**EGI-InSPIRE**

Interim report on the mini projects

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| AbstractThe EGI-InSPIRE SA4 work package has been set up as part of an amendment to the project’s DoW for PY4. This document provides a half-time report on the status of the individual mini-projects for those that last for 12 months, and a final status review for those that have finished after 6 months. |

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1. 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. 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:
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1. Terminology

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

<<The authors should check if the acronyms are covered by the glossary page and if the definition is still correct; all the amendments should be communicated to glossary@egi.eu>>

1. 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.

1. EXECUTIVE SUMMARY

<< The text should provide a summary of the full report so that the reader can ‘in a page’ understand the problem it has been written to cover. This includes an overview of the background material and motivation for the report, a summary of the analysis, and the report’s main conclusions.>>

<<Michel Drescher>>

<<Once all mini project reports are in>>

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# Introduction

During autumn 2012 the EGI-InSPIRE Project Office identified a number of partners that were under-spending. The EGI-InSPIRE Project Management Board decided to reallocate these unused funds to support supplemental activities that accelerate EGI's strategic goals [R 1] around Community & Coordination, Operational Infrastructure and establishing Virtual Research Environments.

On 14 December 2012 the EGI Project office announced a call for funded mini-projects within the scope and funding regulations of the EGI-InSPIRE project[[1]](#footnote-1). A total of 29 mini-projects were submitted, and by the end of January 2013, the PMB prioritised these and started negotiation with the submitters. In total, 11 mini-projects were funded, while two proposals (“Implementation and testing of central banning in the European Grid Infrastructure”, and “OpenAIRE-based Scientific Publication Repository”) were integrated into existing activities without additional funding.

The funded mini projects are organised and set up as tasks within work Package 8 (SA4) as part of the EGI-InSPIRE project. While regular contributions to the EGI-InSPIRE quarterly reports (the first contribution was made to Quarterly Report 13 [R 3]) focus on summarising the progress made and issues faced in the mini projects, this report serves as a mid-term checkpoint to review the progress so far and compare it to the goals and objectives that were agreed upon during the mini project negotiations. It serves as an opportunity for the mini project leaders and appointed shepherds to reflect on the general mechanics of how to embed the mini projects into the respective context, and adjust how the mini project generally conduct their business.

Section 2 forms the core part of this document. Starting with a brief overview of the management structure of the work package, this section provides status reports of each mini project against its own work-plan and objectives.

Section 3 concludes this milestone document with summarising the overall status of the work package.

# Mini projects status reports

## Work Package management

The Work Package management is split along project and technical management aspects: Four shepherds managing the EGI platforms described in the EGI Platform Roadmap [R 2] take care of providing sufficient context and guidance to the mini-projects so that outputs may be integrated into the EGI production infrastructure as seamless as possible. In practical terms, formal Work Package management is kept at a minimum presuming that mini-projects mostly organise themselves.

Mini-projects utilise the following EGI infrastructure:

* An overview of the mini-projects is maintained in the EGI Wiki[[2]](#footnote-2).
* Mini-projects record their meetings in EGI Indico[[3]](#footnote-3) unless folded into other EGI-InSPIRE meetings.
* DocDB, including an appropriate topic, will be used for permanent documentation[[4]](#footnote-4).
* Weekly reports are collected by WP8 management and relayed to the Activity Management Board, including an executive summary. Through this mechanism, mini-projects are encouraged (and already did so) to report delays, raise issues that require support outside the individual mini-projects, and more. Mini-projects may choose their own reporting frequency (e.g. weekly, bi-weekly) but are required to consistently follow their choice.
* A spreadsheet maps members to mini-projects, and shepherds to mini-projects. It is managed online, and anyone with the link may view it. EGI-InSPIRE PO, shepherds and WP8 management may edit it.

Two mailing lists are provided for mini-project leaders, their deputies and shepherds, and for all mini-project members, respectively, although these are rarely used except for regular weekly report collection. This is not an issue, since all mini-projects are well embedded in their target platform ecosystem.

## TSA4.2: Massive Open Online Course Development

<<Jan Bot>>

## TSA4.3: Evaluation of Liferay modules

The objective of the mini-project is to evaluate the Liferay portal with its recently released modules Liferay Sync and Liferay Social Office as a replacement for some of the EGI back office services provided now by CESNET using a set of specialised software systems, and as a web portal platform for the EGI community. The outcome is expected to be best practices and recommendations for the EGI community.

The mini-project is divided among three partners, CESNET which runs the current back office and thus evaluates the service replacement and general portal options, and INFN and SZTAKI, which evaluate compatibility with their community portlets.

### Achieved during the first six months

The INFN partner completed their planned work during the first six months. INFN installed and evaluated two versions of Liferay Social Office 1.5 and 2.0, and the latest version of the Liferay Sync module. They tested interoperability with AAI solutions, namely SAML-based identity federations. They also tested interoperability with the IGI portlets from the community. They also have evaluated Liferay as an alternative for the AppDB (EGI Application Database).

The CESNET partner has assumed most of the tasks in the miniproject. They have installed their own instance of Liferay with Liferay Social Office and Liferay Sync modules, and evaluated the following features:

1. Solution for VRC, VO, NGI, project websites
2. Interoperability with EGI SSO
3. Interoperability and alternative to EGI Helpdesk
4. Interoperability and alternative for Indico
5. Interoperability and alternative for Wiki
6. Interoperability and alternative for DocDB
7. Interoperability and alternative for EGI Blog

The findings were demonstrated on the EGI Technical Forum 2013 conference held in September 2013 in Madrid. However the planned work for this partner is not finished yet and will be continued during the next six months.

The SZTAKI partner has planned one task, evaluation of interoperability of Liferay with Social Office and Sync modules with their SCI-BUS and SHIWA portlets. The have installed their own instance of Liferay with the Social Office and Sync modules, and examined the needed modifications to use the Social Office module with their SCI-BUS and SHIWA portlets.

### To be done in the next six months

The INFN partner has finished their planned work already.

The CESNET partner has evaluated all the planned features on the basic level, but more thorough evaluation is planned in the areas of

1. Implementation of workflows for the Liferay-based alternative for EGI Helpdesk
2. Implementation of so-called *hooks* in Liferay for reimplementation of features of the EGI blog that were required by the EGI and that are present in the current implementation of the EGI blog but that are not provided by the Liferay blog implementation
3. Reimplementation of the current web design of the EGI web site using the tools provided by Liferay, i.e. creating a Liferay theme more close to the original EGI web design

The SZTAKI partner plans to finish their evaluation of interoperability of their SCI-BUS and SHIWA portlets with the Liferay Social Office module.

## TSA4.4: Providing OCCI support for arbitrary CMF

<<Boris Parak>>

## TSA4.5: CDMI Support in Cloud Management Frameworks

<<Ilja Livenson>>

## TSA4.6: Dynamic Deployments for OCCI Compliant Clouds

<<Marc-Elian Begin>>

## TSA4.7: Automatic Deployment and Execution of Applications using Cloud Services.

This task objective is to design and implement a contextualization capability that supports scientific communities in executing their computing workload through automating the deployment of scientific software on virtual machines using the interfaces and standards used in EGI’s Cloud Infrastructure Platform..

This new capability will allow VRC managers (or advanced users) to define a set of applications that the researchers can easily deploy in virtual machines relieving them from the overhead of setting up the computing environment.

The initial preparation of this task consisted in setting up a new GitHub Project[[5]](#footnote-5) where the members can create repositories for all the project artefacts. The work plan of the task included the following milestones for the first 6 months:

* **Analysis of user requirements and the EGI Federated Cloud testbed**. The team members performed an initial analysis of the support of the EGI Federated Cloud infrastructure[[6]](#footnote-6) and proposed a new extension for the OCCI API to enable contextualization by allowing passing user-provided data to the virtual machines on instantiation[[7]](#footnote-7). In close collaboration with the Particle Physics Phenomenology at CSIC an initial architecture of the service was defined and documented at the GitHub project[[8]](#footnote-8).
* **Initial Implementation of VM contextualization service.** As defined in the architecture, the VM contextualization service allows VRC managers to define applications and the recipes that deploy those applications on the virtual machines; and allows users to query those applications and get the relevant contextualization data for deploying those applications. A first functional prototype of the service is available[[9]](#footnote-9) for testing. This initial version includes support for defining the applications, the recipes and for getting cloud-init[[10]](#footnote-10) compatible contextualization data for the users. The service uses VOMS proxies for authorization as the rest of EGI Federated Cloud Infrastructure.
* **REST API to the service**. A REST interface for the service was defined[[11]](#footnote-11) and implemented for the prototype service. As a proof of concept, the Particle Physics Phenomenology contextualization extension used at CSIC for the OpenStack DashBoard has been refactored[[12]](#footnote-12) to use this API instead of a static list of applications.

The next six months of the project will focus on these milestones:

* **Community Engagement**. With the initial prototype and API available, new user communities will be approached to use the service and gather new requirements. The team members are now in contact with users of the computational chemistry and with a community using Observium[[13]](#footnote-13) for research on monitoring tools.
* **Web Interface**. The API also allows the development of a web interface to the service that will lower the entry-barrier for new users.
* **Integration of Automatic Configuration Tools.** The recipes will be extended to support at automatic configuration tools. Initial tests with Puppet have been already performed.
* **Final version of service.** With the input provided with the new communities, a final version that fixes any issues will be made available to the broader EGI community.

## TSA4.8: Transforming Scientific Research Platforms to Exploit Cloud Capacity

<Bjern Hagemeier>>

## TSA4.9: VO Administration and operations PORtal (VAPOR)

VAPOR intends to help small to medium-size grid user communities perform daily administrative and operational tasks, by developing a generic tool to assist community managers and support teams in performing their daily activities. Such communities may typically have no or few dedicated IT support, have scattered scientific activities or fragmented user groups, and may possibly (although not necessarily) make an opportunistic usage of the resources.

The portal is expected to (i) help communities sustain their model by mutualising the administrative and operational cost with other communities, (ii) facilitates the outreach of new user communities by making it easier to start with the administration and operations of a VO.

**Achieved during the first six months:**

Functional specifications:

The starting period (M1 to M3) consisted in a set of phone conferences with partner VOs, in order to define the functional specification of the project, assess existing material that the project may leverage, and sort out priorities in terms of developments. Minutes are available at: [COMPCHEM](https://indico.egi.eu/indico/conferenceDisplay.py?confId=1645), [WeNMR](https://indico.egi.eu/indico/conferenceDisplay.py?confId=1660), [France Grille VO](https://indico.egi.eu/indico/conferenceDisplay.py?confId=1665). This phase resulted in *Deliverable D1 - VAPOR Functional Specifications*[[14]](#footnote-14). Deliverable D1 comes with a companion document that gives development priorities[[15]](#footnote-15): those were sorted by importance for each partner, but also by maturity of the reflection and optionally existing approaches.

Developments:

In a second period (M3 to M6), technical contributions started with the setting up of a development platform at I3S, a [source repository](https://redmine.i3s.unice.fr/svn/vapor/) and [project tracker](https://redmine.i3s.unice.fr/projects/vapor). Technical choices were agreed with the EGI Operations Portal team during a [two-days face to face meeting](https://indico.egi.eu/indico/conferenceDisplay.py?confId=1721).

Developments started as to the features referred to as the *VO Operations management for VO support teams*: resource status indicators and reports, white list of computing elements, report of the list, status and capabilities of all resources supporting a VO by consolidating information from the GOCDB and BDII. This set of features will be completed shortly and is referred to as D3.1 in the figure below.

A last major task initiated in this period is the study and assessment of possible technical solutions to implement the VO Data Management features, referred to as D3.2 in the figure below.

Revision of the project schedule:

The definition of priorities (described above in the starting phase) changed the order of development initially proposed in the project description. As a consequence, D2 (community users management) is postponed after D3 (operations management). D4 (accounting) is deemed less useful and is postponed at the end of the project, if time remains. During the development, D3 appeared to be a bigger work than expected, and it is split into two deliverables: D3.1 (Resource status indicators, statistical reports and white list) and D3.2 (VO Data Management).

The updated schedule is provided in the figure below.



**To be done in the next six months:**

In this period, the first major step will be the development of the VO Data Management (D3.2) features which technical definition has been started in the previous period. This will involve partners CNRS Creatis and GRyCAP, as well as site administrators who showed interest in helping refine the data management procedures.

Then, the last major software package will be the community users management. This task is a quite ambitious feature, in particular because it does not leverage much existing software. As a result, it is unsure, as of today, if this task will realised entirely.

During the last months of the projects, the priority will be put on the deployment of a production-class application properly integrated into the EGI Operations Portal, rather than the development of the Accounting features (D4) that are not deemed essential. D4 is therefore postponed to the end of the project, and will be considered if time remains.

A first deployment phase is planned M8 and will involve the EGI Operations Portal development team. The objective is to make VAPOR accessible to the support team of the biomed VO, so that feed-back can be collected and taken into account.

As of now, the VAPOR software is available under the Apache Licence v2, from the project [SVN repository](https://redmine.i3s.unice.fr/svn/vapor/).

## TSA4.10: A new approach to Computing Availability and Reliability Reports

<< Christos Kanellopoulos>>

## TSA4.11: GOCDB Scoping Extensions and Management Interface

**Objectives Overview**

This project is now complete. The project spanned 6 months starting in April 2013 and finishing in October 2013. This funded a new developer to work with David Meredith to implement the main project deliverables listed below. Both deliverables were completed on time and were integrated into the GOCDB v5 source code. GOCDBv5 was released into production 2nd October.

1. Extend the current ‘EGI’ and ‘Local’ data scoping logic to introduce multiple, non-exclusive scope tags. This allows resources to be grouped into one or more flexible categories such as ‘EGI’ ‘Local’ ‘EGI\_TEST’ and ‘CLIP’.
2. Provide a supporting GOCDB management interface to simplify and speed up daily operational/admin tasks.

The main project task list: <https://wiki.egi.eu/wiki/VT_GOCDBExt>

**Review**

For the most part, the work-plan was followed closely with little deviation. All the main tasks listed at the link above were completed. There is still some documentation to finish but this will be completed over the course of the next few weeks. The project incurred a small overspend.

The end of project review document detailing progress and lessons learnt is at the following link and will not be repeated here: <https://documents.egi.eu/document/1957>

## TSA4.12: Tools for automating applying for and allocating federated resources

<< Tomasz Szepieniec>>

# Conclusion

<<Michel Drescher>>

# References

|  |  |
| --- | --- |
| R 1 | EGI Strategic Plan, Dx.y, DocDB |
| R 2 | EGI Platform Roadmap, MS514, <https://documents.egi.eu/document/1624>  |
| R 3 | EGI-InSPIRE Quarterly Report 13, MS127, <https://documents.egi.eu/document/1928>  |
| R 4 |  |
| R 5 |  |

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2. <https://wiki.egi.eu/wiki/Overview_of_Funded_Virtual_Team_projects> [↑](#footnote-ref-2)
3. <https://indico.egi.eu/indico/categoryDisplay.py?categId=93> [↑](#footnote-ref-3)
4. <https://documents.egi.eu/public/ListBy?topicid=51> [↑](#footnote-ref-4)
5. <https://github.com/AppDeployment> [↑](#footnote-ref-5)
6. <https://github.com/AppDeployment/documents/blob/master/cloudsupport.md> [↑](#footnote-ref-6)
7. [https://wiki.egi.eu/wiki/Fedcloud-tf:WorkGroups:Contextualisation#OCCI\_extension](https://wiki.egi.eu/wiki/Fedcloud-tf%3AWorkGroups%3AContextualisation#OCCI_extension) [↑](#footnote-ref-7)
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