

Project Acronym: GRAND  
 Version:1  
 Contact:caleb.racey@ncl.ac.uk  
 Date:13/01/2010



Project Information			
<b>Project Acronym</b>	GRAND		
<b>Project Title</b>	Granularity, Audit, N-tier and Delegation		
<b>Start Date</b>	01/01/2010	<b>End Date</b>	
<b>Lead Institution</b>	Newcastle University		
<b>Project Director</b>	Steve Williams		
<b>Project Manager &amp; contact details</b>	Caleb Racey, Caleb.racey@ncl.ac.uk , ISS, Claremont tower, Newcastle university, NE17RU tel 0191 222 5916		
<b>Partner Institutions</b>	-		
<b>Project Web URL</b>	http://research.ncl.ac.uk/idmaps/		
<b>Programme Name (and number)</b>	<b>Access and Identity Management, Strand A innovation</b>		
<b>Programme Manager</b>	Chris Brown		

Document Name			
<b>Document Title</b>	Project plan		
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## **JISC Project Plan**

### ***Overview of Project***

#### **1. Background**

The GRAND project addresses three core areas in Access and Identity Management. Those areas being “Granularity and Delegation”, “Audit and Accounting” and “N-tier authentication”. The project will take a look at the practical real world issues uncovered by addressing those areas in a large institute. The project will achieve this by investigating cutting edge approaches that address these areas and by making these approaches a practical, usable, widely deployed reality. In summary the theme of the project is to address the question “how we get from where current real world best practice is, to where it should be in two years time?”.

The project will treat “Granularity and Delegation” as one subject area, approaches that address these two closely related concepts display a great deal of overlap. The proposed approach to delegation is to enable an aspect of someone’s role to be delegated. The project will look at how fine grained these aspects of a role should be. The project will examine what access needs to be delegated and then balance this against what sensible compromises can be made in establishing the exact granularity of a role. In essence this work can be seen as solidifying the interplay between what level people are trusted in the real world and how that relates to how complex we make our access control systems in the virtual world. The greater the complexity expressed in an access control system the more expensive and difficult it is to sustain. Complexity can also overwhelm the users and should not be added unless necessary, sensible compromises between the granularity of roles and the desire to precisely express access rights are therefore desirable. Defining these compromises are central to establishing the granularity of access control and it’s delegation. Too fine grained a setup and the access control is unsustainable and unusable, too large grained and it is insecure and unable to respond to user needs.

The Project will exploit the Grouper group management tool already deployed in Newcastle. Grouper is specifically designed to address both Granularity and Delegation. It is the experience of the project team that careful structuring of access control groups in Grouper can be used to enable the delegation of aspect of a user’s role. The project will investigate the policy, procedure and user education issues around ensuring that this structuring allows secure, flexible, sustainable and most importantly usable delegation of aspect of a role in real world situations. It will also look at how the user community makes use of this ability and how to provide delegation in a form that as many as possible of a user community of 5000 staff will understand and use.

The Project will also address the area of “Audit and Accounting”. Shibboleth 2.1 produces logs suitable for audit purposes and Grouper’s upcoming 1.5 release will include audit logging support. However in order to fulfil audit functions tools need to be developed to process these logs and produce legible output. In order for the audit trail to be useful the logs of both systems need to be analysed and that information combined. A summary of this

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approach is that analysing a Shibboleth log will tell you when someone logged into a system, analysing the Grouper log will tell you what they had the right to do on that system. Another aspect of Audit logging is to investigate its interplay with the requirement to keep historical records of the permissions represented. The project will also address the accounting function of log processing and analyses by investigating and creating solutions to address real world accounting needs, an example of this is the requirement to produce usage summaries suitable for capacity planning.

The project will investigate "N-tier approaches to authentication". It will do so by looking at integrating Shibboleth tightly with Kerberos login. Newcastle University already uses Kerberos for automatic web browser login to Shibboleth; in that if a user who is already logged into a campus computer accesses specific Shibboleth protected sites they will be automatically and apparently transparently logged on. However this uses the SPNEGO<sup>1</sup> (Simple and Protected GSSAPI Negotiation Mechanism) auto login feature of CAS and the remote user login handler of Shibboleth. This technique does not directly expose Kerberos tickets to Shibboleth. In order to fully integrate Shibboleth and Kerberos a native Shibboleth login handler needs to be developed which exposes the Kerberos tickets to Shibboleth directly. The tickets can then be made available to Shibboleth service providers as Shibboleth attributes and portal applications can use Kerberos proxy tickets for N-tier authentication.

The development of N-tier authentication will help to extend portal based syndication and personalisation approaches to applications that contain potentially sensitive data such as print credit systems and student self service. Currently personalised syndication approaches are limited to non sensitive data, for example showing students their exam papers and reading lists. The lack of a robust secure authentication channel between front end portals and web application systems is currently a barrier to integrating sensitive applications into personalised portals.

Use of Kerberos as the token for N-tier authentication is a pragmatic choice, Kerberos is already used as a token for n-tier delegation on the Microsoft platform particularly for email and file sharing. It is also supported on the SAP platform and many Unix based application also integrate with it. Use of Kerberos therefore enables the use of N-tier approaches to a wide range of pre-existing high value applications, making this work directly relevant to the real world. Newcastle has a pressing need to address n-tier authentication to its systems. In order to address the Personalisation and Syndication concerns of the IDMAPS (Institutional Data Management for Personalisation and Syndication) project the institute has already created portal pages that access and combine data from multiple different systems, however systems with sensitive user data have been excluded due to concerns of the risk presented by current n-tier authentication techniques. In order to further enhance the reach of this work the institute needs to be able to authenticate access from the front end Shibboleth portal to sensitive back end systems such as student record systems and email systems. Both student record systems and email systems are reliant on Kerberos; the portal achieves interaction-less login by using the SPNEGO password less login allowed by Kerberos. Hence the desire to look at combining Shibboleth and Kerberos to form a practical real world solution to our N-tier authentication problems. These problems are known to occur across the Higher Education (HE) sector and addressing them in Newcastle would be beneficial to the whole community.

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<sup>1</sup> <http://en.wikipedia.org/wiki/SPNEGO>  
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While this plan deliberately separates the areas of “Granularity and Delegation”, “Audit and Accounting” and “N-tier authentication”. The solutions to these three concerns will form a coherent whole that enables the enhancement of Access and Identity management in the institute and HE community. Indeed solutions will be pivotal in the drive to enhance the real world Access and Identity management solution offered by combining Shibboleth and Grouper

## 2. Aims and Objectives

The overall aim is to take best practice in the areas of granularity delegation audit and n-tier and to develop new enhanced approaches. Aims and objectives of each development work package are as follows:

### **Audit**

- 1) Facilitate the combination and processing of audit data from multiple sources into a coherent whole that allows the audit of who logged into which system and had the ability to do what.
- 2) Examine the interplay between audit logs as a historical record and the use of group structures to reflect historical group membership. In essence answer the question “when do you only need to know what membership someone had and when do you need them to retain their historical memberships and therefore access right”
- 3) examine what useful data can be mined from audit logs to form accounting information useful for sizing and resourcing services

### **Granularity and delegation**

- 1) establish at which point a pragmatic balance between the need for fine grained authorisation and the usability and maintainability of course grained group structures can be struck.
- 2) develop a policy and procedure framework to support the use of group based authorisation.
- 3) educate users in the appropriate use of access control

### **N-tier**

- 1) produce a “true single sign on” login handler for shibboleth that uses SPNEGO based ticket negotiation to achieve single sign on
- 2) establish use cases and value of Kerberos based n-tier authentication for portal syndication
- 3) establish the practicality and usability of “true single sign on” in various usage scenarios e.g. on campus vs off campus

## 3. Overall Approach

### **Strategy**

The project will follow a phased approach to deployment. This will enable the project to produce a series of benefits to the University and wider community during it's life cycle rather than producing outputs and benefits in a burst at the end of the project. This will help maintain institutional buy-in for the project by demonstrating the projects value through out it's 15 month lifecycle.

Methodologies, problems encountered and lessons learned will be documented on the project web site as this work proceeds. The documentation will be published in draft form on the project website and community input will be sought; the final documentation will be refined in the light of this community input. Policy, management and legal issues will be identified by the project team and documented at each stage.

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### **Scope**

The project will address the practical requirements and impact of audit log analyses within an HE institute. It will focus on pragmatic structures and policies required to provide usable group management structures to support delegation and appropriate granularity of control. The scope of the project will cover technical setup, documentation, user education, usability issues, accessibility, and assessment of fitness for purpose.

### **Out of scope**

The project will not investigate or seek to change the underlying protocols (SPNEGO GSSAPI SAML) involved in single sign on, it will instead look at exploiting the current protocols to provide the desired functionality. The project will also not seek to change the behaviour of the Shibboleth or Grouper toolkits but will again look at how best to exploit and augment existing functionality.

### **Critical Success Factors**

Critical success factors will be ensuring that the work around delegation and audit is fit for purpose and relevant to the institutes requirements. Critical to the success of the work around n-tier will be production of a good specification and either successful implementation or timely acknowledgement of technical failure and repurposing of effort to investigate and document exactly what the barriers to success are.

## **4. Project Outputs**

**Initial:** Establish Steering group, Dissemination plan, Detailed project plan.

**Audit:** Use cases, data processing packages, user documentation, policy document.

**Granularity:** Use cases, configuration documentation, user documentation, policy document.

**N-tier:** Use cases, specification, login handler or failure report, report on supporting SPNEGO login, policy document

**Final:** Combined Report, conference presentation(s), screen casts.

Final report.

The project will produce the intangible but valuable benefit of allowing easier web application development and should reduce the support overload of applications deployed using the technologies and approaches developed. Integrated single sign on with n-tier support will allow greater systems integration allowing for a more cohesive user experience.

## **5. Project Outcomes**

The principle outcome is an improved authentication and authorisation service to support application deployed in the university. Specifically

- improved ability for users to login (auto login)
- portal style authentication to back ends (n-tier)
- improved authorisation techniques and usage (granularity and delegation)
- improved ability to report on usage (audit and accounting)

The project expects these improvements to drive greater levels of system integration, improved functionality in applications and a more cohesive user experience. These

improvements are generic infrastructural improvements and should benefit the teaching and research communities equally.

## 6. Stakeholder Analysis

Stakeholder	Interest / stake	Importance
Host institution/lead site ISS	Responsible for delivering project – lead site. Project teams needs to work effectively	High
Steve Williams ISS director	Sponsor – support is essential	High
Lawrence Thompson, Network and security team leader	Coordinator of security matters, audit functionality particularly relevant.	Medium
Clive Gerrard, Assistant Director	Assistant director with portfolio for Single sign on.	Medium
Other programmes in funding programme	Projects need to liaise to share good practice, and testing outcomes	Low
Other HE institutions deploying grouper	Key to effective dissemination	Low
JISC	Funding the Project and associated the programme(s):- Communication and engagement with the programme manager and other JISC projects is vital	High

## 7. Risk Analysis

Work package 4b “develop SPNEGO compatible Shibboleth login plug-in” contains a significant element of risk. Developing new software for Kerberos and Shibboleth integration is technically complex, both packages make significant use of encrypted data flows. While encryption is an absolute prerequisite for security packages, it can seriously impede debugging activities by making visualising what is happening in the protocols extremely difficult. The complexity inherent in the protocols and the area of security in general can quickly spiral development work out of control. Integrating Shibboleth and Kerberos also requires a rare high level set of skills. The project team has previously investigated the issues and reported on them <sup>2</sup>, we believe we now have the skill set required to address them. However we acknowledge that there is still a risk of a skills shortfall.

There is therefore still a significant risk of failure to develop a suitable Shibboleth login plug-in for section b of work package 4. The Project has acted to mitigate this risk by structuring the work package to ensure that the impact of software development failure is minimised. The work investigating use cases and policy will still be valid for all N-tier techniques and provide value to the community should the plug-in development fail. Should the

<sup>2</sup> [http://gfivo.ncl.ac.uk/documents/Shib\\_SPNEGO.pdf](http://gfivo.ncl.ac.uk/documents/Shib_SPNEGO.pdf)  
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development fail the reasons for failure will be documented and made available to the community so that others can learn from the experience. There is a risk that a plug-in may be developed elsewhere, the team has been in contact with the Shibboleth project manager Steve Carmody to ensure that we are not duplicating existing efforts. However others may develop a plug-in. Should this happen development effort will be diverted into investigating, improving and integrating an externally developed plug-in. The project has deliberately chosen to engage the risk inherent in the development of a SPNEGO compatible login plug-in. This risk needs to be engaged, Newcastle University and the HE community need to know if a SPNEGO plug-in for Shibboleth is a practical proposition in order to be able to move forward with advanced Shibboleth integration work. Development of a plug-in would be extremely beneficial to Newcastle University and the wider HE community. Similarly a documented structured failure to produce a plug-in from a defined specification would produce outputs that the community could move forward with to either develop a plug-in or abandon the approach completely.

Risk	Probability	Impact	Score	Mitigation
Organisational	1	4	4	Develop an effective communication strategy. Implement monthly project meetings to plan and coordinate the project.
Staffing:- Loss of availability of Project Officers	1	3	3	Existing staffing availability already identified. In alignment with institutional policy there is redundant cover of most important aspects of job roles.
Technical:- Software failure outside of WP4b	1	2	2	Key software already deployed. Backup choices of tools identified
Technical:- Failure to develop login plug-in. WP4b	4	2	8	Work packages structured to minimise impact of failure. Failure will still lead to outputs of value to community (See above for full explanation of mitigation)
Legal	1	1	1	No legal issues identified. No copyright infringement anticipated. Use of open source projects with liberal licences reduces licensing issues.
Insufficient benefits	1	2	2	It is clear that this project aligns with institutional strategies and has buy in from the institution.
Scope creep	1	2	2	The scope of work outlined is clear and defined.

## 8. Standards

Name of standard or specification	Version	Notes
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XML	Current	
SAML	Current	
GSSAPI	Current	
SQL	--	Version of SQL to be adopted will be decided by compatibility with tools

## 9. Technical Development

The project will adhere to best practice for technical development in the following ways:

- Processes will be documented and revised as the project progresses. These processes will be communicated to the community via the web site, preferably in a format that allows for discussion and contributions,
- Development servers will be used to test and refine software products before deployment onto the delivery platforms,
- Development will use version control systems to ensure the code can be developed by a team and is available beyond project end
- Programming languages used will be those necessary to install, test and use the systems and services produced. These include bash shell, Java, PHP.
- Any databases or database integration tools used will be Open Source, such as MySQL or PostgreSQL,
- Software, documentation and other deliverables will be made available on the project web site in a way that allows easy access for the community.

## 10. Intellectual Property Rights

Intellectual property will be owned by the University of Newcastle Upon Tyne. Written deliverables will be licensed under Creative Commons Attribution - Share Alike 3.0 License<sup>3</sup>. Program code, in particular the code for a shibboleth login handler, will be licensed under a suitable open source licence. This licence is likely to be either Apache software licence v2.0<sup>4</sup> or where the licensing of dependencies dictate licence choice the GPL<sup>5</sup> family of licences. We shall seek the advice of OSSwatch service<sup>6</sup> on appropriate licensing of outputs. Outputs will therefore be reusable at no cost by the community.

## *Project Resources*

### 11. Project Partners

The project is to be run in ISS (Information Systems and Services) in Newcastle university. Responsibility for implementing the project resides solely in the middleware team of ISS.

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<sup>3</sup> <http://creativecommons.org/licenses/by-sa/3.0/>

<sup>4</sup> <http://www.apache.org/licenses/LICENSE-2.0>

<sup>5</sup> <http://www.gnu.org/licenses/gpl.html>

<sup>6</sup> <http://www.oss-watch.ac.uk/>

## 12. Project Management

A project board will be convened 3 times to direct the project, The Project board will be made up of project sponsor, project advisor and project manager. The board will convene twice during the project to ensure project progress and once after the project to review the outcomes. The board will provide the following function:

- To provide a forum for consultation and discussion, raise issues of relevance,
- To provide strategic advice and guidance,
- To act as advocates for the project and promote the project elsewhere,
- To receive and comment on project reports and documentation,
- To monitor the project performance against the objectives set out in the project plan (in conjunction with monitoring undertaken by the JISC programme manager),
- To offer guidance and advice to the project team on issues relating to evaluation and dissemination, especially in relation to the region and the Further/post 16 education communities,
- To offer guidance and advice on future funding opportunities and make recommendations for appropriate exit strategies.

A management group comprising project staff will be established to oversee the day to day implementation of the project and will meet weekly. The project manager will be responsible for managing the project and the project staffing. The project sponsor will be responsible for project oversight and ensuring strategic relevance. Detailed planning will take place by the project team and will be discussed at the monthly meetings.

**Project Sponsor: Steve Williams** (Director, Information Systems and Services) is a recent appointment to ISS having previously been Head of ICT at Sunderland City Council, Steve was recognised as one of '50 most influential CIOs in the country' in 2007 by CIO Magazine<sup>7</sup>.

**Project Manager: Caleb Racey** (Team Leader Middleware, ISS) is Team Leader of the Middleware team. He has 8 years experience of web application provision. He was Project Manager on the JISC funded GFIVO project (completed March 2009), He is currently Technical lead on the IDMAPS project (due to complete in March 2010) . He has given 5 presentations on Access management (Shibboleth & Grouper) at international Internet2 conferences. Cal's commitment represents 20% RFTE, grade G

**Lead Project Officer: Richard James** (Middleware team, ISS) Richard is technical lead responsible for maintaining and developing the Grouper service within ISS. He presented at the "Federating the next generation" JISC event in December 2009. Richie's commitment represents 100% RFTE, grade F

**Project Officer: Andrew Martin** (ASSD, ISS) has 5 years experience of providing Blackboard VLE infrastructure. Andrew has recently been awarded a Blackboard Innovators Award for his open source web service integration into Blackboard. Andrew's commitment represents 20% RFTE, grade F

**Project Officer: Jon Dowland** (Unix Infrastructure, ISS) was Project Officer in the successful JISC-funded IAMSECT project. He has presented on Shibboleth, Authentication

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<sup>7</sup> Silicon.com: The top public sector CIO's - [www.silicon.com/research/specialreports/cio2007/top\\_public.htm](http://www.silicon.com/research/specialreports/cio2007/top_public.htm)  
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and Authorisation at conferences for UKERNA, JISC and the Higher Education Academy (HEA). Jon has a long history of participating in open source projects and is an active Debian Linux maintainer. Jon will provide cover to mitigate any potential loss in availability of the project officers.

**Project Advisor: Lawrence Thompson** (Network & Information Security Manager, ISS) Previously Head of ICT at Newcastle City Council, He was the Local Authorities member of the governments Technical Infrastructure Group that reports to CIO council. Lawrence will advise the project on security issues and form part of the steering group.

### 13. Programme Support

No specific areas of support required. Though as always identification of dissemination opportunities is welcome.

### 14. Budget

See Appendix A, Budget is unchanged from that submitted in proposal.

## *Detailed Project Planning*

### 15. Workpackages

See Appendix

### 16. Evaluation Plan

While there is no formal method of Evaluation being used on the project. Project deliverables will be reevaluated by the project team to ensure suitability for purpose, feedback will also be solicited from the community. Where appropriate, user interviews will be conducted with practitioners to ensure that emerging tools and methodologies are usable and viable as part of standard working practice.

Timing	Factor to Evaluate	Questions to Address	Method(s)	Measure of Success
Ongoing	Project steer / management	Is project steering / management adequate?	Monitoring deliverables	Work packages and reports completed on time
Feb 11	Is the auto login solution fit for deployment on portal	Is auto login achieved, does it degrade gracefully e.g. off campus logins	Observation	The solution is fit for deployment on 10k logins a day site
Aug 10	Audit logs fit for purpose	Do the audit logs provide a usable useful audit trail	Test runs Real world use	Audit logs allow real world audit support and usage.

Oct10	User acceptance testing	Is the balance between fine grained access control and large grained maintainable groups fit for purpose	Interviews Observation	Group structures used extensively for authorisation.
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## 17. Quality Plan

Timing	Compliance With	QA Method(s)	Evidence of Compliance
Ongoing	Fitness for purpose	Observation, Interviews,	The tools and documentation created are usable in the environments they are designed for, i.e. HE, FE and other institutions.
Ongoing	Adherence to plan	Observation, Peer Review.	No scope creep, completion of work packages
Ongoing	Adherence to standards	Observation, Involvement in standards discussions, Peer Review	Use existing tools to ensure web and (where relevant) other standards are being complied with.
Ongoing	Adherence to programme requirements	Respond to programme deliverables (documentation, external evaluation, etc.)	Deliverables and programme reports submitted on time, comply with evaluation

## 18. Dissemination Plan

Newcastle University has a proven record of engagement with the HE community and JISC, demonstrated by (for example) the IAMSECT, G-FIV-O and IDMAPS projects. We will adopt the proven methods of communication established during these projects (detailed below) to ensure a high standard of engagement and dissemination is maintained to the wider community.

A project website with regularly updated news feed has been setup to keep the wider community informed. A mailing list and collaborative wiki will be set up for use by the project team to share project ideas and outputs. Where appropriate screen cast software will be used to generate narrated videos of project outputs in action, enabling community members to visualise the benefits of project outputs.

Project members will also present at UK and international conferences as appropriate. The project will seek to engage with the American communities of practice in the access and identity management sphere. The Grouper and Shibboleth packages used in this project both have their development driven from within the US by the Internet2<sup>8</sup>. These tools represent the pinnacle of current HE practice in the areas of federated authentication and usable access control. Engagement with the American communities is therefore vital to the

<sup>8</sup> <http://www.internet2.edu/>

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entire UK HE community in order to ensure that the tools developed are relevant, applicable and supported in a UK and European context. The project therefore intends to send a representative to present at one of the Internet2 or EDUCAUSE conferences. The project team has a strong record of engagement with the US communities, both presenting at and serving on the program committee of the Internet2 Campus Architecture Middleware Planning conferences (CAMP)<sup>9,10</sup> The project team have also identified the ITANA (IT architects in academia)<sup>11</sup> and Identity management EDUCAUSE groupings as particularly relevant and will engage with them via their mailing lists, teleconferences and screen casts. Again the primary driver for this activity is to ensure that the UK has representation in the future being planned by these groups. The work by the Kuali foundation<sup>12</sup> on Kuali Identity Manager (KIM)<sup>13</sup> being illustrative of the impact these groupings will have on the future.

The project will continue to leverage their existing reputation to ensure that dissemination is as wide and deep as possible in order to maximise benefit for the community.

Timing	Dissemination Activity	Audience	Purpose	Key Message
November 2010	Internet2 fall conference	IT-directors, Team managers,.	Engage with community, Embed outcomes of login handler work	JISC and Newcastle are engaging in the community. There is a plugin in development
Jun 2010	Internet2 eduCAMP	System architects, developers	Build mind share, ensure community relevance	The project represents reusable outputs
TBD	EuroCAMP or suitable TERENA meeting	System architects, developers	Build mind share, ensure community relevance	The project represent reusable outputs
TBD	Uk based dissemination activity	TBD*	TBD*	TBD*

\* Note there is no formal dissemination to the UK community planned as yet, we intend to disseminate to the UK community but will need to await suitable opportunity such as uk-jasig event, JISC event or should nothing suitable emerge will will organise our own event.

## 19. Exit and Sustainability Plans

The development of policy and procedure – with support of executive management of ISS will provide a framework for future developments in the University’s Access and identity management approaches. The project’s focus on delivering pragmatic real world tools and policy to inform the universities core infrastructure will ensure that the outcomes are

<sup>9</sup> <http://research.ncl.ac.uk/idmaps/news.php?involvement-in-successful-camp-conference>

<sup>10</sup> <http://gfivo.ncl.ac.uk/documents/internet2-spring-mm.ppt>

<sup>11</sup> <http://www.itana.org/>

<sup>12</sup> <http://www.kuali.org/>

<sup>13</sup> <http://rice.kuali.org/kim/>

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sustained and integrated for the foreseeable future. Community benefit will be sustained through the long term use of the project outputs and the publication of project deliverables. Additionally participation in the UK and USA communities of practice will help to embed the outcomes in the community.

<b>Project Outputs</b>	<b>Why Sustainable</b>	<b>Scenarios for Taking Forward</b>	<b>Issues to Address</b>
SPNEGO login handler	Needed by many	Embed in shib project,	Community engagement
Policy docs	Reusable and beneficial	Publish under suitable licence	Docs suitably generically useful
Audit data flows	Reusable	Publish in suitable form	Ensure others can reuse Talend data flows as templates
Descriptions of granularity decisions	Everyone has to make these choices	Publish decision making process	
Use cases	Use cases tend not to decay with age	Publish in suitable form	

## Appendix A. Project Budget

<b>Directly Incurred Staff</b>	<b>January 10 – March 10</b>	<b>April 10 – March 11</b>	<b>TOTAL £</b>
Project officer, Grade F, 15 months 100% FTE Project outputs			
<b>Total Directly Incurred Staff (A)</b>			
<b>Non-Staff</b>			
<b>Non-Staff</b>	<b>January 10 – March 10</b>	<b>April 10 – March 11</b>	<b>TOTAL £</b>
Travel and expenses ( <i>programme / JISC events</i> )	£300	£450	£750
Hardware/software ( <i>1 test server, 1 desktop PC</i> )	£950	£3000	£3950
Dissemination ( <i>presenting at international + U.K. conferences, hosting dissemination events</i> )	£200	£4000	£4200
Evaluation( <i>catering 3, 20 seat focus groups, hosting facilities are free</i> )	£ 100	£200	£300
Other ( <i>printing of posters</i> )	£25	£50	£75
<b>Total Directly Incurred Non-Staff (B)</b>			
<b>Directly Incurred Total (C) (A+B=C)</b>			
<b>Directly Allocated</b>			
Staff Project manager, Grade G, 15 months 20% FTE			
Staff Project officer, Grade F, 15 months 20% FTE			
Estates (£1,004 per RFTE)			
Other			
<b>Directly Allocated Total (D)</b>			
<b>Indirect Costs (E) (50% per RFTE – estates) Indirect cost absorbed by institute contribution</b>	<b>£7,845</b>	<b>£35,886</b>	<b>£43,731</b>
<b>Total Project Cost (C+D+E)</b>	<b>£26,163</b>	<b>£111,877</b>	<b>£138,040</b>
<b>Amount Requested from JISC</b>	<b>£12,818</b>	<b>£53,671</b>	<b>£66,489</b>
<b>Institutional Contributions</b>	<b>£13,345</b>	<b>£58,206</b>	<b>£71,551</b>
<b>Percentage Contributions over the life of the project</b>	<b>JISC 48%</b>	<b>Partners 52%</b>	<b>Total 100%</b>

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<b>No. FTEs used to calculate indirect and estates charges, and staff included</b>	<b>No FTEs 1.4</b>	<b>Which Staff.</b> Project Officer(100%), Project Manager (20%), Project Officer (20%)
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## Appendix B. Workpackages

WORKPACKAGES	<i>Month</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<b>1: Setup</b>		x	x													
<b>2: Audit and Accounting</b>			x	x	x	x	x	x								
<b>3: Granularity and Delegation</b>						x	x	x	x	x	x					
<b>4: N-tier</b>									x	x	x	x	x	x		
<b>5: Dissemination</b>		-	-	-	-	-	-	-	-	-	-	-	x	x	x	
<b>6: Final Review</b>																x

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<i>Workpackage and activity</i>	Earliest start date	Latest completion date	<b>Outputs (clearly indicate deliverables &amp; reports in bold)</b>	Milestone	Responsibility
				<b>Milestone</b>	<b>Responsibility</b>
YEAR 1					
WORKPACKAGE 1: <b>Setup</b>  <b><u>Objective:</u></b>					
1. Establish project team	completed	completed	Project team		CR
2. Establish advisory structures	completed	completed	Project advisory board		CR
3. Produce project plan	completed	completed	<b>Project Plan</b>		CR
WORKPACKAGE 2: <b>Audit and Accounting</b>  <b><u>Objective:</u></b>					
4. <b>Use cases:</b> Audit and accounting activity	Feb 2010	Jun 2010	<b>Use Cases documented</b>		RJ
5. <b>Technical tools:</b> Produce talend data flows for audit processing	Feb 2010	July 2010	Template data flows produced		RJ
6. <b>Documentation:</b> Document how to use	Feb 2010	July2010	documentation		RJ

audit and accounting functions				
7. <b>Policy:</b> Establish retention period	Feb 2010	July 2010	Policy	RJ CR
<b>WORKPACKAGE 3: Granularity and Delegation</b>				
<b>Objective:</b>				
8. <b>Use cases:</b> Establish use cases that require	May 2010	Sep2010	<b>Use Cases documented</b>	RJ
9. <b>Technical tools:</b> Configure Grouper structure to enable granularity and delegation support	May 2010	Sep2010	Establish optimum structure <b>ScreenCast explaining structure</b>	RJ
10. <b>Documentation:</b> sysadmin documentation, user documentation	May 2010	Oct2010	Documentation	RJ
11. <b>Policy :</b> define responsibilities involved in delegation	May 2010	Oct2010	Policy	RJ CR
<b>WORKPACKAGE 4:</b>				
<b>Objective:</b>				
12. <b>Use cases:</b> report on use cases that require N-tier authentication	Aug 2010	Nov2010	<b>Use Cases documented</b>	CF RJ
13. <b>Technical tools:</b> Develop Shibboleth plugin that support SPNEGO auto login	Aug 2010	Nov2010	<b>Spec for plugin SPNEGO Plugin</b>	CF AM
14. <b>Documentation:</b> document issues, client configuration, known shortfalls	Aug 2010	Nov2010	<b>Issues and client config documented</b>	CF RJ CR JD

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15. <b>Policy:</b> defines when delegation will be used Define responsibilities of application developers.	Aug 2010	Nov2010	Policy		RJ CR CF
<b>WORKPACKAGE 5: Dissemination</b>  <b><u>Objective:</u></b>					
16. Synthesise project benefits and outputs into a coherent story	Dec 2010	Feb2011			
17. Disseminate at suitable event	Jun2010	Project end	<b>Dissemination Event</b>		RJ CF CR
<b>WORKPACKAGE 7: Final Report</b>  <b><u>Objective:</u></b>					
18. Final Report			<b>Final Report</b>		CR
19. Completion Report			<b>Completion report</b>		CR
20.					