Editors:
Morris Riedel (FZJ)
Gilbert Netzer (KTH)
Rosario M. Piro (INFN)

OGSA – Resource Usage Service DRAFT Charter

Open Grid Forum

Version: 2007 – 01 – 26

1. Administrative information

Name and Acronym: OGSA Resource Usage Service (RUS)

Co – Chairs: Gilbert Netzer (KTH, Stockholm, Sweden)
Email: *noname@pdc.kth.se*

Rosario M. Piro (INFN, Turin, Italy)
Email: *piro@to.infn.it*

Morris Riedel (FZJ, Juelich, Germany)
Email: *m.riedel@fz-juelich.de*

Area: Standards Function – Management

Secretary/Webmaster: Duties carried out by co – chairs

Email list: *rus-wg@ogf.org*

Webpage: http://www.ogf.org/gf/group_info/view.php?group=rus-wg

2. Charter

2.1 Focus/Purpose

Many production Grid projects have begun to offer a wide variety of services to end-users which typically include access to the underlying infrastructure of resources such as supercomputers, clusters, server farms or large storage facilities. In the last few years, these Grid projects have identified an increasing number of applications that require access to these resources via Grid middleware. The usage of the resources per user or per Virtual Organization (VO) is typically logged at the corresponding Grid site and in an ideal case stored using a well-defined usage record format, e.g. the Usage Record Format (URF) [1] as defined by the OGF Usage Record (UR) [2] working group.

The aim of Resource Usage Service (RUS) working group (WG) [3] is to provide a standard for a Web service interface that exposes a collection of information stored in a specific format (e.g. URF) to service consumers. This standardized interface to Grid middleware systems will provide service consumers with the functionality to securely upload, edit and retrieve any kind of resource usage documents contained in the collection.

Examples of service consumers are resource monitoring tools or accounting and billing systems. In addition, such a standardized interface lays the foundation for cross-Grid monitoring, accounting, and billing. This implies the provisioning of VO – wide usage records that are distributed among different Grid resources and exposed by the Resource Usage Service of this working group.

2.2 Scope

The scope of the WG is to pursue the development and definition of a standardized Web service-based RUS interface that provides access to information stored in standardized usage record formats. While other usage record formats may be of interest, the WG primarily focuses on an interface that provides access to information stored in the URF, which is defined by the UR – WG. Note that the RUS specification does explicitly not concern itself with any form of content for the used usage record formats. Furthermore, it is out of scope that this WG will provide an own security model, since such work is done in other OGF groups.

~~The WG also aims at defining a security model (e.g. based on roles and certificates) that enable service consumers to audit and trust the information stored in the URF collection offered by the RUS. Trust should be specified on the RUS level. In other words, service consumers want to trust the RUS not to mess up their information, but the RUS provides trust that it has done authentication of the service provider but cannot validate the content of the information itself. Furthermore, the RUS specification does explicitly not concern itself with any form of payment transactions for the used resources.~~

2.3 Goals and Milestones

The goals and milestones of the group are as follows.

The RUS – WG has two primary goals that are listed in the following as the “RUS core specification” and the “RUS ~~advanced~~ extended specification”, which is an optional specification on top of the core specification.

- The core RUS specification will provide a minimum set of operations to store and extract usage records that are URF compliant. The emphasis should be on providing a simple but extensible interface that covers the basic use-cases. In more detail, the core specification defines a Web service interface to securely store, retrieve and edit collections of information that are URF compliant. Since an initial draft of the RUS specification ~~(version 1.0)~~ [5] was given to public comment ongoing work of the WG focuses on this draft. It is expected that only simple corrections and minor modifications will be made to this draft. However an alignment with the community requests should be carried out to make sure that the current standard meets actual user requirements.

- Since the core RUS specification only tries to provide the bare minimum, more advanced features should be specified in a fully backwards compatible way in the ~~advanced~~ extended RUS specification. Features of interest ~~may~~ include server-side aggregation, data replication, fine-grained security aspects, and VO-level access to usage records. All these topics are currently not addressed by the RUS core specification since not every service consumer/provider needs this functionality. Hence, i~~I~~mplementations of both the core and ~~advanced~~ extended specification~~s~~ should be able to co-exist to allow developers/deployers to choose between a simple RUS interface (only core) or a version of a RUS interface with much more features (core and ~~advanced~~ extended specification on top of core). Furthermore, advanced features that are requested by the Grid community will be gathered and integrated into a seed for discussing possible extensions of the core RUS specification. ~~Finally~~Also, contents of the ~~advanced~~ extended RUS specification ~~MAY~~ include the exposure of other usage record formats different from the URF standard defined by the UR – WG, for instance usage records of large storage facilities or network connections when they become available in a standardized format. ~~Also~~Finally, it ~~MAY be~~is important to ~~think~~ consider~~about~~ rendering~~s~~ for

connection technologies such as the WS-RF Basic Profile [4] or specifications around the WS-Transfer stack.

The RUS – WG has the following milestones:

Feb 2007 OGF19	Discussions about the current version of the RUS core specification ~~version 1.0~~ [5]. Gather final corrections and modifications for the specification during the RUS session at OGF19.
Mar 2007	RUS core specification (formerly known as RUS based on WS – I Basic Profile 1.0) Draft RECOMMENDATION submitted to public comment
May 2007 OGF20	Survey about early usage experiences of RUS core specification implementations and needed extensions and corrections.
Jul 2007	RUS core specification (augmented with developer usage experiences and public comments) Final PROPOSED RECOMMENDATION submitted to OGF Editor.
Sep 2007	RUS advanced specification feature poll. Rich features on top of the RUS core specification, e.g. VO support, compliance with connection technologies such as WS-RF or WS-Transfer, aggregation of usage records
Feb 2008	Draft for the RUS advanced specification
Mar 2008	RUS advanced specification Draft RECOMMENDATION submitted to public comment
May 2008	Discussions and first integrations of the public comments into the RUS advanced specification Draft RECOMMENDATION submitted to OGF Editor.
Jul 2008	RUS advanced specification (augmented with early develop usage experiences and public comments) Final PROPOSED RECOMMENDATION submitted to OGF Editor

3. Management Issues

3.1 Evidence of Commitment to Carry out WG Tasks

During recent telephone conferences of the RUS – WG the following individuals made commitments to carry out WG tasks:

- Morris Riedel, Forschungszentrum Juelich GmbH (FZJ), Germany (UNICORE)
- Gilbert Netzer, Royal Institute of Technology (KTH), Sweden
- Rosario M. Piro, National Institute of Nuclear Physics (INFN), Italy (EGEE)
- Xiaoyu Chen, Brunel University, UK (OSG, EGEE, GridPP)

- Sven van de Berghe, Fujitsu Laboratories Europe (FLE), UK (UNICORE)

Since these individuals participating in different production Grids and Grid projects it is ensured that a wide area of different resource usage use cases will be considered.

3.2 Pre-existing Documents

A first version of the RUS specification was developed for the Open Grid Services Infrastructure and has not achieved the proposed recommendation status.

Another version of the RUS specification named as RUS based on WS – I Basic Profile 1.0 was given to public comment and has not achieved the proposed recommendation status so far.

3.3 Exit Strategy

After the primary goals of the WG have been completed, the WG will assess if continued interest and commitment from the Grid community exist. In that case the WG will continue working on other specifications on top of the core RUS specification; otherwise the WG will dissolve itself.

4. Implementations of RUS

There are several projects and Grid technologies that already have started to implement the interfaces as defined in the early draft RUS core specification:

- The OMII – UK project developed GridSAM which implements the RUS interface – GridSAM is used within the UK e-Science infrastructure.
- ~~The OMII – Europe project has started to develop a~~The UNICORE Grid middleware [8] is currently augmented with a RUS interface ~~for the Web service-based UNICORE Grid middleware~~ – UNICORE is used within the DEISA [9] infrastructure.
- ~~The OMII – Europe project has started to provide a RUS interface for t~~The SweGrid Accounting System (SGAS) [6] started to support a RUS interface ~~[6]~~ – This system is ~~also~~ one optional technology within the Globus Toolkit.
- ~~The OMII – Europe project has started to augment t~~The Distributed Grid Accounting System (DGAS) [7] ~~with an~~integrated the RUS interface – This system is used in the context of gLite within the EGEE Grid [10].

In addition, the following project has announced its interest in implement the RUS interface:

- The currently proprietary LCG – RUS implementation is interested in the integration of a standardized RUS interface – LCG – RUS is used within the OSG Grid.~~.~~

These efforts to provide three independent implementations lay the foundation to achieve a FULL RECOMMENDATION status of the proposed RUS specifications.

Furthermore, the experiences gained by the integration of the RUS interfaces will lead to continuous feedback to the standardization process.

Finally, the OMII – Europe project has started funded interoperability efforts with respect to RUS interfaces among the UNICORE Grid middleware, SGAS, and DGAS. This in turn provides feedback for the evolution of the RUS specifications.

5. Relationships to other standardization efforts

The WG relies on specifications developed by the OGF. The work of the Usage Record (UR) working group is orthogonal to this standard specifying the content of the information, not its exposure. Hence, the RUS-WG specifications are an important addition to the standardization efforts in this WG.

Furthermore, RUS exposes information that MAY be stored within an underlying database of usage records and will therefore have the same challenges concerning general issues when exposing databases. This includes access control, concurrency and locking when service consumers are allowed to access the databases at the same time. One example of such a service is the far more general specifications of the OGSA – Database Access and Integration WG.

6. The Seven Questions Summary

6.1 Is the scope of the proposed group sufficiently focused?

The WG aims at standardising a single Web service interface for update and storage of XML document types (usage records). The primary focus lies on the upcoming OGF URF standard of the UR – WG which is already within public comment.

.

6.2 Are the topics that the group plans to address clear and relevant for the Grid research, development, industrial, implementation, and/or application user community?

The working group addresses the storage and exchange of usage record information between resource providers and service consumers (end-users or other services). This is central for allowing grids to provide provisioning of resources and charging of users for consumed services/resources.

6.3 Will the formation of the group foster (consensus-based) work that would not be done otherwise?

Interoperation between different Grids will create the need for exchange of resource usage information between different Grid systems. However without a consensus-based standardization effort, proprietary solutions will most likely be used to archive interoperation without respect to the larger picture.

6.4 Do the group's activities overlap inappropriately with those of another OGF group or to a group active in another organization such as IETF or W3C?

There are no major inappropriately overlaps with other standardization activities.

Minimal overlap with OGSA – DAI exists, since OGSA – DAI also provides access to remote databases, however RUS-WG is focused on UR storage, whereas OGSA-DAI is concerned with remote database access.

6.5. Are there sufficient interest and expertise in the group's topic, with at least several people willing to expend the effort that is likely to produce significant results over time?

~~The OMII – Europe project is committed to implementing the RUS interface for three different middleware stacks. Two of the chairs are participants in that project. It is in the interest of this project to provide RUS specification standards since that is the basis for the projects contractual obligations.~~The interest of a standardized RUS interface comes out of different projects and technologies that deal with accounting, billing and monitoring and thus with resource usage in general. The active group members of the WG work in the context of different Grid technologies such as UNICORE, SGAS, DGAS, gLite and Globus Toolkits, while these technologies are used within production Grid projects such as DEISA, D-Grid, EGEE, or TeraGrid. The effort in standardization for resource usage within these technologies yb the members of WG will produce significant results over time, bringing in their expertise in the context of resource usage from deployments in real case scenarios.

6.6 Does a base of interested consumers (e.g., application developers, Grid system implementers, industry partners, end-users) appear to exist for the planned work?

~~The OMII-Europe project is committed to provide RUS interfaces to three Grid middleware distributions (Globus, Glite and UNICORE).~~Currently the UNICORE, gLite (via DGAS) and Globus Toolkit (via SGAS) are augmented with a RUS interface. Furthermore a RUS implementation for the OMII-UK middleware stack already exists, while the LCG – RUS developers have already announced their interest for the integration of the RUS interface. Finally, the OMII – Europe project work in the context of interoperability among the RUS interfaces of UNICORE, DGAS and SGAS.

6.7. Does the OGF have a reasonable role to play in the determination of the technology?

Currently no standards for accessing accounting information from Grid middleware exist. This means that the upcoming RUS standard is defining one possible technology for exchanging accounting and monitoring information between different Grids. At least four middleware stacks will be augmented in future with the RUS interface.

7. References

[1] R. Mach, et. al., *"Usage Record - Format Recommendation"*, Usage Record WG, August 2006, http://forge.gridforum.org/sf/go/doc13864?nav=1
[2] OGF Usage Record Working Group
http://forge.gridforum.org/sf/projects/ur-wg
[3] OGF Resource Usage Service Working Group
http://forge.gridforum.org/sf/projects/rus-wg
[4] I. Foster, et. al., *"OGSA WSRF Basic Profile 1.0"*, Open Grid Services Architecture Working Group, May 1, 2006, http://www.ggf.org/documents/GFD.72.pdf
[5] J. Ainsworth, et. al., *"Resource Usage Service (RUS) based on WS-I Basic Profile 1.0"*, RUS-WG, August, 2006, http://forge.gridforum.org/sf/go/doc7965?nav=1
[6] SweGrid Accounting System (SGAS)
http://www.sgas.se/
[7] Distributed Grid Accounting System (DGAS)
http://www.to.infn.it/grid/accounting/main.html

[8] Uniform Interface to Computing Resources (UNICORE) Grid Middleware
http://www.unicore.eu
[9] Distributed European Infrastructure for Supercomputing Applications (DEISA)
http://www.deisa.org
[10] Enabling Grids for e-Science (EGEE)
http://public.eu-egee.org/ ~~[1] R. Lepro, et. al., *"Usage Record XML Format Schema Version 1.12"*, The Global Grid Forum 3, September 3, 2003, http://forge.gridforge.org/tracker/index.php?group_id=90&atid=414
[2] R. Mach, et. al., *"Usage Record - Format Recommendation"*, Usage Record WG, August 2006, http://forge.gridforum.org/sf/go/doc13864?nav=1
[3] Resource Usage Service WG, http://forge.gridforum.org/sf/projects/rus-wg
[4] I. Foster, et. al., *"OGSA WSRF Basic Profile 1.0"*, Open Grid Services Architecture Working Group, May 1, 2006, http://www.ggf.org/documents/GFD.72.pdf
[5] J. Ainsworth, et. al., *"Resource Usage Service (RUS) based on WS-I Basic Profile 1.0"*, RUS-WG, August, 2006, http://forge.gridforum.org/sf/go/doc7965?nav=1~~