EGI-InSPIRE

DEPLOYMENT PLAN FOR THE DISTRIBUTION OF OPERATIONAL TOOLS

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Abstract

This document describes the use cases that define the desired interactions between the local and the central instances of the operational tools. These use cases drive the development activities of task TJRA1.3 for PY2.

The document also updates the roadmap for the deployment of regionalised variations of the operational tools to the NGIs/EIROs that was already described in MS406.

I. COPYRIGHT NOTICE

II. DELIVERY SLIP

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III. DOCUMENT LOG

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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.

V. 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

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

The Operational Regionalised Tools task force provided use cases for the local instances of operational tools. These use cases are reported in this document grouped by tool, which comprise:

- GOCDB
- Operations Portal
- SAM/Nagios
- Accounting System

This document also provides an update about the NGI/EIRO plans for deployment of the regional instances of the following tools:

- Operations Portal
- Helpdesk
- GOCDB
- Accounting Repository
- Accounting Portal
- SAM (including MyEGI)

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1 INTRODUCTION

The purpose of this milestone is to inform about the different interactions between the local and central Operational Tools instances and the deployment plan for the next project year. This work was started with the milestone MS406[R11]. This milestone was the starting point to establish a roadmap for the deployment of regionalised operational tools to the NGIs/EIROs.The first input was gathered through a questionnaire distributed to NGI and EIRO operations managers to know their regionalisation status and future plans. In the last project year this roadmap has undergone many changes (more operational tools have been regionalised, the information about NGI regionalisation plan has been updated, etc). This document contains a summary of the updated information gathered by the regionalisation task force [R12].JRA1 was involved in this task force which contains a small number of NGIs and interested people to define the needed evolution of the regional operational tools.The target audience is the Operational Tools Advisory Group and project leaders. The document is divided in two main sections. The regionalization use cases section describes the key use cases generated by the Regionalisation Task Force [R12] and the requirements to be implemented by JRA1 developers. The second section, the tool deployment plan, provides information about the NGI deployment plans of regionalized operational tools.

2 REGIONALISATION USE CASES

At the January 2011 Operational Tools Advisory Group (OTAG)[R1] face-to-face meeting in Amsterdam, it was decided to create a regionalisation task force, containing a small number of NGIs and interested people throughout the community. The goal of the task force was to define the needed evolution of regional operational tools and a few key use cases of integration between regionalised tools.

The output of the task force wasasummary document that gathered all of these use cases and was presented to the OTAG-09 in July2011. The OTAG analysed the document, and translated the use cases into a set of requirements for the JRA1operational tools developers.

2.1 General overview

2.1.1 Advantages of a distributed scenario

The possibility of customising the tools and extending their utilisation to the services and sites external to EGI is not the only advantage of regionalisation.

The fact of running the operational services locally reduces the impact of downtimes of the central instances; local instances can run independently from the central tools. Consequently, the activities that rely only on regional tools are not affected by the central tools downtimes. On the other hand, the central instances can be a backup in case of downtime of the regionalised tools.

2.1.2 General requirements

Simplified installation and documentation is a general requirement for all of the regionalised tools. The central tools are often operated by the developers, or with their direct supervision. For this reason their installation procedure may miss some automation mechanisms that a widely deployed tool needs. The regionalised developments should also focus on simplified installation procedures, in order to minimise the overhead for the Operations Centres that aredeploying them.

In the same way the tools have to be well documented, in particular the new features (the ones introduced in the regionalised releases) will need additional documentation, tutorials and examples with actual use cases. Supported by complete documentation, the Operations Centre staff would be able to exploit the full functionalities of the regionalised operational tools.

2.1.3 Dependencies between regional tools

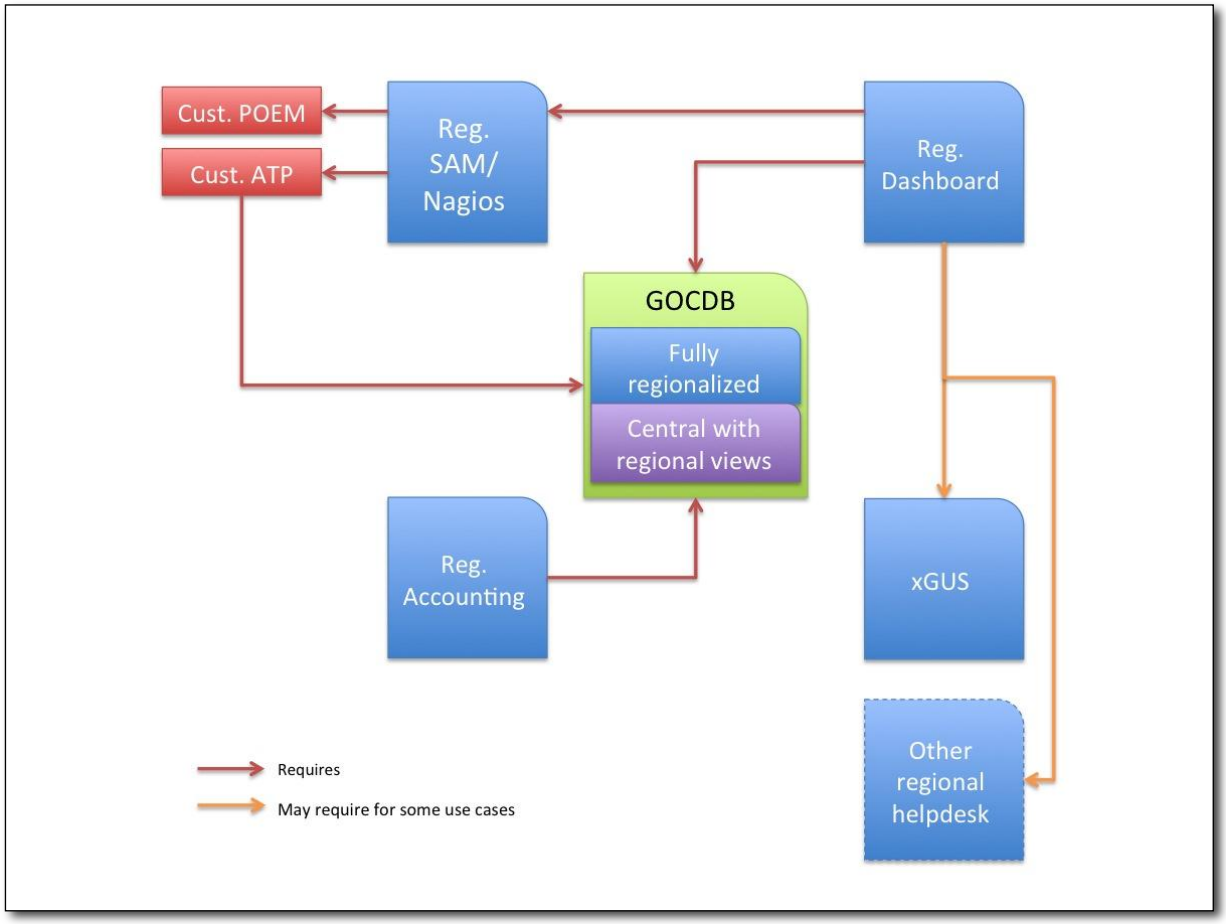

Figure 1 dependencies schema between regional tools

Figure 11 shows the dependencies among regional tools. The dependencies are not at code level, but at a higher functional level. The arrows mean that the first tool needs to access the functionalities of the second one through a web service interface, API or messaging framework.

As described in the picture, GOCDB is the central tool that drives the deployment of the other regionalised tools. This is true for both the fully regionalised GOCDB and the central instance with local views.

2.2 Use Cases for GOCDB[1]

GOCDB developers identified three different regionalisation scenarios for GOCDB [R2]. All of these implementations will be delivered in the next months:

- Central instance with different views for global and local data.
- Local stand-alone GOCDB instance.
- Local instance fully synchronised with central GOCDB.

[1] GOCDB general documentation: https://wiki.egi.eu/wiki/GOCDB/Documentation_Index

2.2.1 Store non EGI data

NIGs often have services not part of the EGI infrastructure, these are middleware and operational services used by local projects and not shared with the rest of theInfrastructure, or custom services implemented and deployed by local NGI teams for specific purposes and not listed in the service types implemented in the GOCDB.

A GOCDB instance, whether central or regional, should be able to differentiate between EGI and non-EGI data so that NGIs can choose whether to include or mask their sites and services from the EGI infrastructure. To do this, Sites, Services and other GOCDB entities need to be tagged as either 'EGI,' 'Local' or 'some other' scoped data.

a) In the central read/write GOCDB, only 'EGI' scoped data would be relevant to EGI, allowing 'Locally' scoped data to be ignored (by defining data scopes in the programmatic interface queries for example). In doing this, NGIs, without the effort to install/host a regional GOCDB, can still selectively publish their sites and services within EGI.
b) For a regional GOCDB, only 'EGI' scoped data would be published up to the central read only GOCDB.

2.2.2 NGI customisations

NGIs may want to extend the GOCDB schema for some NGI-specific purposes that do not involve other NGIs. Extending the GOCDB schema cannot be implemented in the central GOCDB instance, but require a fully regionalised instance.

Documentation describing how to properly extend the GOCDB schema, to add database tables and how to correctly perform the SQL queries to use the new data is needed. If the database schema has changed, then the Graphical User Interface for the data insertion also needs to be changed accordingly. Tutorials should be provided describing how to extend the forms in the GUI to fill the new schema tables.

2.3 Use cases for SAM

2.3.1 Test local services

NGIs mayneed to monitor sites not in the central GOCDB, for example, sites not in the EGI infrastructure because they are funded separately and part of different projects.

In order to deploy a SAM/Nagios box for this use case, the building of the topology of the monitored sites is required, and the Aggregated Topology Provider (ATP)[R3] needs to retrieve the information about the services from a regional instance of the GOCDB.

2.3.2 Run custom probes

An NGI might want to deploy custom probes in its regional Nagios, monitor custom services or add tighter probe policies.

To build the topology, this use case needs a regional ATPconfigured to query a regional GOCDB in case Nagios has to monitor custom services. Custom services have to be registered in the regional GOCDB; to add them,they should be qualified with proper service types, whichmeans that custom service types should be available in the GOCDB schema.

Custom profiles involving the custom probes must be implemented in a regional instance of the Profile Management Database (POEM)[R4], or in the central instance.

For availability and reliability calculations, there arenot regional tools.Availability Calculation Engine (ACE)[R5] is a central tool with no plans for regionalisation, and it is not developed by EGI. However, it is possible to implement custom availability calculation profiles in the central ACE for NGI specific purposes.

2.3.3 Multi-VO Nagios

Another possible customisation to the SAM system is to configure the Nagios instance to run probes using different VOs to test different VO-specific services and enhance probes with more specific metric policies. Nagios currently can submit probes choosing the VO to be used service by service. To submit VO specific probes – different probes for different VO – specific profiles need to be implemented in a regional POEM instance.

2.4 Use cases for Operations Portal

2.4.1 On demand regional alarm added to the Operations Portal

On top of the EGI operationstests[2], regional OperationsPortal[R6]should give the possibility to configure new tests as required by an NGI, or modify the criticality threshold of current tests. Consequently, the Regional Operator on Duty (ROD) can be alerted for all of those alarms considered critical for his region. Modification, of course, could be applied only to those not "operations probes".

2.4.2 Manage alarms and tickets for non-EGI sites and services on the regional dashboard

Normal dashboard workflows should be extended to allow RODs to operate on:

- Sites not registeredin the central GOCDB
- Single services operated by EGI sites that are not in the GOCDB ornot in the set of services types implemented in the GOCDB

The first customisation can be achieved directly throughthe central instance of the Dashboard, which can be customised for the needs of a specific NGI pointing it to a regional view of the GOCDB.

The second one would require additional service types in the GOCDB to register the servicesnot described by a service type already implemented in the GOCDB. The central operations portal cannot point to more than one GOCDB, so all of the services/sites both EGI and local, should be in the same view.

The support of more than one GOCDB view is a feature foreseen for the regional instance of the Operations Portal.

2.4.3 Use different helpdesk for local services

Currently, the Operations Portal opens tickets directly on GGUS, and regional helpdesk systems pull the tickets from the central GGUS web service. The regional Operations Portal should interface directly with the local helpdesk solution through a standard interface. In addition, a lower priority requirement is the possibility ofconfiguring different helpdesks for different groups of sites.

[2] SAM tests wiki page: https://wiki.egi.eu/wiki/SAM_Tests

2.5 Use cases for Accounting system

2.5.1 Keep local accounting data for certain VOs

NGIs may want to keep local the accounting data for some specificnational VOs, not part of the EGI infrastructure. All of the accounting data should be collected by the regional accounting system, to produce comprehensive statistics about the usage of national infrastructure, but NGIs will be able to keep local the accounting data not relevant to the EGI infrastructure.[R7].

3 TOOLS DEPLOYMENT PLAN

The tool deployment plan presented in this deliverable provides information about the NGI deployment plans of regionalised operational tools. Input for this document and the previous version [R7] was gathered through a questionnaire distributed to NGI and EIROoperations managers. For the NGIs that havenot answered the questionnaire a GGUS ticket has been opened to track their plans, details can be found in the RT ticket 831 [R8]. For the remaining NGIs, additional information was complemented – where available – with data extracted from the EGEE-III questionnaire distributed in Spring 2010[R9]. These NGIs are labelled with character * in the summary table below.

During the process of writing this deliverable, all NGIs were requested again to provide updates of their plans. Six NGIs provided updates: NGI_AEGIS, NGI_CH, NGI_FI, NGI_MARGI, NGI_NL and NGI_TR.Details on individual NGI plans are described in the sections below.

3.1 Operations Portal

Operations Portal has been deployed by 4 NGIs: NGI_BY, NGI_CZ, NGI_GRNET and NGI_IBERGRID.

The following 6 NGIs are planning to deploy the Operations portal: NGI_AEGIS, NGI_BG, NGI_DE, NGI_IE, NGI_IT and UK. Deployment dates are not provided.

The remaining 24 NGIs have decided to use the central Operations Portal instance.

3.2 Helpdesk

The regionalised GGUS helpdesk version, xGUS, has been deployed by 4 NGIs: NGI_AEGIS, NGI_CH, NGI_DE and NGI_HU. Single NGI (NGI_FRANCE) is still evaluating xGUS.

The custom helpdesk solutions integrated with the central GGUS instance are used by 12 NGIs. Some of the used solutions are RT, 1|0, Footprints, Xoops/Xhelp and other.

The remaining 17 NGIs have decided to use the central GGUS instance.

3.3 GOCDB

The regionalised GOCDB version is still not available, therefore are no deployed instances. The following 10 NGIs are planning to deploy the GOCDB: NGI_AEGIS, NGI_CZ, NGI_DE, NGI_FRANCE, NGI_HR, NGI_IBERGRID, NGI_IE, NGI_IT, NGI_PL and UK.

Four NGIs of the previous ten replied that they are waiting for a stable and packaged version with the remaining six providing no dates of deployment.

The other 24 NGIs have decided to use the central GOCDBinstance.

3.4 Accounting Portal

The regionalised Accounting Portal version is still not available, so there are no deployed instances. The following 10 NGIs are planning to deploy the Accounting Portal: NGI_AEGIS, NGI_BG, NGI_BY, NGI_GRNET, NGI_HR, NGI_IE, NGI_MARGI, NGI_NDGF, NGI_SI and UK.

Two NGIs of the previous tenreplied that they are waiting for a stable and packaged version and the remaining eight provided no dates of deployment.

Two NGIs are planning to use a custom accounting portal and four NGIs still have not decided which solution will be used.

The other18 NGIs have decided to use the central Accounting Portal instance.

3.5 SAM

SAM NGI instances have been deployed by all NGIs that have production sites.Currently there are 32 SAM instances covering 32 NGIs/ROCs/EIROs and 3 external regions (Canada, IGALC and LA). The detailed list of instances can be found referenced in [R10]. 2 NGIs (NGI_ALBANIA and NGI_MD) do not haveSAM deployed because they currently don't have sites.SAM NGI instances have been deployed by all NGIs.

3.6 Summary

The summary of the deployment plan presented for all operational tools except for SAM is provided in the tables below.

The first table offers a detailed plan for each NGI with the following status explanations:

- NGI: NGI plans to deploy NGI level instance of operations tool, comment provides information about deployment status or plans.
- Central: NGI plans to use central instance of operations tool.
- Not decided: NGI is still evaluating options.
- Custom NGI: NGI plans to deploy custom NGI level solution for particular operations tools, this option is not relevant from JRA1 perspective.

In the case of Helpdesk, the only NGI solution considered official is xGUS. Any other solution is considered custom NGI and NGIsare responsible for providing integration with the central helpdesk instance.

NGI	Accounting portal	GOCDB	Operations Portal	Helpdesk
AGSC (APROC)	Central	Central	Central	Central
CERN *	Central	Central	Central	Central
NGI_AEGIS	NGI, wait for stable version	NGI, wait for package	NGI, no date	NGI (xGUS)
NGI_ALBANIA *	Central	Central	Central	Central
NGI_ARMGRID	Central	Central	Central	Central
NGI_BA	Central	Central	Central	Central
NGI_BG *	NGI, no date	Central	NGI, not of high priority	Custom NGI (0|1)
NGI_BY	NGI, no date	Central	NGI, deployed	Custom NGI (Other)
NGI_CH *	Not decided	Central	Central	NGI (xGUS)

NGI	Accounting portal	GOCDB	Operations Portal	Helpdesk
NGI_CYGRID	Central	Central	Central	Central
NGI_CZ	Not decided	NGI, waiting packaged release	NGI, deployed	Custom NGI (RT)
NGI_DE	Not decided	NGI, no date	NGI, no date	NGI (xGUS)
NGI_FI	Custom NGI solution (SGAS)	Central	Central	Central
NGI_FRANCE	Not decided	NGI, no date	Central	not decided (evaluating xGUS)
NGI_GE	Central	Central	Central	Central
NGI_GRNET	NGI, no date	Central	NGI, deployed	Custom NGI (RT)
NGI_HR	NGI, wait for stable version	NGI, waiting packaged release	Central	Central
NGI_HU	Central	Central	Central	NGI (xGUS)
NGI_IBERGRID	Central	NGI, no date	NGI, deployed	Custom NGI (SWE Helpdesk/RT)
NGI_IE	NGI, no date	NGI, no date	NGI, no date	Custom NGI (Footprints)
NGI_IL	Central	Central	Central	Central
NGI_IT	Custom NGI solution	NGI, no date	NGI, no date	Custom NGI (Xoops/Xhelp)
NGI_MARGI	NGI, no date	Central	Central	Central
NGI_MD	Central	Central	Central	Custom NGI (RT)
NGI_ME	Central	Central	Central	Central
NGI_NDGF	NGI, no date	Central	Central	Custom NGI (Other)
NGI_NL	Central	Central	Central	Central
NGI_PL	Central	NGI, waiting release	Central	Custom NGI (RT)
NGI_RO	Central	Central	Central	Central
NGI_SI	NGI, no date	Central	Central	Central
NGI_SK	Central	Central	Central	Central
NGI_TR	Central	Central	Central	Central
Russia	Central	Central	Central	Custom NGI (Other)
UK	NGI, no date	NGI, no date	NGI, no date	Custom NGI (Footprints)

Table 1 Regional Tools NGI status and plans

The table below provides deployment summary per operational tool.

Tool/feedback	NGI	Central	Not decided	Custom NGI
Accounting portal	10	18	4	2
GGUS(xGUS)	4	17	1	12
GOCDB	10	24	0	0
Operations portal	10	24	0	0

Table 2 Operational Tools deployment summary

4 CONCLUSIONS

The selected regionalisation use cases will help JRA1 developers to implement new features to improve the interaction between the local and global Operation Tools instances (GOCDB, SAM, Operation Portal and Accounting). The new features are oriented to include new specific use cases that were required by the NGIs. Most of the use cases imply the development of custom probes, store local NGI information and the possibility to include non-EGI sites information. The new Operation Tools will be able to handle a heterogonous grid infrastructure, more decentralised and robust without breaking the current global EGI infrastructure. The local and global instances will coexist and interact in this new scenario in a transparent way.

Due to each NGI/EIRO having specific needs, some of them prefer to deploy and use a regional version of the central tool, if available. The decision to use the central or regional instance depends on the type of tool. Only two Operational Tools have not been regionalised yet, the GOCDB – that is available as a stand alone instance not interfaced with the central one - and the Accounting Portal. GOCDB and Accounting developers are working to deploy a regionalised version in the next project year. Most of NGI/EIRO surveyed will continue to use the Operational Tools central instances (see Figure2), while others prefer to deploy the regional version of the central tool, with 6% deploying a custom Accounting Portal that is better suited for their needs. The exception in this case is xGUS; NGIs have been using their custom helpdesks for some time and 35% still have plans to use their own ticket system.

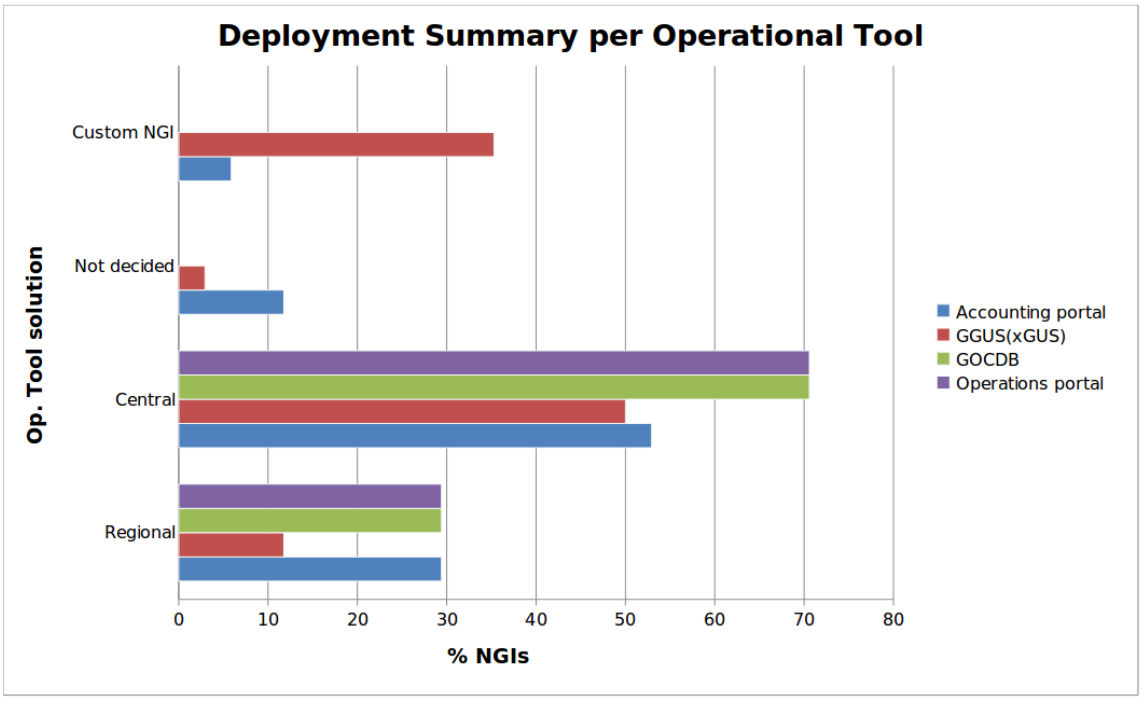

Figure 2 NGIs deployment summary (Number NGIs+EIROs)

Figure 2 does not take into account the number of CPUs or the critical mass provided by each NGI. If we include the number of job slots providedper NGI instead of the number of NGIs+EIROs, the new figure changes significantly (see Figure3).

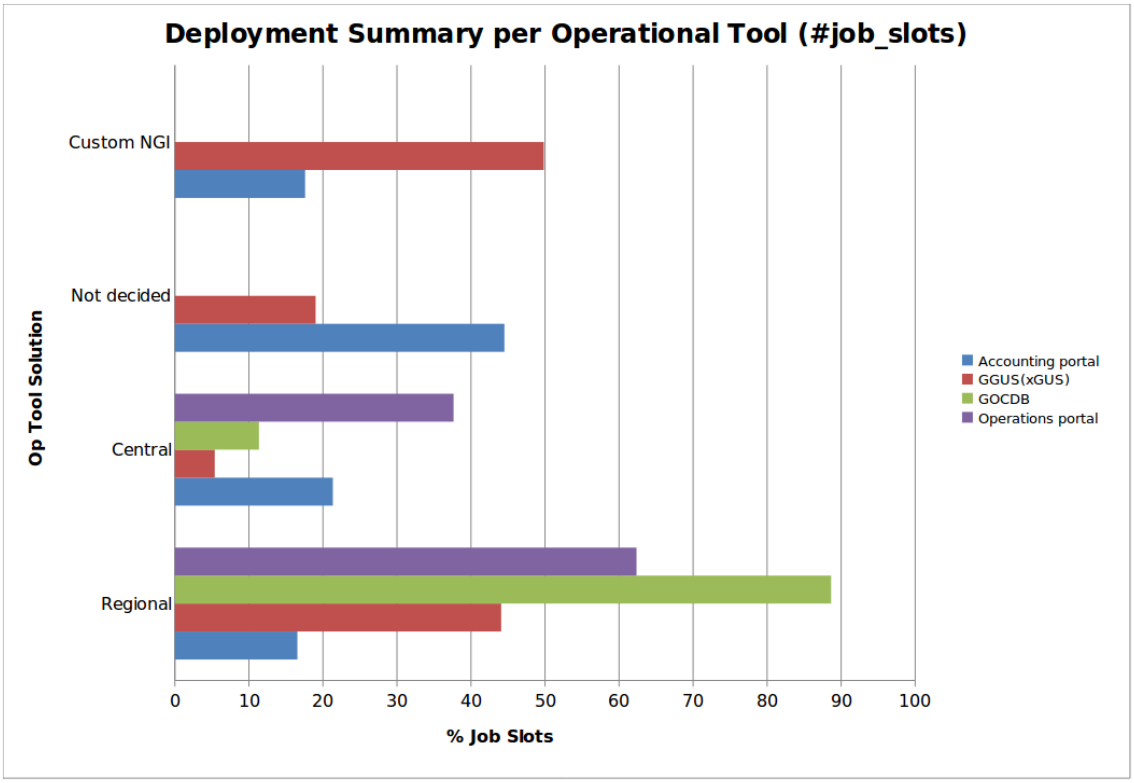

Figure 3 NGIs deployment summary (NGIs size)

NGIs with big resources want regional tools more than small NGIs. This situation is not strange, small NGIs are still using the central Operational Tools because they don't have the resources or the manpower to maintain new services. Meanwhile the big NGIs have their specific requirements and resources to deploy regional instances.

5 REFERENCES

R 1	OTAG wiki page: https://wiki.egi.eu/wiki/OTAG
R 2	GOCDB regionalized scenarios: https://wiki.egi.eu/wiki/GOCDB/Release4/Regionalisation
R 3	Aggregated Topology Provider page: https://tomtools.cern.ch/confluence/display/SAM/ATP
R 4	Profile Management Database: https://tomtools.cern.ch/confluence/display/SAM/POEM
R 5	Availability Calculation Enginepage: https://tomtools.cern.ch/confluence/display/SAM/ACE
R 6	Operations portal wiki page: https://wiki.egi.eu/wiki/Operations_Portal
R 7	MS706, Operational Tools Accounting Work Plan: https://documents.egi.eu/document/531
R 8	Operations tools deployment plans, RT summary ticket: https://rt.egi.eu/rt/Ticket/Display.html?id=831
R 9	EGEE-III operations tools deployment questionnaire: https://edms.cern.ch/document/1061529/
R 10	SAM instances list: https://wiki.egi.eu/wiki/SAM_Instances
R 11	Deployment Plan for the distribution of Operational Tools to the NGIs/EIROs: https://documents.egi.eu/document/128
R 12	OTAG-06 F2F Amsterdam: https://www.egi.eu/indico/sessionDisplay.py?sessionId=5&confId=153#20110125
R13	MS406 Deployment plan for the distribution of operational tools to the NGIs/EIROs https://documents.egi.eu/document/128