

EGI-InSPIRE

Operational Tools Regionalisation Work Plan

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Abstract

This document assesses the work plan on the regionalisation of the operational tools, identifying the upcoming releases and associated functionality.

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EGI-InSPIRE (“European Grid Initiative: Integrated Sustainable Pan-European Infrastructure for Researchers in Europe”) is a project co-funded by the European Commission as an Integrated Infrastructure Initiative within the 7th Framework Programme. EGI-InSPIRE began in May 2010 and will run for 4 years.

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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 the 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 the ESFRI projects. 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- structured international user communities – that are grouped into specific research domains. VRCs are formally represented within EGI at both a technical and strategic level.

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1. INTRODUCTION

1.1. PURPOSE

This document is a report on the work plan of the regionalisation process of the operational tools that needs to be addressed by the WP7. The upcoming functionality is presented here.

1.2. 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.

1.3. REFERENCES

Table 1: Table of references

R 1	Milestone MS401: Operational Tools Regionalization Status (https://documents.egi.eu/document/48)
R 2	The CIC Operations Portal (https://cic.gridops.org)
R 3	<i>Global Grid User Support (GGUS) Plan, EGEE-III Deliverable DSA1.1, August 2008</i> (https://edms.cern.ch/document/931935)
R 4	Mathieu, G.; Casson, J.; <i>GOCDB4, a New Architecture for the European Grid Infrastructure</i> ; to appear in the Proc. of the Int. Symposium on Grid Computing 2010, Mar 2010, Academia Sinica, Taipei, Taiwan
R 5	Jiang, M.; Del Cano Novales, C.; Mathieu, G. et alt; <i>An APEL Tool Based CPU Usage Accounting Infrastructure for Large Scale Computing Grids, in the Proc. of ISGC 2010</i> , Mar 2010, Academia Sinica, Taipei, Taiwan
R 6	The Accounting Portal (http://www3.egee.cesga.es)
R 7	The Service Availability Monitoring Framework (http://www.youtube.com/watch?v=PADq2x8q0kw)
R 8	The Metrics Portal (http://www3.egee.cesga.es/gridsite/accounting/CESGA/links/EGEE-III-SA1-Metrics_Portal_Roadmap_and_Requirements-v3.1.xls)
R 9	The Regional Dashboard (https://operations-portal.in2p3.fr/index.php)
R 10	The Messaging Infrastructure (https://twiki.cern.ch/twiki/bin/view/LCG/MessagingSystemforGrid)
R 11	<i>The Apache ActiveMQ messaging system</i> (http://activemq.apache.org)
R 12	Nagios (http://www.nagios.org/)

1.4. DOCUMENT AMENDMENT PROCEDURE

Amendments, comments and suggestions should be sent to the authors. The procedures documented in the EGI-InSPIRE “Document Management Procedure” will be followed:

<https://wiki.egi.eu/wiki/Procedures>

1.5. TERMINOLOGY

A complete project glossary is provided in the EGI-InSPIRE glossary:
<http://www.egi.eu/results/glossary/>.

2. EXECUTIVE SUMMARY

Regionalization of the operational tools has been one of the important activities of the EGEE-III project. A large effort has been devoted to this activity during the second year of the project with the goal of providing either a regionalized instance of the tool or a regionalized view on the central instance.

However, many of the tools used before were centralized and with no focus on de-centralization or regionalization. Regionalization of the tools is therefore an activity that is continuing within EGI's JRA1.

This document describes the operational tools one by one, focusing on the status of the regionalization efforts.

3. OPERATIONAL TOOLS REGIONALISATION STATUS IN EGI-INSPIRE

The regionalisation of the operational tools is an activity that started and was very much developed during the EGEE-III project. For some of the tools, this activity took longer than expected and is being continued within EGI's JRA1.

The status of the regionalisation process is fully described in the 'Operational Tools Regionalisation Status' EGI's milestone [R1], covering the following tools: the *Operations Portal* [R2], *GGUS* [R3], *GOCDDB* [R4], the *Accounting Repository* [R5], the *Accounting Portal* [R6], the *Service Availability Monitoring Framework* [R7], the *Metrics Portal* [R8] and the *Regional Dashboard* [R9].

4. ROADMAPS IN THE REGIONALISATION PROCESS

4.1. OPERATIONS PORTAL AND REGIONAL DASHBOARD

REFERENCE

R 1	SVN repository for Operations Portal Regional Package : https://cvs.in2p3.fr/operations-portal/package/
R 2	Validation of Operations Regional Package : https://cvs.in2p3.fr/operations-portal/package/validation.pdf?revision=HEAD
R3	MS701 , Operations Portal Work plan https://documents.egi.eu/document/39

STATUS OF THE REGIONALISATION

For around one year we have started the work on a regional package: the goal of this work is to distribute the different features and modules present into the Central Operations Portal into a regional package for NGIs to cope with NGI needs.

The first release of the first production package was on June 8th and this release included the first release of the dashboard module. The different part of the package and the documentation are distributed via a SVN repository [R1].

The regional package has been deployed in production in 2 NGI:

- NGL_CZ
- NGL_GRNET

2 NGIs are currently deploying it :

- NGL_IBERGRID – the validation process is completed but they want to extend the test period
- NGL_BY

ARCHITECTURE AND SYNCHRONIZATION

The application is composed of

- a web service named Lavoisier configured to handle Nagios notifications, store and provide data cache from GOC DB, GGUS and to generate metrics reports about the use of the dashboard (alarms raised, tickets handled ...)
- a PHP web application to provide a user interface based on Symfony framework.
- A database generated automatically with the web application during the installation.

The regional instance is linked with the central instance of Lavoisier; and creation, update, delete of records are synchronized so as not to disrupt global oversight operations. Synchronisation is achieved through REST and SOAP and records are synchronized every 10 minutes by using php scripts. Any problem detected during the synchronisation is reported in a mail sent to webmasters.

The central and the regional instances (Instance 1 and 2 on the schema) have been built on the same model to behave in the same way and to be easily interoperable. A validation procedure [R2] has been established to validate the regional instances when a given region expresses this need. All regions or NGIs are able to opt for either the central or the regional instance. We will continue to offer as now regional views for the future features – when it makes sense - to the NGIs.

As you can see on the schema the architecture is exactly the same on a NGI and central instance.

The distributed components are the same, just the configuration changes:

- with some piece of codes in the PHP application that permits to distinguish a regional instance from a central one
- On the Lavoisier side to filter information and to keep only the information related to the NGI.

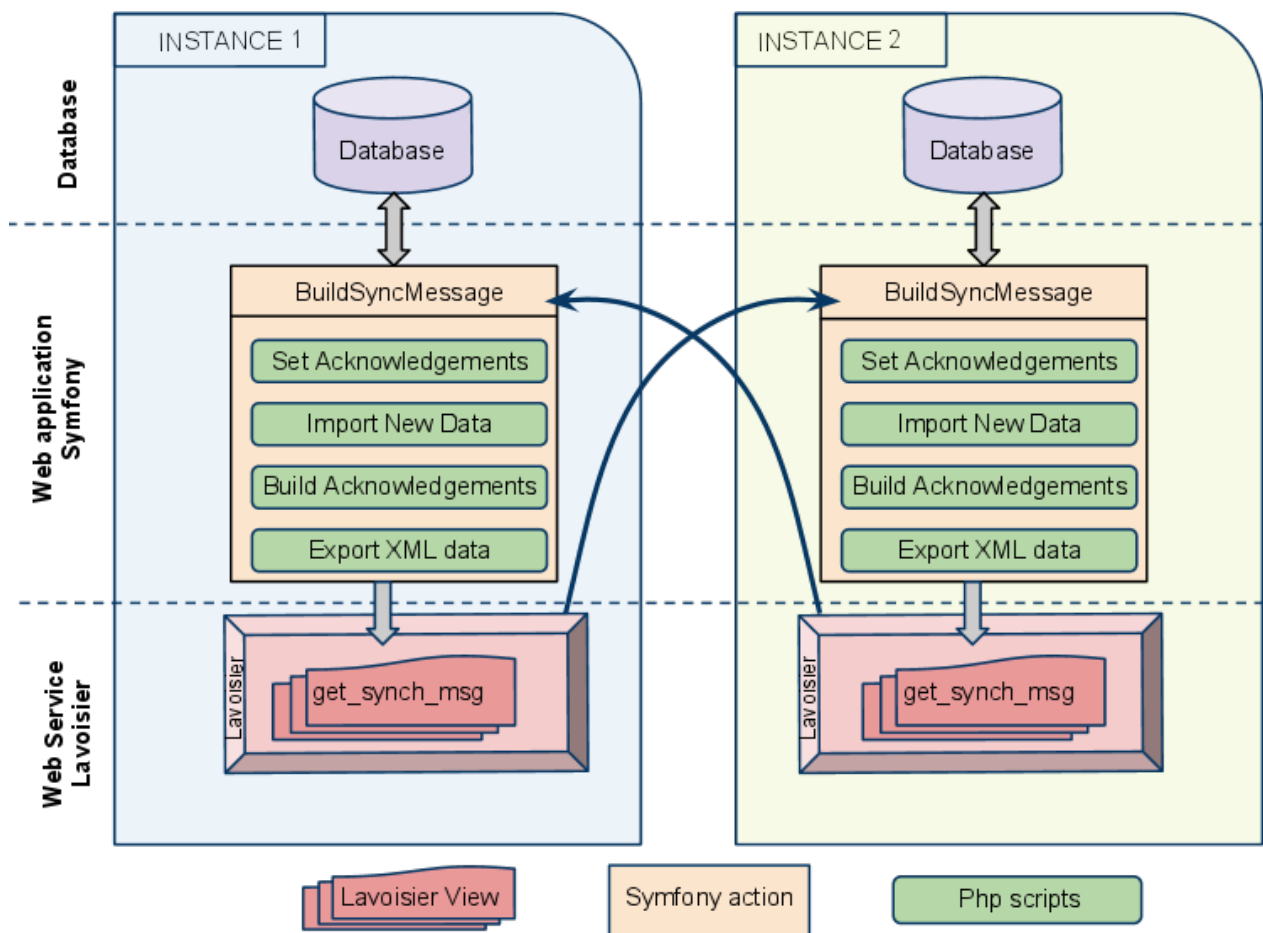


Figure 1 - Overview of the architecture and synchronization

WORK PLAN

This regional package is currently using the same central data sources as the central instance but this package is designed to integrate the regional version of GOCDB and regional helpdesks if they are deployed. This regional package will be constantly improved during the coming year:

- To add some of the other features that will be integrated step by step into the Central Instance. These features will be added one by one into the central instance and if relevant to a regional instance we will provide an update to the package.
- To ease upgrade and set-up of the package in the regions

For each central feature released, we will provide it in the regional package when applicable in the following months.

For the central Instance the different timelines are summarized in the table below.
For each new feature we have to study if it is meaningful to propose it on a regional instance.

Features	Release Date
Migration to Symphony for the VO ID Card	August 2010
Migration to Symphony for the Broadcast	September 2010
Migration to Symphony for the Downtime notifications	December 2010
Enhancements of Lavoisier Programmatic Interface	December 2010
Integration of VO specific tests within the Dashboard	February 2011
Release of Lavoisier 2.0	March 2011

For more details about the complete work plan, please read MS701, Operations Portal Work plan [R3].

4.2. GGUS

The GGUS portal is the central helpdesk of the EGI infrastructure. It acts as an integration platform between other helpdesk systems (regional and topical) that are in production in EGI. The set-up with a central tool and various different satellite systems has been in place since the beginning of EGEE. All project-wide support units are present in the GGUS system, regional or specialised topical support units can be reached via GGUS through the interfaces their respective ticket systems have with GGUS. This enables to track all trouble tickets and service requests of general interest in the GGUS system, independent of the tool in which the ticket is worked on. Since infrastructure is already regionalised GGUS was not part of the regionalisation effort that started in EGEE for the operational tools which was steered by the OAT.

One of the major changes to the user support infrastructure caused by the transition from EGEE to EGI is the move from ROCs to NGIs. This means that instead of 12 regional ticket systems (on in each ROC) now every NGI has to set up their user support infrastructure and interface it to the central GGUS system. This of course increases the number of interfaces that have to be maintained in GGUS and made it necessary to strictly standardise the interfaces to new NGI helpdesk systems. Only web services and messaging interfaces are being accepted now. The interface standards for these two

methods are described in the documentation collection of the GGUS portal (https://gus.fzk.de/pages/ggus-docs/interfaces/docu_ggus_interfaces.php).

In EGI we have identified three options how NGIs can connect to the central user support infrastructure:

- NGIs can set up a regional ticket system and interface GGUS via web services or messaging. This option is currently used by five NGIs.
- NGIs can use the GGUS system directly. In this case there is only one support unit in GGUS for the whole NGI. This option is currently used by 11 NGIs.
- NGIs can use a customisable version of GGUS called xGUS. This was developed to give NGIs a simple way to set up a ticket system without have to host it themselves.

Status of xGUS

The first ideas for a customisable version of GGUS came up during the last year of EGEE-III, resulting in resources being assigned to developing such a system in the proposal for EGI-InSPIRE under JRA1.

The xGUS system has the same basic functionality as the GGUS system and is based on the same workflow engine. xGUS consists of a web front end that can be customised with a NGI specific banner and a backend that includes all basic support portal functionalities such as a ticket database, an email engine, user administration, a news module and basic portal administration. This means that fields like ‚Type Of Problem‘, ‚Affected Site‘, ‚Affected VO‘, ‚Responsible Unit‘, and link lists can be administered directly via the portal.

The template comes with synchronization to GGUS, so tickets coming from or going to GGUS are duplicated and synchronized automatically.

Currently there is a first instance of xGUS in place for NGI-DE, the German NGI. This tool is now used in production as the regional ticket system for NGI-DE. A second instance for NGI-AEGIS, the Serbian NGI, is being finalised at the moment. Discussion with other NGIs on the use of xGUS have started.

The xGUS system will undergo the same release procedures as the GGUS system, as the two systems are closely related.

4.3. GOCDB

GOCDB status

As of the end of July GOCDB is in a transition phase between GOCDB3 and GOCDB4.

- GOCDB4 central portal is online since November 2009. Data appearing there are synchronised from GOCDB3 data

- GOCDB3 Programmatic Interface has been decommissioned on the 15th of July. As a result, all client tools connecting to GOCDB are all contacting GOCDB4 and there is no more dependency on GOCDB3

- the GOCDB4 input system which is due to replace GOCDB3 web portal is under finalisation and testing.

Latest status on regionalisation

The last released version of GOCDB regional module dates from March 2010 (gocdb4.0d3). It is not a fully functional tool but all the basic components are included so that initial deployment can be tested using that version. It is available from http://www.sysadmin.hep.ac.uk/rpms/egee-SA1/centos5-devel/x86_64/repoview/gocdb.html

The latest development version of the module has not been packaged yet, but the code is available from the SVN repository at <http://www.sysadmin.hep.ac.uk/svn/grid-monitoring/trunk/gocdb/>

This development version is a fully functional system, although there are minor development and polishing issues before this can be labelled "production". The estimated timeline for this is September 2010.

The documentation is available on the wiki page:
http://goc.grid.sinica.edu.tw/gocwiki/GOCDB_Regional_Module_Technical_Documentation

GOCDB regionalisation status is available online at
http://goc.grid.sinica.edu.tw/gocwiki/GOCDB4_Regionalisation

Important note: GOCDB regional modules can't be operated in production until GOCDB3 has been fully decommissioned.

Regionalisation roadmap

Main GOCDB development items linked to the tool regionalisation are as follows, with the expected release date:

Features	Release Date
Provide a production quality package for GOCDB regional module	September 2010
Optimize data access for the regional module to improve overall performances	October 2010
Finalise the publication interface from regional to central GOCDB	October 2010
Consolidate and polish the web admin interface for GOCDB regional module	October 2010
Propose a basic definition fo a publication interface from regional non-GOCDB system to the central GOCDB	November 2010
Provide a MySQL version of the GOCDB regional module	April 2011

GOCDB development plans are published on the following wiki page:
http://goc.grid.sinica.edu.tw/gocwiki/GOCDB4_development

4.4. ACCOUNTING REPOSITORY

APEL server latest status

As of the end of July the APEL server is in a transition phase between the R-GMA based system and its ActiveMQ based replacement.

- The ActiveMQ based APEL client has been released to production within gLite3.2 early June 2010.
- around 12 sites are using this version at the time of writing.
- The server accepts publication from both systems in parallel. They are then processed and archived in exactly the same way.

Latest status on regionalisation

The Accounting repository is not ready for regionalisation yet.

A design study of APEL regionalised architecture has been presented as a poster in EGEE09 conference and is available from the APEL home wiki page at <http://goc.grid.sinica.edu.tw/gocwiki/ApelHome>

Regionalisation roadmap

The regionalisation roadmap is not defined yet.

4.5. ACCOUNTING PORTAL

The initial version of the regional accounting portal is already available. Currently several NGIs have expressed their interest in deploying a regional instance of the regional portal.

During the following months the installation scripts will be improved making easier to deploy the portal. Additional improvements will be incorporated based on the feedback from the candidate NGIs. New functionalities incorporated into the central accounting portal will be ported to the regional accounting portal.

In the future the regional accounting portal will use the new accounting infrastructure based on Messaging [R10]. This new accounting infrastructure allows greater flexibility to configure regional accounting repositories. Several modifications are foreseen in the regional accounting portal to support ActiveMQ [R11].

Besides the regional accounting portal a country view is offered in the central accounting portal that allows NGIs to review the usage in their region. This view will be continuously improved based on NGI feedback.

The roadmap for the accounting portal is the following:

Features	Release date
Improved installation support. GOCDBPI-V4 support	December 2010

New improvements based on NGI feedback	March 2011
ActiveMQ support	June 2011

4.6. MONITORING INFRASTRUCTURE

The monitoring infrastructure based on Nagios [R12] and Messaging is already completely regionalized, as described in the EGI-InSPIRE milestone MS401 [R1]

4.7. METRICS PORTAL

There are currently no regionalization plans for the Metrics Portal.

5. CONCLUSIONS

JRA1 has the primary goal of coordinating the operational tools development carried out by various groups. The guidelines are being defined with the fundamental support of the OTAG advisory group.

The operations portal and regional dashboard team have already released a first version of the regional dashboard and have provided a schedule of future releases.

GGUS does not plan to have a specific regionalized application, although they provide xGUS so NGIs can customize GGUS. NGIs have also other possibilities, depending on their needs.

GOCDB is currently in a transition phase between GOCDB v3 and GOCDB v4.

APEL's regionalization roadmap has not been yet planned.

The initial version of the regional accounting portal is already available. Currently several NGIs have expressed their interest in deploying a regional instance of the regional portal.

The monitoring infrastructure based on Nagios [R12] and Messaging is already completely regionalized, as described in the EGI-InSPIRE milestone MS401 [R1]

There are currently no regionalization plans for the Metrics Portal.