responsibility
WORKPACKAGE 4: 1st Pilot Service **Objective: to produce a working service for controlled set of campus users, initially to work with Shibboleth/Athens gateway**					
19. Define scope of service	02/08/05	02/08/05	Defined set of users		NJ, WE, IJT
20. Conduct interviews	03/08/05	05/08/05	Summarised content from interviews		NJ
21. Define requirements	08/08/05	08/08/05	Set of ranked system objectives & physical requirements to authenticate campus users		NJ
22. Identify constraints	09/08/05	09/08/05	List of changes to be considered		NJ
23. Identify trade offs	09/08/05	09/08/05	Comparative tabulation of implications for users & administrators		NJ
24. Defining inputs & outputs	10/08/05	12/08/05	Data flow description		NJ
25. Code & build interfaces	15/08/05	17/08/05	Additional module programming	*	NJ
26. Test & implement	18/08/05	09/12/05	Conclusion of campus user trial	*	NJ
27. Review	14/09/05	14/09/05	**Campus user trial review**		NJ, WE, IJT, SG, MM, AV
28. Iterated service improvements using change management tracking	14/09/05	09/12/05	Bug fixes, enhancements, service changes as approved by management team		NJ, WE, IJT, SG, MM, AV
29. Contingency	15/09/05	30/09/05			

Workpackage and activity	Earliest start date	Latest completion date	Outputs (clearly indicate deliverables & reports in bold)	Milestone	Responsibility
WORKPACKAGE 5: 2nd Pilot Service Objective: to extend 1st pilot to higher education institutions beyond campus, and to work with service providers with Shibbolised resources, e.g. MIMAS					
30. Define scope of service	15/09/05	15/09/05	Defined extended set of institutions & users		NJ, WE, IJT
31. Conduct interviews	10/10/05	19/10/05	Summarised content from interviews		NJ, IJT
32. Define requirements	01/10/05	20/10/05	Set of ranked system objectives & physical requirements to authenticate extended user base & new attribute authorities		NJ
33. Identify constraints	21/10/05	24/10/05	List of changes to be considered		NJ
34. Identify trade offs	25/10/05	25/10/05	Comparative tabulation of implications for users & administrators		NJ
35. Defining inputs & outputs	26/10/05	27/10/05	Data flow description		NJ
36. Code & build interfaces	28/10/05	11/11/05	Additional module programming		NJ
37. Test & implement extended user base	15/11/05	26/11/05	Valid logins by off campus users	*	NJ
38. Test & implement additional attribute authorities	29/11/05	10/12/05	Valid authorisation of newly Shibbolised resources	*	NJ
39. Review	12/12/05	14/12/05	**User and attribute review**		NJ, WE, IJT, SG, MM, AV
40. Iterated service improvements using change management tracking	12/12/05	28/02/06	Bug fixes, enhancements, service changes as approved by management team		NJ

Workpackage and activity	Earliest start date	Latest completion date	Outputs (clearly indicate deliverables & reports in bold)	Milestone	Responsibility
WORKPACKAGE 6: Campus Integration <u>Objective</u>: **to explore wider Shibboleth use with other campus services, such as the portal, the VLE and library management system**					
41. Define set of campus service providers	06/01/06	09/01/06	List including WebCT, XPort portal and Library Management System		NJ, WE, IJT, AV, MM, SG
42. Conduct interviews	09/01/06	13/01/06	Summarised content from interviews		NJ
43. Document & analyse current campus systems	16/01/06	25/01/06	List of specific interfaces of mutual systems		NJ
44. Define requirements	26/01/06	27/01/06	Protocol & permission issues, timeframes and availabilities		NJ
45. Identify constraints	30/01/06	30/01/06	List of changes to be considered		NJ
46. Identify trade offs	31/01/06	31/01/06	Comparative tabulation of implications for users & administrators		NJ
47. Defining inputs & outputs	01/02/06	03/02/06	Data flow description		NJ
48. Make implementation recommendations	06/02/06	24/02/06	**Assessment of costs, resources and development time for candidate systems**	*	NJ, WE, IJT
49. Develop selected systems (time permitting)	27/02/06	31/03/06	Shibboleth compliant service(s)		NJ
WORKPACKAGE 7: Dissemination <u>Objective</u>: **to document & archive Shibboleth implementation; educate, train and inform colleagues within the University, across the South West and beyond.**					
50. Project website	01/06/05	31/05/06	**Project website**	*	IJT, NJ

Workpackage and activity	Earliest start date	Latest completion date	Outputs (clearly indicate deliverables & reports in bold)	Milestone	Responsibility
51. Training sessions	01/06/05	31/05/06	Presentations, questionnaires, documentation		NJ, IJT
52. Workshop	05/06	05/06	**Event for FE & HE**	*	NJ, WE, IJT, AV, MM, SG
53. Contributions to conferences		31/05/06	Presentations		NJ, IJT, WE
54. Publication of papers		31/05/06	Papers submitted to journals		NJ, IJT
55. Technical tools		31/05/06	Scripts with supporting documentation		NJ

Members of Project Team: **IJT** = Ian Tilsed, **NJ** = Nick Johnson, **WE** = Bill Edmunds, **SG** = Steve Grange, **MM** = Martin Myhill, **AV** = Anna Verhamme

Sponsors & Members of Project Committee (in addition to Team, above): **ATP** = Alasdair Paterson, **SB** = Sue Brooks