EGI-InSPIRE

VO SERVICES ACTIVITIES SUMMARY AND WORKPLAN (MONTH 6)

(TNA3.4)

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Abstract

This document presents the objectives and responsibilities of the VO Services subtask developed in the framework of EGI TNA3.4 Technical Services. It starts with a summary of the activities developed in the first six months of the EGI project, followed by a work plan to be accomplished in the following six months. Before concluding, a report on the main issues which presently slow down the execution of this work is also presented.

I. COPYRIGHT NOTICE

II. DELIVERY SLIP

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IV. APPLICATION AREA

This document is a formal deliverable for the European Commission, applicable to all members of the EGI-InSPIRE project, beneficiaries and Joint Research Unit members, as well as its collaborating projects.

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VI. TERMINOLOGY

A complete project glossary is provided at the following page:
http://www.egi.eu/about/glossary/.

VII. PROJECT SUMMARY

To support science and innovation, a lasting operational model for e-Science is needed − both for coordinating the infrastructure and for delivering integrated services that cross national borders.

The EGI-InSPIRE project will support the transition from a project-based system to a sustainable pan-European e-Infrastructure, by supporting 'grids' of high-performance computing (HPC) and high-throughput computing (HTC) resources. EGI-InSPIRE will also be ideally placed to integrate new Distributed Computing Infrastructures (DCIs) such as clouds, supercomputing networks and desktop grids, to benefit user communities within the European Research Area.

EGI-InSPIRE will collect user requirements and provide support for the current and potential new user communities, for example within the ESFRI projects. Additional support will also be given to the current heavy users of the infrastructure, such as high energy physics, computational chemistry and life sciences, as they move their critical services and tools from a centralised support model to one driven by their own individual communities.

The objectives of the project are:

1. The continued operation and expansion of today's production infrastructure by transitioning to a governance model and operational infrastructure that can be increasingly sustained outside of specific project funding.
2. The continued support of researchers within Europe and their international collaborators that are using the current production infrastructure.
3. The support for current heavy users of the infrastructure in earth science, astronomy and astrophysics, fusion, computational chemistry and materials science technology, life sciences and high energy physics as they move to sustainable support models for their own communities.
4. Interfaces that expand access to new user communities including new potential heavy users of the infrastructure from the ESFRI projects.
5. Mechanisms to integrate existing infrastructure providers in Europe and around the world into the production infrastructure, so as to provide transparent access to all authorised users.
6. Establish processes and procedures to allow the integration of new DCI technologies (e.g. clouds, volunteer desktop grids) and heterogeneous resources (e.g. HTC and HPC) into a seamless production infrastructure as they mature and demonstrate value to the EGI community.

The EGI community is a federation of independent national and community resource providers, whose resources support specific research communities and international collaborators both within Europe and worldwide. EGI.eu, coordinator of EGI-InSPIRE, brings together partner institutions established within the

community to provide a set of essential human and technical services that enable secure integrated access to distributed resources on behalf of the community.

The production infrastructure supports Virtual Research Communities (VRCs) – structured international user communities – that are grouped into specific research domains. VRCs are formally represented within EGI at both a technical and strategic level.

VIII. **EXECUTIVE SUMMARY**

This document introduces the VO Services sub-task developed in the framework of EGI TNA3.4 Technical Services in terms of its objectives and responsibilities. It is focused on "Small" User Communities (SUC) needs since "Heavy" User Communities (HUC) are already supported through the EGI SA3 activity. The main objective of this task is to support VO and VRC Managers in the operation of the resources of infrastructure authorized for the VO, either guiding them through the proper procedures or through the deployment and customization of tools to help on the VO daily operation.

During the first six months of the projects many activities have been delivered under the context of this task. An official communication channel (GGUS dedicated support unit) has been established through which VO Managers can address general or specific questions or requests to the VO Services staff. Also, an inventory of services[1] and monitoring tools[2] has been evaluated explicitly referencing the added value from the VO perspective. Finally, some VO Management activities have been revised and further requirements have been gathered and delivered to the developers of tools used in those activities.

One of the main aims for the following six months is to involve all NGIs with effort on this VO Service work. This will be done through a survey to understand which NGIs can host catch-all services and tools for the VOs with special needs. Another added value expected for the next six months is the testing and installation of some monitoring tools. Among the candidates, NAGIOS is one of the tools in the top list. This work has two different aims: create a demo platform to VOs and VRCs; and gain expertize for helping VOs and VRCs customizing those tools for their own needs. Experience of the HUC will also be valuable for the definition of the appropriate test probes and monitoring statistics. The work plan foresees to continue with already running activities such as the survey of tools, operation of the VO Services GGUS support unit, and documentation and improvement of VO Management activities.

One of the original aims of the task was to enable the use of dashboards developed for HUCs in the EGI SA3 activity. However, due to constrains on the technology used, we are not able to understand what will be its future, and we have escalated the issue to the proper EGI activity leaders for clarification.

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[1] https://wiki.egi.eu/w/images/f/f4/Setting_up_VO_Services_in_EGI_v2.pdf

[2] https://wiki.egi.eu/w/images/1/1b/Monitoring_tools_V5.pdf

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1 INTRODUCTION

The VO Services sub-task is developed in the context of the EGI TNA3.4 Technical Services activity. Its main purposes consist of:

- support the VO life-cycle by guiding VO managers during the various steps of the VO management process;
- document precise steps of the VO management process in order to make this activity more agile for VO managers;
- provide requirements to the services and tools used through the VO life-cycle in order to improve the overall VO management process;
- assist VO managers in deploying, using and adapting technical services which may simplify their user community access to the infrastructure and promote collaboration within the VO;
- bridge VO managers requirements with EGI / NGIs resource providers availabilities;
- collect feedback from VO and VRC regarding the technical services provided by EGI and by the different NGIs, and map it into requirements for services improvement.

This subtask is focused on "Small" User Communities (SUC) needs since "Heavy" User Communities (HUC) are already supported through the SA3 activity.

2 ACTIVITY SUMMARY

The activities since the beginning of the project have been centred in the evaluation of services and tools which were found to be useful for VOs and VRCs. Simultaneously, some steps of the VO Management process have been revised, and improvement requirements have been communicated to the developers of the services and tools used during that process. Finally, a new support unit has been created in GGUS in order to properly address VO specificities during the VO life-cycle or regarding the technical services they need or use. Precise details on these activities are described hereafter.

2.1 Service evaluation

A Virtual Organization is made of a set of computing and storage resources and users geographically and administrative spread worldwide. In order to transparently bridge those resources with the VO users, a set of core services has to be deployed.

To raise the awareness of VO Administrators regarding the cost and benefits of operating such kind of central services, we have produced an inventory of basic and general grid core services, based on gLite middleware. The inventory emphasizes special characteristics considered important like:

- Purpose of the service;
- Whether it is a mandatory or optional service;
- The hardware requirements for the service deployment;
- Known issues;
- Services capacities and costs from the perspectives of the major players involved: service provider, VO operations and User Support.

VO administrators should consult this document to known the range of services needed to support standard VO requirements, and understand their associated costs. VOs should understand that providing services to their VO members require an effort that should be at least partially assumed by the VO. This information is an important tool to assist VO Managers in deciding and planning the range of services needed, and whether these services can be operated by the VO or provided through EGI catch-all instances. The most recent version of this document [R 1] is available through the TNA3.4 Wiki [R 2].

2.2 Monitoring tools evaluation

The performance of VO infrastructures and their availability for users can be optimized though active monitoring activities and prompt incident handling. The active monitoring can be accomplished through the deployment of a set of monitoring and accounting tools, with different characteristics and aims, which are widely available for new communities. Those monitoring tools will implement the monitoring policies agreed by the VO. For example, a VO will periodically check

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VOMS availability, SE and CE responsiveness for a specific VO, specific VO services or representative job instances. They could also propagate operational issues such as SE decommissions, SE or CE overloading, etc. to the affected users of the VO.

We have produced a document to provide information about the characteristics of diverse tools for monitoring or/and accounting in grid infrastructures. Each tool is evaluated in terms of its main functionality, technical requirements or operational complexity and emphasizing the added value for the VO. Among the evaluated tools we can find Gstat, Nagios, Ganglia, Bazzar (a SLA negotiation tool) and others. Through this document the VO Managers can know about the range of available monitoring tools, their characteristics and associated costs, and choose the best one which may fulfil VO specific requirements. The most recent version of this document [R 3] is available through the TNA3.4 Wiki [R 2].

2.3 VO Management

The transition from EGEE III to EGI brought structural changes from the managements and operations point of view, with obvious implications in some of the procedures adopted up to now.

2.3.1 VO registration

The VO Registration process was adapted to the new EGI era. In order to prepare ourselves to take over the VO Registration process we have actively participated in the revision of the draft document, and in the collection of requirements to provide to CIC developers in order to make this process easier and more automatic from the VO Administrator point of view.

2.3.2 VO changes

In EGEE-III there was no procedure to manage VO changes after a VO being validated and active. We have started the discussion with the CIC portal supporters in order to create the first EGI draft procedure to manage such kind of changes. Presently, we have identified which changes can be performed by the VO manager, and which changes cannot. We have made an inventory of the changes with none, minor and major impact on the infrastructure, and we have provided requirements to the CIC portal developers (where the VO Managers trigger the VO changes) to produce improved work-flows in order to minimize the impact of the implemented changes in the infrastructure.

2.4 VO Services Support Unit in GGUS

The introduction of the VO Services Support Unit in GGUS [R 5], operated by the TNA3.4 VO Services team, supersedes obsolete EGEE Support units (RAG, VO Management, ...). The support unit objectives and responsibilities are available in a GGUS FAQ document [R 6], and can be briefly summarized in:

- Guide VO managers during the VO registration process, the VO unregistration process, and through VO information changes occurring while the VO is still active.
- Assist VO managers through the process of deploying technical services aimed to simplify their user community access to the infrastructure;
- Receive VO managers requests (in terms of services/tools), link or forward those requests to the most appropriate actors, or match them within EGI / NGIs availabilities.

This support unit will also serve as the official communication channel for some of the VO Management activities such as triggering VO validations, or clarification of dubious information with the VO Manager. For that, the CIC portal has to be able to interact automatically with this Support Unit, a feature which is still not available but that will be implemented in a near future.

The VO Services Support Unit entered in operation on the 27th of October, and the management of the assigned trouble tickets is already taking place. Presently it is dealing with a request for a procedure to change a VO name [R 7], with all the beneath implications (transfers of data, changes of catalogues metadata, etc...).

3 WORK PLAN

This chapter will present the proposed plan for the VO Services work under TNA3.4 Technical Services task, for the following 6 months of the projects.

3.1 Catch-all services deployment and support

One of the following steps on this task is to understand which VO catch-all services are needed, and where they could be installed. The different NGIs with time devoted to this work will be contacted to fill a survey where they express their expertise and availability to support those services. The survey will include a reasonable estimation of the load requested for each service and a production-level performance expected. Examples for these VO catch-all services, among others, are: VOMS, WMS, LFC. The aim of this survey is to identify the proper partners expertise, and build a plan of supported catch-all services to quickly answer VO requests. Part of the effort will also be devoted to ensure that services are usable by the VO, which will require strong cooperation with the members of the VO.

3.2 Tools support

The inventory and evaluation on the monitoring tools will continue. From the list already gathered, some specific tools will be selected for installation and testing, in order to provide a local infrastructure for validation, support and demonstration. The criteria for choosing the tool is the possibility to implement a VO centric view of the infrastructure, and the possibility to produce customized VO tests. The most likely candidate is the regional NAGIOS. The final aim is to create documentation which can guide VO Managers on installation and on development of VO specific probes, and help VOs in adapting the tools to their own tasks. An example "test" VO will be implemented in a demonstrative way to let any user experience the possibilities of the selected tasks.

Due to the issues reported in Section 4, the work on the dashboards will be postponed until there is a clear view of the development plans for the monitoring of VO resources (SAM versus NAGIOS) and for the porting of the Dashboard framework to an open source platform.

3.3 VO Management

We will take over the VO Registration process for the whole EGI infrastructure, and continue to gather feedback to produce requirements aiming to improve the overall VO Management process, and continuing developing documentation to guide VOs and VRC managers though the VO life cycle operations.

3.4 VO Services GGUS support unit operation

We will continue to operate the VO Services GGUS support unit dealing with all the troubles tickets assigned to it. This support unit has only been created recently but its load is expected to increase in the coming months. The requests for VO validations, VO changes, VO management doubts, improved VO documentation and support on the deployment of tools will be addressed to this support unit once the work-flows proposed to the CIC staff development team are implemented. Requests from the VO Managers regarding the VO support on catch-all services should also be addressed to the VO Services support unit which is responsible for providing suggestions and for searching the best solution to fulfil the VO needs.

4 ISSUES

The first problem after taking over this work was to clarify the objectives of the task. The EGI Description of Work (DoW) introduced further information with respect to EGI proposal and Blueprint, which had to be evaluated and taken into consideration. One of the major outcomes of the discussion was that the development of new tools is outside of the scope of this activity, and the work should be focused on searching and testing available monitoring tools which could be customized according to VO and VRC needs. The objective is to obtain the necessary expertise and know how to be able to fulfil VO needs when the request arrives. This work should be coordinated by EGI.eu and delivered through the operations teams and the NGIs.

The DoW gives some emphasis to the fact that EGI could operate access to a basic dashboard infrastructure, developed under the TSA3.2 activity, where the status of the resource fabric being used by a particular VO is reported upon. The evaluation of this item has raised the following concerns:

- The transition from EGEE-III to EGI introduced major differences in the monitoring for the infrastructure, which changed from a central SAM approach based at CERN, to a decentralized regional NAGIOS approach based at the different NGI regions. However, the monitoring for the Heavy User Communities (HUCs) is still based on SAM, as well as the dashboard framework which relies on SAM to gather and collect information from monitoring tests. A mismatch between the technology used to monitor the general infrastructure and the one used to monitor the VO resources exists, and it is important to clarify how both monitoring schemas will continue to evolve in order to understand implications in the dashboards framework.

- The dashboard framework itself uses a commercial software beneath (ORACLE Databases) which, on its own, is a blocking problem for the installation and testing. The dashboards are not ported to other open source platforms (like MySQL) which could be easily adopted and used by VOs and VRCs. In our opinion, this is the way that the dashboard development should go if it wants to fulfil the requirements for the Small User Communities.

Both questions endanger the application of the Dashboard frameworks for Small User Communities, and have been escalated to the NA3 leadership which is in discussion with the SA1 and SA3 leaders.

The activity is highly dependent from the requests issued by the VOs and received by the NA3 User Support Teams. The number of received requests is still small. This could be due to the fact that the establishment of an official communication mechanism between parties only took place recently. Moreover, prior to the set up of the VOs, new communities should approach EGI, so it could be reasonable expected that in the coming months, and as a result of the dissemination performed, new communities will start approaching EGI and therefore TNA3.4. On the other hand, the metrics may not reflect accurately the developed work in terms of the evaluation of new tools and on the VO

Management related activities.

5 CONCLUSION

The VO Services subtask has used the first 6 month of the project to:

- clarify the objectives and responsibilities within the activity;
- produced an inventory of basic and general grid core services including an evaluation of costs and requirements for their operation from different perspectives: Service provider, VO operations and User Support;
- produced an inventory of tools with suited characteristics for VO monitoring;
- improve procedures for VO management, namely revising the VO registration procedure, building a VO changes procedure, gathering requirements for the work-flow between all partners, tools and services involved in VO Management activities;
- set-up an official communication channel, via a dedicated support unit in GGUS, and start operating it, so that VO requests can be safely delivered to the VO Services staff;

The plan for the next 6 months includes:

- involve NGI with effort dedicated on this task in order to plan the deployment and support of catch all services and tools that VOs may request, through the implementation of a survey;
- continue the survey on the tools for VO monitoring and link documentation to help VO Managers on the installation and operation of those tools;
- start the testing and installation of some of the monitoring tools for VO demonstrations. Document best practices for VO customization of those tools;
- Take over the VO registration procedure, complete the VO changes procedure and continue to collect requirements to improve the VO Management activities;
- Identify missing documentation from the VO Manager activities point of view and improve it in order to facility all VO Manager work.
- Operate the VO Services support unit in GGUS addressing any request that is assigned to it;

Presently, there are some blocking issues which put in danger the initial planned work of offering dashboards, developed under SA3 for the "Heavy" User Communities, for other smaller VOs and VRCs:

- The incoherence between the monitoring infrastructure presently adopted for the HUCs and for the general infrastructure, with consequences in the dashboard tools which consolidate the VO centric view of their resources;
- The use of commercial software in the dashboards development;

Both issues have been escalated to the NA3 leadership which is in discussion with the SA1 and SA3 leaders, and we are currently waiting for the outcome of such discussion in order to understand on how we could proceed on those topics.

6 REFERENCES

R 1	https://wiki.egi.eu/w/images/f/f4/Setting_up_VO_Services_in_EGI_v2.pdf
R 2	https://wiki.egi.eu/wiki/TNA3.4_Technical_Services
R 3	https://wiki.egi.eu/w/images/1/1b/Monitoring_tools_V5.pdf
R 5	https://gus.fzk.de/ws/ticket_info.php?ticket=62742
R 6	https://gus.fzk.de/pages/ggus-docs/PDF/18000_FAQ_for_vo_services.pdf
R 7	https://gus.fzk.de/ws/ticket_info.php?ticket=63564