



## Grid-SAFE – Risks & Issues Log

<b>Project Title</b>	Grid-SAFE
<b>Document Title</b>	Grid-SAFE – Risks & Issues Log
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<b>Document Filename</b>	Grid-SAFE-risksIssues.doc
<b>Document Version</b>	v0.2
<b>Distribution Classification</b>	Project internal
<b>Distribution List</b>	<i>JISC Programme Management; Grid-SAFE Team</i>
<b>Approval List</b>	-

## Document History

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Personnel	Date	Comment	Version
RMB	11/08/08	First skeletal draft	0.1
RMB	29/08/08	Completed project-specific risk assessment; risks ordered	0.2

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# 1 Purpose of this Document

This document is the Risks and Issues Log for the Grid-SAFE project. This is a dynamic document that will be reviewed regularly and updated throughout the course of the project.

It is divided into two main parts – a Risks section (Section 3) and an Issues section (Section 4).

## 1.1 Conventions

All risks are assessed in terms of Likelihood and potential Impact. The product of these factors produces a Risk Exposure factor which should be used to prioritise risks for management control.

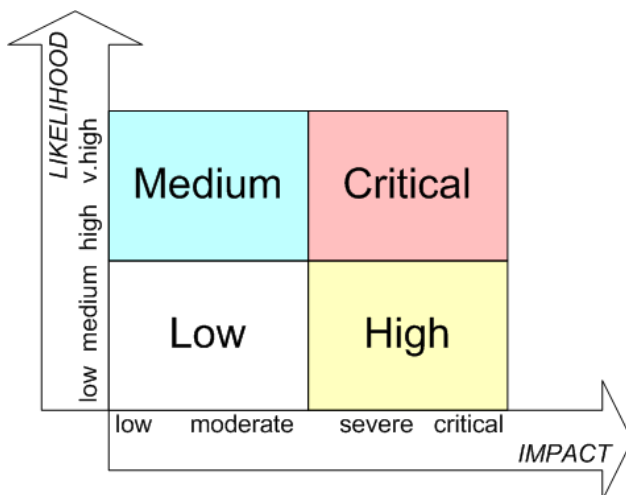
*Likelihood* is a probability measure, and we adopt the following qualitative terms for readability:

- *low*: probability of 10% or less;
- *medium*: probability of 11-30%;
- *high*: probability of 31-60%;
- *very high*: probability of 61-95%;
- *certain*: probability of 96%+.

*Impact* should be quantified wherever possible in terms of a cost in effort, money or other key metric. Where this is difficult, the following qualitative descriptions can be used:

- *low*: less than 10% project cost;
- *moderate*: up to 20% project cost;
- *severe*: up to 50% project cost;
- *critical*: greater than 50% project cost.

For assessing *Risk Exposure* for risks with quantified Impact,  $RE = L \times I$ .



For assessing Risk Exposure for qualitative risks (and for qualifying the numbers from quantified risks), we use the diagram below. Note that a risk with a high probability of becoming an issue still only has a medium exposure if the impact is low – a high chance of a hiccup is less important than a low chance of a disaster.

## 1.2 Related documents

[1] Grid-SAFE Project Plan, *Grid-SAFE-proj-plan* v1.0.

## 2 Summary Tables

### 2.1 Risks

This table is sorted by Risk Exposure, highest first. Trend (Td) indicates direction of last change to exposure – details can be found in the risk commentary.

ID	Title	Owner	Exp.	Td
MR4	Personnel leave before project is complete	PM	high	
TR2	Dependency on draft technical standards, which prove inadequate	PM	medium	
TR8	Meeting product's non-functional requirements takes more time than expected	TL	medium	
TR1	Project is bigger or more complex than first estimated	PM	low	
TR3	Requirements from users are incompatible	PM	low	
MR1	Programme Management response is slower than expected	PM	low	
MR2	Personnel need extra time to learn unfamiliar software tools or environment	TL	low	
MR3	Personnel need extra time to learn unfamiliar programming language	TL	low	
MR5	Management-level progress reporting takes more developer time than expected	TL	low	
TR4	Requirements are poorly defined; further definition expands project scope	PM	low	
TR5	New requirements are added after initial signoff	PM	low	
TR6	Development of the 'wrong' software requires redesign and implementation	TR	low	
TR7	Development of extra functionality that is not required ('gold-plating') delays project	PM	low	
TR9	Requirements for compatibility with existing system(s) takes more time than expected	TL	low	
TR10	Requirement for multiple operating system support takes longer than expected	TL	low	
TR11	Unfamiliar or unproved software environment causes unforeseen problems	TL	low	
TR12	Unfamiliar or unproved hardware environment causes unforeseen problems	TL	low	
TR15	Components developed separately cannot be integrated easily, requiring redesign and rework	TL	low	
TR13	Dependency on technology still under development	PM	zero	
TR14	Code or class libraries have poor quality, causing extra work	TL	zero	
MR6	Contractor does not deliver components when promised	PM	zero	
MR7	Contractor delivers components of unacceptably low quality, and time must be added to improve quality	PM	zero	
MR8	Contractor does not buy into the project and consequently does not provide the level of performance needed	PM	zero	

### 2.2 Issues

Id	Description	Status
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## 3 Project Risks

Risks are documented according to the standard templates below. The *Owner* of a risk is the person charged with monitoring its status and reporting any changes to the WP3 Leader. The *Date* of a risk is the date it was first identified and entered into the Risk Log. Risks are recorded along with notes for *controlling* the risk so it doesn't occur and for providing some *contingency* if it does. Risks that happen should be entered into the Issues section with a reference back to the risk number here.

### 3.1 Management risks

#### MR1 Programme Management response is slower than expected

Grid-SAFE is embedded within the JISC e-Infrastructure Programme. There may be occasional dependencies on action by Programme Management; if this is slower than expected there may be a knock-on effect on the project.

**Date:** 11/08/08

**Owner:** Project Manager

**Likelihood:** low – there are currently no expectations of dependency on Programme Management. There are also no additional partners with whom Programme-level interaction might cause delay.

**Impact:** low – any delay is unlikely to prove critical to the workplan which is almost entirely self-contained.

**Exposure:** low

**Control:** accept – no action required.

**Contingency:** if necessary, retarget technical effort to work around any delays in the particular aspect of the project suffering delay.

#### MR2 Personnel need extra time to learn unfamiliar software tools or environment

Staff on the project may need time to get up to speed with the technologies involved; this could cause delay.

**Date:** 11/08/08

**Owner:** Technical Lead

**Likelihood:** low – the Grid-SAFE project build on the existing team working with the SAFE software.

**Impact:** low – any impact would fall in the early stages of the project; long-term impact would be minimal.

**Exposure:** low.

**Control:** preventative measures already taken in choice of project team.

**Contingency:** accept delays; rescope work if necessary to accommodate any slippage.

#### MR3 Personnel need extra time to learn unfamiliar programming language

The need to learn novel programming languages could cause delays.

**Date:** 11/08/08

**Owner:** Technical Lead

**Likelihood:** low – the project build on existing Java software and XML-based webservice standards. There are no surprises anticipated in the choices of development languages; assigned personnel are familiar with Java and webservices.

**Impact:** low – as with MR2, any impact would fall in the early stages of the project; long-term impact would be minimal

**Exposure:** low.

**Control:** preventative measures already taken in choice of project team.

**Contingency:** accept delays; rescope work if necessary to accommodate any slippage.

#### **MR4 Personnel leave before project is complete**

Always a risk. Here we consider the worst-case: the Grid-SAFE technical lead leaves the organization. Dr Stephen Booth is the architect of the SAFE software and his loss would be significant. Knowledge of the SAFE software has been disseminated around the organization, but Dr Booth still understands the architecture better than anyone else.

**Date:** 11/08/08

**Owner:** Project Manager

**Likelihood:** low – no known issues suggest that this is likely

**Impact:** moderate (severe later in the project) – will cause slippage.

**Exposure:** high (assuming worst-case)

**Control:** reduce by ensuring internal Technical Reviewer is sufficiently involved that key information is not lost. Reduce by factoring in a “reasonable” estimate of sickness leave for the project duration.

**Contingency:** replace member of team as resources allow.

#### **MR5 Management-level progress reporting takes more developer time than expected**

The collection of information required for management reporting might be sufficiently involved that technical work is delayed.

**Date:** 11/08/08

**Owner:** Technical Lead

**Likelihood:** low – Grid-SAFE has a project manager with a technical background and a good chance of being able to assess and report on progress without too much assistance.

**Impact:** low – reporting overheads are not frequent, nor are they expected to be onerous. Reporting requirements are understood from the outset.

**Exposure:** low.

**Control:** accept.

**Contingency:** accept whatever delays might arise.

#### **MR6 Contractor does not deliver components when promised**

Grid-SAFE *may* make use of software developed by a collaborator (Brunel University), and this may not arrive when needed. However, assessment and use of any externally-developed software is yet to be agreed and the project plan has been constructed with no such external software in mind – thus at this stage there is no risk. Should we agree such an approach with Brunel this risk will be reassessed.

**Date:** 11/08/08

**Owner:** Project Manager

**Likelihood:** zero

**Impact:** zero

**Exposure:** zero

**Control:** accept

**Contingency:** no contingency analysis yet required.

#### **MR7 Contractor delivers components of unacceptably low quality, and time must be added to improve quality**

See commentary under MR6.

**Date:** 11/08/08

**Owner:** Project Manager

**Likelihood:** zero

**Impact:** zero

**Exposure:** zero

**Control:** accept

**Contingency:** no contingency analysis yet required.

**MR8 Contractor does not buy into the project and consequently does not provide the level of performance needed**

See commentary under MR6.

**Date:** 11/08/08

**Owner:** Project Manager

**Likelihood:** zero

**Impact:** zero

**Exposure:** zero

**Control:** accept

**Contingency:** no contingency analysis yet required.

### 3.2 Technical risks

**TR1 Project is bigger or more complex than first estimated (in terms of scope, lines of code, etc)**

There may be insufficient resources available to complete the entire work-plan.

**Date:** 11/08/08

**Owner:** Project Manager

**Likelihood:** medium

**Impact:** low

**Exposure:** low

**Control:** Reduce by reusing as much as possible from the SAFE system, and by breaking the solution into components that can operate independently, useful functionality will be produced throughout the proposed project.

**Contingency:** Rescope the final phases of work in good time to ensure delivery of as much of the original specification as possible.

**TR2 Dependency on draft technical standards, which prove inadequate**

The specifications (e.g. from OGF) are either too vague to form the basis of an implementation or inappropriate to support a useful solution to the problem.

**Date:** 11/08/08

**Owner:** Project Manager

**Likelihood:** high

**Impact:** moderate

**Exposure:** **medium**

**Control:** Reduce dependency on “unhelpful” specifications through design; aim to work with subsets of specifications where possible.

**Contingency:** The development team has a great deal of experience in the development and running of this kind of system and therefore is in a good position to expand the specifications where required. Development of such a solution would be in close collaboration with possible users such as the National Grid Service (NGS) and the Edinburgh Compute and Data Facility (ECDF). We would engage with the appropriate OGF working groups to have our solutions ratified as Grid standards.

**TR3 Requirements from users are incompatible**

The requirements from the different types of target users are too disparate to allow for a single solution.

**Date:** 11/08/08

**Owner:** Project Manager

**Likelihood:** medium

**Impact:** low

**Exposure:** low

**Control:** Reduce by attempting to identify such problems early by consultation with potential users and concentrate the development on the commonly useful functionality.

**Contingency:** Design components to provide extension interfaces to allow these to be adapted for any specific or unique requirements.

**TR4 Requirements are poorly defined; further definition expands project scope**

Detailed requirements are yet to be collected from identified stakeholders. There is always a risk that when requirements come to be addressed in development it is discovered that the requirements are lacking detail, causing potential delay.

**Date:** 11/08/08

**Owner:** Project Manager

**Likelihood:** low – core requirements are well understood; the SAFE core is a mature product. The Technical Lead has already discussed additional requirements with community members from NGS, ECDF, OGF and further afield and we do not anticipate any surprises in this area – the risk control is already active.

**Impact:** moderate – impact may require rework of the order of a few weeks which is large enough to be concerned about.

**Exposure:** low.

**Control:** reduce, by engaging early and engaging often with key stakeholders. Active communication channels with NGS, ECDF and OGF already exist.

**Contingency:** Apply standard requirements triage: rescope later stages to accommodate any additional work caused in addressing requirements of key stakeholders.

**TR5 New requirements are added after initial signoff**

New requirements may arise after the initial set have been planned for.

**Date:** 11/08/08

**Owner:** Project Manager

**Likelihood:** low – we intend to manage Grid-SAFE in an agile fashion and address requirements in a “continuous” fashion.

**Impact:** moderate – impact may require additional work of the order of a few weeks which is large enough to be concerned about.

**Exposure:** low.

**Control:** reduce by adopting an agile approach to requirements, by reviewing and reprioritising requirements regularly.

**Contingency:** Apply standard requirements triage: rescope later stages to accommodate any additional work caused in addressing requirements of key stakeholders.

**TR6 Development of the ‘wrong’ software requires redesign and implementation**

The project may work down a blind alley and have to abandon parts of the software that either do not work or are off-specification.

**Date:** 11/08/08

**Owner:** Technical Reviewer

**Likelihood:** low – the architecture of Grid-SAFE is well understood before the project start and its overall scope is well defined.

**Impact:** low – given the good understanding of the architecture any impact is likely to be small, of the order of a few days.

**Exposure:** low.

**Control:** reduce by ensuring the overall technical direction and architecture is communicated regularly to the project team, and technical decisions are taken in concord.

**Contingency:** accept delays; rescope future work if necessary to accommodate any delay.

### **TR7 Development of extra functionality that is not required ('gold-plating') delays project**

Developers may surrender to their natural inclination to embellish software unnecessarily causing delays elsewhere.

**Date:** 11/08/08

**Owner:** Project Manager

**Likelihood:** low – both scope and project timeline are well understood, reducing the possibilities that developers will have time or inclination to do this.

**Impact:** low – again, given the good understanding of the architecture any impact is likely to be small, of the order of a few days.

**Exposure:** low.

**Control:** as TR6, reduce by ensuring the overall technical direction and architecture is communicated regularly to the project team, and technical decisions are taken in concord.

**Contingency:** accept delays; rescope future work if necessary to accommodate any delay.

### **TR8 Meeting product's non-functional requirements takes more time than expected**

This is difficult to assess at this project startup. No MUST or SHOULD non-functional requirements have been identified in pre-project work. This risk must be revisited as requirements from key stakeholders are assessed.

**Date:** 11/08/08

**Owner:** Technical Lead

**Likelihood:** unknown; assume high

**Impact:** moderate – impact may require additional work of the order of a few weeks which is large enough to be concerned about.

**Exposure:** unknown; assume **medium**

**Control:** reduce, by engaging early and engaging often with key stakeholders to increase understanding of requirements. Active communication channels with NGS, ECDF and OGF already exist.

**Contingency:** Apply standard requirements triage: rescope later stages to accommodate any additional work caused in addressing requirements of key stakeholders.

### **TR9 Requirements for compatibility with existing system(s) takes more time than expected**

Grid-SAFE will make use of standard database systems and will interface with standard batch queuing systems. There is a risk that these systems prove more difficult to work with than planned. See also TR2 on compatibility with data format standards.

**Date:** 11/08/08

**Owner:** Technical Lead

**Likelihood:** low – again, Grid-SAFE will build on the existing SAFE software which has already addressed the issues of compatibility with database and batch systems. No surprises are anticipated.

**Impact:** moderate – impact may require additional work of the order of a few weeks which is large enough to be concerned about.

**Exposure:** low.

**Control:** reduce by performing an early analysis of database and batch queue technologies and identifying any potential issues.

**Contingency:** be prepared to switch to alternative database or batch queue technologies. The SAFE software's modular design facilitates this switching, so the impact will not be enormous.

### **TR10 Requirement for multiple operating system support takes longer than expected**

The Grid-SAFE software components are, by their very nature, intended for use in a heterogeneous computing environment. Operating system foibles may mean extra work is required that has not been accounted for.

**Date:** 11/08/08

**Owner:** Technical Lead

**Likelihood:** low – the SAFE and thus Grid-SAFE are Java applications designed to be run in standard Java application server containers such as Apache Tomcat. This design greatly reduces the risk of O/S incompatibilities.

**Impact:** low.

**Exposure:** low.

**Control:** the app-server architecture already reduces this risk as much as is feasible.

**Contingency:** if necessary restrict the Grid-SAFE operating environment to one operating system only, as dictated by key stakeholder requirements.

### **TR11 Unfamiliar or unproved software environment causes unforeseen problems**

Any unforeseen behaviour in the chosen software environment could cause significant delay.

**Date:** 11/08/08

**Owner:** Technical Lead

**Likelihood:** low – again, the existing SAFE software builds on well-understood, mature technologies – Java, Tomcat, MySQL. We anticipate few problems here.

**Impact:** low

**Exposure:** low

**Control:** this risk has already been reduced as far as is feasible by the choice of SAFE as a starting point.

**Contingency:** if necessary restrict the Grid-SAFE operating environment to one known software environment – most likely the original SAFE environment of Tomcat and MySQL.

### **TR12 Unfamiliar or unproved hardware environment causes unforeseen problems**

Any unforeseen behaviour in the chosen hardware environment could cause significant delay.

**Date:** 11/08/08

**Owner:** Technical Lead

**Likelihood:** low – Grid-SAFE has no heavy dependency on hardware configurations.

**Impact:** low

**Exposure:** low

**Control:** accept – the risk is regarded as small enough.

**Contingency:** if necessary restrict the Grid-SAFE operating environment to one known hardware configuration.

**TR13 Dependency on technology still under development**

This is a technical expression of MR6. See the commentary under that risk. There is no other dependency on third-party technology still under development.

**Date:** 11/08/08

**Owner:** Project Manager

**Likelihood:** zero

**Impact:** zero

**Exposure:** zero

**Control:** accept

**Contingency:** no contingency analysis yet required.

**TR14 Code or class libraries have poor quality, causing extra work**

This is a technical expression of MR7. See the commentary under that risk. See also TR2. There is no other dependency on third-party technology which might add risk here.

**Date:** 11/08/08

**Owner:** Technical Lead

**Likelihood:** zero

**Impact:** zero

**Exposure:** zero

**Control:** accept

**Contingency:** no contingency analysis yet required.

**TR15 Components developed separately cannot be integrated easily, requiring redesign and rework**

The timescale of Grid-SAFE is such that the two workstreams – accounting framework and client/usage monitoring framework – will need to proceed in parallel. There is no strong dependency between them, but the software components from each stream will need to work together.

**Date:** 11/08/08

**Owner:** Technical Lead

**Likelihood:** low – components will be developed from an existing software base against existing APIs and external, written standards. Additionally all components will be designed to run within the Java Application Server environment. The only integration risk arises in mismatches of application logic.

**Impact:** low – because of the constraints imposed by the Application Server architecture any incompatibilities are likely to be minor, and thus a matter of a few days at most to fix.

**Exposure:** low

**Control:** reduce by ensuring a high level of technical discourse among the technical team.

**Contingency:** accept delays; rescope future work if necessary to accommodate any delay.

## 4 Project Issues

Issues are documented according to the standard templates below. The *Owner* of an issue is the person charged with carrying out the *Action* required to resolve it. The *Date* of an issue is the date it was first identified and entered into the Issue Log and its *Ref* is an identifier linking it to a Risk, a software defect recorded in the project PR system etc. An Issue's *Class* is either General, RFC (a Request for Change) or Off-Spec (a defect or bug in project-developed software). An issue's *Status* is either *open* or *closed*; this should be noted in the heading as shown below. Issues may be reopened if the solution proves short-lived...

All Project Issues that are not internally-identified software defects **must** be recorded here. This includes any general queries or issues, any Requests for Change or any Customer identified software defects.

### 4.1 Details

#### I1 Issue

description

**Date:**

**Class:** RFC | OffSpec | Gen

**Ref:** -

**Owner:** Project Manager

**Action:**