**EGI-InSPIRE**

Periodic Report – PY5

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| **Document identifier:** | **EGI-InSPIRE-Periodic Report** |
| **Date:** | 26/01/2014 |
| **Activity:** | **NA1** |
| **Lead Partner:** | **EGI.eu** |
| **Document Status:** | **Draft/**Final |
| **Dissemination Level:** | **PUBLIC** |
| **Document Link:** | **<https://documents.egi.eu/document/2244>** |

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| Abstract  This is the periodic report for the 5th year of the EGI-InSPIRE project. It summarises the work completed during the year and the resources expanded in undertaking this work. |

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1. Delivery Slip

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1. Document Log

|  |  |  |  |
| --- | --- | --- | --- |
| **Issue** | **Date** | **Comment** | **Author/Partner** |
| 1 | November 4th , 2014 | ToC | Samuel Keuchkerian  Sy Holsinger |
| 2 | December 8, 2014 | First draft V1.0 | Sergio Andreozzi  Tiziana Ferrari  Samuel Keuchkerian  Peter Solagna  Malgorzata Krakowian |
| 3 | December 27, 2014 | Second draft integrating all managers’ contributions V2.0 | Samuel Keuchkerian |
| 4 | January 14, 2015 | Third draft integrating contributions all managers V3.0 | Malgorzata Krakowian  Sergio Andreozzi  Samuel Keuchkerian |
| 5 | January 26th, 2015 | Final draft | Samuel Keuchkerian |
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1. Application area

This document is a formal deliverable for the European Commission, applicable to all members of the GI-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:  
<https://wiki.egi.eu/wiki/Procedures>

1. Terminology

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

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.

While the project is terminated as of December 31, 2014, the activities are ongoing through a combination of supporting mechanisms without disruption and will be continued through other projects.

**Table of contents**

[1 Declaration by the Scientific Representative of the project 8](#_Toc410053822)

[2 Publishable Summary – ALL Managers/TF 10](#_Toc410053823)

[3 Project Progress 12](#_Toc410053824)

[3.1 Project Objectives for the Period TF 12](#_Toc410053825)

[3.2 PY5 Performance – MK/ALL 12](#_Toc410053826)

[3.3 PY1-PY5 Performance - MK 15](#_Toc410053827)

[3.4 Work progress and achievements during the period 17](#_Toc410053828)

[3.4.1 Operations – PS/MK 17](#_Toc410053829)

[3.4.2 Community engagement - GS 18](#_Toc410053830)

[3.4.3 Strategy Policy and business development – SA 25](#_Toc410053831)

[3.4.4 Federated Cloud – DW 35](#_Toc410053832)

[3.4.5 Mini projects – MD 39](#_Toc410053833)

[3.4.6 Tool development – DS 39](#_Toc410053834)

[3.5 Project Issues 46](#_Toc410053835)

[3.5.1 Operations related issues- MK 46](#_Toc410053836)

[3.5.2 Community engagement related issues– GS/SC 46](#_Toc410053837)

[3.5.3 Strategy Policy and business development related issues – SA/SH 47](#_Toc410053838)

[3.5.4 Federated Cloud – DW/MK/GS 47](#_Toc410053839)

[3.5.5 Mini projects - MD 47](#_Toc410053840)

[3.5.6 Tool development - DS 47](#_Toc410053841)

[3.6 Project Management – TF 47](#_Toc410053842)

[3.6.1 Project Management Metrics 47](#_Toc410053843)

[3.6.2 Coordination Activities 47](#_Toc410053844)

[3.6.3 Cooperation with Other Projects 47](#_Toc410053845)

[4 Deliverables and Milestones 48](#_Toc410053846)

[4.1 Deliverables 48](#_Toc410053847)

[4.2 Milestones 48](#_Toc410053848)

[5 Explanation of the use of Resources 49](#_Toc410053849)

[5.1 Summary – CB/TF 49](#_Toc410053850)

[5.1.1 NA1 – TF 49](#_Toc410053851)

[5.1.2 NA4 - GS 50](#_Toc410053852)

[5.1.3 NA5 – SA 50](#_Toc410053853)

[5.1.4 SA5 - DW 50](#_Toc410053854)

[5.1.5 SA6 - MD 50](#_Toc410053855)

[5.1.6 JRA2 - DS 50](#_Toc410053856)

[6 Financial Statements Per Beneficiary - CB 51](#_Toc410053857)

[6.1 Summary 51](#_Toc410053858)

[6.1.1 Consumption of Effort 51](#_Toc410053859)

[6.1.2 Overall Financial Status 57](#_Toc410053860)

[*Financial Period:* 57](#_Toc410053861)

[*Introduction* 57](#_Toc410053862)

[6.1.3 Deviations from linear plan 58](#_Toc410053863)

[7 Annex A1: Dissemination and Use 59](#_Toc410053864)

[7.1 Main Project and Activity Meetings - ALL 59](#_Toc410053865)

[7.2 Conferences/Workshops Organised – ALL 59](#_Toc410053866)

[7.3 Conferences/Workshops Attended – ALL 59](#_Toc410053867)

[7.4 Publications – SC/SH 60](#_Toc410053868)

[1. APPENDIX A – Distributed Competence Centre progress 87](#_Toc410053869)

# Declaration by the Scientific Representative of the project

**PROJECT PERIODIC REPORT**

**Grant Agreement number: 261323**

**Project acronym: EGI-InSPIRE**

**Project title: European Grid Initiative: Integrated Sustainable Pan-European Infrastructure for Researchers in Europe**

**Funding Scheme: CCPCSA**

**Date of latest version of Annex I against which the assessment will be made:**

**Periodic report: 1st □ 2nd □ 3rd □ 4th □ 5th ⌧**

**Period covered: from 1/05/2014 to 31/12/2014**

**Name, title and organisation of the scientific representative of the project's coordinator****[[1]](#endnote-1):**

**Tiziana Ferrari**

**Tel: +31-20-893 2007**

**Fax: n/a**

**E-mail: tiziana.ferrari@egi.eu**

**Project website address:** <http://www.egi.eu/about/egi-inspire/>

I, as scientific representative of the coordinator1 of this project and in line with the obligations as stated in Article II.2.3 of the Grant Agreement declare that:

* The attached periodic report represents an accurate description of the work carried out in this project for this reporting period;
* The project (tick as appropriate):

■ has fully achieved its objectives and technical goals for the period;

□ has achieved most of its objectives and technical goals for the period with relatively minor deviations;

□ has failed to achieve critical objectives and/or is not at all on schedule.

* The public website is up to date, if applicable.

■ is up to date

□ is not up to date

* 1. To the best of my knowledge, the financial statements which are being submitted as part of this report are in line with the actual work carried out and are consistent with the report on the resources used for the project (section 3.6) and if applicable with the certificate on financial statement.
* 4. All beneficiaries, in particular non-profit public bodies, secondary and higher education establishments, research organisations and SMEs, have declared to have verified their legal status. Any changes have been reported under section 5 (Project Management) in accordance with Article II.3.f of the Grant Agreement.

|  |
| --- |
| Name of scientific representative of the Coordinator1: Tiziana Ferrari  Date: 31/01/2015  Signature of scientific representative of the coordinatori: |

**Usually the contact person of the coordinator as specified in Art. 8.1. of the grant agreement**

The home page of the website should contain the generic European flag and the FP7 logo which are available in electronic format at the Europa website (logo of the European flag: <http://europa.eu/abc/symbols/emblem/index_en.htm> ; logo of the 7th FP: <http://ec.europa.eu/research/fp7/index_en.cfm?pg=logos>). The area of activity of the project should also be mentioned.

# Publishable Summary – ALL Managers/TF

Each manager to provide a high-level overview according to their activities.

TF to review

SA NA5 (can be expanded if needed)contribution SA

**INTRODUCTION**

The vision of Open Science Commons was developed through a full policy paper that has been published, presented at relevant policy events like e-IRG and promoted through a dedicated website. Based on the defined vision, a new EGI strategy has been developed following an extensive consultation with the key stakeholders and a consolidated method for strategic planning based on the use of tools such as strategy map, balanced scorecard and ensuring quality conversations. In the area of business engagement, the related virtual team developed a business engagement program to describe how SMEs can interact with EGI and in what roles. The goal is to facilitate and streamline the way EGI partners establish relationships with the private sector and offer a common framework for engagement. In the area of exploring new business models, the pay for use proof of concept completed the pilot phase by finalising the articulation of appropriate business models, definition of prices for services from the participating sites, definition of agreements and service management processes and procedures, introduction of a billing function, analysis of the changes needed to support services and roll out the new functionalities in the production environment, and evaluation of legal, policy, and organisational issues around the full implementation of the pay-for-use model.

**OVERVIEW**

The present document describes the activities that took place during the 5th reporting period from April 2014 until December 31st, 2014. Following up on activities from preparation and successful completion of the 4th EGI-InSPIRE EC Review, a number of actions took place to align PY5 activities. Changes were made that impacted the project. These changes follow the recommendations made during the EC review and are reflected in a redistribution of efforts and some changes in work packages and activities.

The main outcomes of the project during the reporting period (PY5) can be summarized in the following list directly derived from the six main project’s objectives.

* **PO1:** 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.

Main results

* **PO2:** The continued support of researchers within Europe and their international collaborators that are using the current production infrastructure.

Main results

* **PO3:** The support for current heavy users of the infrastructure in Earth Science, Astronomy & 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.

Main results

* **PO4:** Interfaces that expand access to new user communities including new potential heavy users of the infrastructure from the ESFRI projects.

Main results

* **PO5:** 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.

Main results

* **PO6:** Establish processes and procedures to allow the integration of new DCI technologies (e.g. clouds, volunteer desktop grids, etc.) and heterogeneous resources (e.g. HTC and HPC) into a seamless production

Main results

# Project Progress

## Project Objectives for the Period TF

EGI-InSPIRE defines the following project objectives (PO) as its goals:

* **PO1:** 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.
* **PO2:** The continued support of researchers within Europe and their international collaborators that are using the current production infrastructure.
* **PO3:** The support for current heavy users of the infrastructure in Earth Science, Astronomy & 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.
* **PO4:** Interfaces that expand access to new user communities including new potential heavy users of the infrastructure from the ESFRI projects.
* **PO5:** 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.
* **PO6:** Establish processes and procedures to allow the integration of new DCI technologies (e.g. clouds, volunteer desktop grids, etc.) and heterogeneous resources (e.g. HTC and HPC) into a seamless production

Performance of the individual activities against the planned project metrics targets are outlined in the activity reports and the Periodic Report. Metrics are commented in the Annual Quality Report D1.15[[2]](#footnote-1)

## PY5 Performance – MK/ALL

**Table 1: Achieved Project Year Five Project Metrics (Q17-Q19)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Project  Objectives | Objective Summary | Metrics | PQ17 | PQ18 | PQ19 | Target  PY5 |
| PO1 | Expansion of a nationally based production infrastructure | Number of resource centres in EGI-InSPIRE and integrated partners (M.SA1.Size.1)  Only includes certified sites | 364 | 358 | 352 |  |
| Number of job slots available in EGI-InSPIRE and integrated partners (M.SA1.Size.2A) | 517,464 | 652,445 | 657,044 |  |
| EGI monthly availability and reliability of site middleware services (M.SA1.Operation.5) | 95.20/95.76 | 86.27/87.72 | 93.29/93.44 |  |
| **NEW**  Average monthly availability and reliability of NGI core middleware services (MSA1.Operation.4) | 99.17/99.63 | 98.76/99.27 | 92.02/92.71 |  |
| **NEW**  EGI monthly availability and reliability of critical central operations tools (MSA1.Operation.6a) | 98.42/98.54 | 99.80/99.80 | 99.85/99.94 |  |
| **NEW**  EGI monthly averaged VO availability and reliability (M.SA1.Operation.7) | 90.43/92.25 | 93.24/94.59 | 99.45/99.46 |  |
| PO2 | Support of European researchers and international collaborators through VRCs | Number of papers from EGI Users (M.NA2.5) |  |  |  |  |
| Number of grid jobs done a day (Million) (M.SA1.Usage.1) | 1,431,893 | 1,666,919 | 1,445,130 |  |
| PO3 | Sustainable support for Heavy User Communities | Number of production sites supporting MPI (M.SA1.Integration.2) | 51 | 50 | 52 |  |
| Number of users from HUC VOs (M.SA1.VO7) | 11,369 | 11,311 | 11,474 |  |
| **NEW**  Total number of High Activity VOs  (M.SA1.VO.5)  \*quarterly value  \*\* yearly value | 163 | 160 | 151 |  |
| PO4 | Addition of new User Communities | Number of users from non-HUC VOs (M.SA1.VO.6) | 7,151 | 6,874 | 6,847 |  |
| Public events organised (attendee days) (M.NA2.6) |  |  |  |  |
| PO5 | Transparent integration of other infrastructures | Number of on-going Research Infrastructures/new communities being integrated (M.SA1.Integration.4) | 11 | 15 | 15 |  |
| MoUs with resource providers (M.NA2.10) |  |  |  |  |
| PO6 | Integration of new technologies and resources | Number of resource centres offering federated cloud services accessible to authorised users  (M.SA2.16) |  |  |  |  |

(\*) The value decreased in PQ13, PQ14, PQ15 and Q16 due an on-going campaign aiming at decommissioning inactive VOs. This value needs to be incremented by 12,000 users (estimated value) from 40 VOs that are enabled to use robot certificates. The decommissioning of registered users from expired projects affected the non Heavy User Communities more significantly as these are typically structured around short-term projects.

(\*\*) DRIHM, EISCAT 3D, MAPPER, VERCE, VPH

(\*\*\*) EISCAT, CTA, DRIHM, VPH, Mapper, LifeWatch, GAIA, ENVRI, DCHRP, ELIXIR

(\*\*\*\*) EISCAT, CTA, DRIHM, LifeWatch, ENVRI, DCH-RP, EMSO, ICOS, VERCE, WeNMR, ESA

Activity metrics for each quarter are available from the EGI Metrics Portal:

* <http://metrics.egi.eu/project_metrics/QR17/>
* <http://metrics.egi.eu/project_metrics/QR18/>
* <http://metrics.egi.eu/project_metrics/QR19/>

## PY1-PY5 Performance - MK

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| No | Objective Summary | Metrics | Achieved/  Target  PY1 (PQ4) | Achieved/  Target  PY2 (PQ8) | Achieved/  Target PY3(PQ12**)** | **Achieved/Target PY4**  **(PQ16)** | **Achieved/Target PY5**  **(PQ19)** |
| PO1 | Expansion of a nationally based production infrastructure | Number of resource centres in EGI-InSPIRE and integrated partners (M.SA1.Size.1) | 344/  300 | 347/  330 | 347/  350 (355)  (355) | 361/  345  (350)  (355) | 352  (350)  (355) |
| Number of job slots available in EGI-InSPIRE and integrated partners (M.SA1.Size.2) | 239,895/  200,000 | 290,300/  250,000 | 361,287/  300,000  (325,000)  (333,000) | 487,577/  400,000 (425,000)  (450,000) | 531,000\*  400,000 (425,000)  (450,000) |
| Reliability of resource centre functional services (M.SA1.Operation.5) | 94.6%/  90% | 94.8%/  91% | 96.9%/  95%  (96%)  (97%) | 96.42%/  97/97.5%  (97.5/98%)  (98/98.5%) | 93.29/93.44 (97.5/98%)  (98/98.5%) |
| Reliability of NGI functional services (MSA1.Operations.4) | N/A | N/A | 99.5%/  97%  (98.5%)  (99%) | 99.63%/  99.6/99.8%  (99.65/99.85%)  (99.67/99.87%) | 92.02/92.71 (99.65/99.85%)  (99.67/99.87%) |
| Reliability of critical operations tools (MSA1.Operations.6a) | N/A | N/A | 99.9%/  97%  (98.5%)  (99%) | 99.10%/  99.6/99.8%  (99.65/99.85%)  (99.67/99.87%) | 99.85/99.94 (99.65/99.85%)  (99.67/99.87%) |
| EGI monthly averaged VO availability and reliability (M.SA1.Operation.7) | N/A | N/A | N/A | 97.89%/  98%/99%  (98.5/99.0%)  (98.7/99.2%) | 99.45/99.46 (98.5/99.0%)  (98.7/99.2%) |
| PO2 | Support of European researchers and international collaborators through VRCs | Number of papers from EGI Users (M.NA2.5) | 161/50 | 82/  60 | 72/  70  (80)  (90) | 82/  70  (80)  (90) | 194 |
| Number of jobs done a day (M.SA1.Usage.1) | 960,053/  500,000 | 1,264,922/  525,000 | 1.43/  1.2M  (1.4M)  (1.5M) | 1.6M/  1.6 M  (1.8 M)  (2.0 M) | 1,4M 1.6M (1.8 M)  (2.0 M) |
| PO3 | Sustainable support for Heavy User Communities | Number of sites with MPI (M.SA1.Integration.2) | 96/  50 | 108/  100 | 77/  120  (130)  (140) | 74/  90  (100)  (120) | 52/  90 (100) (120) |
| Number of users from HUC VOs (M.SA1.VO.7) | 7,103/  5,000 | 10,856/  5,500 | 11,595/  12,000  (15,000)  (17,000) | 11,990+7,000/  12,500  (13,000  (14,000) | 11,474+7,000/ 12,500  (13,000  (14,000) |
| Total number of High Activity VOs  (M.SA1.VO.5) | N/A | N/A | N/A | 38/  55  (60)  (65) | TBC |
| PO4 | Addition of new User Communities | Peak number of cores from desktop grids (M.SA1.Integration.3) | N/A | N/A | 6,450/  1,000  (5,000)  (7,500) | N/A | N/A |
| Number of users from non-HUC VOs (M.SA1.VO 6) | 4,075/  5,000 | 8,518/  1,000 | 10,602/  10,000  (12,000)  (13,000 | 7,015+5,000/  11,000  (11,500)  (12,000) | 6,847/  11,000  (11,500)  (12,000) |
| Public events organised (attendee days) (M.NA2.6) | 10,123/  1,500 | 11,795/  2,000 | 8,877/  15,000  (17,000)  (19,000) | 1,553 in QR16  4,430/  15,000  (17,000)  (19,000) | 2,670 |
| PO5 | Transparent integration of other infrastructures | Number of on-going Research Infrastructures/new communities being integrated (M.SA1.Integration.4) | N/A | N/A | N/A | 11/  5  (7)  (9)/  NA | 15/  5  (7)  (9)/  NA |
| MoUs with resource providers (M.NA2.10) | 1/  3 | 3/5 | 3/  4  (5)  (5) | 6/  4  (5)  (5) |  |
| PO6 | Integration of new technologies and resources | Number of HPC resources (M.SA1.Integration.1) | 49/  1 | 39/  3 | 44/  50  (50)  (50) | N/A | N/A |
| Number of resource centres part of the EGI Federated Cloud (M.SA2.16) | 1/  0 | 7/  1 | 14/  10  (15)  (20) | 15/  15  (20)  (25) | 19/ 15 (20)  (25) |

\* Was 652,000, removed half of the CPUs from LRZ-MU (HT on) while investigating.

## Work progress and achievements during the period

### Operations – PS/MK

**Contribution from operations**

During PY5 EGI-InSPIRE supported the central coordination of the infrastructure operations by funding the operations activities carried out by EGI.eu. The core services that enable the EGI federation are supported part by the fees of the EGI council members and part by the partners delivering the services. The operational activities at NGI level, not funded anymore by the project, have been sustained by the NGIs.

The Operations Management Board meeting continues to be regularly held once per month, with a good attendance of the NGI representatives. The on-going actions and other operational issues are tracked and discussed during the Operations meetings held every two weeks. The communication channels between the EGI partners implemented at the beginning of the project continued to be provided seamlessly during PY5 ensuring the coordination of the operational activities and the evolution of the procedures and policies framework.

During 2013 the EGI Council identified the activities funded by the EGI-InSPIRE project that are needed to enable the EGI services federation to be supported after the end of the project by the fees paid by the EGI council members. The service providers have been identified through a bid among all the EGI partners, and they started to provide the required services in May 2014. The core activities[[3]](#footnote-2) supported are:

* the core operational tools,
* the security activities,
* the software provisioning activities,
* catch-all middleware services,
* operational support to NGIs and helpdesk support.

The provisioning of all these activities is regulated by dedicated Operational Level Agreements [[4]](#footnote-3)(OLAs) between the providers and EGI.eu, and by the EGI.eu Service Level Agreement (SLA)[[5]](#footnote-4) between EGI.eu and the consumers (NGIs) of the services. The first set of reports on the services performances subject of the various agreements, OLAs and SLAs, has been collected, the quality of services is monitored and monthly statistics are generated and distributed. Based on monitoring results availability of the technical services and performances of the human services has been assessed as in good standing. All the activities continued without interruptions during the transition from PY4 to PY5.

The definition of clear and complete OLAs and SLAs framework is one of the activities towards the implementation of the FitSM service management system in the EGI Operations. The Federated Operations service has been audited during November 2014 by an external FitSM auditor identifying the areas of improvement. A plan for the full implementation of the service management processes required by FitSM is being defined in order to increase the service quality delivered with repeatable and reliable processes.

Regarding (or With regard to) the UMD software provisioning activities although the UMD-3 upgrade campaign has been mostly completed during PY4, during PY5 (EGI-)Operations coordinated the upgrade of the accounting clients, in collaboration with the APEL team, the upgrade to the new long term supported version of dCache made available in UMD-3, since the security support of the previous version was extended until August 2014, and the configuration of the new ops VO VOMS servers.

During PY5 the number of resource centres remained almost the same as at the end of PY4, the Cloud sites (+5) contributed to keep the number of sites constant by compensating the decommission of few grid sites. The total capacity of the infrastructure has further increased in terms of logical CPUs, although the number of sites has been constant, the increase is in line with PY4 increase considered the shorter period considered.

The number of users has slightly decreased, almost remaining constant from PY4, and this can be explained by the increasing use of scientific gateways that often do not require the user to register to a virtual organization by using a catch-all credential (Robot certificate). New users are increasingly using these technologies to reduce the barriers to use EGI resources.

### Community engagement - GS

Management summary

#### Human networks Coordination – GS

**Contribution from GS**

**Integrating ELIXIR reference datasets within EGI**

There has been significant work done in the EGI in the past to help the deployment and discovery of services, where “services” can be either computationally oriented (such as batch queues) or application oriented (such as web-services, ready-to-use applications embedded in portal gateways or encapsulated in Virtual Machine Images). However in bioinformatics many services used for analysis purposes rely on public reference datasets. Reference dataset are getting big and users struggle to discover, download and compute with them. There is an increasing demand to compute the data where the reference datasets are located. EGI members already host some biological reference datasets across the infrastructure, however currently EGI neither provides discovery capabilities for available datasets, nor provides guidelines for those who wish to use these datasets or would like to replicate additional datasets onto EGI sites.

The EGI community and the ELIXIR communities started a project in December 2014 facilitate the discovery of existing reference datasets in EGI and to develop and deploy services that allows the replication of life science reference datasets by data providers, resource providers and researchers, and the use of these datasets by life science researchers in analysis applications. The project receives contributions from several NGIs, ELIXIR nodes, and e-infrastructure and life science experts beyond EGI and ELIXIR. The foreseen length of the project is 9 months.

During the next period the community is going to wrap up the still active VTs and pilots, and will prepare for the launch of the next stage of EGI without the EGI-InSPIRE project. From the community engagement perspective the two biggest changes will be the (1) full independence of the human networks from an EC project (NILs, Operation Managers, Champions), and (2) supporting communities through a much larger of separate initiatives, such as VRE projects, Competence Centres (in EGI-Engage), other H2020 projects. During January-February 2015 EGI.eu – together with the NGIs – will assess what changes these will require in the user engagement structure and support services.

#### Communications – SC

Contributions from Sara Coelho

##### **Events**

***EGI events***

**EGI Community Forum 2014** (CF2014)[[6]](#footnote-5). The Communications Team lead the logistical organisation of the CF2014 held in Helsinki, Finland (19-23 May 2014) and co-hosted with the University of Helsinki and CSC - IT Center for Science Ltd. The team also supported the Programme Committee and was responsible for the updates and maintenance to the event’s website and Indico pages. A Book of Abstracts was produced for the event – see below. 373 participants attended the event.

**EGI Conference on Challenges and Solutions for Big Data Processing on Cloud** (Big Data Conference)[[7]](#footnote-6). The Communications team lead the logistical organisation of the Big Data Conference held in Amsterdam (24-26 September 2014). The event was co-located with the RDA conference in Amsterdam. The conference hosted the EGI-GÉANT Symposium on Federated Community Cloud Services for e-Science, organised in partnership with the GÉANT Association.

***External events***

The Communications Team represented EGI at the following events:

**European Bioenergetics Conference** (EBEC 2014)[[8]](#footnote-7). EGI sponsored the event in Lisbon (12-17 July) and had a stand, where the Communications team engaged with several potential users with the help of Afonso Duarte, EGI Champion for the Life Sciences. EBEC had about 400 attendees. A blog post[[9]](#footnote-8) summarising the event was published.

**European Conference on Computational Biology** (ECCB 2014)[[10]](#footnote-9). EGI sponsored the event in Strasbourg (7-10 September) and had a stand, where the Communications team engaged with several potential users with the help of Fotis Psomopoulos, EGI Champion for the Life Sciences. EBEC had about 2000 attendees. A blog post[[11]](#footnote-10) summarising the event was published.

Additionally, during PY5:

* Rosette Vandenbroucke, EGI Council member for Belgium, represented EGI at the 4th Gender Summit, held in Brussels (30 June-1 July)
* Afonso Duarte, EGI Champion, attended the FEBS–EMBO 2014 meeting in Paris (30 August- 4 September) and summarised his engagement activities in a blog post
* Joeri van Leeuwen, EGI Champion, will attend the Early Science from Low-frequency Radio Telescopes[[12]](#footnote-11) (8-10 December) to present his EGI-enabled results obtained through the LOFAR telescope.
* Ashiq Anjun, EGI Champion, will attend UCC 2014, the 7th IEEE/ACM Conference on Utility and Cloud Computing[[13]](#footnote-12) in London (8-11 December), where a EGI workshop will be held on the 11th focussing on the EGI Federated Cloud.

##### Publications

During PY5, the Communications Team worked in the following publications:

***Printed***

**EGI CF2014 Book of Abstracts[[14]](#footnote-13).** Compilation of the contributions submitted to the EGI Community Forum 2014 and reviewed by the Programme Committee.

**EGI Solutions.** These four publications were created in collaboration with the Strategy and Policy Team and provide clear, easy to read documents outlining the uses and benefits of the EGI solutions. They are:

* Federated Cloud White paper [[15]](#footnote-14)
* Federated Operations White paper [[16]](#footnote-15)
* High-Throughput Data Analysis White paper [[17]](#footnote-16)
* Community-driven Innovation and Support White paper [[18]](#footnote-17)

**EGI Case Studies[[19]](#footnote-18)**. This publication showcases some of the case studies[[20]](#footnote-19) published online in the EGI website during the EGI-InSPIRE project. The case studies focus on research and scientific results obtained thanks to the use of EGI’s computing services. The case studies are examples of how EGI can contribute to advancements in the long-tail of science.

***Online***

**Newsletters.** Two issues of *Inspired* were published:

* Issue 16 (July 2014) [[21]](#footnote-20)
* Issue 17 (October 2014) [[22]](#footnote-21)

**Open Science Commons paper**[[23]](#footnote-22). This publication was created in collaboration with the Strategy & Policy Team. The Open Science Commons paper is an introduction to EGI’s new vision intended for policy makers, national and European funding agencies, Research Infrastructures, e-Infrastructure providers, research communities and the private sector.

**Case studies.** In PY5 (as of November), the Communications team investigated & wrote six new case studies in cooperation with the scientists featured in the articles. They were:

* *Is the Andromeda II galaxy the result of a merger?* How scientists from Poland used grid computing to find an explanation for the origins of a galaxy that fits astronomical observations.[[24]](#footnote-23)
* *A new way to know more about distant stars.* Grid computing is helping astronomers to describe stars, calculate their age and learn more about the planets that surround them.[[25]](#footnote-24)
* *Getting closer to quantum computing with the grid.* How scientists in Serbia are contributing to our understanding of Bose-Einstein Condensates and how they will lead to a new computing paradigm.[[26]](#footnote-25)
* *Improving digital security with natural selection.* How scientists from the Czech Republic are trialling new cryptanalysis methods with inspiration from the theory of evolution and the help of grid computing.[[27]](#footnote-26)
* *Designing a toxic chemical-eating bacteria*. How a team from the Czech Republic used grid computing to design a bacteria capable to ingest toxic compounds.[[28]](#footnote-27)
* *Does combat stress have a long-term effect on attention and memory?* How grid computing is helping to understand the effects of combat on soldiers’ brains.[[29]](#footnote-28)

##### Additional work

***Website***

There was no major restructuring or rethinking of the EGI website during PY5. The website was updated and maintained as need arose. The content was expanded with, in addition to the online publications stated above, with:

* 25 new news items[[30]](#footnote-29)
* 12 blog posts[[31]](#footnote-30)
* 2 Director’s Letters[[32]](#footnote-31)

***Launch of the EGI Federated Cloud***

The Communications Team worked in concertation with the Operations & Technology Teams to announce the launch of the EGI Federated Cloud during the EGI Community Forum in Helsinki. The launch was announced with a press release[[33]](#footnote-32) and a news item[[34]](#footnote-33) distributed to all media contacts, which resulted in several media mentions[[35]](#footnote-34).

***Webinars***

Two webinars were/are being organised and scheduled:

* RNA-Seq analysis with READemption: setup and usage in the EGI Federated Cloud[[36]](#footnote-35) (26 November)
* Cloud-Init[[37]](#footnote-36) (15 December)

***Communication team contributions to the EGI Strategy***

The Communications team also contributed to the on-going discussions about the definition of the EGI Strategy and vision for the coming years.

#### Distributed Competence Centre - GS

**Contribution from Gergely Sipos**

**Distributed Competence Centre**

In PY5 the EGI-InSPIRE project setup a Distributed Competence Centre (DCC) across the NGIs, projects, user communities and technology providers. The DCC includes user-support personnel and technical assets that can be accessed by research communities to support their research activities with distributed computing services from EGI. The project provides coordination for the DCC, and some of the DCC members’ work is partially supported by the project. This support provides funding for travel so DCC members can visit users and provide face-to-face support in application porting, service development and configuration, pre-production test, system integration and production setups. The achievements of the DCC members are summarised in the below table, showing the support the DCC members provided for certain VOs/communities. Details on the provided support are given in Appendix A.

| VO or community | VRC | | | | NGI | | | | | | | | | Site | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LSGC | CMMST | WeNMR | Earth Science | BG | MD | RS | CZ | BY | SK | PL | ES-PT | FR | LIP | INFN |
| biomed.eu | X |  |  |  |  | X |  |  |  |  |  |  |  |  |  |
| France grilles | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| enmr.eu |  |  | X |  |  | X |  |  |  |  |  |  |  |  | X |
| Compchem |  | X |  |  | X |  |  |  |  |  |  |  |  |  | X |
| Vlemed | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Shiwa | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SEE |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |
| SaGrid |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CLARIN / DRHIHM |  |  |  |  | X |  |  | X |  |  |  |  |  |  | X |
| ENV modelling |  |  |  |  | X |  |  |  |  |  |  |  |  |  |  |
| Biomed |  |  |  |  | X |  |  |  |  |  |  |  |  |  |  |
| Atlas |  |  |  |  | X |  | X |  |  |  |  |  |  |  |  |
| Alice |  |  |  |  | X |  |  |  |  |  |  |  |  |  |  |
| LHCb |  |  |  |  | X |  |  |  |  |  |  |  |  |  |  |
| CMS |  |  |  |  | X |  | X |  |  |  |  |  |  |  |  |
| Economy |  |  |  |  |  | X |  |  |  |  |  |  |  |  |  |
| ES |  |  |  | X |  |  |  |  |  |  |  |  | X |  |  |
| semiconductors |  |  |  |  |  | X |  |  |  |  |  |  |  |  |  |
| highthroughputseq.egi.eu |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |
| physiome.lf1.cuni.cz |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |
| eiscat.se |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |
| peachnote.com |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |
| AUGER |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |
| LifeWatch |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X |
| BELLE |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |
| CLARIN |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |
| ELI |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |
| ELIXIR |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |
| CTA |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |
| EPOS |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |
| LOFAR |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |
| ESS |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |
| BBMRI |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |
| ICOS |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |
| Nanotech |  |  |  |  |  |  |  |  | X | X |  |  |  |  |  |
| Bioinf |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  |
| Med. Image |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  |
| chem.vo.ibergrid.eu |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |
| earth.vo.ibergrid.eu |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |
| eng.vo.ibergrid.eu |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |
| hpc.vo.ibergrid.eu |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |
| iber.vo.ibergrid.eu |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |
| ict.vo.ibergrid.eu |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |
| life.vo.ibergrid.eu |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |
| pfound.vo.ibergrid.eu |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |
| phys.vo.ibergrid.eu |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |
| Aegis |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |
| meteo.see-grid-sci.eu |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |
| seismo.see-grid-sci.eu |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |
| env.see-grid-sci.eu |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |
| desktopgrid.vo.edges-grid.eu |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |
| vo.aginfra.eu |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |
| cmpc.aegis.rs |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |
| vo.semagrow.eu |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |
| drihm.eu |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |

Table xxx: update VOs and Communities December 2014

### Strategy Policy and business development – SA

This section describes the work performed by the Work Package NA5 which is composed of two main tasks: 5.1: “Strategy, policy and business development” and task 5.2 “Business models and proof of concepts”. During the reporting period, the main achievements are: development and promotion of the vision of Open Science Commons, development of a new EGI strategy through a consultation process with the stakeholders, improvement of the strategic planning, definition of an EGI business engagement program, definition of a value proposition document for EGI.eu, development of pay for use proof of concept, business models and tools around the capability to offer EGI services by directly charging customers.

#### Strategy, policy and business development – SA

**Develop and promote the Open Science Commons Vision**

Following the 4th Year EGI-InSPIRE project review, the reviewers recommended to develop and promote the Open Science Commons vision, that was initially conceived in April 2014 and presented at the review. During the period under report, EGI.eu developed a dedicated policy paper[[38]](#footnote-37) that was also presented at the e-IRG workshop in Rome[[39]](#footnote-38). For promoting the Open Science Commons vision, a dedicated Internet domain has been purchased: [www.opensciencecommons.org/.eu/.com](http://www.opensciencecommons.org/.eu/.com). A website will be put online in February 2015.

**Evolve the EGI Strategy**

In the reporting period, EGI.eu put a considerable amount of effort in redesigning the overall EGI strategy based on the Open Science Commons vision and by ensuring that the different viewpoints and needs of the stakeholders were collected and evaluated. The process that was followed is based on the use of the strategy map and balanced scorecard tools, and supported by an external consultant to better develop the skills of EGI.eu staff and consolidate a process that would increase the maturity of EGI strategic planning. The initial step was to organise a 3-day training for the EGI.eu staff to align the knowledge and understanding of how to define and execute strategies. The training was developed on the concrete case of EGI. Following the training, it was decided to continue the work with the consultant to coach and support the EGI.eu strategy and policy team and the EGI.eu senior managers in defining the new strategy.

The new strategy has been developed according to the following steps:

* Development an initial high-level view of the EGI strategy map and analysis of the main strategic shifts
* Development of the strategy tablets (2-page document analysis strategic topics, problems to be solved, )
* Preparation of an interview with the EGI.eu Executive Board to capture their viewpoints on strengths and weaknesses of the current situation, the future challenges, their perceived needs of the various stakeholders and comments on the main shifts that should be captured by the EGI strategy
* Individual interview with the seven members of the EGI.eu Executive Board
* Analysis of interview from the seven members of the EGI.eu Executive Board and update to the big shifts table
* Preparation of a survey for the EGI Council to capture individual NGIs viewpoint
* Collection of answers from the EGI Council
* Analysis of the EGI.eu Council and update of the big shifts table
* Definition of a set of milestones for the years 2015-2017 to implement the strategy
* Preparation of the main EGI strategy document
* Organisation of an EGI Council workshop devoted to the evaluation of the defined strategy
* Final revision of the EGI strategy document and adoption

This work is in advanced development stage and the last three steps are on-going at the time of writing, with the EGI Council workshop planned for the 11th February 2015.

**EGI.eu Value Proposition**

We have developed a short document describing the value of EGI.eu for the participants (NGIs/EIROs) that pay a fee and are part of the EGI Council. The goal of the document is to provide a clear statement for current and future EGI.eu participants of the benefits that they can obtain by becoming part of the EGI Council. The document is available in the EGI document repository[[40]](#footnote-39).

**Business Engagement**

The Business Engagement VT was launched as an additional effort of the EGI-InSPIRE project due to the increasing perception of the need for strengthening the collaboration and knowledge transfer between EGI and industry. EGI acknowledges that SMEs play a very important role in the European economy, and are expected to take even a more important role in boosting European competitiveness. EGI also recognises that the collaboration with industry is essential for enhancing its own performance and sustainability.

The Business Engagement Programme Virtual Team (BEP VT) was launched in April the 1st with the objective of defining a suitable Business Engagement Programme for SMEs, and identifying a number of companies with interest to start collaborating with EGI. A wikipage[[41]](#footnote-40) was released to inform about the motivational background and the proposed action plan. In order to enhance the inclusiveness and participation across several channels were used to disseminate this initiative. NGIs, NILs and champions were informed, but the invitation to participate was also made extensive to some SMEs already orbiting in the EGI constellation. As well, several members joined in different stages of the lifetime of the VT invited by other members. The number of participants in the VT was of 24 in the end of November. There have been organised 7 virtual phone conferences with an average participation on 7-8 members. The minutes of the meetings have been stored in the EGI document repository[[42]](#footnote-41). The discussions have also been continued using the e-mail thread specifically created for enhance the communication among members.

The VT recognised the complexity of the EGI environment and diversity of the legal status and strategic objectives of the Resource Providers and NGIs integrating EGI. Much effort and discussion time have gone to identify these issues and in creating a document with a proposal that would avoid potential conflicts.

The main output of the VT work, which has accepted by the members as a very satisfactory accomplishment, is the delivery of a document proposing a suitable framework for engagement, while respecting the strategic, legal, and organisational issues identified. This document can be found in the EGI document repository[[43]](#footnote-42). It outlines the opportunities and benefits for a wide type of private organisations to work with EGI. A main conclusion was the need of widening the scope to include not only SMEs but also R&D units of large enterprises, and other organisations such as projects with relevant activity after the funding cycle. The document also defines the varying levels of collaboration, proposing a three layer structure. The first one would have a low barrier of entry to facilitate the engagement; the other ones would allow the creation of tailored agreements for collaboration. The document was presented for feedback to the EGI.eu managerial board.

The second output was the creation of a common database for identifying those SMEs that could be participants of the programme. The initial objective of the VT in terms of number of identified SMEs has proven to be overambitious for the time and resource scale of the VT. The contacts for proposing formal engagement has not started yet.

#### Business models and proof of concepts - SH

In early 2013, the EGI Council approved a policy to explore business models for pay-for-use service delivery to couple together with the traditional method of free-at-point-of-use. Therefore, the goal of this task was to support the implementation of this policy in collaboration with NGIs and individual resource providers through the definition and execution of proof of concepts. Activities included: articulation of appropriate business models, definition of prices for services from the participating sites, definition of agreements and service management processes and procedures, introduction of a billing function, analysis of the changes needed to support services and roll out the new functionalities in the production environment, and evaluation of legal, policy, and organisational issues around the full implementation of the pay-for-use model.

The output of this task is documented in a separate report. The approach was taken to split the activity into 2 main phases: Phase 1 (Jan-June 2014) – set up and implement the minimum/basic functionality to allow providers to define a price and to account for them and present at the 4th EGI-InSPIRE EC Review. Phase 2 (July-Nov 2014) – Develop tools for service discovery and request; Increase automated functionality. The first version of the report following Phase 1 was published in June[[44]](#footnote-43) with an updated report (in progress at the time of writing), which provides further details regarding overall activities, processes and documentation for providers and users, and serve as a record for continuing activities into 2015.

The Pay-for-Use Proof of Concept group[[45]](#footnote-44) launched in January 2014 on a best effort basis with formal funding activities starting in May 2014 as a dedicated tasks within PY5 NA5 WP. This activity was also closely linked to TNA5.1 Strategy, Policy and Business Development; SA5.2: Federated Cloud and JRA2 Tool development.

In total, 16 regularly scheduled phone conferences were held[[46]](#footnote-45) with formal minutes produced[[47]](#footnote-46) as well as two dedicated sessions at the EGI Community Forum in Helsinki[[48]](#footnote-47) and the EGI Big Data workshop in Amsterdam (Sept)[[49]](#footnote-48).

The following sections provide a high-level view of the main activities, results achieved, and recommendations moving forward, including individual partner contributions.

**Pay-for-Use PoC Summary**

Overall, the group consisted of 43 Members and Observers from EGI.eu (Lead), Resource Centers, NGI NILs, and Commercial Companies. An overview of the participating countries providing pricing information is summarised as follows:

* Publishing Pricing Information
  + 20 Organisations across 13 Countries
  + 20 Grid Sites: Belarus; Bulgaria; Germany; Greece; Italy; Latvia; Poland; Spain; Switzerland; Turkey
  + 10 Cloud Sites: Finland; Greece; Italy; Poland; Slovakia; Spain; Turkey; UK
  + 15 Storage sites: Bulgaria; Greece; Italy; Spain
* Price Ranges (incl. support)
  + Grid (HEPSPEC/hr): €0.01-€0.15 (Avg. €0.05; Median €0.05)
  + Cloud (wallclock/hr): €0.03-€0.11 (Avg. €0.05; Median €0.05)
  + Storage (€/GB/month): €0.01-€0.14 (Avg. €0.04; Median €0.04)
  + +/- VAT 8%-24% (where applicable)
    - Taxation report available at[[50]](#footnote-49)
  + Prices to be valid for one year once in production

Main Activities/Achievements:

* Complete business processes defined: Providers to publish pricing information; customers to discovery services and prices; request submission; negotiation and SLA; VO set-up; accounting of consumed resources; invoicing.
* Tool adaptation
  + GOCDB extensions added to set pricing: cloud compute and storage, grid compute and storage, VAT
  + Accounting Portal extended for price information accounting
  + e-GRANT developed to offer both a user-facing interface and enable providers to receive requests, negotiate the service and price and allocate resources.
* Business models and pricing schemes defined: selling of physically resources (pay-per-use; packaged), joint development projects, and consultancy.
* National exposure and initiatives underway and already examples of success stories (see individual partner contributions below)
* Legal and Policy solutions emerging for institutions not fully able to engage in commercial activities: e.g. research-only purpose statements; charging for human services with resources offered for free (however, monetary value of those services is now able to be calculated)
* System tested and approved by resource providers
* Business opportunities being explored
  + Helix Nebula Marketplace (HNX) – 4 EGI sites involved
  + Engineering SpA (Large Italian company) - Looking for resource providers to support contract (research data)
  + European Space Agency - Review procurement procedures and tender requirements (financial liability)
  + Pre-commercial procurement (PCP) / Public procurement of innovative solutions (PPI) (dedicated presentation at EGI Big Data Workshop – INFN) e.g. Cloud for Europe; EC projects (e.g. PICSE - Procurement Innovation for Cloud Services in Europe)
  + 100% IT (UK Ltd. company) - Commercial organization involved in EGI Federated Cloud/P4U PoC
  + Charity Engine (Worldwide Computer Company Ltd) - Desktop computing (BOINC) - revenue sharing model (1/3 provider, 1/3 charity, 1/3 company); Broker agreement available for € based on users brought
  + Arctur (Slovenian SME) - Provides cloud and HPC services; Offers Alice ununsed/available resources for free - Interested in joining the EGI "marketplace” as a provider
  + Zenotech (UK) - Runs a marketplace for aerospace, automotive, civil engineering and renewables – contacted EGI to have providers visible in marketplace to serve their customers.

Recommendations moving forward:

* User-facing graphical interface – all technical development is complete and a design mock-up created – will be ready by end of Jan 2015.
* Increase automation of varying pricing schemes beyond pay-for-use and packaged services (e-GRANT terminology of “pools”)
* Integrate an automated billing function
* Mature EGI.eu's role as a full central broker – contractually and pricing model (e.g. % of transaction)

**UIIP-NASB (Belarus)**

Activities carried out during reporting period:

* UIIP NASB has been communicating with business associations and government bodies to promote ideas of creating business oriented grid infrastructures in several domains (i.e. gas and oil industry, nano industry);
* UIIP NASB was also solving organisational issues around the full implementation of the pay-for-use model in the grid infrastructure of the National Academy of Sciences.

Main achievements:

* Two large Grid/Cloud infrastructure state projects have been initiated during the reporting period.

Related activities performed/planned at a national level:

* Pay-for-Use concept and models during next two years will be integrated into national system of funding of the projects using supercomputing technologies as well as into national grid infrastructure information systems.

Individual position and/or plans regarding pay-for-use activities beyond EGI-InSPIRE:

* UIIP NASB is welcoming further development of this activity beyond EGI-InSPIRE project and will be participating in such activity implementing the results on the national level.

**Ibergrid- IFCA CSIC (Spain)**

The work from IFCA has been centered on contributing to establish a pay-for-use scheme under FedCloud. IFCA team has reported the experience they have working with different companies in Spain, in particular supporting execution of applications related to engineering modelling. The different ways to interact and the agreements established have been discussed and reported at EGI CF and at the different meetings of this activity within NA2.5

As IFCA has already approved public rates for computing, it has been easy to translate them to the new scheme, although the definition of the different flavour instances for VM will require further tuning. IFCA team has provided input to participate in different opportunities, although these possibilities have not been concluded yet. Also we have reported on the difficulties to support applications running on MS, although got it ready (with substantial effort).

At national level as indicated we have provided support to several companies to test and try FedCloud use at IFCA. Launching for example very large memory (128-256 GB RAM), or requiring licenses (ANSYS, COMSOL, MATLAB).

IFCA will go ahead with pay-for-use activities beyond the end of EGI-INSPIRE. We are right now estimating the best way to provide HPC pay-for-use instances re-using our supercomputing resources. We have two applications, one on genetics, and another one on hydro-engineering, both using MPI and up to 128 cores, that are being ported to FedCloud.

The experience with these applications has been reported at internal meetings, and presented at EGI CF and at EGI meeting on FedCloud in September in Amsterdam.

**CESGA (Spain)**

Activities carried out during reporting period:

* Participation as a hybrid grid-cloud infrastructure in the pilot.
* Attending EGI Pay-for-Use PoC regular and F2F meetings.
* Contributing in defining the model for the EGI Pay-for-Use PoC
* Review of the “Helix Nebula Infrastructure as a Service Agreement”
* Review of the “Engineering SpA” requirements
* Development of cost calculation capabilities in the Accounting Portal:
  + Extraction of the published CPU costs and VAT from GOCDB.
  + Calculation of CPU cost + VAT for:
    - Sites
    - NGIs
    - Countries
    - Grid, based on Normalised hours
    - Cloud, based on wall time hours (normalised not currently available for cloud)
    - Grouped by date, region, VO, SubmitHost, Number of processors, Nodes
    - Filtered by Date, group of VOs.
    - Graphing of all the above
  + Estimation of CPU cost for all the infrastructure (not only PoC participants). This is done with an average CPU cost and VAT value. All the above points are supported

**CSC (Finland)**

Activities carried out during reporting period

* Attending EGI Pay-for-Use PoC regular meetings and discussions
* “Engineering SpA” requirements' feedback
* GOCDB Cloud site entry and extensions created
* Participation in e-Grant tool testing consequently providing feedback

Main achievements:

* Internal reflection on CSC's cloud service readyness to integrate federated Pay-for-Use business models
* Related activities performed/planned at a national level
* Internal evaluation of cPouta's (CSC-Cloud) compliance to EGI Pay-for-Use PoC

Individual position and/or plans regarding pay-for-use activities beyond EGI-InSPIRE

* CSC is looking forward to support EGI's PfU follow up activities

**GRNET (Greece)**

Activities carried out during reporting period:

* Attending EGI Pay-for-Use PoC regular meetings and action items produced.
* Contributing in defining the model for the EGI Pay-for-Use PoC
* Contribution to work progress and deliverables presented @ EGI-CF 2014 (Helsinki, May 2014)
* Contribution to PoC deliverable preparation for the EGI Conference (Amsterdam, 24-26 September).
* Held a number of internal meetings in order to define GRNET pay-per-use business plans and try to find ways to avoid legal barriers.
* Advertising the agreed values on all HellasGrid sites (both Grid and Cloud) through GOCDB according to the newly devised pricing scheme.

Planned Activities:

* Participate in the regular PoC meetings and follow-up any pending actions that may arise.

**INFN+CNAF+UNIPG (Italy)**

Activities carried out during reporting period:

* Attending EGI Pay-for-Use PoC regular meetings
* Contributing in defining the model for the EGI Pay-for-Use PoC
* Participation to the established Business Engagement Programme VT
* Contribution to Work progress and deliverables presented @ EGI-CF 2014 (Helsinki, May 2014)
* Contribution to PoC deliverable preparation for the EGI Conference (Amsterdam, 24-26 September).
* Definition and review of the EGI Business Engagement Programme presented at EGI.eu Executive Board (Nov 2014).

Main achievements:

* Deliverables and information used to define proper engagement strategies with public and private.

Related activities performed/planned at a national level:

* Preliminary contact with SMEs and public for the participation in national or European projects - activity on going
* Assisting and supporting communities in the definition of pilot architectures and services aimed at the preparation of new EC funded proposals (e.g. computational chemistry, structural biology).

Individual position and/or plans regarding pay-for-use activities beyond EGI-InSPIRE:

* Intention to support the ongoing activities

**INFN-Bari (Italy)**

Activities carried out during reporting period:

* Contributing in defining the model for the EGI Pay-for-Use PoC
* Configuring INFN-BARI and PRISMA-INFN-BARI for the EGI Pay-for-Use PoC
* Attending EGI Pay-for-Use PoC regular meetings
* Review Cloud for Europe PCP tender info and provide initial feedback
* Talk on PCP and PPI (Pre-commercial Procurement and public procurement of innovative solutions) at the EGI Conference on Challenges and Solutions for Big Data Processing on Cloud (24-26 September 2014 CWI Conference Centre, Amsterdam)[[51]](#footnote-50)

Main achievements:

* Evaluation of the compliance of proposed possible customer use cases with respect to NGI\_IT regulations and local Resource Center policies (Requirements from Engineering SpA used as starting material for quality assurance - Report in preparation)

Related activities performed/planned at a national level:

* Review of the “Helix Nebula Infrastructure as a Service Agreement”
* Review of the “Engineering SpA” requirements

Individual position and/or plans regarding pay-for-use activities beyond EGI-InSPIRE:

* Intention to support the ongoing activities

**CYFRONET (PL-GRID)**

Activities carried out during reporting period:

* Attending EGI Pay-for-Use PoC regular meetings
* Contributing in defining the model for the EGI Pay-for-Use PoC
* Contribution to Work progress and deliverables presented @ EGI-CF 2014 (Helsinki, May 2014)
* Contribution to PoC deliverable preparation for the EGI Conference (Amsterdam, 24-26 September)
* Preparation of a pilot system in e-GRANT (EGI RA Tool) carrying out PFU activity

Main achievements:

* According to P4U PoC process consists of 9 activities. 6 of them will be implemented and coordinated in e-GRANT tool. Pilot system conducts first 3 of them:
  + Each provider is able to specify the price for each of the services on a central tool
  + The customer is able to search for all the providers that support pay-for-use services
  + The customer decides from which provider to buy services and submits a request, which creates the core of the environment enabling basic functionalities but fulfilling the most important assumptions of the process.

Individual position and/or plans regarding pay-for-use activities beyond EGI-InSPIRE:

* Developing functionalities for remaining activities in e-GRANT Tool
  + The customer agrees and signs an SLA
  + The consumer uses the services and receives a monthly usage report. However, users will have access to the accounting portal for their VO (updated once a day).
  + The customer receives an invoice and pays directly the service provider(s)

**UI SAV (Slovakia)**

Activities carried out during reporting period:

* Attending EGI Pay-for-Use Proof of Concept regular meeting
* Solving actions conducted by the meeting
* Reviewing requirements of use cases provided by Engineering SpA and provide offers/feedbacks
* Configuration, operation and maintaining of IISAS-FedCloud sites for EGI Pay-for-use PoC
* Analysing business models and legal solutions for EGI Pay-for-use PoC activity
* Participating on reports and presentations of EGI Pay-for-use PoC activity

Main achievements:

* Full operation of IISAS-FedCloud in EGI Pay-for-use PoC activity
* Report on detailed technological compliances for Engineering SpA use cases
* Legal and technological readiness for EGI Pay-for-use PoC activity

Related activities:

* Prototype of SaaS solution for water supplying application for Bratislava Water Supplying company (Bratislavská vodárenská spoločnosť, a. s.)
* Two scientific papers about porting commercial applications to grid and cloud

Planned activities:

* Following actions of EGI Pay-for-use PoC, configuring and operating IISAS-FedCloud site for EGI Pay-for-use PoC

**TUBITAK (Turkey)**

Activities carried out during reporting period:

* Contributing in defining the model for the EGI Pay-for-Use PoC
* Contribution to Work progress and deliverables presented at EGI-CF 2014
* Analysing business models and legal solutions for EGI Pay-for-use PoC activity
* Internal meetings are organised to define the Pay-for-use model of cloud and grid sites.
* Cloud compute and grid compute prices are defined and set in GOCDB

Main achievements:

* The know-how which are developed in the project period and documented as deliverables and information is used to define engagement strategies.

Related activities performed/planned at a national level:

* Pay-for-use model is already used in funding projects which are used high performance computing infrastructure of TUBITAK ULAKBIM since at the beginning of 2011.

Individual position and/or plans regarding pay-for-use activities beyond EGI-InSPIRE:

* Following actions of EGI Pay-for-use PoC, configuring and operating grid and cloud sites for EGI Pay-for-use PoC

**IMCS-UL (Latvian Grid)**

* Activities carried out during reporting period:
  + Attending EGI Pay-for-Use PoC regular meetings
  + Participation in discussions on EGI Pay-for-Use mailing list
  + Contributing to Pay-for-Use PoC report
  + Continuing support for GRID cluster users
* Main achievements:
  + Our scientists published two papers: “Corrections to finite–size scaling in the φ4 model on square lattice” (<http://arxiv.org/pdf/1406.7491.pdf>) and “Corrections to finite–size scaling in the 3D Ising model based on non–perturbative approaches and Monte Carlo simulations” (<http://arxiv.org/pdf/1407.3095v1.pdf>). Computation part was done using Latvian Grid Infrastructure (part of EGI) cluster (mentioned in Acknowledgements).
* Individual position and/or plans regarding pay-for-use activities beyond EGI-InSPIRE:
  + While preparing answers for P4U PoC report in June '14 we discussed with management the viability of such solution for us in near future. We strive to provide computing resources for our scientists free of charge. Currently there might not be much interest in paid computing resources (that might change one day, though). On top of that, currently all of our cluster frequent users are from the same institution as we are (IMCS UL). So that would be another challenge - how do we charge different departments inside one organization.

**IICT-BAS (Bulgaria)**

Activities carried out during reporting period:

* Attending in the regular meetings of EGI Pay-for-Use PoC
* Contributing in defining the model for the EGI Pay-for-Use PoC
* Contribution to Work progress and participation with presentation at EGI-CF 2014 (Helsinki, May 2014)
* Participation at EGI Conference on Challenges and Solutions for Big Data Processing on Cloud (24-26 September 2014 CWI Conference Centre, Amsterdam)
* Contribution in the EGI Business Engagement Programme presented at EGI.eu Executive Board (Nov 2014)
* A number of internal meetings with Bulgarian business.

Main achievements:

* A tender was open to enlarge IICT-BAS computing infrastructure
* Establish collaboration with VMware-Bulgaria EOOD, Bulgarian CLARIN community and other National RI recognized into National Roadmap.
* Related activities performed/planned at a national level
* Series of meetings with policy–makers from Ministry of Education and Scientists, as a result, new updated version of National Roadmap for RI was accepted (Decision #569 from 31 July 2014 by Council of Ministers of Bulgaria). IICT-BAS is a coordinator of National Research Infrastructure, named, “National Center for HPC and Distributed computing”.
* Planned to enlarge Grid infrastructure in Bulgaria with new computer facility.
* Planned additional meetings with Bulgarian businesses interested in Cloud / Grid computing.

Individual position and/or plans regarding pay-for-use activities beyond EGI-InSPIRE:

* Intention to support the ongoing pay-for-use activities beyond EGI-InSPIRE

### Federated Cloud – DW

Contri DWFollowing the successful launch of the federated cloud the PY5 period was one of consolidation, where we aimed to strengthen the support for both resource providers, with improved tools and technologies to make their joining the federated cloud more easy and for user communities where necessary strengthening the process by which we engage with new and emerging communities. This involved alterations to operational and user support procedures which are detailed within the next sections.

Though we had experienced a rapid growth in the number of resource providers joining the fedcloud a key component was now to stabilise those we had, get them all supporting proof of concepts and participating fully in the activities. This included responding to support requests in the manner as normal for EGI resources centres.

#### Operating a reliable federated institutional IaaS Cloud service – MK

**Contribution from DW and MD** Towards the beginning of PY5 almost all operational activities for the IaaS Cloud services were dedicated to releasing the Cloud infrastructure into production.

In the remainder if PY5 all work undertaken in Task SA5.1 were geared towards continuous improvement and formalisation of the operational activities and processes for the federated Cloud infrastructure, this includes supporting new sites to join the federated cloud.

This also included the support and maintenance of the dedicated connectors and reporters which allow the easy integration of the new cloud service type in to the production infrastructure, alongside continuing external developments of cloud management frameworks, user facing tools and our own central services.

**Site connection procedure improvements:**

* Processing developments and extensions to recommended or under development standards passed back to SDO working groups (UR, OCCI, GLUE)
* Development of standards middleware to support connection of new CMF, including the public clouds Microsoft Azure and Amazon Web Services.
* Development and release of reference implementation for CDMI based on GRNET Syneffo.
* Development of monitoring probes to test higher level functionality in CMF to cover full user workflows including contextualisation which has been standardised through cloudinit.
* Development of documentation for new sites and installation of federated cloud specific software components.

**Site certification procedure improvements:**

* **Merging PROC18 in PROC09 –** The temporary Cloud site certification procedure PROC18 was integrated into PROC09, unifying the overall certification process across all offered resource types in EGI (save necessary differentiations, which were kept at a minimum).
* **Manual check instructions –** The manual checks that must be conducted during certification are documented in the EGI Wiki[[52]](#footnote-51)
* **Information security checks –** Security checks were developed together with EGI Security Policy Group (SPG) and the EGI Computer Security Incident Response Team (CSIRT) and documented in the EGI Wiki.[[53]](#footnote-52)

**Service support & improvement activities:**

* **GGUS support units (SU) –** A set of dedicated support unit were set up in GGUS to track operational incidents in the federated Cloud infrastructure
* **Availability & Reliability monitoring –** A/R metrics are generated and collected on a monthly basis with other OLA service level targets.[[54]](#footnote-53)
* **CMF release and deployment management** – Cloud Management Framework (CMF) integration code may be released and deployed using the UMD, and managed by the URT. An initial survey[[55]](#footnote-54) was conducted for scoping further work.
* **Technical service improvements –** Campaigns were run to integrate site bdii instances in GOCDB, supporting dteam VO at Cloud sites, including VO information in accounting records, and to put VM descriptions in GOCDB.
* **Resource provisioning –** Support for cloud sites in Resource Allocation process; Cloud resources can be offered through E-grant
* **CMF production infrastructure integration –** A new procedure has been produced and approved by the OMB regarding the integration of new Cloud Management Frameworks and Grid middleware in the EGI production infrastructure (<https://wiki.egi.eu/wiki/PROC19>)

**User related activities:**

* **VO control –** Updating PROC14 (VO creation) and PROC13 (VO decommission) procedures to include cloud VOs creation and support
* **User SLA –** Working on first EGI User SLA document based on Cloud use case with Biovel community

#### Participation in Proofs of Concept elicited by EGI - GS

**Contribution from DW and MD**

During PY5 the EGI.eu UCST continued with broadening the network of NGIs providing support for Proofs of Concept use cases and users. This requires continuous monitoring of site certification (because certified sites typically became active in user support), and knowledge exchange about the services, resources and tools that are available for the NGI support teams to engage with and support the users. The bi-weekly User Support teleconferences have proved an important platform for coordinating the distributed support for existing use cases, discussing new use cases, cross-cutting needs and requirements. The following comprises a summary of the activities during PY5; complete and more detailed information is available in the EGI Wiki[[56]](#footnote-55).

In total, resource providers contributing support for Proofs of Concepts are affiliated with 11 NGIs (in alphabetical order; Czech Republic, Croatia, France, Greece, Hungary, Italy, Macedonia, Spain, Poland, Portugal and Sweden).

At launch there were a total of 15 usecases/proof of concepts on going. Due to the rapid growth experienced in new communities approaching the federated cloud it became necessary to streamline the support workflow to maximise efficiency of usage for the UCST. This included classifying the usecases such that it was clear at each stage what support or assistance was necessary from the UCST

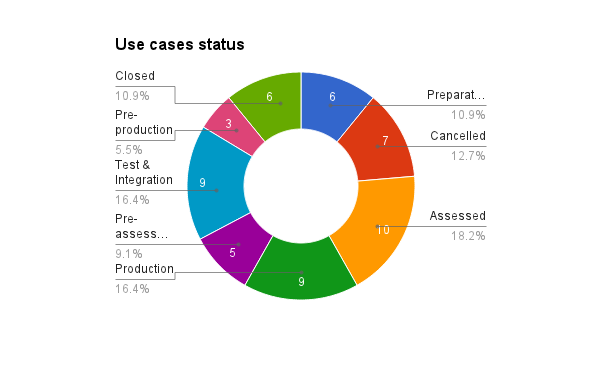
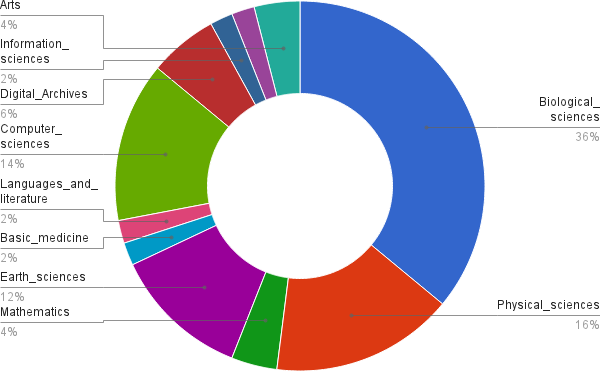
In total, the UCST took care of 36 Proofs of Concepts; of these, five went into production: BioVeL Portal, OpenRefine, OpenModeler (all BioVel project) and READemption (Uni Wuerzburg). Three further Proofs of Concept were closed without turning into a production system: EISCAT-3D data catalog, acces and dissemination, ESA SSEP data processing, and Jena University’s JAMS (Jena Adaptive Modelling System) porting to the Cloud. Figure 1 provides an overview of the status of all supported Proofs of Concept.

Figure 1: Overview of the status of the supported Proofs of Concept

Overall, in terms of classification the Proofs of Concept supported by the UCST on the Federated Cloud infrastructure is by far more diverse than on any other offered resource type. XXXX provides an overview of the first and second level scientific discipline classification of all Proofs of Concept.



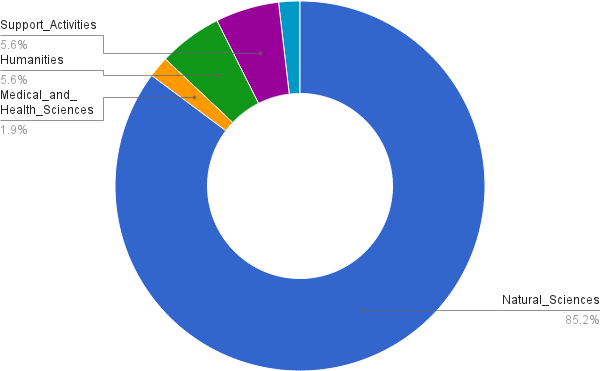


Figure 2: First level and second level classification of all Proofs of Concept

The UCST further promoted the various tools and Proofs of Concept that went into production:

* FedCloud demo session at the EGI CF 2014: https://www.egi.eu/news-and-media/newsletters/Inspired\_Issue\_16/CF2014wrapup.html
* Biovel: http://www.egi.eu/news-and-media/newsfeed/news\_2013\_0038.html
* Biovel newsletter n. 4: http://www.biovel.eu/images/publications/BioVeLNewsNo4-Autumn2013.pdf
* Ecological Niche Modelling running on the EGI Federated Cloud: http://www.egi.eu/news-and-media/newsletters/Inspired\_Issue\_13/ENM.html
* Biovel newsletter n. 5: http://www.biovel.eu/images/publications/BioVeLNewsNo5-Spring2014-final.pdf
* IFCA launches EGI FedCloud portal for CMS open data: https://www.egi.eu/news-and-media/newsfeed/news\_2014\_041.html
* READemption webinar: http://www.egi.eu/blog/2014/11/04/egi\_webinar\_rna\_seq\_analysis\_with\_reademption\_setup\_and\_go.html

Further, through the work with the Proof of Concept user communities, UCST elicited the following common key requirements for the Federated Cloud activity:

* **Big data distribution**: an official solution should be offered by the EGI Federated Cloud to copy and replicate the big data sets used by the use cases.
* **Automatic scalability to exploit cloud elasticity**: add in the EGI Federated Cloud portfolio services tools allowing users to automatically scale out through both live VM resource allocation (CPU, RAM, etc.) and VM instance management
* **Contextualisation tool(s) for Windows OS**: offer a contextualization solution for Windows OS virtual machines as well.
* **Extend the EGI Federated Cloud OCCI client to get information about the cloud site configuration**: a user should be able to query a EGI Federated Cloud site to know its policy about IP management, ports, etc. The OCCI client should allow users to create new security rules (e.g. open port 22) during for their virtual machines.
* **Offer a Virtual Machine image with the EGI Federated Cloud CLI environment pre-installed**: to speed-up the use case preparatory work.
* **Reliable storage solutions**: offer production quality block and object storage solutions.
* **Custom DNSs**: Users should be able to create custom DNS configurations.
* **Reliable service management**: Well-defined procedures and policies to access the EGI Federated Cloud resources.
* **Java API for OCCI**: useful to easily integrate user applications to the EGI Federated Cloud.

### Mini projects – MD

No mini projects in PY5 - MD

### Tool development – DS

JRA2 is a new activity started in PY5 with the aim to continue the software development for a subset of tools that require further development to support pay per use Proof of Concepts, and the operation of the Federated Cloud.

As first step, collaboration and reporting tools were chosen and created:

* JRA2 mailing list: inspire-jra2@mailman.egi.eu
* Indico folder for the JRA2 meetings: https://indico.egi.eu/indico/categoryDisplay.py?categId=130
* JRA2 wiki page for the weekly reporting: https://wiki.egi.eu/wiki/Inspire\_JRA1\_weekly\_reports
* JRA2 RT queue

It was agreed to organise a JRA2 monthly meeting to discuss about the development status and future plans of the tools involved. The other EGI tools, not directly involved in the JRA2 activity but parts of the EGI Federated Operations solution, have been also invited to attend the JRA2 monthly meeting. Indeed, we have taken advantage of these meetings to coordinate the tool development roadmaps and guarantee the tool interoperation as we did in the JRA1 monthly meetings during the first four years of the project.

Furthermore, during the first quarter of the PY5, AppDB and e-GRANT adopted the development processes defined in JRA1 and already used by all the other tools.

The integration testbed[[57]](#footnote-56) is still operative and now includes AppDB and e-GRANT too.

#### SAM – Christos

The main objective of this task is the evolution of the current Service Availability Monitoring framework towards a more lightweight and sustainable solution that will better address the evolving requirements of EGI for testing and benchmarking its capabilities in terms of resilience and service continuity. Details about foreseen activities are available in the DoW.

During the first half of PY5 a proposal had been made by the consortium (GRNET, SRCE & CNRS) working on this task for the expansion of the scope of JRA2.1 to include new functionality, which we considered important in order to deliver a functional product that will be able to replace the existing SAM service in the beginning of EGI-Engage. In the first days of October, the discussions with EGI.eu were finalized and the following items were added to the JRA2.1 work plan:

* Standalone version of ARGO (started in October 2014)
* Testing and release of ARGO (started in November 2014)
* Removal of the WN framework (started in November 2014)
* CDMI Cloud Storage Monitoring probe (started in November 2014)

The status and planning for JRA2.1 can be found on the JRA2.1 time-plan[[58]](#footnote-57). Currently all the development tasks are still running but they will be completed by the end of the year or in January 2015.

Web UI

For the WebUI, Lavoisier was migrated to the latest version. The new version of Lavoisier comes with improved functionality with the cost of introducing non-backwards compatible changes. This version benefits from a new language, which eases the developments. A preliminary work has been done to introduce statuses report and some chart libraries have been tested. The final choice is the google chart library. As a result, most of the custom UI functionality was re-implemented for the new version of Lavoisier. Along with the new version of Lavoisier, a new theme was used that provides higher quality UI components. Furthermore, the new version of Lavoisier gave us the ability to implement access control using X.509 certificates and custom roles either defined in the configuration files or using the existing roles from the GOCDB. The tree map view was implemented taking into account the custom factors provided by the API.

Moreover, EGI Operations team has tested the current Web UI and some bug fixes and ergonomics requirements have been done.

Web API

For the WebAPI we had to implement the relevant changes in order to provide access to the raw data that are now being captured by the Sync Components. The new functionality resulted in updating both the WebAPI service and the mongodb datastore. In addition to this, the test use cases for the core functionality of the WebAPI were extended to cover significant part of the code base. Finally, we introduced support for the custom factors in the WebAPI.

The implementation of delivering status results timelines on various levels required effort on both the datastore and the api service itself.

Regarding the datastore, which is implemented in MongoDB:

* Various schema changes were applied in the collections that hold the status result data. Also additional collections were employed because of the need to hold supplementary meta-information regarding statuses.
* Because the order of magnitude of the status data is tenfold compared to the a/r results, various optimizations were employed in-order to increase speed and efficiency on the queries. The optimizations include implementations of various critical indexing strategies on the above collections and the enrichment (with metadata) and pre-arrangement of data before being delivered to the datastore.

Regarding the API (which is implemented in golang) and considering the need to serve in different ways the metric data & status results, we decided to implement more unified, concise and feature-rich responses that cater for more, but also stay simpler and easier to understand and use.

In that notion, everything that is related with serving metric results is implemented in one unified request that gives the ability to flexibly define nested types of groupings (per vo, per ngi, per site, per host and per metric). Also the inclusion of senseful default values on most of the usual parameters and the placement of critical input parameters on the url path gives the ability to have more clean,semantic-like and user-friendly urls. Regarding the responses most of the xml fields are being implemented in a more robust and dynamic way (by using efficient pointer structures of xml objects in golang) giving the ability to change and shift the amount of data presented and how it is grouped on demand.

A/R Compute Engine

For the Compute Engine, the main focus has been the optimization of the core engine for the A/R computations, including the full unit test coverage of the core functionality.

During the reporting period the focus with respect to the Compute Engine has been placed upon:

* deserialization framework for input files
* modifications of low level AND and ORing within the engine and customization of these selections
* transiting of status results towards the web interface
* code refactoring (removing old and deprecated bits and pieces of code in the code base)

Much progress has been done with respect to code refactoring and deserialization framework. Still work is ongoing in all of the above mentioned aspects and will be completed by the end of December.

Sync Components

For the Sync Components, the bulk of the work was directed towards the implementation of the required data store changes in order to be able to capture also the raw data for each probe. The raw data are now stored in a separate stream in parallel to the captured metric results.

We looked into AVRO format for storing sync component streams. This will allow the sync components to add data schemas, which will later be used in the A/R Compute Engine.

Monitoring Engine & Gridmon

For the SAM Gridmon we investigated usage of Web API and other internal APIs by SAM Nagios and third parties (ARGO sync components, Operations portal, EGI.eu operations). Based on the investigation it was decided that majority of functions are already implemented by the ARGO REST API and that they can be deprecated.

The only component from SAM Gridmon that will remain is POEM. It was decided to refactor it in order to make it independent from MRS database. Furthermore, POEM will use SQLite instead of MySQL to make the deployment more lightweight. First version of simplified POEM will be deployed in November.

Monitoring engine will be simplified to contain Nagios, POEM and components for configuration and communication over message broker. Instead of modifying ATP provide XML that NCG uses currently, NCG was modified to use GOCDB REST API directly. Similarly, instead of using POEM-Sync component, NCG gets information about profiles directly from POEM deployed on GridMon. In addition, as part of the SAM Update-23 release thorough cleaning of the packages from SAM repository was performed and first RHEL6 packages were tested.

Standalone version

As a part of a conceptual and design procedure, the initial effort was to analyse, identify and list all the integral parts of the compute engine that are monolithic and heavy-targeted on specific use-cases and environments. The components that have been listed are being transitionally refactored in order to be replaced with something more generic and modular. In addition, some refactoring took place regarding eliminating operational points of dependency with the hadoop cluster in order to be able to reduce gracefully when the cluster is absent.

The most promising and fruitful point from which the refactoring effort embarks is the input part of the compute engine where the various consumer logs and sync component files are gathered. There has been an effort for establishing a clear schema mechanism for each type of data file. Avro framework was chosen as a way to serialize data in the consumer & sync components and deliver it to the compute engine. An avro file serializer & deserializer has been implemented both as a proof of concept and also to serve as an utility to handle files during development. Avro Schemas have been implemented for the current form of sync and consumer log files albeit with more expressive and generic header fields.

Regarding the readiness of the compute engine to accept avro-encoded files, new parts have been introduced in the front of the compute pipeline that automatically receive the avro-files, extract the schema and transfer the structured data to the rest of the compute engine.

Another important part is the centralization of some crucial information (topology/operational stuff etc) during computation steps in a single point (eg the datastore) in order to greatly reduce the use of configuration files and parameter bundles that unfortunately get transferred/referenced on each step of the computation pipeline. This will greatly improve the effort to further modularize and decouple the compute engine parts in order to be able to offer more generic features on demand.

Through the developments for the standalone version our plan is to make ARGO as a product more lightweight and well documented.

#### Accounting – Stuart

In PY5, the most relevant enhancements in the EGI accounting system have been related to the CPU, MPI and Cloud accounting. Furthermore, an important contribution has been given to the Pay-for-User Proof-of-Concept.

For the CPU accounting, the team assisted many sites sites to migrate from EMI2 APEL software to the EMI3 software. Now, around 10 sites remain using EMI2 APEL. INFN, IN2P3 and NorduGrid sites migrated from SSM1.2 to SSM2 messaging software and new versions of the APEL accounting software were released to fix many bugs.

Changes to the central repository have been made to enable it to send MPI data summary to the portal. After some initial issues, now the system has been running reliably and the central repository is regularly sending MPI data summary to the portal.

A new EMI3 view showing the accounting data according to the new EMI3 schema and integrating the MPI accounting data was developed and it is now available in the development version of the accounting portal for evaluations aims. The EMI3 view will become soon the new official view in the EGI accounting production system.

About Cloud accounting, new EGI Federated Cloud sites have been included in the accounting system. In July, the new accounting probes, developed in collaboration with the EGI Federated Cloud TF, were released. These new probes allowed us to add the VO information in the cloud accounting data. Now, we are working with the EGI Federated Cloud TF to improve the conformance with the agreed schema. The next relevant enhancements in the cloud accounting will be (1) adding a unique identifier of the VM image in the cloud accounting record (linked to the AppDB Cloud Marketplace) and (2) improving the accounting of long-term VM instance. Both should be available in the first months of 2015.

The team also supported the Pay-for-User Proof-of-Concept WG helping them to define prices for grid, cloud and storage resources. New views were developed in the portal to allow the estimation of the average monetary cost of the used resources according to the billing functions defined by the Pay-for-Use PoC.

Finally, a first support of the new EGI scientific discipline classification is now available in the portal and an analysis to choose the best technologies for the new portal has been done.

#### The evolution of the accounting system will continue in the first months of 2015. The backed systems will be updated systems to provide better reliability to EMI3 clients and reducing resources allocated for EMI2 clients,. Support for sites to migrate from EMI2/SSM1.2 to EMI3/SSM2 APEL software will continue, MPI view in the portal will be improved according to the users’ feedback and the consistency of the cloud accounting data will be verified in collaboration with the EGI Federated Cloud developers.

#### AppDB – Marios

During PY5, AppDB has seen several improvements with respect to extending the service’s reach.

Starting with v5.2.0 (May), its Cloud Marketplace features support for VO-wide image lists of Virtual Appliances; VO administrators can create and manage lists of VA images that are supported by their VO and publish them via VMCaster / VMCatcher integration[[59]](#footnote-58). Moreover, through integration with the Grid Information Service (top/site BDIIs) and the GOCDB, interested users can review these lists and get information on how to instantiate supported VAs on the appropriate sites / resource providers.

Since v5.2.8 (June), the authentication system has been expanded with support for the eduGAIN federated AAI. As part of the greater effort to support the ELIXIR project, we granted AppDB access to the user authenticated through the EBI’s[[60]](#footnote-59) IdP; to this purpose, we also did the integration with Perun, in order to provide information on Cloud VOs.

Another work that took place during the first quarter was the preparation for and participation at the EGI Community Forum, where two presentations were made, and the development of a new probe which monitors the AppDB as a VA distribution mean[[61]](#footnote-60).

From July, AppDB has seen further improvements related to Virtual Appliance support, and has been extended with new data entities, which among other interconnect people and software. More specifically, starting with v5.3.0 (July), Virtual Appliance images have been introduced to a new mechanism to support contextualization scripts; users registering Virtual Appliances may choose to specify one or more such scripts for each image they add. Any user who runs the Virtual Appliance, then, can select one of the appropriate scripts in order to instantiate the virtual machine with a predefined environment, more suitable to his or her needs.

Moreover, as far as Virtual Appliance support goes, a new entity went public after v5.3.0, namely the Site entity, by making use of GOCDB's web API[[62]](#footnote-61). These entities provide information on whether a site exposes an OCCI endpoint (service) and on which Virtual Appliance images, registered in AppDB, are available there, along with all the necessary data to instantiate a virtual machine on the site. This feature makes it much easier for a user to find and properly deploy the solution he or she needs, from a single point of entry.

Other new entities that were introduced v5.4.0 (September) onwards, are related to software and people interconnection, by making use of OpenAIRE's web API [R2]. These include Organizations and Projects. Organizations have been mapped to people profiles based on existing institute information, which they have superseded. Furthermore, users can also add Project entries on their profiles, and also link Project and Organization entities to software / virtual appliances they have registered, also specifying a verb which indicated the type of relation the software / virtual appliance has to these entries. Furthermore, software and virtual appliances may be linked to each other by owners, in order to specify relations such as “instance-of” and “uses”, meaning e.g. that “Software A” uses “Software B”. The result of this effort is a more coherently connected content for AppDB, which provides end-users with a richer and more versatile experience when trying to locate information.

It should also be mentioned that, currently, the aforementioned contextualization script mechanism is being remodelled, in order to enhance its capabilities. The result, which is expected to be deployed with the forthcoming v5.5.0 release, will feature a new entity in its core, namely the Software Appliance, in an effort to provide Software-as-a-Service (SaaS). Software Appliances will contain and manage contextualization scripts for Virtual Appliances, and will completely replace the existing contextualization script mechanism. Estimated delivery date, end of November - begin of December.

Finally, a pilot-project, co-funded by the EGI-InSpire and the ELIXIR project, has been initiated having as primary aim to identify, integrate and expose ELIXIR reference datasets within the European Grid Infrastructure. The expected outcome for the AppDB will be to extend the service with new capabilities in order to expose information about biological reference datasets and their replicas across EGI. Key characteristics of these datasets will be made available by AppDB in the form of metadata for life science users. The initial dataset metadata schema should consist of basic attributes such as name, locations, size, and type; when input from tasks 1 & 2 becomes available, the schema should be revisited in order to identify any additional characteristics that may need to be included. The expected delivery date is on the second quarter of 2015 and more information are available at this [link](https://docs.google.com/document/d/1xJrnVW7u5Q2N7nF3hPsYBOnzloilaoDx2j607Wo7BcA).

#### e-GRANT - Tomasz

During the first months of PY5 e-GRANT development was focused on two main issues:

* improvements for Resource Allocation (RA) procedure;
* functionalities supporting the EGI Federated Cloud.

Development around RA concerned implementing functionalities, which allow using e-GRANT more efficiently as a RA Tool, such as:

* implementation of "approximate" pool matching: the broker has a better access to all resource pools available (enabled in the system) when searching for resources for a specific RA request. At the same time, the system assesses for the broker which pools are most appropriate for the request;
* solution for the problem with expiring Pools, enabling / disabling Pools in production: during the searching for the resources (“Find Pools” command) only pools enabled by providers are given as a result of the command;
* implementation of e-mail notifications: every significant action taken in e-GRANT is notified with an e-mail sent to all relevant parties (customer, broker or provider).

Work involved in implementing functionalities designed for the EGI Federated Cloud was performed according to a schedule agreed with the Federated Cloud Task Force members. Tasks planned for and fulfilled during the second quarter of 2014 are:

* allowing customers to request EGI Federated Cloud resources: implemented RA request form for EGI Federated Cloud resources with adequate metrics for the resources,
* allowing EGI Federated Cloud providers to create resource pools: implemented Pool form for EGI Federated Cloud resources with adequate metrics for the resources.

The e-GRANT team developed also a new feature for the EGI Federated Cloud:

Additionally, cooperation with Pay-for-Use Task Force has been established. As a result an overall contribution of e-GRANT in Pay-for-Use activity was initially determined and e-GRANT will provide support for 6 out of 11 processes involved in the activity.

During the second half of the PY5, e-GRANT development work was focused on evolving Federated Cloud activity in e-GRANT, making it an integral part of EGI resource allocation process and introducing a new activity: the EGI Pay-for-Use. e-GRANT team became a member of Pay-for-Use working group whose aim is to create a pilot system supporting EGI Pay for Use activity.

The team also started to develop a feature to broker Federated Cloud resources in e-GRANT.

At the same time the core component of the tool – general functionalities for RA process, evolved. Cooperation with Resource allocation support team led to introducing improvements to the system, making it more user-friendly. RA support team conducted tests, which concluded in list of features meant to improve RA process in e-GRANT: make it compact, facilitate pool matching, and make it more intuitive for users. Some of the improvements:

* Involving middleware information in resource specification – both Customer and Provider can specify middleware which makes pool matching conducted by Broker more accurate
* Specific description of metrics for Customer and Provider – Customer and Provider gained personalized definition for information they need to specify when creating a RA Request or RA Pool
* New view for Pool List – better organized, Broker and Provider are able to more freely browse Pools available in site(s).

During the last quarter, work on the rest of functionalities for the EGI Federated Cloud was completed. After agreeing final details with the EGI Federated Cloud Task Force and EGI.eu User Community Support Team (UCST) development on brokering Federated Cloud resources was finished and moved to production. Some other details (UCST requirements) were also implemented:

* putting information about RA Documentation in Provider and Customer view
* improving navigation for RA Documentation
* Federated Cloud resources are by default added to new RA Request.

A complete list is available in [this GGUS ticket](https://ggus.eu/?mode=ticket_info&ticket_id=107696).

Regarding the EGI Pay-for-Use WG, a separate testing instance was established where following functionalities were developed:

* integration with EGI GOCDB to import data about resource prices
* possibility for Provider to create a Resource Pool with Pay-for-Use resources
* information about resource price filled automatically (info from GOCDB) when creating a PFU resource Pool
* HTC and Federated Cloud resources integrated with Pay-for-Use activity

As a result, 29 Pay-for-Use resource Pools were created

December activity will be focused on complete the developments related to the Pay-for-Use activity. January 2015, it is planned to have a whole working pilot system with basic functionalities for Pay-for-Use. Functionalities that will be developed by the end of the year are:

* The customer is able to search for all the providers that support pay-for-use services
* The customer decides from which provider to buy services and submits a request

The activities foreseen for the first months of the next year will included the introduction of the SLA definition for EGI HTC and Federated Cloud resources in the resource allocation process.

Further activities to support the Pay-for-Use proof of concept are foreseen too:

* the customer uses the services and receives a monthly usage report. However, users will have access to the accounting portal for their VO (updated once a day);
* the customer receives an invoice and pays directly the service provider(s).

## Project Issues

### Operations related issues- MK

**Contribution from Operations (PS/MK)**

The main issue raised during PY5 for the operational infrastructure is related to few small NGIs who are experiencing difficulties in performing their daily activities. This is caused mainly by staff issue and the impossibility to have more people working on the NGI duties. Since small NGIs with few sites do not have a big pool of people to distribute operational tasks.

The issue is currently being assessed, EGI Operations plan to have individual interviews with the smaller NGIs, in order to discuss the status of their operations and identify how EGI can help them to provide the minimum operational activities required to be part of the federation.

### Community engagement related issues– GS/SC

### Strategy Policy and business development related issues – SA/SH

### Federated Cloud – DW/MK/GS

In the run up to production there had been a significant growth in the number of resource providers that had been joining and contributing resources. With the production launch it was clear that this growth would not be sustained though we had at that time and continue to have significant number of resources with clear capacity to support our current proof of concepts. As PoC moving into production we must ensure that those centres supporting them have the available capacity, have signed the appropriate SLA and quality of service is maintained.

With a number of providers the participation in the federated cloud is their first within EGI and therefore there is expectation management on what is expected of them, their operational methods and adherence to policies already set out within EGI. We also have a number for whom it is not clear how the NGI model will work going forward particularly if we are successful in the further engagement of commercial resource providers who may wish to be more independent in their governance.

### Mini projects - MD

### Tool development - DS

The main issue raised in JRA2 during PY5 was related to the task TJRA2.1. The SAM/ARGO product team experienced some problem to hire the personnel needed to accomplish the task objectives, this, in conjunction with a low estimation of the effort to operate the current SAM instance, caused a delay on the development roadmap. This delay was partially recovered in the last months of the year after the conclusion of the hiring process. Furthermore, partners involved in TJRA2.1 are committed to complete the remaining work in January 2015.

## Project Management – TF

(NA1 stuff)

### Project Management Metrics

The project was managed through regular meetings defined by the Consortium Agreement: Change dates and update contents

* Collaboration Board: Composed of representatives from the partners, the group met twice during the project year in September 2013 and May 2014. Besides discussing the general project status, the third project amendment for the support of PY5 was presented and policies for claiming of unspent budget after PY4 were discussed. Policies for the handling of partners that may not be in a position to pay their council membership fees in 2014 were discussed.
* Project Management Board: Composed of representations of partner groupings within the project it met 6 times during the year (both F2F and via telecon) to develop the project amendment and to discuss the handling of Breach of obligations under Consortium Agreement caused by the withdrawing of Germany from the EGI Council in 2014.
* Activity Management Board: Composed of the work package leaders it met frequently during the year – generally fortnightly – to manage the day-to-day activities of the project.

### Coordination Activities

### Cooperation with Other Projects

# Deliverables and Milestones

## Deliverables

| **Id** | **Activity No** | **Deliverable title** | **Lead partner** | **Original Delivery date(\*)[[63]](#footnote-62)** | **Revised delivery date(\*)** | **Status**  **(\*\*)** |
| --- | --- | --- | --- | --- | --- | --- |
| D#.## |  |  |  |  |  |  |

## Milestones

| **Id** | **Activity No** | **Milestone title** | **Lead partner** | **Original Delivery date(\*)[[64]](#footnote-63)** | **Revised delivery date(\*)** | **Status**  **(\*\*)** |
| --- | --- | --- | --- | --- | --- | --- |
| MS248 | NA4 | EGI Community Forum 2014 Helsinki <https://documents.egi.eu/document/2242> | EGI.eu | 48 | 51 | PMB Approved |

# Explanation of the use of Resources

## Summary – CB/TF

**Section 1 - Form C and summary financial statement**:

### NA1 – TF

Contri SA

TNA5.1 represents the EGI.eu Strategy and Policy Team based at EGI.eu and focused on strategy, policy and business development. During the reporting period, the activities required two extra person months leading to a total effort of 137% compared to the planned resources. The extra effort was added to meet the recommendations provided by the reviewers after the 4th EGI-InSPIRE review, mainly related to developing the Open Science Commons vision and the new EGI strategy.

### NA4 - GS

### NA5 – SA

Contri SA

TNA5.2 was led by EGI.eu and comprised a mix between NGIs and individual resource centres representing resource providers to develop business models and proof of concepts, namely the pay-for-use proof of concept. During PY5 staff at EGI.eu remained stable and consumed 100,3% of resources, which is in line with budget projections and effort descriptions of worked carried out. Effort consumption varied across the resource providers, however, cumulatively spent 88,8% of allocated resources with limited impact on the results achieved, which is also expected to increase as two partners have not yet provided reporting information at the time of writing this report (RENAM; STFC). One partner, UIIP NASB, did not claim any effort through the project, but still participated in group activities as unfunded effort. Each partner declaring effort over the originally allocated effort (e.g. CSIC) was matched by requested work to be carried out and balanced with other project partners under spending, therefore no major issues occurred in project management and financial resource consumption.

### SA5 – DW

### Overall SA5 was led by the university of Oxford though the sub tasks SA5.1 & SA5.2 were both led by EGI.eu.

### SA6 - MD

### JRA2 – DS

The overall JRA2 effort consumption was the 112.3% of allocated resources and no major issues occurred in final resource consumption. Almost all partners consumed all the committed resources, except GRNET that spent the 90.3%. This was due to the delay on hiring the new personnel needed; anyway, the underreporting was almost completely recovered in the last months of the year. Furthermore, GRNET is committed to complete the remaining development work in early 2015. Some other partners (CNRS, FCTSG, CYFRONET) allocated a quite relevant amount of unfunded effort to properly complete their tasks and satisfy new emerging requirements.

# Financial Statements Per Beneficiary - CB

## Summary

### Consumption of Effort

***Selected period: PM37 to PM48 (May 2013 to April 2014)***

***Report extracted on 10 June 2014 (updates the previously provided one). The updated report was necessary because of problems encountered with the effort reporting system, in particular with the reported “committed PMs”, which are now accurate.***

**Project Period 5 to be updated**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Work Package** | **Worked PM Funded** | **Committed PM** | **Achieved PY4 PM %** | **Achieved PY3 PM %** | **Achieved PY2 PM %** | **Achieved PY1 PM %** |
| **MGT** | **WP1** | 60 | 82 | 73% | 92% | 99% | 75% |
| **COORD** | **WP2** | 266 | 353 | 75% | 80% | 91% | 107% |
| **COORD**  **End 30/10/11** | **WP3** | n/a | n/a | n/a | n/a | 128% | 106% |
| **SUPPORT** | **WP4** | 1,218 | 1,123 | 108% | 107% | 108% | 100% |
| **SUPPORT** | **WP5** | 142 | 134 | 106% | 88% | 99% | 87% |
| **SUPPORT**  **End 30/04/13** | **WP6** | n/a | n/a | n/a | 91% | 104% | 83% |
| **RTD** | **WP7** | 77 | 70 | 110% | 92% | 87% | 93% |
| **SUPPORT** | **WP8** | 111 | 103 | 108% | 46% | n/a | n/a |
|  | **Total** | 1,874 | 1,865 | 100.5% | 97% | 104% | 97% |

The detailed breakdown of effort contributed to each work package by each partner is provided in the following tables for PY4. Each work package (for reporting purposes) is split into the different types of effort used within EGI-InSPIRE (which has different reimbursement rates) and is therefore reported separately.

The different types are:

* M: Project Management as defined by the EC.
* E: EGI Global Task related effort.
* G: General tasks within the project.
* N: NGI International Task related effort.

**Project PERIOD 5**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **EGI-InSPIRE Effort report Per Work Package and Task CB** | | | | | |  |  |
|  |  |  |  |  |  |  |  |
| *The reported man-power is based on validated timesheets only.* | | | | | | |  |
| *The timesheets shall be used exclusively for the purpose of reporting to the European Commission.* | | | | | | | |
|  |  |  |  |  |  |  |  |
| *Selected period:* | | | | | | |  |
| *Report extracted on:* | | | | | | |  |
|  |  |  |  |  |  |  |  |
| **WP1-E - NA1 Management (EGI)** | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Task** | **PM Declared** | **Committed PM** | **Achieved PM** | |  |  |  |
| TNA1.2E | 17.7 | 37.3 | 47.3% | |  |  |  |
| Total: | 17.7 | 37.3 | 47.3% | |  |  |  |
|  |  |  |  |  |  |  |  |
| **WP1-M - NA1 Management** | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Task** | **PM Declared** | **Committed PM** | **Achieved PM** | |  |  |  |
| TNA1.1 | 8.0 | 6.0 | 133.3% | |  |  |  |
| TNA1.2M | 25.5 | 23.8 | 107.3% | |  |  |  |
| TNA1.3 | 7.7 | 9.0 | 85.8% | |  |  |  |
| TNA1.4 | 1.0 | 6.0 | 16.7% | |  |  |  |
| Total: | 42.2 | 44.8 | 94.3% | |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
| **WP2-E - NA2 Community Engagement (EGI)** | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Task** | **PM Declared** | **Committed PM** | **Achieved PM** | |  |  |  |
| TNA2.1 |  | 0.0 |  | |  |  |  |
| TNA2.2E |  | 0.0 |  | |  |  |  |
| TNA2.3E |  | 0.0 |  | |  |  |  |
| TNA2.4E |  | 0.0 |  | |  |  |  |
| TNA2U.1E | 0.7 | 3.6 | 20.1% | |  |  |  |
| TNA2U.2E | 27.4 | 29.3 | 93.5% | |  |  |  |
| TNA2U.3E | 27.6 | 46.3 | 59.7% | |  |  |  |
| TNA2U.4E | 7.9 | 13.3 | 59.2% | |  |  |  |
| TNA2U.5E | 31.4 | 69.2 | 45.4% | |  |  |  |
| Total: | 95.0 | 161.7 | 58.8% | |  |  |  |
|  |  |  |  |  |  |  |  |
| **WP2-N - NA2 Community Engagement** | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Task** | **PM Declared** | **Committed PM** | **Achieved PM** | |  |  |  |
| TNA2.1N | 122.4 | 191.3 | 63.6% | |  |  |  |
| TNA2.2N |  | 0.0 |  | |  |  |  |
| TNA2.3N |  | 0.0 |  | |  |  |  |
| TNA2.4N |  | 0.0 |  | |  |  |  |
| TNA2.6N | 48.6 |  |  | |  |  |  |
| Total: | 171.0 | 191.3 | 89.4% | |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
| **WP4-E - SA1 Operations (EGI)** | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Task** | **PM Declared** | **Committed PM** | **Achieved PM** | |  |  |  |
| TSA1.1 | 12.8 | 13.8 | 92.7% | |  |  |  |
| TSA1.2E | 9.8 | 10.8 | 91.3% | |  |  |  |
| TSA1.3.1E | 3.5 | 7.2 | 49.0% | |  |  |  |
| TSA1.3E | 33.1 | 21.3 | 155.7% | |  |  |  |
| TSA1.4E | 33.7 | 35.3 | 95.5% | |  |  |  |
| TSA1.5E | 5.0 | 6.0 | 83.3% | |  |  |  |
| TSA1.6E | 13.0 | 11.8 | 110.8% | |  |  |  |
| TSA1.7.1E | 0.0 | 6.1 | 0.0% | |  |  |  |
| TSA1.7.2E | 12.7 | 6.0 | 212.4% | |  |  |  |
| TSA1.7.3E | 45.8 | 43.5 | 105.2% | |  |  |  |
| TSA1.7.4E | 3.6 | 1.0 | 360.7% | |  |  |  |
| TSA1.7E | 8.9 | 13.1 | 68.0% | |  |  |  |
| TSA1.8.1E | 3.3 | 7.2 | 45.9% | |  |  |  |
| TSA1.8E | 23.7 | 19.5 | 121.4% | |  |  |  |
| Total: | 209.0 | 202.4 | 103.2% | |  |  |  |
|  |  |  |  |  |  |  |  |
| **WP4-N - SA1 Operations** | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Task** | **PM Declared** | **Committed PM** | **Achieved PM** | |  |  |  |
| TSA1.1N | 22.9 | 29.8 | 77.1% | |  |  |  |
| TSA1.2N | 100.0 | 79.3 | 126.1% | |  |  |  |
| TSA1.3N | 130.5 | 93.7 | 139.3% | |  |  |  |
| TSA1.4N | 179.5 | 188.7 | 95.1% | |  |  |  |
| TSA1.5N | 44.4 | 51.7 | 85.9% | |  |  |  |
| TSA1.6N | 72.1 | 80.0 | 90.0% | |  |  |  |
| TSA1.7N | 282.8 | 268.2 | 105.4% | |  |  |  |
| TSA1.8N | 176.3 | 128.7 | 136.9% | |  |  |  |
| Total: | 1,008.5 | 920.1 | 109.6% | |  |  |  |
|  |  |  |  |  |  |  |  |
| **WP5-E - SA2 Provisioning Soft. Infrastr. (EGI)** | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Task** | **PM Declared** | **Committed PM** | **Achieved PM** | |  |  |  |
| TSA2.1 | 7.9 | 9.0 | 87.7% | |  |  |  |
| TSA2.2 | 19.6 | 17.5 | 111.8% | |  |  |  |
| TSA2.3 | 21.1 | 17.5 | 120.3% | |  |  |  |
| TSA2.4 | 34.4 | 38.8 | 88.9% | |  |  |  |
| TSA2.5 |  | 0.0 |  | |  |  |  |
| Total: | 83.0 | 82.8 | 100.2% | |  |  |  |
|  |  |  |  |  |  |  |  |
| **WP5-N - SA2 Provisioning Soft. Infrastr.** | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Task** | **PM Declared** | **Committed PM** | **Achieved PM** | |  |  |  |
| TSA2.6 | 58.6 | 51.0 | 115.0% | |  |  |  |
| Total: | 58.6 | 51.0 | 115.0% | |  |  |  |
| **WP7-E - JRA1 Operational Tools (EGI)** | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Task** | **PM Declared** | **Committed PM** | **Achieved PM** | |  |  |  |
| TJRA1.1 | 6.2 | 6.0 | 104.1% | |  |  |  |
| TJRA1.2 | 35.6 | 32.8 | 108.7% | |  |  |  |
| Total: | 41.9 | 38.8 | 108.0% | |  |  |  |
|  |  |  |  |  |  |  |  |
| **WP7-G - JRA1 Operational Tools** | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Task** | **PM Declared** | **Committed PM** | **Achieved PM** | |  |  |  |
| TJRA1.3 |  | 0.0 |  | |  |  |  |
| TJRA1.4 |  | 29.7 | 119.2% | |  |  |  |
| TJRA1.5 |  | 1.5 |  | |  |  |  |
| Total: | 35.4 | 31.1 | 113.5% | |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
| **WP8-S - SA4 Advancing EGIs Strategic Goals** | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Task** | **PM Declared** | **Committed PM** | **Achieved PM** | |  |  |  |
| TSA4.1 |  | 0.4 | 0.0% | |  |  |  |
| TSA4.10 |  | 13.3 | 93.2% | |  |  |  |
| TSA4.11 |  | 4.3 | 120.6% | |  |  |  |
| TSA4.12 |  | 13.3 | 113.1% | |  |  |  |
| TSA4.2 |  | 12.0 | 120.6% | |  |  |  |
| TSA4.3 |  | 9.0 | 76.5% | |  |  |  |
| TSA4.4 |  | 6.9 | 115.0% | |  |  |  |
| TSA4.5 |  | 5.1 | 63.1% | |  |  |  |
| TSA4.6 |  | 6.0 | 71.3% | |  |  |  |
| TSA4.7 |  | 15.4 | 137.0% | |  |  |  |
| TSA4.8 |  | 6.9 | 128.1% | |  |  |  |
| TSA4.9 |  | 10.3 | 113.8% | |  |  |  |
| Total: | 111.0 | 102.9 | 107.9% | |  |  |  |

### Overall Financial Status

### *Financial Period:*

### *Introduction*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Partner** | **PM Declared** | **Committed PM** | **Achieved PM** | **Eligible Cost Estimate** | **Estimated Funding** |
| 1-EGI.EU |  | 252.5 | 65.2% | 1,461,393.4 | 911,540.4 |
| 2-UPT |  | 1.6 | 0.0% | 0.0 | 0.0 |
| 3-IIAP NAS RA |  | 6.6 | 315.8% | 61,624.7 | 20,336.1 |
| 5A-IICT-BAS |  | 20.2 | 62.4% | 76,879.4 | 25,370.2 |
| 6-UIIP NASB |  | 7.6 | 37.5% | 10,971.4 | 3,620.6 |
| 7A-ETH ZURICH |  | 28.1 | 42.1% | 119,130.0 | 39,312.9 |
| 8-UCY |  | 16.1 | 30.6% | 42,483.5 | 14,019.6 |
| 9-CESNET |  | 84.7 | 95.6% | 532,690.5 | 255,582.6 |
| 10B-KIT-G |  | 137.7 | 92.7% | 1,135,143.2 | 443,345.4 |
| 11-UNI BL |  | 9.5 | 134.3% | 52,224.0 | 17,233.9 |
| 12A-CSIC |  | 162.8 | 150.9% | 1,920,526.2 | 751,482.8 |
| 13-CSC |  | 30.8 | 83.8% | 266,096.1 | 87,811.7 |
| 14A-CNRS |  | 128.6 | 96.5% | 1,072,358.5 | 456,183.6 |
| 15-GRENA |  | 6.4 | 103.6% | 16,282.9 | 5,373.3 |
| 16A-GRNET |  | 106.8 | 94.4% | 780,593.0 | 341,118.0 |
| 17-SRCE |  | 35.0 | 116.8% | 203,005.7 | 91,900.8 |
| 18A-MTA KFKI |  | 38.9 | 76.9% | 143,311.8 | 47,292.9 |
| 20-IUCC |  | 6.3 | 485.6% | 391,727.5 | 129,270.1 |
| 21A-INFN |  | 162.1 | 81.1% | 858,937.6 | 335,725.3 |
| 22-VU |  | 4.4 | 279.9% | 102,453.1 | 33,809.5 |
| 23-RENAM |  | 5.7 | 121.8% | 20,892.9 | 6,894.6 |
| 24-UOM |  | 11.3 | 117.3% | 31,803.8 | 10,495.2 |
| 25-UKIM |  | 17.8 | 126.4% | 89,771.4 | 29,624.6 |
| **Partner** | **PM Declared** | **Committed PM** | **Achieved PM** | **Eligible Cost Estimate** | **Estimated Funding** |
| 26-NCF |  | 67.5 | 88.1% | 608,874.6 | 281,403.9 |
| 27A-SIGMA |  | 22.1 | 59.3% | 129,845.2 | 42,848.9 |
| 28A-CYFRONET |  | 63.9 | 118.3% | 647,367.2 | 257,113.8 |
| 29-LIP |  | 50.9 | 153.6% | 428,107.9 | 176,245.6 |
| 30-IPB |  | 36.9 | 99.0% | 199,601.1 | 65,868.4 |
| 31-ARNES |  | 27.3 | 191.4% | 313,255.0 | 103,374.2 |
| 32-UI SAV |  | 37.2 | 109.6% | 326,375.4 | 107,703.9 |
| 33-TUBITAK ULAKBIM |  | 46.0 | 90.9% | 294,624.0 | 97,225.9 |
| 34A-STFC |  | 136.4 | 112.1% | 1,570,142.2 | 623,559.2 |
| 35-CERN |  | 18.9 | 90.0% | 4,037.4 | 1,332.3 |
| 36-UCPH |  | 11.5 | 97.8% | 124,110.6 | 40,956.5 |
| 38-UU |  | 34.1 | 94.8% | 370,486.5 | 144,260.1 |
| 39-IMCS-UL |  | 8.6 | 83.7% | 56,728.0 | 18,720.2 |
| 40A-E-ARENA |  | 15.1 | 105.1% | 62,988.3 | 20,786.1 |
| 51A-ICI |  | 6.1 | 152.1% | 56,564.0 | 18,666.1 |
| **Total** | **1,874** | **1,864** | **100.5%** | **14,583,452** | **6,057,409** |

### Deviations from linear plan

# Annex A1: Dissemination and Use

## Main Project and Activity Meetings - ALL

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Location** | **Title** | **Participants** | **Outcome (Short report & Indico URL)** |
| 19-23 May 2014 | Helsinki, Finland | EGI Community Forum 2014 | 420 | [http://cf2014.egi.eu](http://cf2014.egi.eu/) |

Project and Activity Meetings; details in <https://indico.egi.eu/indico/categoryDisplay.py?categId=3>

## Conferences/Workshops Organised – ALL

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Location** | **Title** | **Participants** | **Outcome (Short report & Indico URL)** |
| 19-23 May 2014 | Helsinki, Finland | EGI Community Forum 2014 | 420 | [http://cf2014.egi.eu](http://cf2014.egi.eu/) |
| 4-6 Mar 2014 | Amsterdam, NL | [APARSEN-EGI Community Workshop on Managing, Computing and Preserving Big Data for Research](http://indico.egi.eu/indico/conferenceDisplay.py?confId=2052) | 32 | http://indico.egi.eu/indico/conferenceDisplay.py?confId=2052 |
| 24-26 Sept 2014 | Amsterdam, NL | [EGI Conference on Challenges and Solutions for Big Data Processing on Cloud](http://indico.egi.eu/indico/conferenceDisplay.py?confId=2160) | 158 | http://indico.egi.eu/indico/conferenceDisplay.py?confId=2160 |

## Conferences/Workshops Attended – ALL

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Location** | **Title** | **Participants** | **Outcome (Short report & Indico URL)** |
| 31 Mar 2014 | ITQB, Oeiras, PT | Exploit the power of the European computer grid infrastructure for Structural Biology | 15 |  |
| 2-4 April 2014 | Athens, Greece | 2nd International Conference on Research Infrastructures | 700 |  |
| 31-Aug-14 | Paris, France | FEBS–EMBO 2014 | 700 |  |
| 12-17 July 2014 | Lisbon, Portugal | EBEC 2014 | 300 |  |
| 8-10 Decemnber 2014 | Tempe, USA | Early Science from Low-frequency Radio Telescopes | 300 |  |

## Publications – SC/SH

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Publication title** | **Journal / Proceedings title** | **DOI code** | **Journal references (volume, pages)** | | **Authors** |
| Probing the radio emission from air showers with polarization measurements | Physical Review D | 10.1103/PhysRevD.89.052002 | 89 | 52002 | Aab A. et al |
| Measurement of the parity-violating asymmetry parameter alpha\_b and the helicity amplitudes for the decay Lambda\_b->J/psi+Lambda with the ATLAS detector | Physical Review D | 10.1103/PhysRevD.89.092009 | 89 | 92009 | Aad G. et al |
| Search for dark matter in events with a Z boson and missing transverse momentum in pp collisions at $\sqrt{s}$=8 TeV with the ATLAS detector | Physical Review D | 10.1103/PhysRevD.90.012004 | 90 | 12004 | Aad G. et al |
| Search for top quark decays $t\rightarrow qH$ with $H\to\gamma\gamma$ using the ATLAS detector | Journal of High Energy Physics | 10.1007/JHEP06(2014)008 | 6 | 8 | Aad G. et al |
| Search for direct production of charginos neutralinos and sleptons in final states with two leptons and missing transverse momentum in pp collisions at sqrt(s) = 8 TeV with the ATLAS detector | Journal of High Energy Physics | 10.1007/JHEP05(2014)071 | 5 | 71 | Aad G. et al |
| Search for direct top squark pair production in events with a Z boson b-jets and missing transverse momentum in sqrt(s)=8 TeV pp collisions with the ATLAS detector | European Physical Journal C: Particles and Fields | 10.1140/epjc/s10052-014-2883-6 | 74 | 2883 | Aad G. et al |
| Search for direct production of charginos and neutralinos in events with three leptons and missing transverse momentum in sqrt(s) = 8TeV pp collisions with the ATLAS detector | Journal of High Energy Physics | 10.1007/JHEP04(2014)169 | 4 | UNSP 169 | Aad G. et al |
| Measurement of the production of a W boson in association with a charm quark in pp collisions at sqrt(s)=7 TeV with the ATLAS detector | Journal of High Energy Physics | 10.1007/JHEP05(2014)068 | 5 | 68 | Aad G. et al |
| Search for Higgs boson decays to a photon and a Z boson in pp collisions at sqrt(s)=7 and 8 TeV with the ATLAS detector | Physics Letters B | 10.1016/j.physletb.2014.03.015 | 732 | 8-27 | Aad G. et al |
| Search for Invisible Decays of a Higgs Boson Produced in Association with a Z Boson in ATLAS | Physical Review Letters | 10.1103/PhysRevLett.112.201802 | 112 | 201802 | Aad G. et al |
| Measurement of the electroweak production of dijets in association with a Z-boson and distributions sensitive to vector boson fusion in proton-proton collisions at sqrt(s) = 8 TeV using the ATLAS detector | Journal of High Energy Physics | 10.1007/JHEP04(2014)031 | 4 | 31 | Aad G. et al |
| Measurement of the production cross section of prompt J/psi mesons in association with a W boson in pp collisions at sqrt{s}=7 TeV with the ATLAS detector | Journal of High Energy Physics | 10.1007/JHEP04(2014)172 | 4 | 172 | Aad G. et al |
| Measurement of dijet cross sections in pp collisions at 7 TeV centre-of-mass energy using the ATLAS detector | Journal of High Energy Physics | 10.1007/JHEP05(2014)059 | 5 | 59 | Aad G. et al |
| Search for a multi-Higgs-boson cascade in WWbb events with the ATLAS detector in pp collisions at sqrt(s) = 8 TeV | Physical Review D | 10.1103/PhysRevD.89.032002 | 89 | 32002 | Aad G. et al |
| Standalone vertex finding in the ATLAS muon spectrometer | Journal of Instrumentation | 10.1088/1748-0221/9/02/P02001 | 9 | P02001 | Aad G. et al |
| Measurement of the top quark pair production charge asymmetry in proton-proton collisions at 7 TeV using the ATLAS detector | Journal of High Energy Physics | 10.1007/JHEP02(2014)107 | 2 | 107 | Aad G. et al |
| Search for Quantum Black Hole Production in High-Invariant-Mass Lepton+Jet Final States Using Proton-Proton Collisions at sqrt(s) = 8 TeV and the ATLAS Detector | Physical Review Letters | 10.1103/PhysRevLett.112.091804 | 112 | 91804 | Aad G. et al |
| Measurement of the mass difference between top and anti-top quarks in pp collisions at sqrt(s) = 7 TeV using the ATLAS detector | Physics Letters B | 10.1016/j.physletb.2013.12.010 | 728 | 363-379 | Aad G. et al |
| Search for new phenomena in photon+jet events collected in proton--proton collisions at sqrt(s) = 8 TeV with the ATLAS detector | Physics Letters B | 10.1016/j.physletb.2013.12.029 | 728 | 562-578 | Aad G. et al |
| Search for dark matter in events with a hadronically decaying W or Z boson and missing transverse momentum in pp collisions at sqrt(s)=8 TeV with the ATLAS detector | Physical Review Letters | 10.1103/PhysRevLett.112.041802 | 112 | 41802 | Aad G. et al |
| A study of heavy flavor quarks produced in association with top quark pairs at sqrt(s) = 7 TeV using the ATLAS detector | Physical Review D | 10.1103/PhysRevD.89.072012 | 89 | 72012 | Aad G. et al |
| Measurement of the resonant and CP components in $\overline{B}^0\rightarrow J/\psi \pi^+\pi^-$ decays | Physical Review D | 10.1103/PhysRevD.90.012003 | 90 | 12003 | Aaij R. et al |
| Observation of the resonant character of the $Z(4430)^-$ state | Physical Review Letters | 10.1103/PhysRevLett.112.222002 | 112 | 222002 | Aaij R. et al |
| Evidence for the decay $B\_c^+ \rightarrow J/\psi 3\pi^+ 2\pi^-$ | Journal of High Energy Physics | 10.1007/JHEP05(2014)148 | 5 | 148 | Aaij R. et al |
| Angular analysis of charged and neutral $B \to K \mu^+\mu^-$ decays | Journal of High Energy Physics | 10.1007/JHEP05(2014)082 | 5 | 82 | Aaij R. et al |
| Study of beauty hadron decays into pairs of charm hadrons | Physical Review Letters | 10.1103/PhysRevLett.112.202001 | 112 | 202001 | Aaij R. et al |
| Measurement of $\psi(2S)$ polarisation in $pp$ collisions at $\sqrt{s}=7$ TeV | European Physical Journal C: Particles and Fields | 10.1140/epjc/s10052-014-2872-9 | 74 | 2872 | Aaij R. et al |
| Observation of photon polarization in the $b \to s\gamma$ transition | Physical Review Letters | 10.1103/PhysRevLett.112.161801 | 112 | 161801 | Aaij R. et al |
| Measurement of resonant and $CP$ components in $\overline{B}\_s^0\rightarrow J/\psi \pi^+\pi^-$ decays | Physical Review D | 10.1103/PhysRevD.89.092006 | 89 | 92006 | Aaij R. et al |
| Precision measurement of the ratio of the $\Lambda^0\_b$ to $\overline{B}^0$ lifetimes | Physics Letters B | 10.1016/j.physletb.2014.05.021 | 734 | 122-130 | Aaij R. et al |
| Measurement of charged particle multiplicities and densities in $pp$ collisions at $\sqrt{s}=7\;$TeV in the forward region | European Physical Journal C: Particles and Fields | 10.1140/epjc/s10052-014-2888-1 | 74 | 2888 | Aaij R. et al |
| Searches for $\Lambda^0\_{b}$ and $\Xi^{0}\_{b}$ decays to $K^0\_{\rm S} p \pi^{-}$ and $K^0\_{\rm S}p K^{-}$ final states with first observation of the $\Lambda^0\_{b} \rightarrow K^0\_{\rm S}p \pi^{-}$ decay | Journal of High Energy Physics | 10.1007/JHEP04(2014)087 | 4 | 87 | Aaij R. et al |
| A study of CP violation in $B^\pm \to D K^\pm$ and $B^\pm \to D \pi^\pm$ decays with $D \to K^0\_{\rm S} K^\pm \pi^\mp$ final states | Physics Letters B | 10.1016/j.physletb.2014.03.051 | 733 | 36-45 | Aaij R. et al |
| Measurements of the $B^+$ $B^0$ $B\_s^0$ meson and $\Lambda\_b^0$ baryon lifetimes | Journal of High Energy Physics | 10.1007/JHEP04(2014)114 | 4 | 114 | Aaij R. et al |
| Measurement of Upsilon production in pp collisions at sqrt{s}=2.76 TeV | European Physical Journal C: Particles and Fields | 10.1140/epjc/s10052-014-2835-1 | 74 | 2835 | Aaij R. et al |
| Measurement of the $B\_c^+$ meson lifetime using $B\_c^+ \to J\!/\!\psi\mu^+ \nu\_{\mu} X$ decays | European Physical Journal C: Particles and Fields | 10.1140/epjc/s10052-014-2839-x | 74 | 2839 | Aaij R. et al |
| Search for Majorana neutrinos in $B^- \to \pi^+\mu^-\mu^-$ decays | Physical Review Letters | 10.1103/PhysRevLett.112.131802 | 112 | 131802 | Aaij R. et al |
| Updated measurements of exclusive $J/\psi$ and $\psi(2S)$ production cross-sections in $pp$ collisions at $\sqrt{s}=7$ TeV | Journal of Physics G Nuclear Physics | 10.1088/0954-3899/41/5/055002 | 41 | 55002 | Aaij R. et al |
| Measurement of the flavour-specific CP-violating asymmetry $a\_{\rm sl}^s$ in $B\_s^0$ decays | Physics Letters B | 10.1016/j.physletb.2013.12.030 | 728 | 607-615 | Aaij R. et al |
| Measurement of the $\bar{B}\_s^0\to D\_s^-D\_s^+$ and $\bar{B}\_s^0\to D^-D\_s^+$ effective lifetimes | Physical Review Letters | 10.1103/PhysRevLett.112.111802 | 112 | 111802 | Aaij R. et al |
| Studies of beauty baryon decays to $D^0 p h^-$ and $\Lambda\_c^+ h^-$ final states | Physical Review D | 10.1103/PhysRevD.89.032001 | 89 | 32001 | Aaij R. et al |
| Study of forward Z+jet production in pp collisions at $\sqrt{s} = 7$ TeV | Journal of High Energy Physics | 10.1007/JHEP01(2014)033 | 1 | 33 | Aaij R. et al |
| Search for CP violation in the decay $D^+ \to \pi^-\pi^+\pi^+$ | Physics Letters B | 10.1016/j.physletb.2013.12.035 | 728 | 585-595 | Aaij R. et al |
| Measurements of indirect CP asymmetries in $D^0\to K^-K^+$ and $D^0\to\pi^-\pi^+$ decays | Physical Review Letters | 10.1103/PhysRevLett.112.041801 | 112 | 41801 | Aaij R. et al |
| Measurement of CP violation in the phase space of $B^{\pm} \rightarrow K^{+} K^{-} \pi^{\pm}$ and $B^{\pm} \rightarrow \pi^{+} \pi^{-} \pi^{\pm}$ decays | Physical Review Letters | 10.1103/PhysRevLett.112.011801 | 112 | 11801 | Aaij R. et al |
| Search for the decay D0 to \pi+ \pi- \mu+ \mu- | Physics Letters B | 10.1016/j.physletb.2013.11.053 | 728 | 234-243 | Aaij R. et al |
| Observation of B^0\_(s) -> J/\psi f\_1(1285) decays and measurement of the f\_1(1285) mixing angle | Physical Review Letters | 10.1103/PhysRevLett.112.091802 | 112 | 91802 | Aaij R. et al |
| Measurement of the charge asymmetry in $B^{\pm}\rightarrow \phi K^{\pm}$ and search for $B^{\pm}\rightarrow \phi \pi^{\pm}$ decays | Physics Letters B | 10.1016/j.physletb.2013.11.036 | 728 | 85-94 | Aaij R. et al |
| Study of $J/\psi$ production and cold nuclear matter effects in $p$Pb collisions | Journal of High Energy Physics | 10.1007/JHEP02(2014)072 | 2 | 72 | Aaij R. et al |
| Observation of Electron Neutrino Appearance in a Muon Neutrino Beam | Physical Review Letters | 10.1103/PhysRevLett.112.061802 | 112 | 61802 | Abe K. et al |
| Measurement of charged jet suppression n Pb-Pb collisions at sqrt(sNN)=2.76TeV | Journal of High Energy Physics | 10.1007/JHEP03(2014)013 | 3 | 13 | Abelev B. et al |
| Centrality rapidity and transverse momentum dependence of J/Psi suppression in Pb-Pb collisions at sqrt(sNN)=2.76TeV | Physics Letters B | 10.1016/j.physletb.2014.05.064 | 734 | 314-327 | Abelev B. et al |
| Two and Three-Pion Quantum Statistics Correlations in Pb-Pb Collisions at sqrt(sNN)=2.76 TeV at the LHC | Physical Review C | 10.1103/PhysRevC.89.024911 | 89 | 24911 | Abelev B. et al |
| J/psi production and nuclear effects in p-Pb collisions at sqrt(sNN)=5.02 TeV | Journal of High Energy Physics | 10.1007/JHEP02(2014)073 | 2 | 73 | Abelev B. et al |
| Multiplicity Dependence of Pion Kaon Proton and Lambda Production in p--Pb Collisions at sqrt(s\_NN) = 5.02 TeV | Physics Letters B | 10.1016/j.physletb.2013.11.020 | 728 | 25-38 | Abelev B. et al |
| Multi-strange baryon production at mid-rapidity in Pb-Pb collisions at sqrt(s\_NN) = 2.76 TeV | Physics Letters B | 10.1016/j.physletb.2013.11.048 | 728 | 216-227 | Abelev B. et al |
| Shower development of particles with momenta from 1 to 10 GeV in the CALICE Scintillator-Tungsten HCAL | Journal of Instrumentation | 10.1088/1748-0221/9/01/P01004 | 9 | P01004 | Adloff C. et al |
| Measurements of the t t-bar charge asymmetry using the dilepton decay channel in pp collisions at sqrt(s) = 7 TeV | Physical Review Letters | 10.1103/PhysRevLett.112.182001 | 112 | 182001 | Chatrchyan S. et al |
| Measurement of the production cross sections for a Z boson and one or more b jets in pp collisions at sqrt(s) = 7 TeV | Journal of High Energy Physics | 10.1007/JHEP06(2014)120 | 6 | 120 | Chatrchyan S. et al |
| Search for W' to tb decays in the lepton + jets final state in pp collisions at sqrt(s) = 8 TeV | Journal of High Energy Physics | 10.1007/JHEP05(2014)108 | 5 | 108 | Chatrchyan S. et al |
| Measurement of inclusive W and Z boson production cross sections in pp collisions at sqrt(s) = 8 TeV | Physical Review Letters | 10.1103/PhysRevLett.112.191802 | 112 | 191802 | Chatrchyan S. et al |
| Evidence for the 125 GeV Higgs boson decaying to a pair of tau leptons | Journal of High Energy Physics |  | 5 | 104 | Chatrchyan S. et al |
| Observation of the associated production of a single top quark and a W boson in pp collisions at sqrt(s) = 8 TeV | Physical Review Letters | 10.1103/PhysRevLett.112.231802 | 112 | 231802 | Chatrchyan S. et al |
| Event activity dependence of Y(nS) production in sqrt(s[NN])=5.02 TeV pPb and sqrt(s)=2.76 TeV pp collisions | Journal of High Energy Physics | 10.1007/JHEP04(2014)103 | 4 | 103 | Chatrchyan S. et al |
| Measurement of four-jet production in proton-proton collisions at sqrt(s)=7 TeV | Physical Review D | 10.1103/PhysRevD.89.092010 | 89 | 92010 | Chatrchyan S. et al |
| Study of double parton scattering using W + 2-jet events in proton-proton collisions at sqrt(s) = 7 TeV | Journal of High Energy Physics | 10.1007/JHEP03(2014)032 | 3 | 32 | Chatrchyan S. et al |
| Measurement of the properties of a Higgs boson in the four-lepton final state | Physical Review D | 10.1103/PhysRevD.89.092007 | 89 | 92007 | Chatrchyan S. et al |
| Search for flavor-changing neutral currents in top-quark decays t to Zq in pp collisions at sqrt(s)=8 TeV | Physical Review Letters | 10.1103/PhysRevLett.112.171802 | 112 | 171802 | Chatrchyan S. et al |
| Studies of azimuthal anisotropy harmonics in ultra-central PbPb collisions at sqrt(s[NN]) = 2.76 TeV | Journal of High Energy Physics | 10.1007/JHEP02(2014)088 | 02(2014) | 88 | Chatrchyan S. et al |
| Search for top-quark partners with charge 5/3 in the same-sign dilepton final state | Physical Review Letters | 10.1103/PhysRevLett.112.171801 | 112 | 1801 | Chatrchyan S. et al |
| Search for supersymmetry in pp collisions at sqrt(s) = 8 TeV in events with a single lepton large jet multiplicity and multiple b jets | Physics Letters B | 10.1016/j.physletb.2014.04.023 | 733 | 328-353 | Chatrchyan S. et al |
| Measurements of t t-bar spin correlations and top-quark polarization using dilepton final states in pp collisions at 7 TeV | Physical Review Letters | 10.1103/PhysRevLett.112.182001 | 112 | 182001 | Chatrchyan S. et al |
| Measurement of higher-order harmonic azimuthal anisotropy in PbPb collisions at a nucleon-nucleon center-of-mass energy of 2.76 TeV | Physical Review C | 10.1103/PhysRevC.89.044906 | 89 | 44906 | Chatrchyan S. et al |
| Modification of jet shapes in PbPb collisions at sqrt(s[NN]) = 2.76 TeV | Physics Letters B | 10.1016/j.physletb.2014.01.042 | 730 | 243-263 | Chatrchyan S. et al |
| Search for baryon number violation in top quark decays | Physics Letters B | 10.1016/j.physletb.2014.02.033 | 731 | 137-196 | Chatrchyan S. et al |
| Measurement of the W gamma and Z gamma inclusive cross sections in pp collisions at sqrt(s) = 7 TeV and limits on anomalous triple gauge boson couplings | Physical Review D | 10.1103/PhysRevD.89.092005 | 89 | 92005 | Chatrchyan S. et al |
| A stateful storage availability and entropy model to control storage distribution on grids | Journal of Concurrency and Computation: Practice and Experience | 10.1002/cpe.3209 |  | in press | Ma J. et al |
| Data Stream Clustering with Affinity Propagation | IEEE Transactions on Knowledge and Data Engineering |  |  |  | Zhang X. et al |
| Simulating Application Workflows and Services Deployed on the European Grid Infrastructure | 13th IEEE/ACM International Symposium on Cluster Cloud and Grid Computing |  |  | 18--25 | Camarasu-Pop S. et al |
| Synergy between the CIMENT tier-2 HPC centre in Grenoble (France) | Journal of Physics: Conference Series | 10.1088/1742-6596/513/3/032008 | 513 | 32008 | Biscarat C. et al |
| Radiation hard programmable delay line for LHCb calorimeter upgrade | Journal of Instrumentation | 10.1088/1748-0221/9/01/C01016 | 9 | C01016 | Mauricio J. et al |
| Environmental Science Federated Cloud Platform in the BSEC Region | International Journal of Scientific & Engineering Research |  | 1 | 1130-1133 | Astsatryan H. et al. |
| Dynamical Features of Complex Systems: A Molecular Simulation Study | Serbia, Springer Modelling and Optimization in Science and Technologies | 10.1007/978-3-319-01520-0\_14 | 2 | 117-122 | Poghosyan A.H. et al |
| Energy aware performance study for a class of MC algorithms | Proceeding of the International International Conference on "Numerical Methods for Scientific Computations and Advanced Applications", |  |  |  | Atanassov E. et al |
| Performance Analysis of the Regional Grid Resources for an Environmental Modeling Application | Large-Scale Scientific Computing Lecture Notes in Computer Science | 10.1007/978-3-662-43880-0\_58 |  | 507-514 | Hristova R. et al. |
| Tuning for Scallability on Hybrid HPC Cluster | Proceedings of Eighth Annual Meeting of the Bulgarian Section of SIAM |  |  |  | Atanassov E. et al |
| Computation and Analysis of Sobol Coefficients for Air Pollution Concentrations over the Territory of Bulgaria | Proceedings of the 36th International Convention |  |  | 254-257 | Atanassov E. et al |
| Tuning for Scallability on Hybrid HPC Cluster | Mathematics in Industry, Cambridge Scholar Publishing |  |  |  | Atanassov E. et al |
| Air Quality Index Evaluations for Bulgaria | Proceeding of the International International Conference, NMSCAA'14 |  |  | 39-41 | Georgieva I. |
| Computer Simulations of the Atmospheric Composition Climate of Bulgaria -Some Basic Results | Proceeding of the International International Conference, NMSCAA'14 |  |  | 35-38 | Gadzhev G. et al. |
| Energy aware performance study for a class of MC Algorithms | Proceeding of the International International Conference, NMSCAA'14 |  |  | 15-18 | Atanassov E. et al |
| Performance Analysis of the Regional Grid Resources for an Environmental Modeling Application | LNCS | 10.1007/978-3-662-43880-0\_53 | 8353 | 507-514 | Hristova R. et al. |
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# APPENDIX A – Distributed Competence Centre progress

This appendix is added here. TF to indicate where it would best fit.

LSCG VRC

*Amsterdam Medisch Centrum (AMC)*

The AMC e-Science group (part of LSGC) has continued to support biomedical researchers mainly from the AMC (academic hospital in NL) - around 50 researchers who use facilities from time to time. Activities/Achievements include:

* Support and management of the VLEMED VO
* Further development, maintenance and operation of a science gateway for neuroimaging data analysis on grid (<https://neuro.ebioscience.amc.nl/>)
* Development of a science gateway for molecular docking simulation on grid (<https://docking.ebioscience.amc.nl/>)
* Proposal to develop a new gateway to manage genomics data for immunology research
* Basic training of biomedical science students on usage of the neuroscience gateway
* Basic training of WS-PGRADE for medical informatics students
* Basic training of WS-PGRADE for bioinformaticians during the 2014 european conference on computational biology (ECCB, Strasbourg, 7 Sept 2014)
* Various invited presentations in which the science gateway activities were disseminated

Plans:

* Continue to support VLEMED, extending to cloud resources
* Continue and extend support to existing science gateways (neuroscience, docking)
* Development of new data management gateway for immunogenomics (will use EUDAT resources)
* New science gateways for other (biomedical) applications

*Centre national de la recherche scientifique (CNRS)*

CNRS contributed to the Life Science community support. CNRS is leading the LSGC (Life Science Grid Community) group where community-wide policies are discussed. During this period, CNRS has particularly bee involved in:

1. **VAPOR maintenance.** The VAPOR portal (Vo Administration PORtal: https://operations-portal.egi.eu/vapor/) is now mature and only bug fixes where implemented during the last months. The VAPOR portal has been deployed for the biomed VO and used by the LSGC technical team for infrastructure monitoring and community support. Due to high demand, other VOs have been integrated. In addition to biomed, it currently monitors the France Grille, WeNMR, CompChem, VLEMED, SHIWA workflows, SEE and SAGRID VOs.
2. **DIRAC workload management.** To deal with various recurrent issues, DIRAC has been identified as the reference workload manager for the LSGC. Although its use could not be technically enforced for all users, it received higher priority support. A DIRAC instance is maintain by the French NGI for various user communities.
3. **CVMFS.** CVMFS applications deployment tool has been successfully tested by the LSGC technical team. A Life Sciences CVMFS instance installation campaign has been conducted by contacting every sites supporting the biomed VO. Currently, 44 sites deliver this service for the biomed VO.
4. The **biomed technical team** provided continuous support to the life science users, monitored the resources available through the VAPOR portal and liaised with the sites when needed to solve technical problems and improve users experience.

CMMST VRC

The activities of UNIPG in the period May-December 2014 can be divided into two parts. The first part was devoted to the assemblage and approval of the work done by the chemistry Molecular, Materials Science and Technologies (CMMST) Virtual Research Community formalized  
at the EGI Community forum held in Helsinki. Such work was followed in the period going from May to July by the preparation of the documentation for proposing the Homonimus Competence   
Centre (presented at the International Conference of Computational Science and its Applications  
and at XSEDE 2014). The proposal was not approved by EGI and from there on contacts with ECTN   
and EUCHEMS (Istanbul and Krakow September 2014) were made in order to enlarge the community  
and prepare with the sponsorship of INSTM the documentation for a Virtual research environment that will be discussed in December at the EGI premise. Several Laboratories of the COST actions as well as EUCHEMS; ECTN, MOSGRID and SCALALIFE have expressed their willing of taking part to the initiative. If successful, the activity will continue in 2015.

WeNMR VRC

The WeNMR VRC and its associated DCC have been operating on a regular basis over the last period. In preparation for H2020, WeNMR, in collaboration with NeuGRID, has submitted a proposal for a competence center in EGI Engage: “MoBrain: A Competence Center to Serve Translational Research from Molecule to Brain”. MoBrain has been selected for inclusion in EGI-Engage.

The WeNMR community has shown a constant growth over that period (Figure 1), reaching over 1500 registered users from all over the world (Figure 2).

Figure 1: Growth of the WeNMR VRC user community

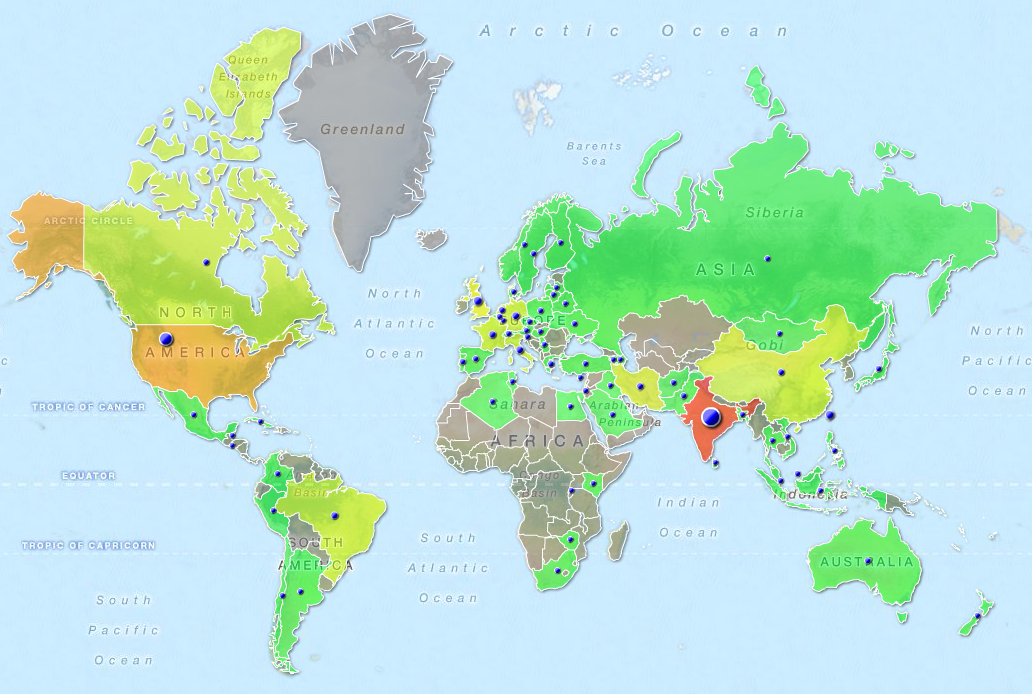


Figure 2: Geographic WeNMR VRC user distribution (November 2014)

Its help center (<https://www.wenmr.eu/wenmr/support/help-center/all-issues>) has handled 12 requests, but many more were received by the respective software developers/experts directly by email.

On the infrastructure side, all sites have kept their infrastructure updated. INFN keeps updating and operating the two VOMS servers ([voms2.cnaf.infn.it](http://voms2.cnaf.infn.it/) and [voms-02.pd.infn.it](http://voms-02.pd.infn.it/)) serving the [enmr.eu](http://enmr.eu/) VO, and the VO-specific Nagios monitoring service hosted by the server [grid-monitor03.pd.infn.it](http://grid-monitor03.pd.infn.it/). INFN provided technical support for solving grid related issues at sites (11 GGUS ticket since May 2014), configuring CVMFS on the majority of the grid sites supporting the [enmr.eu](http://enmr.eu/) VO, and helping users to obtain grid certificates.

In terms of outreach to the user community, the following meetings were attended where WeNMR and its activities were shortly highlighted in presentations:

* *“A worldwide e-Infrastructure for NMR and structural biology”*. Keynote lecture at the 6th International Workshop on Science Gateways, Dublin, Ireland, June 3-6, 2014.
* *“Information-driven modelling of biomolecular complexes”*. EMBO practical course on the structural characterization of macromolecular complexes, Grenoble, June 6-8, 2014.
* *“Integrative modelling of biomolecular complexes”*. BioNMR workshop on “using NMR spectroscopy and other biophysical methods to study protein-ligand interactions”, Oxford, UK, July 7-9, 2014.
* *“Integrative modelling of biomolecular complexes”*. 24th International Conference on Magnetic Resonance in Biological Systems (ICMRBS), Dallas TX, USA, August 24-29, 2014.
* *“Modelling structure, affinity and specificity of protein-protein complexes”*. Protein-Protein Interactions on the Genome Scale meeting, Paris, October 8-10, 2014.
* *“Modelling structure, affinity and specificity of protein-protein complexes”*. Protein-Protein Interactions on the Genome Scale meeting, Paris, October 8-10, 2014.
* *“Integrative modelling of biomolecular complexes”*. Modeling of Protein Interaction meeting, Lawrence KS, USA, October 23-25, 2014.

An updated list of publications citing or acknowledging WeNMR is available at:

<https://www.wenmr.eu/wenmr/publications-acknowledging-wenmr>

Finally, concerning the future plans to support the activity in 2015, part of it will be run via the MoBrain CC, but much will also depend on the results of current and future H2020 calls, including EINFRA-9.

Earth Science community

The community still operates the ES VO on the Infrastructure. New work is done at IPSL, Paris French NGI . They started to use IRODS at EUDAT and will combine it with EGI. The related activities/Achievements include:

* start using IRODS to replicate valuable data (original) on EUDAT (CINES site)
* studies has been undertaken to define the granularity of data archival
* exchange knowledge and information with French NGI so as to share expertise on IRODS
* a workflow is currently in place to replicate IPSL data on EUDAT using IRODS

NGI Bulgaria, Bulgaria

During this period the Bulgarian government updated the National Roadmap on Research Infrastructures, where first of all the Grid and HPC activities are merged under the umbrella of a National center for HPC and distributed computing, which will be responsible to support all the scientific communities with regards to their e-infrastructure needs. Specifically, the BG CLARIN-DARIAH community is also merged in the roadmap.

The second active Grid user community comes from the Environmental modelling and environmental protection area, where two institutes from BAS – National Institute for Geophysics, Geography and Geodesics (NIGGG-BAS) and National Institute of Meteorology and Hydrology (NIMH-BAS).

New users were added to the chemistry VO and further steps were taken to expand the usage from people involved in the area of molecular design and new materials.

Continued support for the activities of LHC and biomed users from Bulgaria.

Expanding the community interested in the use of GPGPU and Xeon PHI resources.

NGI Bulgaria Provided support for specific needs of a research group that is leading the BG CLARIN-DARIAH effort, porting to grid resources, organization of use cases for future fed cloud usage. We also provided support to the key research groups from NIGGG-BAS and NIMH-BAS to port applications that model the transport of air pollutants with higher space resolution than before. Provided resources for LHC and biomed activities.

Provided resources for access to GPGPU through grid.

Work on use of Xeon PHI-based resources, study feasibility of porting certain MPI applications from the above user groups.

The research group from BG CLARIN was able to achieve through using our grid resources much faster processing of their data so that they obtain results in days instead of months. These results are in preparation for publication.

Results from the work of environmental modelling and environmental protection groups were reported in the Community Forum in Helsinki as well as in relevant scientific conferences in the field.

Results were achieved in the use of GPGPU devices to speed-up the modelling of supersonic gas flows and the results are accepted for publication.

Some achievements in the area of Grid middleware and scalability of Grid applications were also published.

We expect before end of 2014 to start the deployment of the new facility at IICT-BAS, which will achieve more than 400 TFlops of peak performance in double precision, thus fulfilling the goals of the roadmap for research infrastructure and integrating all the support of HPC and Grid/cloud communities in a centralized and focused way.

During the last few months there was a national call for projects in several thematic areas, including ICT, new materials, energy and life sciences, and many of these projects specify use of advanced computing models and distributed processing methods and we plan to work actively with these research groups to achieve the best results from use of the new advanced equipment, which will be operational in the first.

NGI\_MD, Moldavia

In the reporting period NGI\_MD activities in the area of users community enlargement was focused on two directions. One is attracting new users from the State University of Moldova where new Grid site was deployed in the beginning of 2014. This site run-time environment, as well as other NGI clusters’ execution environment and open-source applications’ support libraries was adopted for two main applications areas – for modelling of decision-making processes for economical systems analysis and applications for semiconductor devices simulation. The second users’ community is actively using as a framework the idea of the finite volume method, created the efficient algorithms and implement corresponding software to solve practical problems of semiconductor devices modeling.

The other users’ community is representing by local Life Science VRC. The resources of the NGI\_MD were allocated for operation of the distributed information system "DICOM Network”, an innovative informational system for providing modern e-health services in cooperation with other informational systems existing in the national medical institutions. The system is focused on accumulation, processing, systematization and authorized access to distributed database of medical images producing in DICOM format. The distributed system helps supporting of decision-making services for providing information necessary to develop diagnoses, finding solutions of various problems faced by professionals in medicine. The implementing system is a complex of structured elements, which are interdependent and interconnected and forming a complex operating unit in a given environment in order to achieve specific objectives in the area of medical images processing.

For these two users communities are available resources of all three Grid sites operating at national level. For Grid infrastructure users from the State University on 21 May 2014 was organized dedicated training workshop. Serious of specialized trainings for Grid sites admins took place in May – September 2014.

To attract new users’ communities several meetings were attended by NGI-MD staff with presentations that highlighted resources, services and users’ support activities at national level and supporting activities provided by EGI-Inspire project at European level:

* International Scientific Conference “Mathematical Modeling, Optimization and Information Technologies”, IV edition, Chisinau, ATIC, March 25–28, 2014.
* Third Conference of Mathematical Society of the Republic of Moldova (IMCS-50). Chisinau, IMI ASM, August 19-23, 2014.
* “Networking in Education and Research”, Joint Event 13th RoEduNet & 8th RENAM Conference, Chisinau, September 11-13, 2014.

Plans to continue user community support and deployment of new services in 2015 are:

* Extending testing cloud infrastructure to provide resources for existing users and porting new applications;
* Allocation of the cloud infrastructure resources for integration of the distributed medical images collection and processing information system (currently deployed using Grid middleware);
* Implementation of the federated AAI infrastructure at national level, including for providing access to computing resources.

NGI\_AEGIS, Serbia

During the past period NGI\_AEGIS continued to provide support to its key scientific communities: condensed matter physics, chemistry and agricultural community. That included day-to-day operational and user support tasks such as resolving issues related to efficient running of software ported to Grid, VOs membership and certificates handling and renewal but also updating ported software packages to their latest versions (e.g. update of the OpenEye software stack for computational chemistry researchers) and enhancing workflows deployed for users from agricultural community. As one of the outcomes of the successful NGI\_AEGIS user support activities, IPB’s researcher Milovan Suvakov participated in Lighting talks session

(<https://indico.egi.eu/indico/getFile.py/access?contribId=192&sessionId=64&resId=0&materialId=slides&confId=1994>) at EGI Community Forum 2014 that was held in Helsinki, Finland on 19-23 May 2014 (http://cf2014.egi.eu/). As an invited lecturer at the RO-LCG 2014 conference that was held on 3-5 November 2014 in Bucharest, Romania (http://rolcg2014.ifin.ro/) IPB's Vladimir Slavnic gave a talk where he presented ongoing Grid and High Performance (HPC) activities in Serbia, supported scientific communities and various tools and portals developed for their researchers. NGI\_AEGIS support activities will be continued in 2015 and that will include hosting and maintenance of deployed VO services, porting of new applications to Grid, support in gUSE/WS-PGRADE workflow and application dedicated RESTful interface development, as well as providing day-to-day support to all supported research communities.

NGI\_CZ, Czech Republic

FedCloud adoption:

Although this partially belongs to SA5.2 results are interesting for DCCs/support too, especially to Elixir DCC.

Operation and Support for VOs & user communities. Creating new cloud and support of VOs, e.g. [highthroughputseq.egi.eu](http://highthroughputseq.egi.eu/), [physiome.lf1.cuni.cz](http://physiome.lf1.cuni.cz/), [eiscat.se](http://eiscat.se/), [fedcloud.egi.eu](http://fedcloud.egi.eu/), [peachnote.com](http://peachnote.com/). Porting existing user images, creating new generic appliances, porting existing applications to the cloud.

Support for EBI and Elixir with Perun (preparation of VO, support in Perun, integration with AppDB), support for use-cases with users without certificates.

Plan for 2015 include continuing support for user communities which use/plan to use EGI federated cloud infrastructure, with emphasis on cloud adoption by new groups and support for life-science user groups.

Particle physics:

We continuously support the managed VOs.

* Auger VO is preparing the change of the production system and catalog. A new test instance of DIRAC was installed in Prague. One week workshop will be held in December in Prague with A. Tsaregorodstsev to discuss details of the migration. Another planning workshop (for 2 or 3 days) is planned in January with the current production team.
* Belle VO. NGI\_CZ supported Belle-II in the 4th MC Campaign. About 2 TB of data were produced at CESNET (2% of the total production) and stored on predefined SEs. A new disk space was made available for the VO belle and it will be used during the next campaign planned for February 2015. Report about CESNET participation was presented at Belle II meeting in KEK (on behalf of CESNET, we did not participate in person).
* ELI VO. We helped ELI simulation group with a cluster selection procedure. Documentation for [eli-beams.eu](http://eli-beams.eu/) was prepared. NGI\_CZ provided ELI computing and storage capacity for testing purposes. Meetings with ELI are held to share our experience with cluster management and possibility how to connect their HW to NGI\_CZ infrastructure. The HW will be delivered in January and after an initial evaluation period we will discuss sharing with other users.

ESFRI project support:

Being an e-infrastructure, the NGI-CZ is a facility that supports research activities in practically all scientific disciplines, resulting in very large and diverse set of users. We support the following large ESFRI communities, with representation in the Czech Republic.

* ELIXIR – CESNET and CERIT-SC are full members of the national node ELIXIR CZ RI proposal. Prof. Ludek Matyska is currently the deputy head of the node and he co-chairs the Technical Services workstream of the whole ELIXIR (together with Tommi Nyronen from CSC, FI). NGI staff is involved in several ELIXIR task forces, with leading positions in some of them. The NGI is further expected to take care of the basic ELIXIR-CZ e-infrastructure and to provide sufficient computing/storage resources required for operation of the national ELIXIR-CZ node.
* BBMRI – very close collaboration with the Czech BBMRI CZ node leader. It is expected, NGI\_CZ will take care of their basic e-infrastructure needs, coordinating the information systems among the Czech bio-banks.
* ICOS – very close collaboration with CzechGlobe (leader of CzeCOS - local part of ICOS ESFRI project). A collaboration agreement on the deployment of Aladin, the weather forecast system to be used for climate simulations, was signed. The NGI\_CZ will provide the community computing and storage facilities and support the CzeCOS/ICOS RI with expert knowledge in the area of high-performance computing.
* CLARIN – the first contact was done in October with aim to help the community to integrate to NGI.
* ELI – see above ELI VO

Plan for 2015 - to continue with dissemination and support of existing users communities, searching new communities.

Belarus NGI

In the reporting period UIIP NASB has managed to engage new user communities, and further support the main ones:

1. Nanotechnology – The usage of grid technologies has been promoted to Nanotechnology Association, and some projects on solving specific tasks have started.
2. Bioinformatics – A mini course on bionformatics was organized ([http://uiip.bas](http://uiip.bas/)- [net.by/event/mini\_cours.php](http://net.by/event/mini_cours.php) ).
3. Tire Industry – New results has been achieved in modelling tires for big trucks. Plans to develop some educational services.
4. Medical image processing – A portal of experimental web-based services for medical image processing has been deployed (<http://imlab.grid.by/>). The work was being done within a project on tuberculosis portal (<http://tuberculosis.by/about>).
5. Grid middleware development – The formal agreement on cooperation in further develoopment of QCG middleware has been discussed with Poznan Supercomputing and Networking Center. Plans for 2015 are to formalize cooperation.
6. Cloud – Experimental grid site of virtualized resources (cloud) has been deployed on the basis of Ganeti software. Plans are to deploy Synnefo in our infrastructure.

NGI Slovakia

The Slovakia DCC-member provided the continued support for all users in the process of developing, upgrading and running their applications on the HPC cluster and EGI infrastructure.ch4.opt.wfout Particularly, our activities were focused on the support of the scientific community from the field of nanotechnology.

Our works realised include:

* Providing the talks and consultancy for members of the nanoscience community with the view of making them familiar with the structure and components of the HPC cluster and EGI infrastructure and how these can be accessed and efficiently utilized.
* Porting three software packages used in the nano-research to the HPC cluster integrated in EGI: “OOMMF” (Object Oriented MicroMagnetic Framework) – for performing micromagnetic simulations; “Magpar” (Parallel Finite Element Micromagnetics) – for solving a variety of static and dynamic micromagnetic problems; “QWalk” – for performing Quantum Monte Carlo calculations of electronic structures in molecules and solids.
* Creating software support tools to reduce the technical difficulties of accessing remote computing resources, and to facilitate the execution process of simulations on the HPC cluster and EGI infrastructure. For running various models offered by the simulation packages mentioned above we have developed flexible and easily manageable command-line scripts which enable the job submission based only on several input parameters. For running the OOMMF simulations we have developed a scientific gateway which provides a unified access to both the HPC cluster and Grid environment. Employing the gateway interface users do not recognise whether their application is submitted to the local cluster or EGI infrastructure. The OOMMF framework is applied to simulation of dynamical processes in magnetic devices.

Our plans:

We will go on with the assistance of existing and new users in the development and improvement their applications and with the development of suitable user-friendly tools for job submission. The architecture and implementation of the scientific gateway is generic, we intend to adopt this approach for other applications likewise; moreover we plan to extend the gateway to Cloud computing resources. Our focus will be imposed also on the porting GPGPU applications to the HPC cluster and EGI infrastructure.

Publications:

1. Viet Tran, Robert Andok, Ladislav Hluchý, Giang Nguyen, Miroslav Dobrucký: “High Performance Computing for Nanoscale Simulations”. EGI Community Forum 2014, Contribution ID: 98, session: Porting new applications to EGI, track: Porting applications to the grid and cloud platform. Helsinki 2014.
2. Giang Nguyen, Ladislav Hluchý, Jaroslav Tóbik, Viera Šipková, Miroslav Dobrucký, Ján Astaloš, Viet Tran, Robert Andok: “Unified nanoscale gateway to HPC and Grid environments”. The 5th Symposium on Information and Communication Technology 2014, ACM 978-1-4503-2930-9/14/12, DOI 10.1145/2676585.2676591 (accepted paper)

LifeWatch DCC:

Lifewatch and its associated Distributed Competence Center have been working in different services during the last months. Lifewatch Spain with a couple of National Grid Initiatives (Spain, Portugal, France and Italy), Flanders Marine Institute (VLIZ, Belgium) and CIBIO (Portugal) has submitted a proposal for a Competence Center in EGI-ENGAGE called “EGI-Lifewatch Competence Center”. In this proposal many different certain actions are defined to do whithin EGI infrastructure. During the las months different EGI resources have been used in three of the use cases included in the proposal:

1. **Data processing and modelling for Ecological Observatories**: During the last months a number of modelling simulations have been run using EGI FedCloud infrastructure. The software used was Delf3D, a suite developed by Deltares, which is composed of a set of modules, including hydrodinamics and water quality. A couple of virtual machines have been launched (at CESNET and IFCA) and set up installing and configuring the software and then a number of hydrodinamics simulations have been executed. For 2015 we plan to continue our simulations and use other kind of resources like storage.
2. **Big data:** Flanders Marine Institute (VLIZ) has started the installation of a number of biosensors on board of the Research Vessel Simon Stevin, as part of the Flanders Marine LifeWatch Observatory. This project has a series of needs that require the use of a powerful e-infrastructure able to handle a Big Data problem: about 50Tb of data per year. During the last months VLIZ have been uploading these files to our Grid site at IFCA and getting ready for the processing (defining needed tools and resources). We have arranged a technical meeting for the very beginning of 2015 in order to establish the concrete needs and train users.
3. **Biodiversity pipeline:** TRUFA (Transcriptomes User-Friendly Analysis) is a free webserver designed to help performing RNA-seq analysis. This web tool have been designed for working over a HPC architecture but in the last months we have been working on migrating it to cloud. TRUFA is currently in alpha phase with around 20 users but we expect to increase the number in the following months so we need to have an scalable solution. In the last months we have defined the new cloud-based architecture and start to work in it under FedCloud infrastructure.

Polish NGI, Poland

* CLARIN: We have tightened links with local CLARIN community. Necessarily storage space & computing power has been booked for them. They are building right now a bunch of services accessed by a web interface. Current work include managing and tagging data, morforlogical analysis, significance estimation via web services. More is planned for next few months: semantical and statistical analysis of the text „core”, speech recognition algorithms and other text analysis related actions. We have also started porting of their software to EGI platform.
* EPOS: A prototype of the SG has been deployed. Current work include vast amount of induced seismicity software porting, integration of this software with SG and development of so-called non-stationary hazard use case within the portal. The use case is focussing on coal mining processes only. Further extensions are planned towards reservoir IS hazard analysis. The SG has been presented on several conferences and together with InSilicoLab technology will be used to build so called Thematic Core Services for EPOS WG10. We have also met with VERCE project people (they use gUSE for their SG) in order to work towards interoperability between these two SG. Same work is in progress in CTA.
* CTA: InSilicoLab Team works on a solution for the CTA Science Gateway, a central web portal for the whole community including external observers and internal CTA members. The Science Gateway will integrate many different tools, such as wiki pages, helpdesk etc. and more CTA specific applications provided by other project groups like e.g. proposal handling, observation scheduler. One of such application is meant to enable an easy access to the computing infrastructure. A solution for that is also developed by our team based on the InSilicoLab Framework.
* LOFAR — a few LOFAR software packages have been ported to EGEE grid, however aside simple tests no other job runs have been performed.
* ESS – the cooperation just stared. Seems that our InsilicoLab for Chemistry will be a perfect starting point. This will develop during next few months.

LIP, PT

* Support and managemment of several VOs:
  + [chem.vo.ibergrid.eu](http://chem.vo.ibergrid.eu/)
  + [earth.vo.ibergrid.eu](http://earth.vo.ibergrid.eu/)
  + [eng.vo.ibergrid.eu](http://eng.vo.ibergrid.eu/)
  + [hpc.vo.ibergrid.eu](http://hpc.vo.ibergrid.eu/)
  + [iber.vo.ibergrid.eu](http://iber.vo.ibergrid.eu/)
  + [ict.vo.ibergrid.eu](http://ict.vo.ibergrid.eu/)
  + [life.vo.ibergrid.eu](http://life.vo.ibergrid.eu/)
  + [pfound.vo.ibergrid.eu](http://pfound.vo.ibergrid.eu/)
  + [phys.vo.ibergrid.eu](http://phys.vo.ibergrid.eu/)
* Regular participation in the Virtual Team (GAPF VT: <https://wiki.egi.eu/wiki/VT_GAPF>) with the goal to increase the awareness of EGI services and applications to the Protein Structural Biology and Sequencing (Protein/DNA/RNA) communities. The major contributions from our part to the VT was the identification of tools available in the EGI e-infrastructure which could be off interested to the VT targeted community. In this framework we continue to pursue the national research teams, namely the ELIXIR, in order to increase our knowledge networks with the goal of increasing the number of users. This is being done in cooperation with the EGI Champion Afonso Duarte.
* Support and dissemination of the Py4Grid tool developed at LIP (<https://github.com/GoncaloBorges/Py4Grid>).

Short/medium plans:

* Continue to provide support for the current VOs
* Porting of new applications to the grid namely R ([www.r-project.org/](http://www.r-project.org/)) and BATMAN (<http://batman.r-forge.r-project.org/>).
* Extending support of some of grid users to cloud resources

INFN, Italy

Regular user support and onboarding for new users is currently provided for some communities:

* WeNMR;
* DRIMHM;
* INFN internal projects (SPES);
* Computational Chemistry (CMMST);

The activity carried out was focused on providing technical support on the application porting and the resolution of common problems related to application running on grid and cloud sites.

Some of the applications have been made available making use of the IGI Grid Portal and developing for them proper portlets and workflows.

As a result, the activity carried out by INFN contributed to the constant growth over time of the supported national, european and worldwide communities[[65]](#footnote-64) (WeNMR +10%; DRIHM +80%; INFN +30%;CMMST +31%).

Moreover INFN contributed to the following EGI activities:

* Participation to the ELIXIR pilot in EGI.

In particular INFN was leading Task 4 - Tools for data replication.

The scope of the Task was to identify and propose suitable software tools, software configurations, operational practices and documentations expressly devoted to biological reference datasets to run over the EGI FedCloud. The outcomes can be summarized as following:

* Selection of recommended services to replicate reference biological datasets to EGI;
* Deploy a distributed testbed with the recommended services;
* Collect evaluation of such services from resource providers and users.
* Participation to the EGI Long Tail Of Science (LTOS) working group (WG).

The scope of the activity was to merge efforts from different expertise (among the EGI partners) and develop a LTOS platform where single users (who do not belong to structured communities) can relay on a simplified access to the Infrastructure. Discussions and exchanges between the WG members promoted the delivery of the first pilot service by the end of PY5.

In line with this, some activities devoted to helping communities in structure and define EU funded call for proposals have been started. In particular support is given to the following communities:

* CMMST-VRE (EINFRA-9): promoted by INSTM and other public and private working on the field of Computational Chemistry.
  + The first internal meeting for the CMMST community will held in Amsterdam Dec the 1st (<https://indico.egi.eu/indico/conferenceDisplay.py?confId=2342>)
* Structural Biology (EINFRA-9): promoted by the major institutes of ESFRI INSTRUCT and RDA Interest Group).
  + Activities for the Structural biology are ongoing
* LinkD (EINFRA-9): Promoted by LifeWatch community, INFN is involved in order to support bioinformatics application over EGI grid and cloud computational resources. INFN is also involved in the development of web services frontend that allow the end-user to seamless exploit diverse computing resources.
* Biology (EGI-Engage): contribution to the proposal for a Competence Center in EGI-Engage called “MoBrain: A Competence Center to Serve Translational Research from Molecule to Brain”.
* Lifewatch (EGI-Engage): contribution to the proposal for a Competence Center in EGI-Engage “EGI-LifeWatch CC”, in order to support the Lifewatch use-cases over EGI Infrastructure.

The activities led by INFN are aimed at providing and/or developing proper DCI related services to support the above mentioned communities on achieving their outcomes raised from the related projects. However, such activities have to be revised depending on the final evaluation of the related proposals.

French NGI (France Grilles)

During the reporting period France Grilles financed attendance and travel to the EGI Community forum for 8 users of different French communities. The France Grilles team attended. The NIL attended the Biodiversa forum in Paris in October on demand of EGI.eu team to study potential needs of the projects presented. France Grilles team attended the EGI Amsterdam workshop in September.

EGI and France Grilles services were presented in workshop (biodiversity group in Marseille, ECCB'14 in Strasbourg with the EGI.eu team). The NIL took part in the business VT. Several groups of users were supported such as an INRA distributed group of users interested in the iRODS service, a user isolated in Tahiti located at the opposite side of the world but relevant as France Grilles user. Visioconferences involving EGI.eu, France Grilles and the user were organised. A certificate has been issued, the situation is currently on hold.

During this time the collection of publications gathered by France Grilles has grown and this work was presented at a regional academic business group meeting. A DIRAC and iRODS tutorial is currently prepared and will be held in January. A "cloud challenge" call is just closed and one or two projects will be supported on the France Grilles federated cloud.

1. Usually the contact person of the coordinator as specified in Art. 8.1. of the grant agreement [↑](#endnote-ref-1)
2. D1.15 Annual report on quality status <https://documents.egi.eu/document/2251> [↑](#footnote-ref-1)
3. Wiki page with the description of the core activities: https://wiki.egi.eu/wiki/Core\_EGI\_Activities [↑](#footnote-ref-2)
4. https://documents.egi.eu/secure/ShowDocument?docid=2170 [↑](#footnote-ref-3)
5. https://documents.egi.eu/public/ShowDocument?docid=2166 [↑](#footnote-ref-4)
6. Event’s website: <http://cf2014.egi.eu>; Event’s report: <https://documents.egi.eu/document/2242> [↑](#footnote-ref-5)
7. https://indico.egi.eu/indico/conferenceDisplay.py?confId=2160 [↑](#footnote-ref-6)
8. http://www.ebec2014.org/ [↑](#footnote-ref-7)
9. http://www.egi.eu/blog/2014/07/17/egi\_at\_european\_bioenergetics\_conference.html [↑](#footnote-ref-8)
10. http://www.eccb14.org [↑](#footnote-ref-9)
11. http://www.egi.eu/blog/2014/09/09/egi\_at\_the\_european\_conference\_on\_computational\_biology.html [↑](#footnote-ref-10)
12. http://mwatelescope.org/tempe2014 [↑](#footnote-ref-11)
13. http://computing.derby.ac.uk/ucc2014/ [↑](#footnote-ref-12)
14. <http://www.egi.eu/news-and-media/publications/CF2014_BoA.pdf> [↑](#footnote-ref-13)
15. <http://go.egi.eu/2197> [↑](#footnote-ref-14)
16. <http://go.egi.eu/2196> [↑](#footnote-ref-15)
17. <http://go.egi.eu/2198> [↑](#footnote-ref-16)
18. <http://go.egi.eu/2199> [↑](#footnote-ref-17)
19. At the time of writing this report, the EGI Case Studies publication is in layout phase and there is no final PDF to be linked to. An earlier draft of the publication, which provides an idea of the concept, can be found here: <http://www.egi.eu/news-and-media/publications/Case_studies_v2.pdf> [↑](#footnote-ref-18)
20. <http://www.egi.eu/case-studies/> [↑](#footnote-ref-19)
21. <http://go.egi.eu/Issue16PDF> [↑](#footnote-ref-20)
22. <http://go.egi.eu/Issue17PDF> [↑](#footnote-ref-21)
23. <http://go.egi.eu/osc> [↑](#footnote-ref-22)
24. <http://www.egi.eu/case-studies/physical-sciences/andromeda_ii.html> [↑](#footnote-ref-23)
25. <http://www.egi.eu/case-studies/physical-sciences/stars.html> [↑](#footnote-ref-24)
26. <http://www.egi.eu/case-studies/physical-sciences/becs.html> [↑](#footnote-ref-25)
27. <http://www.egi.eu/case-studies/natural-sciences/digital_security.html> [↑](#footnote-ref-26)
28. <http://www.egi.eu/news-and-media/newsletters/Inspired_Issue_15/bacteria.html> [↑](#footnote-ref-27)
29. <http://www.egi.eu/case-studies/medical/combat_stress.html> [↑](#footnote-ref-28)
30. <http://www.egi.eu/news-and-media/newsfeed/> [↑](#footnote-ref-29)
31. <http://www.egi.eu/blog/> [↑](#footnote-ref-30)
32. <http://www.egi.eu/news-and-media/directors_letters/> [↑](#footnote-ref-31)
33. <https://www.egi.eu/news-and-media/press/Press_Release_Federated_Cloud_Launch.pdf> [↑](#footnote-ref-32)
34. <http://www.egi.eu/news-and-media/newsfeed/news_2014_023.html> [↑](#footnote-ref-33)
35. E.g *The Register* <http://www.theregister.co.uk/2014/05/22/egi_launches_federated_cloud/> [↑](#footnote-ref-34)
36. <http://indico.egi.eu/indico/conferenceDisplay.py?confId=2345> [↑](#footnote-ref-35)
37. Indico page to be announced. [↑](#footnote-ref-36)
38. http://go.egi.eu/osc [↑](#footnote-ref-37)
39. http://e-irg.eu/workshop-2014-11-programme [↑](#footnote-ref-38)
40. https://documents.egi.eu/document/2387 [↑](#footnote-ref-39)
41. <https://wiki.egi.eu/wiki/VT_Business_Engagement> [↑](#footnote-ref-40)
42. https://documents.egi.eu/document/2169 [↑](#footnote-ref-41)
43. https://documents.egi.eu/document/2339 [↑](#footnote-ref-42)
44. https://documents.egi.eu/document/2256 [↑](#footnote-ref-43)
45. https://wiki.egi.eu/wiki/EGI\_Pay-for-Use\_PoC [↑](#footnote-ref-44)
46. https://wiki.egi.eu/wiki/EGI\_Pay-for-Use\_PoC:Meetings [↑](#footnote-ref-45)
47. https://documents.egi.eu/document/2088 [↑](#footnote-ref-46)
48. https://indico.egi.eu/indico/sessionDisplay.py?sessionId=29&confId=1994#20140521 [↑](#footnote-ref-47)
49. https://indico.egi.eu/indico/sessionDisplay.py?sessionId=2&confId=2160#20140925 [↑](#footnote-ref-48)
50. https://documents.egi.eu/document/1391 [↑](#footnote-ref-49)
51. <https://indico.egi.eu/indico/contributionDisplay.py?sessionId=2&contribId=34&confId=2160> [↑](#footnote-ref-50)
52. [https://wiki.egi.eu/wiki/HOWTO04\_Site\_Certification\_Manual\_tests](https://wiki.egi.eu/wiki/HOWTO04_Site_Certification_Manual_tests#Check_the_functionality_of_the_cloud_elements) [↑](#footnote-ref-51)
53. [https://wiki.egi.eu/wiki/EGI\_CSIRT:Security\_Resource\_Centre\_Certification\_Procedure](https://wiki.egi.eu/wiki/EGI_CSIRT:Security_Resource_Centre_Certification_Procedure#Cloud_Resource_Center) [↑](#footnote-ref-52)
54. https://wiki.egi.eu/wiki/Resource\_Centres\_OLA\_and\_Resource\_infrastructure\_Provider\_OLA\_reports [↑](#footnote-ref-53)
55. https://www.surveymonkey.com/r/FedCloud\_UMD [↑](#footnote-ref-54)
56. https://wiki.egi.eu/wiki/Federated\_Cloud\_Communities [↑](#footnote-ref-55)
57. https://wiki.egi.eu/wiki/Operational\_tools\_testbed [↑](#footnote-ref-56)
58. http://goo.gl/1NmYs6 [↑](#footnote-ref-57)
59. https://vmcaster.appdb.egi.eu/ [↑](#footnote-ref-58)
60. http://www.ebi.ac.uk/ [↑](#footnote-ref-59)
61. https://cloudmon.egi.eu/nagios/cgi-bin/extinfo.cgi?type=2&host=vmcaster.appdb.egi.eu&service=eu.egi.cloud.AppDB-Update [↑](#footnote-ref-60)
62. <http://goc.egi.eu/> [↑](#footnote-ref-61)
63. *(\*) Dates are expressed in project month (1 to 48).*

    *(\*\*) Status = Not started – In preparation – Pending internal review – PMB approved*

    *(\*\*\*) Nature =* ***R*** *= Report* ***P*** *= Prototype* ***D*** *= Demonstrator* ***O*** *= Other, Deliverable id: for Milestone attached to a deliverable* [↑](#footnote-ref-62)
64. *(\*) Dates are expressed in project month (1 to 48).*

    *(\*\*) Status = Not started – In preparation – Pending internal review – PMB approved*

    *(\*\*\*) Nature =* ***R*** *= Report* ***P*** *= Prototype* ***D*** *= Demonstrator* ***O*** *= Other, Deliverable id: for Milestone attached to a deliverable* [↑](#footnote-ref-63)
65. From 1st Jan 2014, source http://operations-portal.egi.eu [↑](#footnote-ref-64)