JISC

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Project Director			
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0.1	11/08/08	First draft
0.2	29/08/08	Complete draft
1.0	18/09/08	Final
1.1	04/02/09	Update for Jan report; impact of deferred completion of A1.3 and A1.4 (cf. Appendix B).
1.2	4/6/2009	Update May/June 2009 with Phase II plans and amendments
1.3	23/6/2009	Some amendments to budget appendix
1.4	11/12/2009	Updated with work plan for 2010

JISC Project Plan – Grid-SAFE

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Overview of Project

1. Background

At the start of 2007 a report was commissioned by the JISC to examine the current status of developments in accounting and usage in the UK academic community. The objectives were to address the following topics:

- An analysis of stakeholders and their requirements.
- The identification of key metrics and a framework within which they could fit.
- An assessment of current tools and how they could work or be re-tasked to work within the framework.
- Recommendations for further work to create an eventual solution.

The stakeholder review was conducted through visits, teleconferences, email, and via a questionnaire. Feedback was received from over forty people from various stakeholder groups including national, regional and campus grid services, the high performance computing community (including HPCx and HECTOR), EDINA, MIMAS, NeSC, OMII-UK, OMII-Europe, and grid accounting software developers. From these discussions, the major requirements for accounting and usage were deemed to be:

- Standards should be used where possible to maximise interoperability. However deficiencies identified by the stakeholders must be addressed both through extensions to the standards and by other means if necessary.
- The solution should be lightweight and not prescriptive, and should not compromise performance.
- Further development is required to address the longer term requirements for data & service accounting.

This document has been updated in May 2009 and again in December 2009 to reflect to changes to Phases II and III of the project, and a no-cost extension to the project until 31st June 2010.

2. Aims and Objectives

The main recommendations in the accounting and usage report identified two key components that need to be developed in parallel:

- Provide a modular accounting solution for HPC systems.
- Provide help and support for users wishing to use some or all of the Grid-SAFE solutions on their systems
- Accounting Framework – an accounting framework that will assist deployments based on the standards specifications.
- Client/Usage Monitoring Framework – a client based usage monitoring/management framework to provide a common basis for monitoring related activities.

The main aim of this project is to meet these needs by developing a software framework to support accounting, reporting and usage monitoring, and resource management on advanced computing facilities.

The software frameworks will comprise a number of modularised components which can be assembled to provide end-to-end applications for monitoring resource use on all HPC systems. Where appropriate these components will make use of existing APIs and standards for resource management.

This work is based on the EPCC SAFE system that currently provides these functions for the HPCx and HECToR national HPC services. The results of this project will be applicable to both Grid and non-Grid operating environments.

The project consists of a number of activities as descried below.

2.1 A1 Accounting-Framework I (Completed)

This activity is to develop implementations of specifications from the OGF RUS-WG and OGF UR-WG working groups. The main outputs of this activity are:

- UR provider implementations that allow resource providers to generate OGF-UR records for their resources and upload these to any RUS repository;
- A RUS repository implementation.

2.2 A3 Client/Usage Monitoring I (Completed)

This activity is to build on the existing SAFE technology to produce technology that generates resource usage reports for both charging and for usage analysis. This will be used to produce a reporting portal directly attached to the RUS implementation in the previous activity. To support non grid deployments we will also produce a local accounting/reporting system that can handle native accounting records rather than requiring the data to be converted to OGF-UR format first.

2.3 A2 Accounting Framework II (Completed)

This activity extends the basic RUS service primarily to support query operations on the usage data via a web service. A specification for this is being looked at in the RUS-WG (confusingly called aggregate usage records!) but has not yet reached the stage of a public draft. Locally deployed accounting/reporting systems should also be able to support the same interface for querying usage.

It will continue to produce incremental releases of the implementation throughout the remainder of the project – based on the RUPI specifications and user requirements that reach us via our outreach activities.

In addition, this activity will define a common programming interface for querying the data held in a remote repository of usage records. This was identified as a priority at 5/5/2009 meeting attended by representatives of Grid-Safe, NGS and EGEE. Each of these projects have developed repositories of accounting data and developing a standard interface to query these repositories allows for the development of reporting tools that can operate in all of these environments. This is particularly important in Grid environments where the usage data for a single virtual organisation may be distributed across multiple repositories. It is expected this work will begin in August 2009. The first stage will be an involved design phase to define the interface. During this phase we will be working closely with the NGS and EGEE accounting groups. A milestone document, D8 will be produced at the end of October 2009, and a reference implementation within our own code base will begin. The software will be delivered as D9 at the end of November 2009. The NGS and EGEE accounting groups are also expected to implement this interface within their own systems.

Finally, the activity will produce incremental releases of the accounting framework and the stand-alone accounting portal. This will primarily be driven by feedback and additional requirements from the early adopters of the software.

2.4 A3 Client/Usage Monitoring II (Completed)

Throughout the remainder of the project, we will continue to work closely with our early adopters of the Grid-SAFE software to-date- the ECDF at the University of Edinburgh and the EUFORIA project - both add value and real use-cases to the software development. Deploying the software at these sites continues to provide live-testing for the releases, and shapes what enhancements we add and any defects we may fix in incremental release of software throughout the reminder of the project.

This activity extends the Reporting framework. Exact work will be requirements-driven, but may possibly include:

- Integration with VOMS. VOMS seems to be the most important mechanism for managing a virtual organisation. By integrating with VOMS we can identify usage by VO and define access lists based on VO membership and roles. At present, this work is being carried out in the EUFORIA project, and we will merge work here and release is as part of our incremental releases.

- Extensions to the Framework will include modules for handling resource allocations. This will handle allocations to user's projects or groups optionally over pre-defined periods of time. Use against a given allocation will be automatically tracked as records are inserted into the system.

2.5 A3 Client/Usage Monitoring III

This work package is deleted – the work was moved into the previous packages and they have been expanded.

2.6 A4 Grid-SAFE Enhancements

This new activity is introduced to the project plan to incorporate our stakeholders' requirements we have gathered during the initial phases of the project from September 2008 until December 2009, and also to anticipate enhancements we will want to make.

During the latter part of 2009, the project has been working closely with our stakeholders – in particularly ECDF to attend to their requirements as they use Grid-SAFE. Incremental releases of both the accounting framework and client usage software (D4 and D10) have allowed us to incorporate users' requirements, as well as implement planned functionality.
In addition, the release of both RUPI and RUQI has given the community new ways to utilise the Grid-SAFE solutions.

This activity will provide more incremental releases of the Grid-SAFE software at regular intervals. In conjunction with our stakeholders, the following is provisional list of features *in priority* that will be included in incremental releases during the final phase of this project:

- Add functionality for storage accounting.
- Allocation tracking.
- Non-accounting upload features.
- Additional Databases connectivity – for example, Oracle .
- Adding real-time data.
- Simplify configuration.

This will be modified in response to any subsequent changes in stakeholder requirements. This will allow Grid-SAFE to remain flexible to the needs of our user and potential user community.

It is also anticipated that we will have maintenance and defect fixes to add to releases. Between January 2010 and the end of June 2010 we will release two more major incremental releases at March 2010 and the project end – deliverables D12 and D13.

2.7 A5 Outreach, Consultation and Support

It is crucial to the success of Grid-SAFE that stakeholders and other HPC users can benefit from the solutions Grid-SAFE can provide to HPC accounting – the majority of potential Grid-SAFE users will not be from the "grid" community – this activity addresses this outreach to all these communities.

It is vital that the project communicates the message that Grid-SAFE solutions can increase efficiency, allow institutions to interoperate and hence reduce their cost base and increase the range of services they can offer to users.

To this end, some specific milestones and deliverables have been planned in this activity. This will provide the project with definitive outreach goals. At present, Grid-SAFE provides bespoke solutions to HPC accounting. A goal of this activity is to help provide consultation to potential users by providing pre-configured solutions users to download, and active consultation and support.

Specific areas of outreach, although by no means exhaustive, that have been identified are:

- Attendance at HPC-SIG and Campus Grid events in early 2010, and throughout the remainder of the project.

- Deploying Grid-SAFE at the Hartree centre.
- Ongoing work with ECDF and Euphoria projects
- NGS work
  - Evaluation at Manchester
  - Importing NGS data into Grid-SAFE
  - Deploying Grid-SAFE modules at the NGS to aid their accounting solution.

In addition, this activity will produce a set of instructional videos to act as both information points and demonstrations for potential users.

This activity will also update Grid-SAFE publicity material as required throughout the remainder of the project.

A milestone document, M3 is included at the end of March 2010 to act as a checkpoint to ensure our outreach has been effective during the first quarter of 2010, and also review how best to target outreach for the remainder of the project.

3. Overall Approach

The work of Grid-SAFE will be structured as a typical EPCC project and will be run according to EPCC's common principles of PRINCE2-based project management and agile software development with a strong emphasis on developer test. See Section 12 for more details on the project structure.

Generally the two work streams – the Accounting Framework and the Client/Usage Monitoring Framework – will run in parallel, subject to resource constraints within the overall budget. Dr Stephen Booth, Grid-SAFE Technical Lead, will split his time between these two streams and will guide them concurrently.

Our technical strategy is to build on the solid base of the SAFE software stack (Service Administration Functions from EPCC). The SAFE is already used to manage local and national HPC services; our aim in this project is to extend this functionality to Grid computing resources.

4. Project Outputs

Deliverables are listed here in due-date order.

***NB**. Deliverable numbering from D5 onwards differs from the proposal scheme because of the accidental numbering of three 'D4's in the proposal.*
Deliverables and dates have changed in May 2009 to reflect Phase II updates

D	Deliverable name	Form	Due
D3	Accounting Framework phase II development plan DONE	Plan	30/04/09
D7	Integrated RUS service Brought Forward from 24/8/2009 DONE	Software	04/06/09
D4	Second Accounting Framework release and Architecture Document– Incremental release Remains the same DONE	Software and Document	24/08/09
M2	*Management Report II* Remains the same DONE	*Report*	16/10/09
D8	Specification for Query Interface New Deliverable	Document	31/10/209

	DONE		
D9	Web Service Query Interface New Deliverable – Replaces D9 Resource Management Framework DONE	Software	30/11/09
D10	Incremental releases of frameworks New Deliverable –	Software	31/12/09
D11	Grid-SAFE information/tutorial videos New Deliverable	Videos	31/1/2010
M3	Review and evaluation of outreach New Deliverable	Document	31/3/2010
D12	Incremental releases of Software New Deliverable	Software	30/3/2010
D13	Final incremental releases of frameworks New Deliverable –	Software	30/6/2010
M4	Final Report Deferred until 31/6/2010, originally M3, renamed M4	Report	30/6/2010

Note the changed delivery date for D7; reasons for this change are discussed in Appendix B and in Issue I2 in the Risks and Issues Log.

Note the changed delivery date for the second Management Report, at Programme Management request.

5. Project Outcomes

The main outcome we look for is uptake of the Grid-SAFE software by the key high-importance End-user stakeholders noted in Section 6. Uptake by a wider community would be an additional, highly-prized outcome.

In the longer term there is a possible feed into the EU EUFORIA project and DEISA-2. EUFORIA (EU Fusion fOR Iter Applications) is a project funded by European Union under the Seventh Framework Programme which will provide a comprehensive framework and infrastructure for core and edge transport and turbulence simulation, linking grid and High-Performance Computing (HPC), to the fusion modelling community. EUFORIA have an interest in accounting systems for both HPC and Grid applications and Grid-SAFE may prove suitable. DEISA-2 is a FP7 EU project that links European HPC centres in a Grid of HPC facilities and they are interested in developing their accounting and monitoring functionalities. Likewise, PRACE (Partnership for Advanced Computing in Europe), another EU FP7 project, has a need for the kind of functionality that Grid-SAFE can provide so may be interested in using its technology.

6. Stakeholder Analysis

Stakeholder	Interest / stake	Importance
UOEHPCx ltd Managing agent of UK National HPCx and HECToR services	End-user	High
NGS UK National Grid Service	End-user	High
ECDF Edinburgh Compute and Data Facility – University of	End-user	High

Edinburgh central research computing facility		
DEISA-2 EU FP7 project and consortium of European high-performance computing centres	End-user	Medium
Brunel University	Collaborator	Medium

We aim to capture requirements from the End-user stakeholders and use these to guide the development and detailed scope of the software deliverables.

We plan to engage directly with the HPC and Campus Grid SIGs and the NGS accounting group. In the initial phases of the project we intend to circulate/present a paper/talk outlining the project and requesting comments and feedback. We also plan to ask members of these groups to complete a short survey of their requirements in this area, in particular to capture site local requirements. At this stage we will attempt to identify sites and projects with sufficient interest in the various components to act as evaluation sites. In return for having additional influence over the specification of the components, evaluation sites will be asked to evaluate each release and provide feedback.

Brunel University have web service based software which might be useful to Grid-SAFE; initial contacts with them have already proven fruitful and we would hope to collaborate with them to add value to the Grid-SAFE project.

Interoperability with the UK National Grid Service is a high priority and a key outcome. We will pursue this outcome at the expense of 100% standards compliance if necessary; currently NGS are not fully compliant with the OGF-RUS standard due to deficiencies in the draft (cf. Section 8).

7. Risk Analysis

The initial risk log for Grid-SAFE is recorded in the first draft of a separate document (Grid-SAFE-risksIssues.doc). This Risks and Issues log follows EPCC's standard template and will become a live document that will be updated throughout the project.

8. Standards

For Grid-SAFE the key standards are currently emerging from work in the Open Grid Forum (OGF). Both these are currently in draft form, raising risk for the project (Risk TR2).

Name of standard or specification	Version	Notes
OGF RUS (Resource Usage Service)	draft	See http://www.ogf.org/gf/group_info/view.php?group=rus-wg Also cf. Risk TR2. The OGF Resource Usage Service specification is in draft and currently possesses a number of constraints and/or deficiencies which may conflict with Grid-SAFE user requirements.
OGF UR (Usage Record)	draft	See http://www.ogf.org/gf/group_info/view.php?group=ur-wg Also cf. Risk TR2.

9. Technical Development

EPCC applies the principles of agile software development to its projects, and Grid-SAFE will follow this approach. We use three key features of agile development to ensure higher-quality output from projects:

- Continuous requirements analysis: wherever possible we will maintain engagement with key End-user stakeholders throughout the development phases of the project, adopting and adapting development to match requirements one by one.

- Developer testing: we have a strong emphasis on developer unit testing, encouraging development staff to test as they go and thus build quality control into the development process.
- Continuous integration: the incremental addressing of requirements and writing of developer tests leads naturally into a process of continuous integration. Software will be stored under version control (currently CVS; we may consider a migration to SVN during the project) and regular "checkout/build/test" cycles will be introduced to cement the quality control process.

The pre-existing software base of SAFE is written in **Java** and designed for deployment within a standard **Java Application Server** environment. We will continue to build on this architecture.

The SAFE software also makes extensive use of the **JUnit** unit test framework; we will extend this framework for Grid-SAFE.

A **webservice** front end will be required for conformance with OGF standards, and this will be constructed as part of A1 WP4.

10. Intellectual Property Rights

Ownership of the IPR and Copyright of the SAFE software will remain with the University of Edinburgh.

All software developed as part of this project will be released as open source.

This project will build on background IP contained in the existing SAFE software. The existing SAFE software base will be made freely available in binary form for academic users in the UK.

Project Resources

11. Project Partners

N/A

12. Project Management

EPCC uses a tailored version of PRINCE2 for project management. Its key features are:

- a staged approach to delivery, with stages planned in detail as required;
- active risk management based on a combined risks and issues log which is reviewed weekly;
- a lightweight yet powerful change process based on project issues;
- documented quality control procedures and a focus on continuous integration and developer-led testing;
- product-based planning to maintain focus on project deliverables;
- a common management control of regular weekly team meetings.

12.1 Project execution

Grid-SAFE will follow the standard EPCC project execution pattern as follows:

- The team holds weekly checkpoint meetings to define work packages and tasks, accept completed tasks, check progress, issues and risks (in the Risks and Issues Log), and take corrective actions if needed.
- The team accepts, executes and delivers completed tasks.
- Developers send weekly 5:15s (short time reports) to the PM.
- The PM sends Highlight Reports to the Board (in this case JISC Programme Management) at regular intervals. Programme Management provides advice as needed.
- The PM escalates issues that might push the Phase outside its tolerance limits, either to EPCC Management or Programme Management.

- Near the end of each Phase, the PM updates the overall Project Plan and Risk and Issues Log.

12.2 Project team

The following table describes the project team structure.

	Role	**Name**
Project Manager [0.2 FTE]	Day-to-day management; project tracking; risk management; deliverable signoff	Davy Virdee d.virdee@epcc.ed.ac.uk 0131 650 6085
Technical Lead [0.5 FTE]	Technical strategy; software architecture	Stephen Booth s.booth@epcc.ed.ac.uk
Developer [0.8 FTE]	Software design; software development; software test	Nix McDonnell
Developer [1.0 FTE]	Software design; software development; software test	Malcolm Illingworth (replaces Josh Green)
Technical Reviewer [0.1 FTE unfunded]	Document quality control; software test review	Adrian Jackson

13. Programme Support

No specific Programme Support is anticipated at this stage.

14. Budget

The project budget is reviewed in Appendix **Error! Reference source not found.**. No changes have been made since the proposal was approved.

Detailed Project Planning

15. Work packages

A detailed list of work packages is included in Appendix A.

16. Evaluation Plan

Our primary measure of success will be uptake by key stakeholders and other early adopters.

The existing SAFE software is already in production in a live environment. Among other goals, Grid-SAFE will develop additional capabilities for deployment in the same environment. Thus Grid-SAFE has a ready-made evaluation environment for its products.

The quality of project outputs is covered in Section 17 below.

Timing	**Factor to Evaluate**	**Questions to Address**	**Method(s)**	**Measure of Success**
2009 Q2	Uptake of D2 by NGS	D2 will be designed to work within the NGS RUS operations model. Does it meet their requirements?	Delivery of D2 to NGS; face-to-face handover meeting	Acceptance by NGS that D2 meets their expectations.
2009 Q3	Uptake of D5,6 by ECDF	D5 and D6 are designed to work in	Delivery of D5, D6 to ECDF admin	Acceptance by ECDF system management

		the live management environment of UoE's ECDF. Do they meet the requirements of the live service?	team; face-to-face handover meeting	that D5, D6 meet their expectations.
2009 Q3	Uptake of D5,6 by HPCx and HECToR	D5 and D6 are designed to work in the live management environment of HPCx and HECToR. Do they meet the requirements of the live service?	Delivery of D5, D6 to HPCx and HECToR admin team; face-to-face handover meeting	Acceptance by HPCx and HECToR system management that D5, D6 meet their expectations.
2010 Q1	Uptake of D7,8,9 by HPCx and HECToR	D7, D8 and D9 will be designed to work in the live management environment of HPCx and HECToR. Do they meet the requirements of the live service?	Delivery of D7,8,9 to HPCx and HECToR admin team; face-to-face handover meeting	Acceptance by HPCx and HECToR system management that D7, D8, D9 meet their expectations.
2010 Q1	Uptake of D4 by early adopters	The scope of D4 will be governed by feedback and requirements from potential early adopters, including NGS. Uptake of D4 will be measured against these requirements, as documented in D3.		
2010 Q1	Uptake of D8 and D9	Use of RUPI and RUQI by NGS - integration and customisation		
2010 Q2	Update of D11	Videos help users install Grid-SAFE?	Exposure on website/YouTUBE, etc.	Number of downloads – more importantly volume of feedback – this means they are getting watched

17. Quality Plan

As described above Grid-SAFE development will be conducted hand-in-hand with unit test development using the JUnit test framework. This will build up a comprehensive series of tests for all software components which will be exercised regularly within the continuous integration framework. Software testing will thus be an ongoing process.

Documents will be reviewed according to EPCC's standard, lightweight review procedure. All deliverable technical documents will reviewed by the Technical Reviewer and the Project Manager. The Project Manager has final signoff on all deliverables.

Output	***D1 Database performance report***				
Timing	**Quality criteria**	**QA method(s)**	**Evidence of compliance**	**Quality responsibilities**	**Quality tools (if applicable)**
10/10/08	Complete	Review meeting	PM signoff	PM	-

Output	***D2 Initial Accounting Framework release***				
Timing	**Quality criteria**	**QA method(s)**	**Evidence of compliance**	**Quality responsibilities**	**Quality tools (if applicable)**
02/12/08	DB/XML persistence module completed	Test review	Unit tests passed	Tech Lead	JUnit
19/01/09	RUS ops logic	Test review	Unit tests passed	Tech Lead	JUnit

	completed				
20/02/09	Webservice interface completed	Test review	Unit tests passed	Tech Lead	JUnit
15/01/09	Initial batch system completed	Test review	Unit tests passed	Tech Lead	JUnit
31/03/09	Integration tests pass	Test review	System test passed	Tech Lead	-

Output	***D3 Accounting Framework phase II development plan***				
Timing	**Quality criteria**	**QA method(s)**	**Evidence of compliance**	**Quality responsibilities**	**Quality tools (if applicable)**
30/04/09	Complete	Review meeting	PM signoff	PM	-

Output	***D4 Second Accounting Framework release***				
Timing	**Quality criteria**	**QA method(s)**	**Evidence of compliance**	**Quality responsibilities**	**Quality tools (if applicable)**
		Depends on D3			
24/08/09	Integration tests pass	Test review	System test passed	Tech Lead	-

Output	***D5 Client/Usage Monitoring Framework architecture***				
Timing	**Quality criteria**	**QA method(s)**	**Evidence of compliance**	**Quality responsibilities**	**Quality tools (if applicable)**
05/12/08	Complete	Review meeting	PM signoff	Tech Lead	-

Output	***D6 Standalone accounting report module***				
Timing	**Quality criteria**	**QA method(s)**	**Evidence of compliance**	**Quality responsibilities**	**Quality tools (if applicable)**
06/04/09	Module completed	Test review	Unit tests passed	Tech Lead	JUnit

Output	***D7 Integrated RUS service***				
Timing	**Quality criteria**	**QA method(s)**	**Evidence of compliance**	**Quality responsibilities**	**Quality tools (if applicable)**
08/05/09	Module completed	Test review	Unit tests passed	Tech Lead	JUnit

Output	***D8 Specification for Query Interface***				
Timing	**Quality criteria**	**QA method(s)**	**Evidence of compliance**	**Quality responsibilities**	**Quality tools (if applicable)**
13/10/2009	Document complete	Peer review	PM sign off	Tech Lead	

Output	***D9 Web Service Query Interface***

Timing	Quality criteria	QA method(s)	Evidence of compliance	Quality responsibilities	Quality tools (if applicable)
30/11/09	Working system	Third party testing	Manual testing works	Tech Lead	Manual testing

Output	***D10a* Final incremental release of framework**				
Timing	**Quality criteria**	**QA method(s)**	**Evidence of compliance**	**Quality responsibilities**	**Quality tools (if applicable)**
31/12/2009	Module completed	Test review	Unit tests passed	Tech Lead	JUnit

Output	***D10b* Integrated RUS service –incremental update release**				
Timing	**Quality criteria**	**QA method(s)**	**Evidence of compliance**	**Quality responsibilities**	**Quality tools (if applicable)**
31/12/2009	Module completed	Test review	Unit tests passed	Tech Lead	JUnit

Output	***D11* Videos**				
Timing	**Quality criteria**	**QA method(s)**	**Evidence of compliance**	**Quality responsibilities**	**Quality tools (if applicable)**
31/1/2010	Functionally accurate and easy to follow.	Peer review	Uploaded on Grid-SAFE website	Project Manager	-

Output	***D12*–incremental update release**				
Timing	**Quality criteria**	**QA method(s)**	**Evidence of compliance**	**Quality responsibilities**	**Quality tools (if applicable)**
31/3/2010	Module completed	• Review of tests • Review of installation procedures	• Unit tests passed; • installation procedure clear and as documented • CVS synchronised and tagged	Tech Lead	JUnit; Third Party review;.

Output	***D13* Final incremental update release**

Timing	Quality criteria	QA method(s)	Evidence of compliance	Quality responsibilities	Quality tools (if applicable)
31/6/2010	Module completed	• Review of tests • Review of installation procedures	• Unit tests passed; • installation procedure clear and as documented • CVS synchronised and tagged	Tech Lead	JUnit; Third party review

18. Dissemination Plan

Timing	Dissemination Activity	Audience	Purpose	Key Message
2008 Q4	Mailing to hpc-sig@jiscmail.ac.uk	HPC-SIG	Requirements questionnaire; attraction of potential early adopters	Description of Grid-SAFE activities; call for interested parties
2008 Q4	Mailing to campus-grids@jiscmail.ac.uk	Campus Grids SIG	Requirements questionnaire; attraction of potential early adopters	Description of Grid-SAFE activities; call for interested parties
Milestones	Mailing to campus-grids and hpc-sig@jiscmail.ac.uk	HPC-SIG, Campus Grids SIG	Announcements of deliverables; attraction of potential early adopters	Description of deliverable; call for interested parties
As required	Mailing to rus-wg@ogf.org	OGF-RUS	Engagement with RUS standards activities	Shaping of RUS standard
-	Talk at HPC-SIG mtgs	HPC-SIG	Information and feedback *from* HPC-SIG on project ideas	Description of Grid-SAFE activities; call for interested parties
-	Talk at OGF-RUS mtgs	OGF-RUS	Information on implementation progress; feedback *to* OGF-RUS on standards	Description of Grid-SAFE activities; shaping of RUS standard
As required	Project website	Interested parties	General progress updates; software downloads	Repository for Grid-SAFE software

19. Exit and Sustainability Plans

Project Outputs	Action for Take-up & Embedding	Action for Exit
D2, D4	Delivery to NGS, handover meeting. Installation at EPCC for HPCx, HECToR	Ongoing maintenance of Grid-SAFE software. EPCC have a fundamental stake in the SAFE and Grid-SAFE software. The products of Grid-SAFE will be assimilated into the main SAFE software currently running and supported at EPCC for
D5, D6	Delivery to ECDF, HPCx and HECToR. Installation at EPCC, ECDF for management of systems at UoE ACF	
D7, D8, D9,D10,D12,D13	Delivery to ECDF, HPCx and HECToR. Installation at EPCC, ECDF for management of systems at UoE ACF	

		HPC systems management.
Project website	Linked from websites of take-up users (EPCC, ECDF, NGS)	Ongoing maintenance of website as part of SAFE software support.

The Grid-SAFE project's raison d'etre is the functional extension of the SAFE user management system already in use at EPCC, and the wider deployment of the software. Most of the deliverable products of Grid-SAFE are intended for continued use beyond the project itself.

Project Outputs	Why Sustainable	Scenarios for Taking Forward	Issues to Address
D5, D6, D7, D8, D9, D10,D12,D13	Will become part of the live SAFE user management system for UoE.	Deployment and support as part of current UoE user management system.	Successful integration with current SAFE system; some operator retraining.

Appendixes

A Work-packages

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Note 1. After the completion of Phase I is was decided in summer 2009 to merge work from the original Phase II and Phase III into a single Phase II. This was decided as there would be an overlap with start/end dates for Phase II for the two work-packages. A no-cost extension was agreed for the project until 31st June 2010, and this new work will be entitiled **Phase 3**

Note 2: In the last project plan, D7 RUS implementation has been erroneously completed in the Accounting Framework after a deferment. Phase II sees it move from A2 to A3 to allow us to incorporate VOMS work

Note 3: The final report is deferred until 31st June 2010.

PHASE I	***01/09/08***	***06/04/09***			**EPCC**
A1 - Accounting Framework I **Objective**: Deliver first version of accounting framework	**01/09/08**	**04/03/09**			
A1.1: Perf. Eval of DB tech Performance evaluation of DB technologies for accounting.	18/09/08	10/10/08	**D1 DB Performance report** ***DONE***	**10/10/08**	JG, SPB
A1.2: Rel-DB XML data persistence module This module will support schema driven mapping of XML data to a relational database via the SAFE object persistence model. We will also define a XML mapping to the SAFE query model so that queries to the DB can be easily mapped to web services.	06/10/08	10/12/08			JG, SPB
A1.3a: RUS operations logic RUS operations logic and basic access control	06/10/08	23/10/08	*Swap order of A1.3a, A1.4a.* *Defer completion until Phase II.*		JG, SPB

Workpackage and activity	Earliest start date	Latest completion date	Outputs (clearly indicate deliverables & reports in bold)	Milestone	Responsi-bility
mechanism					
A1.4a: Initial WS impln Initial web-service implementation (corresponding to current OGF-RUS specification including access control)	11/12/08	03/11/08	*Defer completion until Phase II.*		JG, SPB
A1.5: Initial batch system UR provider Initial Batch system UR provider. Common framework and specific providers for 3 common batch systems	02/12/08	24/02/09			NM
A1.6: Initial release Initial release including performance evaluation and gathering stakeholder feedback.	25/02/09	31/03/09	**D2 Initial framework release**	**31/03/09**	JG, SPB
A3 - Client/Usage Monitoring I **Objective**: Design monitoring framework and deliver standalone reporting module	**01/09/08**	**06/04/09**			
A3.1: Design framework structure Design work for the distributed accounting framework.	Mon 01/09/08	Thu 05/12/08	**D5 Framework architecture doc *DONE***	**05/12/08**	NM, SPB
A3.2: Standalone reporting module This will provide the current SAFE reporting structure deployed as a stand-alone web application. This will include a data-access object corresponding to the relational database schema used by the RUS service	Thu 07/12/08	Mon 06/04/09	**D6 Standalone accounting module *DONE***	**06/04/09**	NM, SPB

Workpackage and activity	Earliest start date	Latest completion date	Outputs (clearly indicate deliverables & reports in bold)	Milestone	Responsi-bility
developed in D2 allowing to generate reports for the RUS service via shared access to the database. Initially three levels of reporting will be supported (Service, Project/VO, user).					
PHASE II	***06/04/09***	***24/08/09***			**EPCC**
A2 - Accounting Framework II **Objective**: Deliver final version of accounting framework and develop the use of a query interface	**06/04/09**	**24/08/09**			
A2.1: Phase 2 plan Phase-2 design and work-plan specification.	06/04/09	30/04/09	**D3 Phase 2 development plan** ***DONE***	**30/04/09**	SPB
A1.3b: RUS operations logic Implementation of the RUPI specification	06/04/09	8/6/2009	**D7 Integrated RUS service** *DONE*	**8/6/2009**	JG, SPB
A1.4b: Initial WS impln Initial web-service implementation of RUPI specification	12/05/09	8/6/2009	**D7 Integrated RUS service** *DONE*	**8/6/2009**	JG, SPB
A2.3: Second framework release	12/08/09	24/08/09	**D4 Second framework release Incremental release of work to date** *DONE*	**24/08/09**	TBD,SPB

Workpackage and activity	Earliest start date	Latest completion date	Outputs (clearly indicate deliverables & reports in bold)	Milestone	Responsi-bility
A2.4: Query Interface Speciation The first stage will be a involved design phase to define the interface. During this phase we will be working closely with the NGS and EGEE accounting groups.	1/8/2009	31/10/2009	**D8 Specification for Query Interface** *DONE*	31/10/2009	NM,SPB
A2.5 Web Service Query Interface Development of interface	31/10/2009	30/11/2009	**D9 Web Service Query Interface** *DONE*	**30/11/2009**	**TBD,SPB**
			D10a incremental release of accounting framework	**31/12/2009**	**TBD, SPB**
A3 - Client/Usage Monitoring II **Objective**: Deliver key components of monitoring framework	**06/04/09**	**11/08/09**			
					NM, SPB
A3.1 Extensions to the Framework will include modules for handling resource allocations. This will handle allocations to user's projects or groups optionally over pre-defined periods of time. Use against a given allocation will be automatically tracked as records are inserted into the system.	25/5/2009	31/12/2009	**D10b Integrated RUS service**		
A3.2: VOMS integration Allow the SAFE to use VOMS as the group membership	25/05/09	31/12/2008	**D10b Integrated RUS service**		NM, SPB

Workpackage and activity	Earliest start date	Latest completion date	Outputs (clearly indicate deliverables & reports in bold)	Milestone	Responsi-bility
system.					
PHASE III	***01/01/2010***	***30/06/2010***			**EPCC**
A4 – Grid-SAFE Enhancements **Objective**: Deliver enhancements and maintains software for community	**01/01/2010**	**30/06/2010**			
A4.1: Incremental release Including features and functionality as required by users and stake holders	01/01/2010	31/3/2010	**D12 Incremental releases of Software**	**31/03/10**	SPB
A4.2: Final Release Including further features and functionality as required by users and stake holders	1/4/2010	30/6/2010	**D13 Final Incremental releases of Software**	**30/6/2010**	SPB

Workpackage and activity	Earliest start date	Latest completion date	Outputs (clearly indicate deliverables & reports in bold)	Milestone	Responsi-bility
A5 – Outreach and Consultancy **Objective**: Communicate, consult and train user community and potential user community	**01/01/2010**	**30/06/2010**			EPCC
A5.1 Grid-SAFE videos – initial releases An initial release of instructional/demonstration videos for Grid-SAFE software. These will be reviewed and re-shot as new features are added. Review times will coincide with D12 and D13	01/01/2010	31/1/2010	**D11 Grid-SAFE information/tutorial videos**	**31/1/2010**	MI,DV
A5.2 Campus Grid and HPC-SIG User groups Actively participate in these user group meetings and send a project representative to all meetings	01/01/2010	30/6/2010	Mailing lists and attendance at meetings		DV
A5.3 Pre Configured releases and Use case Scenarios Add pre-configured releases to web site to aid users. Use cases and instructions will be releases as videos to aid consumption	01/01/2010	30/6/2010	Uploads on website		SPB,DV
A5.4 Publicity Material Website, posters and flyers kept up-to-date and reviewed for each event.	01/01/2010	30/6/2010	Uploads on website; posters; flyers and technical “white papers”		AJ, DV

A.1 Notes

- Project start date: 01/09/08.
- Project completion date: 31/12/09 – extended at no-cost until 30th June 2010
- Duration: 16 months.
- The Technical Lead role is split 25/25 between the two streams as consistently as possible.
- Holidays have been accounted for as simple blocks around Christmas, Easter and July. These will be varied as needed but this shows a typical impact on the schedule; technical work is scheduled to complete in early December.