JISC

Project Document Cover Sheet

Project Information	
Project Acronym	VPMan
Project Title	Integrating VOMS and PERMIS for Superior Secure Grid Management
Start Date	1 March 2007	**End Date**	31 July 2008
Lead Institution	University of Kent
Project Director	Professor David Chadwick
Project Manager & contact details	Prof David Chadwick, University of Kent, Computing Laboratory, Canterbury, CT2 7NF. Email: d.w.chadwick@kent.ac.uk Mobile: +44 77 96 44 7184
Partner Institutions	The National e-Science Centre (NeSC) at the University of Glasgow (http://www.nesc.ac.uk/) The National Grid Service at the Science and Technology Facilities Council (http://www.grid-support.ac.uk/) Open Middleware Infrastructure Institute UK (http://www.omii.ac.uk/)
Project Web URL	http://sec.cs.kent.ac.uk/vpman/
Programme Name (and number)	e-Infrastructure (security)
Programme Manager	James Farnhill

Document Name		
Document Title	Project Plan	
Reporting Period		
Author(s) & project role	D Chadwick, Project Director	
Date	27 October 2007	**Filename**	project_plan.doc
URL	http://sec.cs.kent.ac.uk/vpman/project_plan.doc	
Access	☐ Project and JISC internal	✓ General dissemination

Document History		
Version	**Date**	**Comments**
0.9	14 July 2007	First draft for circulation to project team
1.0	28 July 07	First complete version incorporating feedback from JISC and project partners
1.01	13 August 07	Minor changes from partners
1.02	27 Oct. 07	Added that CA had been signed off. Replaced Bassem Nasser with other staff. Added a new deliverable D1.3

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JISC Project Plan

Overview of Project

1. Background

Managing grids from a security perspective comprises two main functions: the privilege assignment function in which users are assigned to roles, and the authorisation decision function in which policies are set for which roles should have access to which grid resources. These functions typically take place in different systems at different locations. These functions are carried out by the Identity Provider (IdP) and Service Provider (SP) in Shibboleth terminology, and by the VO Manager and grid service provider in grid terminology. More generally, privileges are assigned to users as a mixture of attributes and roles, by one or more attribute authorities (AAs). Attributes (such as login id and department) are assigned by a user's home institution; virtual organisation (VO) roles are assigned by a VO management authority, and professional memberships by learned societies such as IEEE and ACM. These attributes are then transferred to the grid SP, where the authorisation decision function is carried out based on the policy set by the resource's owner. If a user's grid job is accessing multiple resources at multiple sites, then the authorisation decision function may take place several times at several different resource sites using different policies in each case. The Virtual Organisation Management Service (VOMS) [1] provides a well utilised privilege assignment function which is carried out by the VO manager. It is the chosen VO management function of Grid projects such as EGEE, and it is planned to integrate it into the National Grid Service (NGS) at CCLRC. However, its authorisation decision function is intentionally missing by design (it relies on LCAS and other plug-ins). PERMIS on the other hand provides a feature rich, modular authorisation decision function, with a user friendly policy management interface, is already integrated into Shibboleth and is currently being integrated into the OMII-UK software environment by the London E-Science Centre (LESC). However, it has a less well developed privilege assignment function. This project proposes to integrate the privilege assignment function of VOMS with the authorisation decision function of PERMIS, so that the management of grids becomes easier, whilst simultaneously allowing finer grained more feature rich authorisation infrastructures to be designed and built. We expect the combination of these technologies to have a significant impact across the UK and international e-Science communities.

2. Aims and Objectives

The project objectives are to:
- integrate VOMS and PERMIS, more specifically the VOMS user management and attribute assignment function with the PERMIS policy based authorisation decision function;
- ensure they seamlessly inter-work with the latest Grid technologies including Globus Toolkit version 4 (GT4), the Open Middleware Infrastructure Institute UK (OMII-UK) and Shibboleth;
- validate the results in several representative major pilot applications run by the NeSC;
- evaluate the combined software from user, administrator and Grid developer perspectives;
- integrate the combined infrastructure with the National Grid Service (NGS) at CCLRC;
- distribute the integrated software as open source code as part of either Globus Toolkit, the OMII-UK repository, or the US-NMI, or a combination of them.

3. Overall Approach

NGS, OMII and NeSC will provide use cases that are to be supported
Kent will analyse the existing technologies and then produce a design for the integrated infrastructure.
NGS, OMII and NeSC will provide feedback and QA of the design.
Kent will implement the design, producing the software glue for VOMS and PERMIS, and the policy management GUI to support VOMS attributes.

NeSC will build the testbeds for piloting the integrated software in various configurations with different grid applications.
OMII will provide help and support with the integration with their middleware and packaging of the final release.
NGS will provide help and support with integrating the piloted software into their operational services

4. Project Outputs

D1.1 A document describing the background to the integration work.
D1.2 A document of case studies to be supported
D2.1 A VOMS-PERMIS integration design document.
D3.1 A modified PERMIS Policy Editor and Wizard with documentation and help files
D4.1 Beta software ready for validation and piloting.
D4.2 Preparation of test bed, services and portals
D5.1 A paper for an international grid conference describing the piloting of the integrated VOMS-PERMIS software with GT4 and/or OMII-UK.
D5.2 A paper for an international grid conference describing the piloting of the integrated authorization software utilizing Shibboleth and multiple Grid middleware (GT4 and OMII-UK) including how user single sign-on across a range of UK e-Science resources can be supported with fine grained authorisation.
D5.3 Document describing the overall lessons learned in supporting this infrastructure from a user, an administrator and a Grid developer perspective
D6.1 The integrated software packaged with GT4 and OMII-UK and fully integrated into the NGS
D6.2. User, developer and administrator documentation for the integrated VOMS-PERMIS package including support in a Shibboleth-enabled environment, with guidance to Grid Operations Support Centre on practicalities of usage
D6.3 Final report to JISC

5. Project Outcomes

The project will allow grid administrators to gain more fine grained control over access to their grid resources. It will distribute management of user roles to local VO managers, whilst leaving control of access to resources with the resource owners. The creation of more sophisticated access control policies will be achieved through the use of XML based policies that are directly interpreted by the policy decision points (PDPs). The XML policies will be easy to create via the PERMIS GUI that displays the policy back in natural language to the policy writer.

Currently there is much duplication of effort in grid projects when it comes to specifying and building access controls. This project should allow most (if not all) grid projects to use the same more comprehensive and fine grained policy driven access control mechanism, thereby reducing effort, whilst simultaneously increasing security.

6. Stakeholder Analysis

Stakeholder	Interest / stake	Importance
NGS	Using the project's outputs in their service	Very high
OMII	Using the project's outputs in their open source software	High
Globus development team	Using the project's outputs in GT4 and its successors	High
VOMS development team	Ensuring their interfaces and specifications are usable by others	Medium
Kent	Lead developer	Very High
University of Glasgow (NeSC)	Application demonstrators	High
JISC	Funding Body	Medium

7. Risk Analysis

Risk	Probability (1-5)	Severity (1-5)	Score (P x S)	Action to Prevent/Manage Risk
Staffing problems at Kent (e.g. RA leaves)	3	3	9	We have a team of people at Kent and therefore will have substitutes if the main RA leaves.
Staffing problems at Glasgow	3	3	9	RAs at Glasgow are both able to cover each others work. Also other RAs at Glasgow can support this project
Insufficient support from OMII and/or NGS	1	5	5	This would critically impact the project, but given that both parties are stakeholders, the probability is low
Poor PM liaison between Kent and Glasgow	1	3	3	This would impact the ability to effectively pilot the results. Ensure frequent dialogue and early notification of problems.
Failure to find appropriate technical solution.	1	3	3	We do not believe there will be any significant technical problems with this project, but if there are we will almost certainly be able to build workarounds.
LESC integrating PERMIS into OMII-UK	2	5	10	Whilst the basic integration is already done, LESC are integrating Bouncy Castle ASN.1 handling and this is the risky. If this is unsuccessful we will have to fallback to IAIK binary libraries.
OGF completing the specification of the 2nd generation OGSA AuthZ protocols and on OMII-UK implementing them	2	5	10	As the PI is joint chair of the OGSA AuthZ WG and joint editor of the 2nd generation AuthZ profiles he can have some influence over their timely production. As Prof Sinnott is a member of the OMII-UK Users' Forum the requirement has already been fed into OMII-UK. If OMII-UK do not implement (or subcontract) the 2nd generation protocol in time, we can still perform the OMII-UK demonstrator using the existing 1st generation protocol, but this will mean that some authorisation policies cannot be tested (i.e. ones that have conditions on operation arguments).
Failure of INFN, who is the main external supplier, to provide the VOMS SAML interface on time	3	3	9	A failure of this would compromise the pull model from working satisfactorily. Mitigating Action. Keep good communication channels open with them. Have flexible project planning
Legal issues with code	1	1	1	Make sure everything is BSD-like open source

Data Corruption/Hardware malfunction	1	5	5	Use versioning system and regular backups
Unrealistic scenarios/user cases	3	3	9	We will use case studies from engineering domain (nanoCMOS) and clinical trials domain (VOTES) which are both major UK pilot projects
Beating the March 2009 deadline	1	5	5	We have a 13.5 month project which we have scheduled over 17 months so as to build sufficient contingency into the plan. We still have 8 months after the scheduled completion date to beat the March 2009 deadline
Biased reporting of results	1	3	3	By having NeSC as the project partner responsible for the demonstrations, one can be assured that they will specifically feed the positive and negative results of the demonstrators into the UK e-Science and OMII-UK user groups.
Application specific solutions	1	5	5	Through the rich portfolio of application projects at NeSC, we will fully explore the VOMS-PERMIS software in a variety of applications and fully analyse it against existing solutions

8. Standards

Name of standard or specification	Version	Notes
X.509 proxy certificates	RFC 3820	Use as is
X.509 attribute certificates	X.509	Use VOMS variants
SAML (attribute assertions)	SAMLv1.1 or 2.0	Use to pull attributes from a VOMS server
XACML (request context)	V2	Use in GT4 to interface to PERMIS PDP
SAML (authz queries)	V1.1	Use in OMII to interface to PERMIS
PERMIS XML policy schema (proprietary)	V10	Use instead of XACML policies since easier to understand and faster to reach decision

9. Technical Development

During the project all the software will be designed before any code is written. The designs will be quality assured by experienced staff and the project managers at each partner site. All designs at Kent are held in a local Subversion SVN system for ease of distribution and tracking changes.

To ensure that the developers are using the most up-to-date code, and to make coherent and retractable changes to it, the CVS versioning system will be used. All the core PERMIS software is already held in this system. The CVS content is frequently backed up onto a second hard disk, and a quarterly back-up is burnt onto a CD-RW. This protects the development process against hardware failure.

Any changes to the existing PERMIS codebase will be regression tested to ensure that no bugs are introduced. An automated regression testing facility has been developed for PERMIS containing a test suite with well over a 1000 test cases. New test cases are continually being added. All new functionality produced under this project will have regression tests developed for it. This will ensure that any future development will remain compatible with the ones developed under VPMan.

10. Intellectual Property Rights

Any IPR developed under this project will be owned by the University of Kent, but will be made freely available to the community through the release of open source software with a BSD-like license. Any other third party software that will be used will also be open source with a zero cost license so that no encumbrances will be places on users of the project deliverables.

Project Resources

11. Project Partners

Primary Contractor: University of Kent
Main Contact: Professor David Chadwick, University of Kent, Computing Laboratory
Fax +44 1227 762 811
Mobile: +44 77 96 44 7184
Email: D.W.Chadwick@kent.ac.uk

Project Partner: National Grid Centre, University of Glasgow
Main Contact: Professor Richard Sinnott, University of Glasgow
Email: r.sinnott@nesc.gla.ac.uk
Tel: 0141-330-8606
Fax: 0141-330-8625

Project Partner: National Grid Service
Main Contact: Dr Andrew Richards, National Grid Service
Email: a.j.richards@rl.ac.uk
Tel: 01235 778029
Fax: 01235 445945

Project Partner: OMII-UK
Main Contact: Mr Tim Parkinson, OMII-UK
Email: tim.parkinson@soton.ac.uk
Tel: 02380 598382
Fax: 02380 598870

Consortium Agreement
A copy of an existing CA was provided by the NGS, and modified to suit the VPMan project. It was signed by all partners in Sept 2007

12. Project Management

Project Management will follow simplified PRINCE(2) principles.

The Project Board will comprise the nominees from each partner organisation (Kent, Glasgow, NGS, OMII-UK) plus the project manager and a member of JISC. The Project Board will meet quarterly to review progress and to authorise the next quarter's planned work. The Project Board will also meet if an Exception Report is created by any of the site nominees indicating that the current work cannot be completed as planned. The Project Board will determine the best course of action in this event.

Technical day to day decisions will be made by the project manager and the development staff

concerned, with reference to their site leaders where necessary. Important issues and exceptions will be reported to the site nominees. Strategic decision making will be made by the Project Manager in consultation with the Project Director.

The overall project director will be Professor David Chadwick from the University of Kent. He will spend approx 10% of his time on this project overall.

Staff at Kent

David Chadwick, Project Director and Project Manager, will spend approx 10% of his time on the project.
Linying Su, RA, will spend 100% of his time on the project development and implementation.

Staff at Glasgow

Tom Doherty and David Martin, research associates, will both spend 50% of their time on the project in exploring the integrated VOMS-PERMIS software in the identified case studies.
Richard Sinnott, PI for Glasgow, will spend approx 10% of his time on the project in managing the work at Glasgow, i.e. validating the software in the case studies and co-ordinating efforts with Kent.

Staff at NGS

Neil Geddes and Andrew Richards will provide input for use cases and overall project direction as stakeholders. David Spence will provide expertise from the NGS to assist with deployment of the project outputs. The listed staff are all based at STFC-RAL

Staff at OMII-UK

Tim Parkinson, Project Manager will spend up to but no more than 5% of his time on project management (unfunded) and will allocate suitably qualified OMII-UK staff to the relevant work packages.

13. Programme Support

The project would like the support of the programme manager in facilitating links with other projects and with external bodies where this is appropriate.

14. Budget

See Appendix A. There are no changes at present to the one in the proposal.

Detailed Project Planning

15. Work Packages

Appendix B contains a detailed description of the various work packages and deliverables, along with a Gantt chart.

16. Evaluation Plan

Timing	Factor to Evaluate	Questions to Address	Method(s)	Measure of Success
M7-8	PERMIS Policy Editor (formative)	Will the policy editor allow resource owners to easily specify their chosen authorisation policies?	Testing with user groups	>95% of user are able to achieve their objectives
M9-13	Software deliverables (formative)	Will the integrated PERMIS-VOMS software allow grid users to control access their resources?	Testing with user groups	>95% of user are able to achieve their objectives

| M14-17 | Pilot NGS service (summative) | Will the PERMIS-VOMS software improve the NGS? | Questionnaire | 75% of users and adminstrators surveyed are satisfied or very satisfied with the new NGS |
| Year after completion | Take up of open source software (summative) | Is there take up by the community at large? | Count number of downloads | 200+ downloads in initial 12 months after release. |

17. Quality Plan

Output and Timing	Quality criteria	QA method(s)	Evidence of compliance	Quality responsibilities	Quality tools (if applicable)
User Documentation M9-M13	Fitness for purpose	Review and test by independent users e.g. students	Test report	Project Manager	Word processor
Dissemination papers M14-M15	Leading edge	Review by external reviewers	Accepted for conference or journal	Authors of paper	Word processor
Design documentation M2-M6	Fit for purpose	Internal reviews	Signed off by Project Director	Project Director	Word processor, SVN
Software deliverables M4-M13	Performs as expected	Code inspections	Integrated into NGS and OMII-UK	Project Director	CVS, Regression test bench
Background info document M1-M5	Comprehensive and clear	Review by project members	Accepted by project team for publication on project web site	Project Manager	Word processor
Use cases document M1-M5	All possible configurations covered	Review by project members	Accepted by project team for publication on project web site	Project Manager	Word processor

18. Dissemination Plan

Timing	Dissemination Activity	Audience	Purpose	Key Message
M1	Web site	Global grid community	To raise awareness	Project objectives
M1-3	Questionnaire	VOMS community	Raise awareness and capture requirements	Project has started. What are your requirements
M9-13	Pilot the software in NeSC grid projects	NeSC grid users	Engage a few pilot users	Try out the new service
M14-17	Newsletters, mailing lists, flysheet, web sites about NGS service	UK grid community	Engage the community	New VOMS-PERMIS NGS is available

M6-18	Conference presentations	Conference attendees	To publicise the project and its results	A new security service is available
M6-18	Demonstrations	Conference/OGF/AH /Workshop attendees	Promote the project	New service and software is available
M14-17	Distribute via OMII-UK, US-NMI	Global grid community	Promote the project's outputs	New VOMS-PERMIS open source software is available

19. Exit and Sustainability Plans

Project Outputs	Action for Take-up & Embedding	Action for Exit
Software deliverables and associated documentation	1. NGS to incorporate software into their ongoing service. 2. OMII-UK to incorporate software into their ongoing releases 3. GT4 to include the software in its core release 4. PERMIS site to continue distributing the software	Access. Have software available for download. Preservation. ?? Maintenance. See table below. IPR. None needed. All software will be open source BSD
Case studies and best practice examples, a "How To" document	Widely disseminate these at various web sites	Access. Have available on various web sites for download Preservation. ?? Maintenance. See table below IPR. Users should be given permission to copy for own use

Project Outputs	Why Sustainable	Scenarios for Taking Forward	Issues to Address
PERMIS software	Standards based, open source, application independent authz infrastructure, modular, extensible	1. Encourage open source community to build around it 2. Further RTD grants to continue its development	1. How to fund coordinator of this project 2. Finding appropriate calls for proposals

Project Acronym: VPMan
Version: 1.02
Contact: David Chadwick
Date: 27 Oct 2007

Appendix A. Project Budget

	March 07	Apr 07– Mar 08	Apr 08– Mar 09	TOTAL £
Directly Incurred Staff at Kent				
RA 13.5 months 100% full time	**£3,231**	**£39,552**	**£1,552**	**£44,336**
Non-Staff at Kent				
Travel and expenses	£250	£1,750	£2,000	£4,000
Hardware/software	£0	£1,500	£0	£1,500
Other	£100	£1,000	£300	£1,400
Total Non-Staff (B)	**£350**	**£4,250**	**£2,300**	**£6,900**
Directly Incurred Total (A+B=C)	**£3,581**	**£43,802**	**£3,852**	**£51,235**
Directly Allocated				
Staff Prof Chadwick	£853	£10,442	£3,596	£14,891
Estates	£481	£5,768	£456	£6,705
Directly Allocated Total (D)	**£1,334**	**£16,210**	**£4,052**	**£21,596**
Indirect Costs (E)	**£2,426**	**£29,108**	**£2,304**	**£33,838**
Total Project Cost Kent	**£7,341**	**£89,120**	**£10,208**	**£106,669**
Directly Incurred Staff at NESC				
RA 9 months 80% full time	£1,325	£16,368	£5,680	£23,373
Non-Staff at NESC				
Travel and expenses	£250	£1,750	£2,000	£4,000
Hardware/software	£1500			£1,500
Other	£400	£1,200	£400	£2,000
Total Non-Staff (B)	£2,150	£2,950	£2,400	£7,500
Directly Incurred Total (A+B=C)	**£3,475**	**£19,318**	**£8,080**	**£30,873**
Directly Allocated				
Staff Prof Sinnott	£393	£4,950	£1,688	£7,031
Estates	**£446**	**£5,357**	**£1,786**	**£7,589**
Directly Allocated Total (D)	£839	£10,307	£3,474	£14,620
Indirect Costs (E)	**£1,755**	**£21,061**	**£7,020**	**£29,837**
Total Project Cost NESC	**£6,069**	**£50,686**	**£18,574**	**£75,330**
Directly Incurred Staff at NGS and OMII				
RA 2.75 months @ £38Kpa NGS RA 2.75 months OMII		£5,554 £4,989	£3,173 £2,851	£8,727 £7,840
Non-Staff at NGS and OMII				
Travel and expenses NGS Travel and expenses OMII		£500 £500	£250 £250	£750 £750
Total Non-Staff (B)		**£1,000**	**£500**	**£1,500**
Directly Incurred Total (A+B=C)		**£11,543**	**£6,524**	**£18,067**
Directly Allocated NGS **OMII**		£851 £3,070	£486 £1,754	£1,337 £4,824
Indirect Costs (E) NGS **OMII**		£5,750 £6,225	£3,286 £3,557	£9,036 £9,782
Total Project Cost NGS and OMII		**£27,439**	**£15,607**	**£43,046**
Total Project Cost	**£13,410**	**£167,245**	**£44,389**	**£225,045**
Amount Requested from JISC	**£10,728**	**£111,845**	**£23,026**	**£145,599**
Institutional Contributions	**£2,682**	**£55,400**	**£21,363**	**£79,446**
Percentage Contributions over the life of the project		**JISC** **65 %**	**Partners** **35%**	**Total** **100%**

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Appendix B. WORK PACKAGES

WORKPACKAGES	Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1: **Requirements and information gathering**		X	X	X	X	X												
2: **VOMS-PERMIS Integration Design**			X	X	X	X	X											
3: **Modify the PERMIS Policy Editor and Wizard**						X	X											
4: **VOMS-PERMIS and Shibboleth Integration and Test-bed establishment**					X	X	X	X	X									
5: **Run the Demonstrators to validate the Integration in e-Science applications**										X	X	X	X	X				
6: **Dissemination**		X	x	x	x	x	x	x	x	x	x	x	x	x	X	X	X	X

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Contact: David Chadwick
Date: 27 Oct 2007

Duration: <nn> months

				Milestone	Responsibility
YEAR 1					
WORKPACKAGE 1: *Objective: Requirements and information gathering*	1 March 2007	**30 July 2007**			
T1.1 Install and configure VOMS. Understand the precise semantics and current usage of groups, subgroups, roles and capabilities within VOMS applications. Find out how they are being used today for authorization decision making. Understand the relationship between the 3 default LCAS modes and the VOMS mode. Understand how this integrates into Globus Toolkit and can be integrated into OMII-UK, and its relationship with other access control mechanisms such as LCMAPS and GACLs. Document the results in D1.1 and D1.3	1 March 2007	30 June 2007	**D1.1 Requirements and information gathering** **D1.3 Survey of current VOMS users**		BN, DC BN, DC
T1.2 Production of detailed requirements for case studies utilizing VOMS, PERMIS and Shibboleth with GT4 and OMII-UK, and for GT2 based job submission systems such as Grid portals. Send questionnaire to other projects in this area to determine their requirements	1 April	30 July 2007	**D1.2 Use Cases to be supported**		ALL

WORKPACKAGE 2: Objective: *VOMS-PERMIS Integration Design*	1 April 2007	31 August 2007			
T2.1 Describe how VOMS and PERMIS will be integrated into GT4 for both the push and pull models			**D2.1 VOMS-PERMIS integration design document (Section A)**		BN, DC
T2.2.Describe how VOMS and PERMIS will be integrated into OMII-UK			**D2.1 VOMS-PERMIS integration design document (Section B)**		BN, DC
T2.3 Describe how VOMS and PERMIS will be integrated into GT2 and glite, and how the other components (LCAS, LCMAPS etc.) will be utilized			**D2.1 VOMS-PERMIS integration design document (Section C)**		BN, DC
WORKPACKAGE 3: Objective: **Modify the PERMIS Policy Editor and Wizard to support VOMS policies and use case requirements**	1 July	31 August			
T3.1 Modify the PERMIS Policy Editor and Policy Wizard so that it will be easy to create policies that specify permissions based on VOMS groups, subgroups and roles. Add an Obligations window to PE and PW	1 July	31 August	**D3.1 A modified PERMIS Policy Editor and Wizard with documentation and help files**		BN, LLS
WORKPACKAGE 4: Objective: **VOMS-PERMIS and Shibboleth Integration and Test-bed establishment**	1 June 2007	30 October 2007			
T4.1 Integrate VOMS and PERMIS into GT4 using the push mode. Build a VOMS-PERMIS PIP	1 June	30 June	**D4.1 GT4-VOMS-PERMIS (push) Beta software ready for validation and**		BN

for extracting VOMS groups and roles ready for passing to PERMIS			piloting		
T4.2 Integrate VOMS and PERMIS into OMII according to the design produced in WP2	1 July	31 July	**D4.1 OMII-VOMS-PERMIS Beta software ready for validation and piloting**		BN
T4.3 Integrate VOMS and PERMIS into GT2/glite according to the design produced in WP2.	1 Aug	31 Aug	**D4.1 LCAS-VOMS-PERMIS Beta software ready for validation and piloting**		BN, LS
T4.4 Integrate VOMS and PERMIS into GT4 using the pull mode. Build a PERMIS repository capable of talking to the VOMS server	1 Sept	30 Sept	**D4.1 GT4-VOMS-PERMIS (pull) Beta software ready for validation and piloting**		LS
T4.5 Prepare the infrastructure for the case studies including policy specification, Grid services, portal and portlet developments and establishment of Shibboleth IdP and SP including ensuring services run on the NGS and can access data hosted on the NGS. Look towards the Shibboleth enabling of the NGS portal and its enhancement and incorporating VOMS-PERMIS authorization scenarios. If needed adapt existing GridSphere portal solutions utilizing the Java-CoG toolkit for GT2 based job submission developed at NeSC as part of the JISC funded GLASS project	1 June	30 Sept	**D4.2 Prepared test beds services and portals**		RS, TD
T4.6 Integrate the outputs from T4.1-4 with T4.5	1 Oct	30 Oct	**D4.2 Completed test beds, services and portals**		RS,BN
WORKPACKAGE 5: Objective: Run **the Demonstrators to validate the Integration in e-Science applications**	**1 Nov 2007**	**31 March 2007**			
T5.1 GT4 Demonstrator of VOMS-PERMIS	1 Nov	30 Nov	**D5.1 A paper for an international grid conference describing the piloting of**		TD, RS

			the integrated VOMS-PERMIS software with GT4 and/or OMII-UK and/or LCAS		
T5.2 OMII Demonstrator of VOMS PERMIS	1 Dec 2007	15 Jan 2008	**D5.1 A paper for an international grid conference describing the piloting of the integrated VOMS-PERMIS software with GT4 and/or OMII-UK and/or LCAS**		TD, RS
T5.3 GT2/glite/LCAS Demonstrator of VOMS PERMIS	16 Jan 2008	28 Feb 2008	**D5.1 A paper for an international grid conference describing the piloting of the integrated VOMS-PERMIS software with GT4 and/or OMII-UK and/or LCAS.**		TD, RS
T5.4 Combined demonstrator of VOMS-PERMIS, Shibboleth, GT2, GT4 and OMII-UK	1 March	31 March 2008	**D5.2 A paper for an international grid conference describing the piloting of the integrated authorization software utilizing Shibboleth and multiple Grid middleware (GT4 and OMII-UK) including how user single sign-on across a range of UK e-Science resources can be supported with fine grained authorisation.**		TD, RS
WORKPACKAGE 6: Objective: Dissemination	1 March 2007	31 July 2008			
T6.1 Build a project web site and add this to the PERMIS, NeSC and NGS web sites.	1 March 2007	31 March 2007	D6.0 Project web site		ALL
T6.2 Integrate the validated software into the NGS.	1 April 2008	31 May 2008	**D6.1 The integrated software packaged with GT4 and OMII-UK and fully integrated into the NGS**		AR
T6.3 Package the software along with Globus	1 June	31 July 2008	**D6.2. User, developer and**		LS, TP

Toolkit, OMII-UK and/or NMI. Produce user friendly documentation, installation guides and tools.			**administrator documentation for the integrated VOMS-PERMIS package including support in a Shibboleth-enabled environment, with guidance to Grid Operations Support Centre on practicalities of usage**		
T6.4 Project wrap up.	1 July	31 July 2008	**D6.3 Final report to JISC including D6.4 Document describing the overall lessons learned in supporting this infrastructure from a user, an administrator and a Grid developer perspective (this includes managers of the NGS and VO administrators wishing to utilize resources such as the NGS and end users of the NGS)**		ALL

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