**EGI-InSPIRE**

Periodic Report – PY3

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| Abstract  This is the periodic report for the 3rd 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

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1. Application area

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

1. Document amendment procedure

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

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# Declaration by the Scientific Representative of the project

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# Publishable Summary

EGI continues to expand and develop the operational infrastructure that it offers to its current user base of over 21,000 researchers across multiple disciplines and the technical outreach it provides to expand this user base across the whole of the European Research Area by developing its technical services. The success of achieving a high quality of service with vast amounts of CPU delivered accompanied by hundreds of petabytes of storage and multi-gigabit networking across a heterogeneous federated infrastructure with loosely coupled management domains is now much more than an existence proof or even mere state-of-the-art: it is a reliable, performant and operational sustainable production system capable of meeting the needs of thousands of scientists worldwide 24 hours per day and close to 365 days per year.

EGI and its integrated resource infrastructures comprise 347 Resource Centres contributing more than 360,000 logical CPU cores. The integration scenarios and processes of the EGI Core Infrastructure Platform supporting integrated operations of these different Resource Centres and other e-Infrastructures into a uniform infrastructure, has demonstrated high-levels of availability and reliability which have been improving since monitoring began in January 2012. The Core infrastructure has been steadily improving in terms of performance delivered and amount of new functionality made available to the operations staff. In particular, the Accounting infrastructure has been greatly evolving in many respects and the publishing and associated record loading/unloading methods created for collecting CPU accounting records were modified to collect new types of accounting record: storage and cloud accounting records. The EGI operations documentation has been expanding and greatly improved its usability. Security Operations have been evolving in terms of support tools, procedures and policies

The production infrastructure delivered 507.2 million jobs in the year (1.43 million jobs a day on average). Overall, the compute capacity consumed by EGI’s users increased by 46% during the year with its use by High Energy Physics amounting to 94% of this work – testament to the data analysis that was needed to help in the discovery of the Higgs particle that was announce in July 2012 at CERN. Other user communities substantially increased their own usage of EGI over the year: Earth Sciences (+123%), Computational Chemistry (+78%), Astronomy Astro-particle and Astrophysics (+76%), Life Science (+65) and other sciences (+199%).

The policies, procedures, tools and activities needed to ensure the deployment of the supported software continued to be defined. New policies supported the successful decommissioning of software deployed before the start of EGI-InSPIRE and described how the regular retirement of deployed software that was no longer being supported would be organised. The infrastructure for testing software upgrades has been progressively increasing to comprise 74 teams. Software support activities were successfully restructured and changes introduced to prepare for the end of the EGI and IGE projects and the coordination and technical functions that they have provided.

The EGI Core Infrastructure Platform is composed of the operational tools need to integrate the different middlewares deployed at different Resource Centres across Europe. During the year EGI completed the integration services from UNICORE, ARC, GLOBUS, Desktop Grids and the QosCosGrid within its monitoring and service registration capabilities. The tool regionalisation plan has been updated to reflect the current needs of the NGIs and for some tools there will now be a move towards regional views of central instances rather than fully independent regionalised versions. As a result, developments of regionalised versions of the Operations Portal and GOCDB have stopped in favour of regional views on the central instance. Developments on regional accounting solutions continued with the release of regionalised versions of the Accounting Repository and Portal due next year.

Following time spent on investigating requirements, development work has now started on implementing accounting for different resource types. Within the next year Cloud, CPU and Parallel Jobs resources types could be accounted for in an updated EGI Accounting Repository, and initial design work has taken place to provide accounting support for applications, storage and virtualisations.

During PY3 the overall software provisioning process of UMD proved to be efficient and functional. Major improvements in the specific technical tools have been deployed to optimize the workflow, reducing the amount of manual actions and consequently reducing the overhead. The major achievement of the PY3 have been the release of the second major release of UMD, while the updates to the first major release continued independently, and the extension to support multiple operating systems.

The Federated Clouds Task Force, which is now supported directly as part of the project, continued to define the architecture of a federated Cloud infrastructure embedded into the EGI production infrastructure by building on top of the existing Core Infrastructure Platform. Technical work continued to improve the maturity of the implementations exposing the public cloud interfaces, to improve the backend integration of the cloud resources with the EGI Core Infrastructure Platform, and to demonstrate the feasibility and usability of the developments by integrating use cases from a range of user communities including WeNMR, British National Corpus, gUSE,/WS-PGRADE, EUBrazilOpenBio/BioVel.

The dedicated support being provided to EGI’s Heavy User Communities stops at the end of PY3. Although domain-specific support is still required, further areas of commonality have been found around shared solutions are much more likely to be supported in the long-term than those that are highly-specific to a given VO. Further advances in this area are therefore possible and still need to be explored. As a result sustainability for these services and tools has been a key concern that has been addressed at the technical and strategic level. Sustainable does not, however, mean self-sustaining: all of the domains supported are dependent on external funding and this is committed in the short-term, planned in the medium and expected even in the (very) long-term. Many of these activities are now supported by collaboration through their consuming communities or hosted by organisations as part of their baseline infrastructure.

The community engagement activities in PY3 have developed in two directions over the year: activities that continue to develop EGI’s profile and engagement within the European Research Area, and work to develop and utilise the human networks within the EGI community.

To support the development of EGI within the European Research Area the Marketing and Communications team have continued to develop the website and promote EGI and the activities of its users through use cases and other publications. Over 87,000 people unique visitors visited the EGI.eu domain in PY3, compared to 67,000 in the previous 12 months, corresponding to 181,000 visits and 642,000 page views. Around 47% were new visitors, up from 40% the previous year. Articles about EGI were published in the e-IRG Newsletter, Public Service Review: European Science & Technology, Supercomputing Online, HPC in the Cloud, International Innovation, Public Service Review: European Union, International Innovation and the CERN Bulletin. Articles about EGI were published PanEuropeanNetworks: Science & Technology and there were 23 EGI-related items in iSGTW, an increase from 15 items last year. A press release on the sonification of the CERN Higgs data released by DANTE, mentioning EGI, was picked up by a number of high profile publications, including Bloomberg BusinessWeek, Discovery News and Wired.

EGI also featured in the winning FP7 success story from the WeNMR project in March 2013. By the end of April 2013, 195 blog posts have been contributed in total to the EGI blog, with 83 added during PY3. The main EGI Twitter account @Europeangrid now has over 600 followers, and is followed by Dell, GlobusOnline, SURFnet, Datanami and a number of European projects as well as CERN, which has 790,000 followers. EGI has around 150 likes on Facebook and 2,800 views on Flickr, a four-fold increase since last year. By the end of PY3, the EGI YouTube channel has over 9000 views, a big increase compared to the 793 views seen by 12 April 2012, with episode 3 being the most popular video with over 3000 views. The EGI YouTube channel also has 77 subscribers. Traffic to the website from social media sites has significantly increased. Referrals from Face-book have increased by 90% and from Twitter by 30%. Traffic from iSGTW.org has increased by over 90% and from the e-ScienceTalk website by 190%. Traffic from Wikipedia is up by 80%.

Outreach at events has focused on key target communities, such as life sciences, environmental sciences and digital heritage. These included events in Europe, the US and Asia Pacific region. The communications team also supported EGI's two major events, the Technical Forum 2012 in Prague and the Community Forum 2013 in Manchester, including producing promotional materials, driving media partnerships, coordinating social media channels, the EGI booth and producing marketing materials. During the events, the team presented the EGI communications handbook to the NILs and presented the EGI videos. Between them, the two events generated nearly 1000 Twitter microblogs.

The Strategy and Policy Team have provided support for internal and external policy and strategy development within EGI. The first edition of the EGI Compendium was published covering 2011, while the data collection for the 2012 version has started. The data collected through the Compendium contributes to our understanding of EGI and its supporting national ecosystem and many of these figures are reflected in the strategic metrics captured through the EGI balanced scorecard which has been revised to better reflect the EGI 2020 strategy.

A number of policy papers have been created and approved by the EGI Council in the area of federated resource allocation and demonstrating excellent science on EGI resources, pay-for-use models, a scientific publications repository that has led to a strategic collaboration with the OpenAIRE project, a new proposed classification for scientific disciplines to be adopted by EGI’s tools, and an EGI.eu transition plan to ERIC. These were developed in collaboration with representatives from both the operational and non-operational representatives within the NGIs, and external collaborators as required.

Collaborations were established with three new partners: DANTE to consolidate our interaction with the European networking community, PSNC for QosCosGrid software that exposes the reservation capability within compute clusters, and UVACSE for Genesis-II a lightweight middleware being deployed within the NSF funded XSEDE infrastructure. New security policies have been established and the liaison with EUGridPMA and IGTF has continued.

Sustainability was a recurring focus across many of EGI’s activities supported by the policy team. This included the collection, integration and analysis of costs relating to the EGI Global Tasks and their description within the EGI Service Catalogue. With community consultation the criticality of these services to the continued operation and development of EGI’s production infrastructure were analysed. As a result, a set of services that are core to EGI’s ability to operate a production infrastructure have been identified and a business model where these Core EGI activities are supported by EGI.eu’s participation fee identified for future community discussion. Other activities that are not seen as part of this Core and development of the Core activities themselves will either have to be supported by the community or continue to be developed through projects.

EGI continued to develop its human networks to support its internal communication and general development activities. The NGI International Liaisons (NILs) established in PY2 continued to grow and complement EGI’s strong and established network of NGI Operations Managers. These human networks were expanded in PY3 through the establishment of ‘EGI Champions’ who would act as enthusiastic and proactive promoters of EGI. Nine EGI Champions have been recruited and these have started building links between EGI and their own research communities through EGI’s support to attend outreach events by providing travel, registration and subsistence support.

The Virtual Team model that EGI had established across the NILs during PY2 was seen as providing an effective and dynamic approach to tackling community issues than previous project structures. During PY3 the Virtual Team model has continued to develop bringing in experts from across the community (operations and policy) and from other e-Infrastructures. Plans have been established to expand this primarily unfunded activity with dedicated project funding for PY4 through 11 small mini-projects that have been selected to accelerate the achievement of EGI’s strategic objectives. The NIL structure was evolved in PY3 to improve the focus of the EGI community of reaching out through the NGIs to new user communities through events, outreach, marketing and direct technical engagement. In PY4 this work will be expanded to include the EGI Champions and representatives from the software development teams that are part of EGI’s technology provider community. The Virtual Teams have been supported by the Strategic Planning and Policy Support, Marketing and Communication, Community Outreach and Technical Outreach to New Communities teams based at EGI.eu, and the providers of the Training Marketplace, Apps DB and CRM services in the NGIs. Direct technical outreach to new user communities has been undertaken by developing key services centrally provided by EGI (the training marketplace, the applications database and the customer relationship management tool) and supporting direct engagement with users in their technical needs.

# Project Progress

## Project Objectives for the Period

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.

**Table 1: Achieved Project Year Three Project Metrics (Q9-Q12) Table 1: Target Project Metrics**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Project**  **Objectives** | **Objective Summary** | **Metrics** | **PQ9** | **PQ10** | **PQ11** | **PQ12** | **Target**  **PY3** |
| **PO1** | Expansion of a nationally based production infrastructure | Number of resource centres in EGI-InSPIRE and integrated partners (M.SA1.Size.1) | 347 | 351 | 315 | 347 | 350 (355)  (355) |
| Number of job slots available in EGI-InSPIRE and integrated partners (M.SA1.Size.2A) | 327,394 | 327,706 | 372,584 | 361,287 | 300,000  (325,000)  (333,000) |
| EGI monthly availability and reliability of site middleware services (M.SA1.Operation.5) | 94.53  94.15% | 93.9%  94.8% | 92.6%  94.8% | 96.43%  96.94% | 95%  (96%)  (97%) |
| Average monthly availability and reliability of NGI core middleware services (MSA1.Operations.4) | 98.1%  98.6% | 95.17%  95.92% | 97.3%  99% | 99.4%  99.5% | 97%  (98.5%)  (99%) |
| EGI monthly availability and reliability of critical central operations tools (MSA1.Operations.6a) | N/A | N/A | 97.95%  98.15% | 99.53%  99.89% | 97%  (98.5%)  (99%) |
| **PO2** | Support of European researchers and international collaborators through VRCs | Number of papers from EGI Users (M.NA2.5) | 27 | 16 | 11 | 18 | 70  (80)  (90) |
| Number of grid jobs done a day (Million) (M.SA1.Usage.1) | 1.56 | 1.38 | 1.67 | 1.43 | 1.2M  (1.4M)  (1.5M) |
| **PO3** | Sustainable support for Heavy User Communities | Number of production sites supporting MPI (M.SA1.Integration.2) | 106 | 87 | 80 | 77 | 120  (130)  (140) |
| Number of users from HUC VOs (M.SA1.VO7) | 11,073 | 11,208 | 11,431 | 11,595 | 12,000  (15,000)  (17,000) |
| **PO4** | Addition of new User Communities | Peak number of cores from desktop grids (M.SA1.Integration.3) | N/A | 4284 | 5220 | 6450 | 1,000  (5,000)  (7,500) |
| Number of users from non-HUC VOs (M.SA1.VO.6) | 7,467 | 10,325 | 10,654 | 10,602 | 10,000  (12,000)  (13,000) |
| Public events organised (attendee days) (M.NA2.6) \* | 418 | 5035 | 726 | 2698 | 15,000  (17,000)  (19,000) |
| **PO5** | Transparent integration of other infrastructures | MoUs with resource providers (M.NA2.10) | 3 | 3 | 2 | 3 | 4  (5)  (5) |
| **PO6** | Integration of new technologies and resources | Number of HPC resources (M.SA1.Integration.1) | 40 | 37 | 42 | 44 | 50  (50)  (50) |
| Number of resource centres part of the EGI Federated Cloud (M.SA2.16) | 14 | 9 | 16 | 14 | 10  (15)  (20) |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Objective Summary** | **Metrics** | **Target PY1** | **Achieved  PY1 (PQ4)** | **Target PY2** | **Achieved  PY2**  **(PQ8)** | **Target PY3** | **Achieved PY3**  **(PQ12)** |
| **PO1** | Expansion of a nationally based production infrastructure | Number of resource centres in EGI-InSPIRE and integrated partners (M.SA1.Size.1) | 300 | **344** | 330 | 347 | 350 (355)  (355) | 347 |
| Number of job slots available in EGI-InSPIRE and integrated partners (M.SA1.Size.2) | 200,000 | **239,895** | 250,000 | 290,300 | 300,000  (325,000)  (333,000) | 361,287 |
| Reliability of resource centre functional services (M.SA1.Operation.5) | 90% | **94.6%** | 91% | 94.8% | 95%  (96%)  (97%) | 96.9% |
| Reliability of NGI functional services (MSA1.Operations.4) | **N/A** | **N/A** | **N/A** | **N/A** | 97%  (98.5%)  (99%) | 99.5% |
| Reliability of critical operations tools (MSA1.Operations.6a) | **N/A** | **N/A** | **N/A** | **N/A** | 97%  (98.5%)  (99%) | 99.9% |
| **PO2** | Support of European researchers and international collaborators through VRCs | Number of papers from EGI Users (M.NA2.5) | 50 | **161** | 60 | 82 | 70  (80)  (90) | 72 |
| Number of jobs done a day (M.SA1.Usage.1) | 500,000 | **960,053** | 525000 | 1,264,922 | 1.2M  (1.4M)  (1.5M) | 1.43 |
| **PO3** | Sustainable support for Heavy User Communities | Number of sites with MPI (M.SA1.Integration.2) | 50 | **96** | 100 | 108 | 120  (130)  (140) | 77 |
| Number of users from HUC VOs (M.SA1.VO.7) | 5000 | **7,103** | 5500 | 10,856 | 12,000  (15,000)  (17,000) | 11,595 |
| **PO4** | Addition of new User Communities | Peak number of cores from desktop grids (M.SA1.Integration.3) | **N/A** | **N/A** | **N/A** | **N/A** | 1,000  (5,000)  (7,500) | 6,450 |
| Number of users from non-HUC VOs (M.SA1.VO 6) | 500 | **4075** | 1000 | 8,518 | 10,000  (12,000)  (13,000) | 10602 |
| Public events organised (attendee days) (M.NA2.6) | 1500 | **10,123** | 2000 | 11,795 | 15,000  (17,000)  (19,000) | 8877 |
| **PO5** | Transparent integration of other infrastructures | MoUs with resource providers (M.NA2.10) | 3 | **1** | 5 | 3 | 4  (5)  (5) | 3 |
| **PO6** | Integration of new technologies and resources | Number of HPC resources (M.SA1.Integration.1) | 1 | **49** | 3 | 39 | 50  (50)  (50) | 44 |
| Number of resource centres part of the EGI Federated Cloud (M.SA2.16) | 0 | **1** | 1 | 7 | 10  (15)  (20) | 14 |

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

* <http://metrics.egi.eu/quarterly_report/QR12/>
* <http://metrics.egi.eu/quarterly_report/QR11/>
* <http://metrics.egi.eu/quarterly_report/QR10/>
* <http://metrics.egi.eu/quarterly_report/QR9/>

## Work progress and achievements during the period

### Operations

The production Infrastructure satisfactorily met the PY3 targets of the SA1 project metrics with particular reference to the number of Resource Centres integrated, the compute capacity offered, and usage, as illustrated by the following summary table[[1]](#footnote-1).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Project objective** | **Metric** | **PY3 performance** | **PY3 Target**  **Foundation/Ideal/Stretch** | **Deviation from Foundation (%)** |
| **Expansion of a nationally based production infrastructure** | Total number of production resource centres that are part of EGI (EGI-InSPIRE and integrated partners)  Metric: M.SA1.Size.1 | 347 | 350/355/355 | **-0.86%** |
| Total number of job slots available in EGI-InSPIRE and integrated resource providers  Metric: M.SA1.Size.2a | 361,287 | 300,000/325,000/330,000 | **+20.43%** |
| EGI monthly reliability of Resource Centre  Metric: M.SA1.Operation.5 | 95.23%  (PY3 average) | 95%/96%/97% | **+0.24%** |
| Average monthly reliability of NGI core middleware services  Metric: MSA1.Operations.4 | 98.28%  (PY3 average) | 97%/98.5%/99% | **+1.32%** |
| EGI monthly reliability of critical central operations tools  Metric: MSA1.Operations.6a | 99.89% | 97%/98.5%/99% | **+2.98%** |
| **Sustainable support for Heavy User Communities** | Number of production sites supporting MPI  Metric: M.SA1.Integration.2 | 77 | 120/130/140 | **-35.83%** |
| Number of users from HUC VOs Metric: M.SA1.VO.7 | 11,595 | 12,000/15,000/17,000 | **-3.49%** |
| **Addition of new User Communities** | Peak number of cores from desktop grids Metric: M.SA1.Integration.3 | 6,450 | 1,000/5,000/7,500 | **+545.00%** |
| Number of users from non-HUC VOs Metric: M.SA1.vo.6 | 10,602 | 10,000/12,000/13,000 | **+6.02%** |
| Number of HPC resources Metric: M.SA1.Integration.1 | 44 | 50/50/50 | **-12.00%** |

Operations successfully contributed to the accomplishment of the applicable project objectives as detailed in the following.

* Objective 1 (O1): *The continued operation and expansion of today’s production Infrastructure*.

This objective was successfully met by completing the integration of the Ukrainian National Grid[[2]](#footnote-2) comprising 12 production RCs. A MoU with the *Asia Pacific Grid Initiative* (APGI) was signed in PQ12 and a MoU is being finalized with Open Science Grid in USA. Two Operations Centres were decommissioned because of sustainability issues: NGI Ireland and Iniciativa de Grid de America Latina – Caribe. Resource Centres were migrated to other operations structures where possibly. Fortunately this was compensated by a substantial overall increase in the offered capacity: compute resources increased by +33.6% in PY3, while disk capacity increase to 177 PB (+25.36%). EGI and its integrated resource infrastructures comprise 347 Resource Centres contributing more than 360,000 logical CPU cores. The PY3 average monthly Availability and Reliability of NGI services (97.48%/98.28%) has been excellently improving since January 2012 when the NGI Availability/Reliability statistics were introduced for the first time in PQ11, and the EGI Core Infrastructure Platform is delivering very good and stable performance (99.53%, 99.79%). VO-oriented Availability and Reliability metrics are being prototyped and will be rolled to production in PY4. The interim results are satisfactory for the most active VOs: in April 2011 Availability was 97.67% while Reliability was 99.49%). Monitoring of EGI Core Infrastructure Platform was rolled to production in November 2012. The central EGI.eu services being monitored – which are part of the EGI Core Infrastructure Platform – are: the distributed monitoring infrastructure – SAM, the Metrics Portal, the Accounting Portal and central database, the central Operations Portal and the service registry GOCDB.

gLite 3.1 and 3.2 software – released before the start of the EMI project and still partially deployed by several RCs sites at the beginning of PY3 were retired. The decommissioning campaign of these two releases started in October 2012 and was successfully completed in PQ11. This first decommissioning campaign was subsequently followed by an EMI-1 decommissioning campaign which is still in progress (EMI-1 end of security updates and support is due on April 30th 2013).

The decommissioning involved EGI.eu operations, EGI CSIRT, the Security Policy Group (for the definition of a software retirement policy) and the Central Grid Oversight time for the enforcement of retirement policies across the whole infrastructure. The security monitoring team and the developers of the Operations Portal also contributed to this activity to adapt the security monitoring infrastructure.

In PQ10 a new policy for the retirement of unsupported software from the production infrastructure was approved. This policy was incorporated into the main body of EGI security procedures and new procedures were developed to support the timely retirement of software.

The Information Discovery System – one of the main components of the EGI Core Infrastructure – is now supporting the two main version of the information publication standard GLUE, including the latest version 2.0. The GLUE 2.0 information is being published following the guidelines of the EGI profile[[3]](#footnote-3), which was defined in collaboration with user communities and technology providers.

The community of RCs participating to the early deployment of newly released software (Staged Rollout) has been expanding: the number of participating RCs has been progressively increasing to test a growing set of products from EMI, IGE and EGI-InSPIRE JRA1 (operational tools), and it currently amounts to 74 teams.

In preparation to the end of coordinated support through the EMI and IGE projects, in PQ11information about the individual Product Team future support plans and resources was collected. Continuity of support through the EGI helpdesk will be ensured to the largest majority of the software products deployed in the infrastructure, and different software support service level targets were negotiated with the Product Teams. According to the result of this assessment, the need of various changes emerged, which affect various EGI software support structures (the helpdesk workflows, the human support teams and support quality parameters). The changes identified will be implemented in PQ13.

* *Objective 2 (O2): The continued support of researchers within Europe and their international collaborators that are using the current production infrastructure.*

In PY2 the responsibility of providing VO services was migrated to the EGI.eu operations team and the NGIs. VO support includes existing SA1 VO services provided by NGIs including support through the EGI Helpdesk, the operation of software platforms dedicated to VOs (VO Management Services, user identity provisioning, VO grid services etc.), and the operation of tools to assist VO administration and monitoring. In PY3 the number of high activity VOs increased from 42 to 50.

The collaboration between the active User Communities and the Resource Providers of EGI was strengthened. The overall quantity of computing resources used in PY3 amounts to 12.01 Billion HEP-SPEC 06 Hours (the corresponding amount of consumed resources consumed during PY2 amounted to 10.5 Billion HEP-SPEC 06 Hours) as shown in Table 9. The PY3 workload was generated by 507.2 Million jobs, which amounts to an average of 1.43 Million job/day.

The overall compute resource utilization during PY3 has been significantly increasing both in terms of the cumulative number of jobs successfully done and the normalized CPU wall time consumed by all disciplines. In the reference period April 2012-March 2013 the rate of jobs successfully executed increased by +8.0%, while the total normalized CPU wall time (HEP-SEPC06) increased by +45.8%.

While the HEP utilization is dominating in absolute terms (93.78% of the total EGI consumption), a number of other communities significantly increased their CPU wall time utilization: Earth Sciences (+123.45% yearly increase), Computational Chemistry (+78.31%), Astronomy Astro-particle and Astrophysics (+76.64%), Life Science (+65.12) and other sciences (+199.45%). Astronomy Astrophysics and Astro-particle Physics are the second community in terms of used normalized CPU wall clock time, which now amounts to 2.82% of the overall EGI used CPU wall clock time. Life Sciences are the third community for usage (1.52% of the overall EGI used normalized CPU time).

* Objective 4 (O4): *Interfaces that expand access to new user communities including new potential heavy users of the infrastructure from the ESFRI projects*.

EGI is actively collaborating with various ESFRI cluster projects to investigate and demonstrate the reuse of EGI’s Core Infrastructure and Functional services to meet common ESFRI requirements. A collaboration was established with the EUDAT and PRACE infrastructures and user communities started in November 2012[[4]](#footnote-4) aiming for the integration of data access and processing across the three infrastructures. Use cases are being collected for data access, transfer, replication and processing in various disciplines: (seismology, earth science, human physiology and hydrometeorology). Common data access and transfer tools and protocols that can be provided by all three e-infrastructures will be identified.

A Task Force with representatives from user communities and Resource infrastructure Providers was set-up to define the processes, activities and procedures needed to provide resources as a service, i.e. to facilitate the provisioning of resources through a federated pool to peer-reviewed international scientific collaborations[[5]](#footnote-5). The proposed framework was approved by the OMB and will be reviewed by the EGI Council in PQ13.

* Objective 5 (O5): *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*.

The “Resource infrastructure Provider Operational Service Agreement” [RPO] was introduced in October 2011 to facilitate the exchange of operational services and the integration between the EGI-InSPIRE infrastructure and those operated by internal and external partners.

The EGI Core Infrastructure Platform service levels were defined in the EGI.eu Operational Level Agreement [EGIO], which was approved for the first time in January 2013. This agreement is the foundation for the provisioning of operations tools as a service to other resource infrastructures.

The EGI service registry (GOCDB) was adopted by EUDAT to support operations, and EGI-InSPIRE supported the implementation of EUDAT requirements through JRA1 development activities. EGI is currently responsible of the technical installation of the service. PRACE expressed interest in GOCDB. The version to be released in PQ13 will be tested and verified.

A collaboration with EUDAT will be established on the evaluation of the EGI Service Availability Monitoring and its suitability to EUDAT deployment needs.

A collaboration was also established in PQ9 with XSEDE, a major research infrastructure providing HPC resources in US. A submission of Collaborative Use Examples (CUEs) for collaborating research teams utilizing resources in EGI and XSEDE (which includes resources provided by the Open Science Grid) was opened in PQ10 with the aim of getting a better understanding of the breadth of research activities and of the usage modalities that would benefit from a XSEDE and EGI collaboration. The collaboration with Open Science Grid in the USA strengthened in PY3 aiming for extending the common support of new international VOs.

* Objective 6 (O6): *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 infrastructure as they mature and demonstrate value to the EGI community*.

The integration scenarios and processes of the EGI Core Infrastructure Platform supporting integrated operations of e-Infrastructure were completed[[6]](#footnote-6).

Integration of ARC-CE, UNICORE, GLOBUS, Desktop Grid and QosCosGrid software is now complete, with the only exception of accounting whose progress was put on hold waiting for the publishing of a new accounting publisher (APEL) based on a new publishing protocol (Stomp Secure Messaging v2). This publisher was released by EMI in PQ12 and was release in the EGI Unified Middleware Distribution in PQ13. All these software stacks are already deployed in production by various NGIs[[7]](#footnote-7).

In the following sections the major achievements in each operations technical area are listed.

#### Security

* The EGI CSIRT handled two security incidents. One of these involved a number of nodes being used to perform a denial of service attack, while the other related to a brute-force attack via ssh.
* Various high risk vulnerabilities that affected the production infrastructure were handled. Five EGI CSIRT alerts and advisories[[8]](#footnote-8) were issued (of which two critical and one high priority). 12 Software Vulnerability Group advisories[[9]](#footnote-9) were issued, of which one critical and three high priority.
* A policy was approved on deployment of supported software.
* gLite 3.1 and 3.2 were retired from the production infrastructure, and the retirement of the EMI 1.0 software release started in PQ11.
* The EGI Security Threat Risk Assessment was completed.
* The tools supporting security operations advanced. The software framework supporting the Security Service Challenge 5 was successfully extended with the integration of more job-submission methods, the extension of access of the monitoring module and the improvement of reporting module. The alerts in security dashboard were optimized.
* A new release of Pakiti was made during the year. New custom security monitoring probes were developed and deployed as required to track upgrades to services either as a result of vulnerabilities or the end of security support. A plan to support the monitoring of the security of all machines at a site is being worked on.
* The Security Service Challenge 5 was run by NGI\_NL and NGI\_UK (11 sites). The next NGI SSC run will be performed by NGI\_DE. A new inter-NGI challenge (Security Service Challenge 6) was run in collaboration with the CMS VO. In early September 2012 SSC6 was fully prepared and executed, this involved about 40 sites.
* The EMI Vulnerability Assessment of VOMS Core and WMS were completed. The assessment of CREAM is currently in progress. A revised software vulnerability report handling procedure was established for use following the end of both the EMI and IGE projects.
* The EGI Software Vulnerability Group/EMI Vulnerability Assessment plan was updated, including a status report. This is for the pro-active examination of software to find vulnerabilities that may exist carried out by the technology providers.
* A policy was approved on deployment of supported software.
* Various EGI CSIRT and Software Vulnerability Group face-to-face meetings were organized and five training events relating to forensic analysis supported by a training testbed, were organized in co-location with Grid international schools, international conferences and the EGI Technical Forum 2012. The EGI CSIRT plan is to keep on developing this training test bed also improving the related documentation.
* An action plan for the preparation of the production infrastructure towards a migration to SHA-2 as an algorithm for the encryption of personal certificates was prepared and approved by the Software Coordination Group. The plan included the request of SHA-2 support as mandatory requirement for inclusion of software into the Unified Middleware Distribution, the validation of SHA-2 compliance in the EGI software provisioning cycle and the definition of an a monitoring infrastructure to automate the SHA-2 compliance testing.
* The deployment of a centrally run emergency user suspension service is extremely useful for the CSIRT during the handling of an on-going security incident. An extension to the Security Service Operations Policy was approved by the OMB allowing the central emergency suspension of users. This policy requires the implementation of automated procedures to download the security emergency suspension lists defined centrally by Security Operations and the taking of all appropriate actions based on these lists, to be effective within the specified time period. The suspension of a compromised user identity, from the authorisation point of view, defined in one place and then automatically rolled out to all sites and services in a short period of time is currently missing. Technology for the enforcement of this policy, in the form of ARGUS[[10]](#footnote-10) , is now available to enforce such a policy. An implementation plan[[11]](#footnote-11) was proposed for Resource infrastructures based on ARGUS or different technical solutions. In addition, a compromised certificate suspension procedure is being drafted[[12]](#footnote-12).
* Changes in procedures and approach required for dealing with security in a federated Cloud environment are being discussed. Traceability continues to be of utmost importance and logging and monitoring will also be essential. Work will start with the analysis of some simple use cases.
* The collaboration with the PRACE and EUDAT security teams strengthened. This is very useful not only for sharing information but we also to work closer in the future while moving towards a sustainable security team beyond the current projects.
* The EGI Incident Response Task Force participated in the TF-CSIRT/FIRST meeting in Lisbon: EGI CSIRT was accredited by the TF-CSIRT Trusted Introducer of TERENA since October 2012.

#### Service Deployment and Integration

* Several changes to the overall software provisioning process for staged rollout were discussed by the OMB and were approved. The approved changes reduce the lag between the time software is released and the time staged rollout starts by parallelizing verification and testing in the production infrastructure, and by simplifying the process. Early adoption resources were re-allocated various times, initially to allow the phased released into UMD of EMI 1 and IGE products according to the priorities defined by the OMB, and after this to cover an extended list of supported OS (sl5, sl6 and Debian) in preparation to UMD 2 and UMD3 (which was released early in PQ13).
* The contribution of Resource Centres significantly increased to 74 teams. The total number of Staged Rollout tests conducted in PY3 amounts to 232 (523 in total from the beginning of EGI-InSPIRE).
* The integration of Desktop Grids, GLOBUS, QoSCoSGrid software and UNICORE was completed (with the exception of the accounting component, whose integration depended on the availability of accounting publishers provided by the respective technology providers).
* The operations integration team engaged with the MAPPER project and PRACE to discuss the

feasibility of the integration between the EGI helpdesk (GGUS) and the PRACE helpdesk (RT). The first testing results will be reported during the EGI TF2012. The integration of the EGI accounting repository (APEL) with the PRACE accounting system for the merging of accounting data across multiple infrastructures is also being investigated.

* A collaboration was established with the EUDAT and PRACE infrastructures and user communities started in November 2012[[13]](#footnote-13) aiming for the integration of data access and processing across the three infrastructures. The workshop featured the participation of VERCE

(earthquake and seismology), VPH (Virtual Physiological Human), EPOS (European plate observation), molecular and materials science, MAPPER (multi-scale simulation), SCALALIFE (life science) and DRIHM (hydro-meteorology). The first set of pilot activities will complete in PQ14.

#### Help Desk & Support Activities

* Tests were implemented to probe the interface between GGUS and the remote helpdesk systems. These tests are executed after each GGUS release.
* The interfaces to external helpdesk systems were extended. The interface with the ticketing system of NGI\_FRANCE (OTRS), CERN (Service Now), IberGrid (RT) and NGI\_CZ (RT) were set and/or consolidated.
* GGUS Report Generator[[14]](#footnote-14) was rolled to production to support EGI reporting activities of support services.
* Six xGUS service instances were operated in PY3, these provide helpdesk facilities to: NGI\_AEGIS (<https://helpdesk.aegis.rs/>), NGI\_DE (https://helpdesk.ngi-de.eu/), NGI\_CH (https://xgus.ggus.eu/ngi\_ch/), NGI\_SI (https://xgus.ggus.eu/ngi\_si/), Africa\_ROC (https://support.africa-grid.org/), NGI\_CHINA (https://xgus.ggus.eu/ngi\_china/) and NGI\_IGALC (https://xgus.ggus.eu/ngi\_igalc/).
* The GGUS Advisory Board was constituted in November 2012 to facilitate the technical discussion of new features requested by user communities, operators and technology providers.
* A Memorandum of Understanding with DANTE was established[[15]](#footnote-15); one of the objectives is the collaboration with DANTE and NRENs on the provisioning of network support services to EGI.
* The Central on Duty team (COD) contributed to the daily operations of EGI by supervising and supporting the operational activities conducted nationally and regionally by the EGI Resource infrastructure Providers. COD was responsible of the follow-up of underperforming Resource Centres and National Grid Initiatives. The automation of the first processes through the implementation of ad-hoc alarms was rolled to production in PQ11: COD contributed to the definition of the probe and the assessment of in a controlled production environment. From 1st November 2012, COD is still responsible for suspending Resource Centres in case of continued performance issues. COD also significantly contributed to the decommissioning of unsupported software in the infrastructure either by contacting or supporting directly Resource Centres (gLite 3.1 and glite 3.2) and by monitoring the progress, supervising the Resource Centre plans, and by collecting feedback on software upgrade issues. COD is also now responsible of chairing the working group that is responsible of assessing the quality of software monitoring probes provided by external technology providers, and in assisting the OMB in planning the upgrade of the EGI monitoring infrastructure. COD certified two new NGIs in PQ9: Moldova and Ukraine.
* **Revision of TPM and DMSU activities**. These two software-support related activities were thoroughly analysed at the start of PY3, overlaps were identified, and reorganization proposed. The two groups were merged, and responsibilities of the involved partners were reassigned in order to achieve more efficient effort usage by facilitating synergies between 1st and 2nd level support, and better coverage of support activities[[16]](#footnote-16). Software support activities have been running stably since then.
* **VO support.** An action plan for the BIOMED VO started during PQ9 and including the following activities: capacity management for VOs like BIOMED fully relying on the opportunistic usage of EGI resources, data management issues. Face-to-face meetings with the representatives of Virtual Research Communities and the main VOs were organized at the EGI conferences for the discussion of VO-oriented operational issues, collect new requirements and feedback on new policies and procedures of concern to the users.

#### Infrastructure Services

* **EGI service registry**. The GOCDB read-write portal was decommissioned on July 31st and replaced by a single read-write version at https://goc.egi.eu/portal. This consolidated all GOCDB components (including the Programmatic Interface, used to automatically access the GOCDB data) under the same URL. To improve the reliability of the service, a failover service instance was made available[[17]](#footnote-17). In 2012 the failover was utilised during a number of unexpected downtimes.
* **Operations Portal**. Multiple releases of the new Operations Portal were deployed. Site monthly Availability/Reliability is now accessible at <https://operations-portal.egi.eu/availability/siteAvailabilities> since Operations Portal release 2.9.6 (PQ10). This Operations Portal page provides an overview of the performance over the last months, and plots historical availability/reliability data so that trends over time can be analysed. VO Dashboard was included in Operations Portal 2.9, released in PQ12.
* **Service Availability Monitoring (SAM)**. Multiple SAM Updates were released and deployed by the NGIs. The staged rollout of SAM Update-17 was successfully completed at the end of August. By the end of PQ10, 30 instances were upgraded to SAM Update-17. SAM Update 17 rolled to production a number of important new features, among which the most important is Profile Management (POEM) system provides an interfaces and functionality necessary to group different metrics into profiles and based on those profiles configure Nagios and all other SAM components A new central SAM instance was deployed in PQ11 for the monitoring of EGI.eu central technical services[[18]](#footnote-18) after SAM Update 19. The staged rollout of SAM Update-19 was successfully completed and released to production in November 2012. SAM Update-20 staged rollout successfully finished and released to production in March 2013. SAM Update-22 work is focused on integration of EMI probes and it will be released once all the probes are successfully integrated in PQ13. In PQ11 three new SAM instances were rolled to production: one for the monitoring of the operations and user support tools of EGI (Training Marketplace, CRM and Application Database), one for the monitoring of obsolete software deployment, and one for monitoring of the Federated Cloud infrastructure. A new permanent working group was constituted to review the status and business logic of the EMI 2 Nagios probes prior to their integration into SAM Update 21.
* **Accounting Database**. The APEL Accounting Repository and Portal were kept working reliably throughout 2012. The APEL Accounting Repository was taken out of service in PQ12 when the servers were all upgraded to Scientific Linux 5.
  + The new SSM-based APEL Accounting Repository was brought into service in June 2012 and by the end of 2012 there were two sites (CERN and NIKHEF) sending Job Records to this repository. There are also four other publishers (OSG/Gratia, INFN/DGAS, NDGF/SGAS and Switzerland/SGAS) which have migrated to sending Summary Records (for 97 sites) to the new APEL Accounting Repository. These records are integrated with the summaries from the old Accounting Repository which are updated daily and retrieved by the Accounting Portal. This has established a stable method for other accounting implementations to interface their different solutions with central accounting.
  + Other sites producing accounting data requested a change to the messaging protocol used in SSM 1.2 and a new accounting protocol was produced in collaboration with these teams which has been implemented as SSM 2.0.
  + The SSM and associated record loading/unloading methods created for publishing CPU accounting records were modified to collect new types of accounting record, including storage and cloud accounting records.
    - The Cloud Accounting Usage Record has been revised to enable cloud accounting data to be more efficiently summarised. A corresponding cloud message format has also been implemented and, along with the latest version of SSM (2.0) has been tested with two of the Federated Cloud Task Force sites (CESGA and CESNET). Cloud accounting records have been successfully sent to the Accounting Portal. The majority of Federated Cloud Resource Providers migrated to publishing cloud accounting data using SSM 2.0 using the new cloud accounting usage record definition. A summary cloud accounting record has been created and data in this format provided to CESGA for work on the cloud accounting portal to progress. The CESGA team have also successfully tested receiving records from the cloud accounting repository using SSM 2.0.
    - A test storage accounting database was put in place, along with the new version of SSM v2.0 ready to receive test StAR (Storage Accounting Record) from storage clients. To date StAR data is received from 50 Resource Centres, thanks to the integration with the Italian NGI storage accounting implementation.
  + In PQ11 a campaign was successfully completed for the publishing of user Distinguished Names by Resource Centres. During PQ11 the accounting infrastructure made important steps towards the support of new resource types: cloud and storage. This activity is important to improve the accuracy and completeness of data that is needed for the production of inter-NGI usage reports.
* **Accounting Portal**. In PQ11 The "Fomalhaut" version of the Accounting Portal was released, with many improvements on InterNGI usage in the “Reports” view[[19]](#footnote-19), custom VOs, local job filtering and many fixes and improvements.
* **Messaging**. A test message broker network was deployed. This new infrastructure is used for change management (testing of new software updates, new service probes etc.). A test suite for testing of both the production and test messaging infrastructures was developed. The scalability of the network improved through the deployment of ActiveMQ software versions that allow the closing of inactive STOMP connections after one hour. The messaging infrastructure also improved its availability through the decommissioning of the deployment of the so-called “camel routes”, which were replaced by the usage of ActiveMQ “virtual destinations” (PQ11). The latest upgrade of ActiveMQ brokers was performed in March 2013 to version 5.5.1-fuse-10-16.
* **Availability and Reliability**. The EGI.eu OLA[[20]](#footnote-20) is the agreement that defines EGI.eu responsibilities and EGI Global Services, which are provided by EGI.eu to the RPs through the technical collaboration in place with various EGI partners. The agreement does not cover specific agreements that user groups, RPs and the technology providers might want to negotiate with EGI.eu. The EGI.eu OLA was discussed and approved in January 2013 and technically defines various technical and human services (currently a subset) provided by EGI.eu together with the respective service levels. The performance reporting tools advanced in PY3, in particular RC monthly reports can now be consulted on the MyEGI portal, and EGI.eu central operational tools are now under monitoring: the Service Availability Monitoring system was extended with ad-hoc profiles for the EGI.eu tools and a dedicated Nagios service instance was deployed for the monitoring of the end-points.
* **Documentation**. Documentation activities were focused on various areas: improvement of the EGI wiki, procedures, the rolling to production of the EGI discussion forum and the creation of new documentation. The EGI operations wiki space has been reorganized and new menus have been introduced to better find needed information. Unnecessary pages were removed or marked as deprecated. For EGI Operations newcomers, site administrators and end-users have been created pagers which gather all existing information to support their daily work. A large number of procedures were technically improved. Wiki pages are periodically reviewed.

#### Tool Maintenance and Development

The JRA1 work package provides for the continual evolution of the operational tools used by the production infrastructure and is composed of five tasks:

1. TJRA1.1 is the management task
2. TJRA1.2 for the maintenance and the developments for all the tools
3. TJRA1.3 devoted to the development of regionalised tools
4. TJRA1.4 for the extension of the accounting system to encompass new resource types (other than CPU)
5. TJRA1.5 for the extension of the Operations Portal and its harmonization with other portal frameworks

TJRA1.5 completes its activities at the end of this year, while TJRA1.3 ended in PY2 after one year extension.

**Operation Portal**

The development of the Operations Portal during PY3 focused on the following components:

1. **Monitoring of unsupported middleware version**: Security and operation dashboards are now able to expose the alarms raised when an obsolete version of a middleware component is detected.
2. **Dashboards**: An important refactoring has been initiated to improve their performance and usability and a new VO Operations dashboard has been designed.
3. **Availabilities/Reliabilities for Top-BDII and sites**: These modules have been designed to compute and expose the availabilities and reliabilities of the Top-BDII of a NGI and sites.
4. **VO Availabilities/Reliabilities:**  A standalone module has been developed on the top of the Lavoisier service to ensure the computation of availabilities and reliabilities for the VO services and the NGI Core services following the different rules:
   1. the raw data extracted from by MyEGI PI;
   2. this data is aggregated per group of services
   3. first computation gives the Av/Re per hour for this group;
   4. a second aggregation is done per day then per month.
5. **Regional views**: the regional package has been dropped and replaced by new regional views on the central instance in agreement with the NGIs that previously deployed the regional package.

**EGI Helpdesk (GGUS)**

There have been several important areas of work undertaken during PY3:

1. The **Report Generator** has been redesigned from scratch, the new version provides the ability to create all metrics reports on the fly;
2. The **High Availability (HA) solution** has been implemented for the Web Front-ends and the AR Server (BMC Remedy Action Request System). Moreover, HA is now available for the on call duty service and the Intrusion Prevention system. Switching to the backup machines will be done using a management script that can be run by GGUS administrators or the KIT on-call service at any time;
3. A new **GGUS Advisory Board** has been established during the EGI Technical Forum in Prague. It is composed of representative from user communities, NGIs, EGI, technology providers. The advisory board meets once per month directly after the monthly GGUS releases. The new requirements will be discussed there before reaching the OTAG;
4. Several minor achievements have been completed such as the adaptations for the interface to the CERN ServiceNow ticketing system, the interface with the NGI France ticketing system, the integration in the GGUS helpdesk system of new support units for some VOs and a new GGUS mail infrastructure.
5. The definition of **new interfaces** to PRACE/MAPPER, DANTE is ongoing. The implementation of the interface to NGI Ibergrid has been completed.
6. **New support units** have been added in particular to handle tickets for the new middleware in the production infrastructure as QosCosGrid and the EGI Federated Cloud.
7. In addition to the already available authentication methods, X509 certificates and login/password, new authentication methods to access GGUS services are under examination. Indeed NGIs expressed interest in federated identity management technologies such as Shibboleth.

**Grid Configuration Database (GOCDB)**

During PY3 effort focused on the following main activity streams:

1. In September 2012 the product team released the **GOCDB v4.4**. This release harmonized the separate read-only and read/write instances into a single portal and addressed many small RT requirements for GUI enhancements. See the GOCDB change log for more details.
2. A **GOCDB failover instance** has been installed at the Fraunhofer Institute to increase the tool availability.
3. A **separate GOCDB instance** has also been **deployed by the EUDAT project**, and has been tailored for use by means provided by the GOCDB abstractions/extension-points.
4. Work in PQ11 and PQ12 have largely focussed on the **design and development of GOCDB v5**. This new GOCDB version is based on a new data layer able to use different RDBMS platforms (e.g. MySQL, Postgres, Oracle) satisfying the DoW requirement to support non-Oracle deployment. It will simplify future developments making GOCDB more attractive for adoption by other projects.
5. Continued engagement with the GLUE2 working group to help to finalize the GLUE2 XML rendering document. The GLUE2 XML schema and GFD document have been completed and, now, have been **published by OGF for public comment.**
6. An analysis to extend the GOCDB scoping to introduce **multiple, non-exclusive scope tags** to enable hosting multiple projects within a single GOCDB instance has been done. This activity was not foreseen in the original plan for JRA1 and has been funded by EGI-InSPIRE in the context of the call for mini-projects of January 2013 and will now take place within SA4.

**Accounting Repository**

The most substantial result obtained during the third year of the project has been the bringing into service of the **new SSM (Secure Stomp Messenger) based APEL Accounting Repository** in June 2012. Sites of some big EGI partners, as CERN and NIKHEF, now send Job Records to this repository and external clients, as OSG/Gratia, INFN/DGAS, NDGF/SGAS and Switzerland/SGAS, have migrated to sending Summary Records (for 97 sites) to the new APEL Accounting Repository. New SSM clients have been developed and tested (or are in testing phase) with the Accounting Repository for IGE/GridSafe, QoSCoSGrid/MAPPER, EDGI and UNICORE. The records collected by the new APEL Accounting Repository are integrated with the summaries from the old Accounting Repository and retrieved by the Accounting Portal.

In March 2013 EMI-3 was released. It includes the new EMI-APEL client, completely rewritten, which will use SSM v2 for communication between clients and the APEL Accounting Repository and includes support for local jobs and MPI accounting. When the sites are updated to EMI-3, they will automatically send their records to the new SSM based APEL Accounting Repository which uses the EGI Message Brokers to receive data. In the same time, the new Accounting Repository has been updated to support SSM 2.0 and the new schema to receive CAR and EMI 3 APEL Client records.

The previous version of the APEL Accounting Repository will be retained while support for the old EMI versions continues unless all sites migrate earlier.

The **Regional Accounting Repository** has been released for NGI testing in April 2013. South Africa, Germany and Taiwan NGIs have requested to participate in the testing phase and they are going to install the regional accounting repository.

It comprises:

* MySQL database;
* apel-lib, apel-server and apel-ssm packages;
* packages are available on github;
* documentation for installing a test setup is available to NGI on request.

The communication between clients and servers is done via the EGI Message Broker network using the APEL SSM package like for the new central repository. The new EMI 3 APEL Client can be configured to send Summary Records to either the central APEL server or a regional APEL server.

Regarding the accounting of different type of resources the main activity performed during the third year are listed below:

* **Cloud:** The majority of Federated Cloud Resource Providers migrated to publishing cloud accounting data using SSM 2.0 using the new cloud accounting usage record definition. A summary cloud accounting record has been created and data in this format sent to the Accounting Portal using SSM 2.0.
* **Parallel Jobs:** The parallel jobs data has been added to the CAR (Compute Accounting Record) and now,after the release of EMI-3**,** such datacan be stored in the Accounting

Repository.

* **Storage Accounting:**  The JRA1 team integrated the new StAR (Storage Accounting Record) record in the Accounting Repository and is now able to receive it through SSM from dCache, StoRM and DPM storage types. An analysis to support StoRM storage is running. Storage records are now received in the test database from 50 sites. The Accounting Repository receives storage data from sites once per day.
* **Application Accounting:** The definition of an Application Accounting usage Record (AAR) in XML format was completed and a first prototype developed for Application Accounting. The work on the integration with the Accounting Repository is on-going.

The Accounting Portal team is participating to the Pay-for-Use pilot group[[21]](#footnote-21) to identify how the billing task may be implemented for accounting data.

**Accounting Portal**

During PY3 the Accounting Portal team improved the product with a considerable code refactoring and several enhancements and optimizations mostly driven by user requirements. The most important improvements are the following:

* Extension and maintenance of the VO Manager views;
* User data views now show all user entries;
* Graphs made bigger and easier to read;
* Support of RFC2254 DNs;
* InterNGI usage reports;
* PDA & Mobile support;
* Preliminary support for the provisioning of Cloud Accounting;
* Design and implementation of the Regional Accounting Portal that will be released in PQ13.

The current production version of the Accounting Portal is v4.2 Fomalhaut.

**Service Availability Monitor (SAM)**

The main activity streamlines on which the development focused during PY3 are:

* **POEM** component has been included and **fully integrated** in SAM Update-17[[22]](#footnote-22).
* **MyEGI** has been **reviewed** and improved as part of SAM Update-19. It is currently providing the following views: Metric Status, Availability and Reliability, Treemap, and Topology description.
* **SAM instance for monitoring operational tools** (OPS-MONITOR) has been deployed as part of SAM Update-20.

An important activity started in PY3 is the **integration of EMI probes in SAM**. This currently involves rearranging and validating meta-packages to support dependencies provided by EMI. This will also involve dependency changes in other SAM components to reflect the new arrangement as well as code adaptations that may be required for this transition.

The next two SAM updates, SAM Update 21 (which was closed in February but won’t be released) and the SAM Update 22 (now still under-development), are mainly focused on the integration of EMI probes.

Regarding messaging; the main achievements during PY3 are:

* Implementation of the credential synchronization system, which is responsible for keeping user and group records synchronized between the brokers of the same broker network;
* Development of a test suite in order to test the message brokers network prior to applying software updates on production message broker network;
* Enabled the logging of unauthenticated connections (IPs) to the production broker network;
* An analysis with SAM team to implement authentication, preferably based on usage of X.509 credential, has started in December 2012;
* Redesign of monitoring tools (i.e. Nagios probes for SAM) has started in January 2013;
* An analysis to develop a failover capability with respect to the delivery of results from SAM probes has started: when a broker endpoint is not functional, the probe should be able to deliver its results to another broker endpoint within the network. This feature will be ready in December 2013.

**Metrics Portal**

The main Metrics Portal developments performed during PY3 were:

* Per country metrics for NGIs that requested this feature;
* Heavy query optimization;
* Added XLS output support;
* Aggregated metrics (sum of all NGI predicted metrics plus entered metrics);
* Metrics accessible depending on several variables;
* Internal documentation and re-factorization;

The Metrics Portal has been used for the last two years to gather metrics from the project tasks. It has been updated according to changes in the structure and scope of the project and its tasks and activities. In PQ9 new metrics for the SA2, NA2, SA1 and NA3 tasks have been added. The concept of depreciable metrics or activities has also been introduced.

### Domain Specific Support and Shared Services

Although domain-specific support is still required, further areas of commonality have been found and the communities understand that shared solutions are much more likely to be supported in the long-term than those that are highly-specific to a given VO. Further advances in this area are therefore possible and still need to be explored.

Sustainability has been a key concern that has been addressed at the technical and strategic level. Sustainable does not, however, mean self-sustaining: all of the domains supported are dependent on external funding and this is committed in the short-term, planned in the medium and expected even in the (very) long-term. One of the youngest domains – HEP, which dates back some 60 years and is hence just an infant compared with e.g. astronomy – has a vision for the next 40 years, as presented in the CERN Director General’s annual address in January 2012. Another positive is the trend towards highly distributed computing and “cloud-like” models is unlikely to be reversed.

The success of achieving a high quality of service with vast amounts of CPU delivered accompanied by hundreds of petabytes of storage and multi-gigabit networking across a heterogeneous federated infrastructure with loosely coupled management domains is now much more than an existence proof or even mere state-of-the-art: it is a reliable, performant and operational sustainable production system capable of meeting the needs of thousands of scientists worldwide 24 hours per day and close to 365 days per year.

#### High Energy Physics

The Services for High Energy Physics (HEP) focuses primarily but not exclusively on the 4 LHC VOs (experiments) centred at CERN: ALICE, ATLAS, CMS and LHCb (and hence for and via the WLCG project and collaboration). Services and tools developed or extended by these VOs are also used by other HEP experiments and/or are under consideration for the future[[23]](#footnote-23). The focus during the year has been consolidating the optimisation phase undertaken last year into production, and handing over the long-term support of activities to teams that will continue long after SA3. This has been completed successfully, with the clear recognition from WLCG management boards that these activities are essential.

**HammerCloud**

HammerCloud (HC) is a Grid site testing service developed around Ganga. HC uses frequent short jobs to validate a site’s availability and functionality, and also delivers on-demand stress tests to aid in site commissioning or general benchmarking. HC was developed with the ATLAS experiment but is also now used by the CMS and LHCb experiments.

HammerCloud has seen work on the backend that allows a more sustainable growth in service clients. The first action has been performed on the web service, improving the deployment with more machines for the HammerCloud cluster and deep optimizations in the code to make web views between 20% and, in some cases up to 3,000% faster. A new storage backend was also deployed to provide a high availability database cluster to improve data management and durability.

Additional test infrastructure was added and tighter integration achieved with development teams from the two LHC experiments, ATLAS and CMS. In the ATLAS case, integration with the Athena developers will allow nightly release testing on the Grid, improving deployment quality and reducing “hot fixes” after the deployment of new versions.

**CMS CRAB Client**

The CMS Remote Analysis Builder (CRAB) was the first analysis tool in CMS to aid users in configuring CMS applications for distributed use, by discovering the location of remote datasets and submitting jobs to the Grid infrastructure. CRAB has progressed from a limited initial prototype nearly 5 years ago to a fully validated system that is critical to the production of published physics results. CMS currently observes more than 400 unique users submitting CRAB jobs per week, with close to 1000 individuals per month. The CMS Computing Technical Design Report (CTDR) estimated roughly 100k Grid submissions per day.

After the development of the CRAB submission client a CRAB server was developed, which has increased the scalability of submission and added capabilities of automatic resubmission. The CRAB server also provides a development platform for additional capabilities.

During the past year effort has been spent both to maintain the production version of CRAB2 and to continue developing and commissioning CRAB3. CRAB2 developments included:

* Improvement of documentation to include the AsyncStageOut component. Amongst various changes, the two main development items were the automation of user data publication and a new monitoring system.
* A proposal that, during migration of the CrabServer to a new version of the REST APIs, support for data-publication on demand will be dropped and integrated into the AsyncStageOut functionality. AsyncStageOut currently takes care of data movement to the final storage element and is then responsible for the data injection into the dataset-bookkeeping system (DBS).
* Development of a new monitoring system, designed around the continuous replication functionality of CouchDB, was completed and tested by the integration team. The new system assumes that every distributed instance produces internal documents with summary information and that these documents are replicated in a central database at runtime; the AsyncStageOut tool implements a similar logic.

The development of CRAB3 has been completed with most of the basic functionality needed and version 3.1.4 has been released. Integration and beta testing were performed and useful feedback received. Key features added to CRAB3 include:

* Allow users to generate small, private samples of Monte-Carlo data.
* Support the input of a lumi-mask to enable the capability for the user to select the input data to be analysed at a finer granularity.
* Automating data publication through the AsyncStageOut service and the newly developed DBSPublisher component.
* Ability to perform a manual resubmission of failed jobs, respecting the security constraints.
* Manage the workflow to produce reports, monitor transfers and the publication status.
* Perform troubleshooting in the event of failures (i.e. retrieve log file, kill pending jobs etc.)
* Improve web monitoring to track the progress of all workflows and in order to have an overview on the distributed system activities.

During PQ10 two distinct versions of the services providing these functionalities were released. In both cases there was intensive testing performed by the CMS Integration group, which included the participation of beta-users. In both test campaigns useful feedback was provided and a solution implemented in subsequent releases. Work has also included the refactoring of deployment scripts. These were improved in order to automate the deployment of CRAB3 services on the CMS Cluster (cmsweb.cern.ch), allowing for the deployment of dedicated redundant services on which CRAB3 relies on.

Finally, CRAB3 components were evaluated with the PanDA server as a core system for the job life cycle management, replacing the WMAgent system. The study’s main goal was to evaluate the future possibility of a common distributed analysis system for the ATLAS and CMS experiments. This study has led to a proof of concept prototype which has demonstrated to be able to run CMS jobs through the PanDA system already in production for the ATLAS experiment.

**ATLAS Distributed Data Management**

ATLAS, one of the LHC experiments, fully relies on the use of Grid computing for offline processing and analysis. This processing is done worldwide using the well-known tier model across heterogeneous interoperable Grids and the ATLAS Distributed Data Management (DDM) project is responsible for the replication, access and bookkeeping of ATLAS data across more than 100 distributed Grid sites.

The current ATLAS DDM software is now in a mature state and the present work is focused on maintenance and support operations. Inside the ATLAS Distributed Computing community there is an on-going discussion about developing a new DDM system (the Rucio project) to solve the current shortcomings and scalability issues in the Central Catalogues. The details about the future of the project and the implications in other groups are unclear at this point.

**LHCb DIRAC**

DIRAC framework provides a complete solution for using the distributed computing resources of the LHCb experiment. DIRAC is a framework for data processing and analysis, including workload management, data management, monitoring and accounting. LHCbDIRAC framework is the DIRAC extension specific to the LHCb experiment, which has been formally separated from DIRAC in order to streamline the implementation of features requested by LHCb community.

The first preliminary version of the popularity service was put into production and evaluated. User-feedback and feature requests were implemented and deployed during PQ10. The popularity service provides metrics to quantify dataset popularity and provide a ranking of the most popular datasets (i.e. those most frequently accessed by users). The final goal is to use the information gathered to implement a dynamic data placement model, whereby the number of replicas of a given dataset is based on its popularity.

The LHCbDIRAC agent, which provides accounting plots for storage resources usage and which was first deployed in production during PY1, was refurbished and improved. The new implementation takes advantage of some new functionality in the framework, allowing more efficient usage of resources and a reduced number of queries to gather the necessary information. Following thorough validation, improvements were put into production during PQ10.

During PQ11, the popularity service was reviewed and then taken over by other developers, who committed to follow up with support and development of the service, according to the requirements of the LHCb user community. Similarly, the service for storage resources accounting, extensively used for data management, has been documented and other data management experts will support this service.

The system for consistency checks between storage elements and file catalogue has been reviewed and documentation has been provided to the LHCb data management team.

The activity started during PQ10 aimed at optimizing the LHCb production management and reducing the man power needed to run the production system has been continued in collaboration with other members of the production team, who will take over and finish this work.

**Experiment Dashboard**

The Experiment Dashboard was developed in order to address the monitoring needs of the LHC community and its VOs – namely job processing and data transfer – but also provide common solutions that work transparently across various middleware. Experiment Dashboard applications have continued to be heavily used by the LHC virtual organizations (VOs), in particular by ATLAS and CMS. The system plays an important role for everyday operations, for site commissioning activity and for the distributed computing shifts. More than 200 CMS physicists daily access CMS Dashboard task monitoring in order to follow processing of their tasks on the distributed infrastructure. ATLAS DDM Dashboard is being actively used for monitoring of ATLAS Data transfers. All LHC experiments use the Dashboard SAM portal which provides information for evaluating site usability from the VO perspective.

A new version of the WLCG Transfer Dashboard was deployed in production. This version provides the ability to monitor not only data transfers handled by FTS, but also data transfers and data access performed by ATLAS and CMS on federated storage (xRootD). The next step is to deploy in production a version with the integrated xRootD traffic of the ALICE experiment. A WLCG Transfer Dashboard with ALICE xRootD traffic was prototyped and deployed to the integration server.

The Experiment Dashboard aims to provide a common solution for monitoring of the xrootd federations. Two prototypes with similar functionality but different persistency implementations are being developed. ORACLE is used as a database backend for the first prototype. Foreseeing a per-federation deployment model of the xrootd monitor, the Experiment Dashboard offers another solution with Hadoop/Hbase used for implementation of the monitoring data repository. The user interface, based on the xBrowser framework developed for transfer monitoring applications, is shared by both prototypes and has a common core part with the WLCG Transfer Dashboard and ATLAS DDM Dashboard.

A new DDM accounting application to monitor the evolution of datasets, files and bytes over time was developed at the request of the ATLAS VO. The application provides advanced statistics either in historical or real-time views and it offers wide flexibility to the ATLAS users. The new application shares its implementation to a large extent with the Job Monitoring Historical Views, which allowed a prototype Proof of Concept (PoC) implementation to be developed in less than one month. The prototype is currently under validation by the ATLAS computing experts while feedback for additional features is constantly being received from the ATLAS experts. The final version of the application should be deployed in production in October 2012 during the ATLAS Software and Computing workshop.

A prototype Analysis Task monitoring tool, which includes the ability to kill jobs from the Task monitoring user interface, was deployed on the test server and is being intensively tested in order to make sure that user privileges are properly handled by the application.

The Site Usability Monitor (SUM) which provides visualization of the results of the remote tests submitted via the SAM/Nagios framework and site availability based on these results is heavily used by the LHC experiments for monitoring everyday operations. The data visualized in SUM is retrieved from the SAM repositories using the SAM APIs. Therefore validation of the new SAM releases should include validation of the SAM APIs. A set of tests to check the content and format of data retrieved with SAM APIs has been developed and is being used for validation of the new SAM releases.

Multiple improvements were performed in the Site Status Board application. Caching of data on the client side was implemented, which improves the performance of the user interface. The possibility to modify metric values from the user interface was enabled. The CMS production team evaluated SSB for resource usage monitoring. As a result of this evaluation a new production view was created in the CMS SSB instance. This view is now used by the CMS production operators. The SSB workshop was held for the SSB user community. During the workshop the SSB developers demonstrated new functionality of the application. SSB users from different LHC experiments shared their experience and provided feedback to the development team.

#### Life Science

The Life Science Grid Community (LSGC) provides coordination and support of the Life Science community in EGI which is composed of scattered and fragmented user groups and very different use cases for grid infrastructure exploitation. The Life Science HUC contributed to the LSGC effort by maintaining a production quality Grid environment for Life Sciences by providing technical skills and manpower for VRC operation, as well as some specific tools dedicated to the Life Science community. A significant effort is spent on the VO-wise monitoring and trouble-shooting of the EGI’s production infrastructure. This effort is split between a daily trouble-solving activity to ensure the immediate usability of the Life Science resources for the community, and a longer term effort in VRC management tools that are being developed to simplify and lighten the VRC administrators’ workload in the future. Moreover, the provision of additional services, mostly a Grid database interface (GRelC) and a data encryption service (Hydra) are being handled within the HUC.

**LSGC User Management Tools**

The Life Sciences HUC steers the LSGC (“Life Sciences Grid Community” VRC) effort to organize the community and deliver new services. A particular effort is invested in assisting users to better exploit the Grid and rationalizing Grid usage. In this context, several services to the HUC users have been provisioned:

* Web gadgets listing Life Sciences applications and community requirements posted to the RT systems set up by User Communities Support Team have been added to the LSGC wiki;
* A HUC support service is delivered. A technical team of expert users has been set up. It addresses the difficulties reported by users on the VRC mailing lists or through GGUS. Bi-monthly phone conferences are scheduled and shifts are organized to ensure that there is always a team on duty tackling the problems. See technical team wiki for details ;
* The technical team pro-actively monitors the infrastructure health at a VO level, to identify the problems occurring. The French NGI deploys a dedicated Nagios server for that purpose. New probes to monitor all VO SEs, WMSs and CEs were developed;
* On-line reporting tools easing the monitoring of SEs space management have been added to the technical team wiki page.

Work during PY3 included:

* New tools and web reports developed to allow for the monitoring of storage space consumed VRC-wise, and thus anticipate problems of storage resources running out of free space.
* Several Web gadgets customized for the Life Sciences have been added to the LSGC wiki, with the help of the User Communities Support Team [MS121].
* Upgrade of dedicated Nagios server to exploit new EMI-enabled probes and new topology builder based on VO feeds.
* Migration of the gLite VOMS server to EMI VOMS.
* Creation of an EMI UI virtual machine image made available for tests and deployment to the community.

Besides the continuation of the current community support activity, discussions are continuing with Operations colleagues to improve and mutualise infrastructure monitoring tools and dashboards.

**GRelC data access interface**

The GRelC service provides a WS-I compliant access interface to grid-databases. During PY3, the following LS use cases have been supported: UNIPROT, Invasive Alien Species and GeneOntology. Some of them have been already finalized (such as UNIPROT, which started in PY1) whereas other ones (like the IAS) still need to be completed. During PY3, the support in terms of setup and maintenance of a GRelC node (deployed by the SPACI partner in Lecce) has been provided to address LS needs and host LS data banks needed to support the previously mentioned use cases. Support will continue to be provided for the definition, implementation and hosting of data to support new LS use cases. GReIC has also been ported to the EMI distribution.

**Hydra encryption service**

Hydra is a file encryption/decryption tool developed by EMI to enable the protection of sensitive files stored on Grid storage resources. The service is composed by a distributed encryption key store (hence its name), and client command lines that can (i) upload/fetch keys to/from the key store and (ii) encrypt/decrypt data files using these keys.

Hydra has been officially released as part of EMI2. In addition, EMI has made significant efforts to produce useful documentation that was severely lacking. Nevertheless, the service remains hardly usable for production: some bug fixes are still on-going at EMI, while some concerns about the way Hydra should be deployed and operated in a production environment have not been clarified yet. At present, the service that has been delivered remains a test service that gives the opportunity for the delivered functionality to be validated and the deployment procedures to be tested.

Finally, the decision of EMI not to make the Hydra client package mandatory in the Worker Nodes distribution suggests that VOs willing to use the service will have to either (i) deploy this package as VO-specific software on the computing elements they wish to use, or (ii) negotiate with each and every resource centre supporting the VO the deployment of the package. A survey has revealed that many production sites were misconfigured, not having deployed the Hydra client, having deployed an older version of the Hydra client, or publishing Hydra tags that are not consistent with the deployed client if any. A negotiation was led with each site publishing Hydra tags, or provisioning Hydra client without tags to resolve the situation. The production deployment model of the Hydra service remains unclear. Discussions are still ongoing with the EMI team developing Hydra, in order to figure out the best deployment model, and find answers to the concerns that remain unclear.

#### Astronomy and Astrophysics

Activities carried out by the A&A community during PY3 focused on the following topics:

* Coordination of the A&A community focusing in particular on the long-term sustainability plan,
* Using the VisIVO visualization tools on HPC, parallel programming, and GPU resources.

**Coordination of the A&A Community**

This work helps collect use case and requirements between research groups and institutes in the European A&A community around:

* interactivity between e-Infrastructures based on different technologies (Grid, HPC and Cloud)
* access and management of astronomical databases from Grid Infrastructures

In particular effort focused around the big transnational astronomical projects (especially the ESFRI projects) given their ability to attract new communities of end users. Although contacts with small projects and research groups are not neglected, priority was given to big projects in order to rapidly increment the number of end users and also for reasons related to the long-term sustainability. Contacts then were established with SKA, Euclid and CTA. Each of them acts as the reference projects for a specific branch of the astrophysical research (radio, astroparticle physics, etc.) with a strong ability to aggregate large fractions of the astro end users community.

A virtual team was established around the CTA ESFRI which provides general access to the whole Astro-Particle Physics community. The VT has been created to achieve the following objectives:

* Gather requirements from end users relating to Science Gateways and the SSO authentication system.
* Identify and put in place an identity federation model for the CTA collaboration and for the whole astroparticle physics community.
* Identify the most suitable technological solutions for the implementation of the SSO system and of one or more specialized Science Gateways.
* Define a roadmap for the design and implementation of the SSO system and of the Science Gateways after the completion of the VT activities.

**VisIVO**

Significant results have been achieved by porting VisIVO (Visualization Interface for the Virtual Observatory), a visualization and analysis software for astrophysical data to EGI. It consists in a suite of software tools aimed at creating customized views of 3D renderings from many types of datasets. VisIVO-related activities competed during PY3 include:

* A parallel application for the ESA GAIA Mission dedicated to the development and test of the core part of the AVU-GSR (Astrometric Verification Unit - Global Sphere Reconstruction) is being ported to EGI. The parallel code uses MPI and OpenMP (where available); it is characterized by an extremely low communication level between the processes, so that preliminary speed-up tests show behaviour close to the theoretical speed-up. Since AVU-GSR is very demanding on hardware resources.
* The integration of VisIVO where GPUs (Graphics Processing Units) are available is important as GPUs are emerging as an important computing resource in Astronomy as they can be successfully used to effectively carry out data reduction and analysis. The option of using GPU computing resources in EGI to make visualization processing on VisIVO was therefore considered and a preliminary study focused on the porting and optimization of the data transfer between the CPU and GPUs on worker nodes where GPUs are available.
* The production of a CUDA-enabled version of VisIVO for EGI has taken place. A first preliminary study focused on the porting and optimization of the data transfer between the CPU and GPUs on worker nodes where GPUs are available. To provide a service able to take advantage of GPUs on the Grid, A&A acquired a new hybrid CPU-GPU system (funded by the Astrophysical Observatory of Catania) configured as a Grid computing node.
* A grid-enabled library that allows users to interact with Grid computing and storage resources has been designed and implemented.

It is worth noting that the current version of VisIVO is also able to interface with and use the gLite Grid Catalogue and that, although VisIVO has been conceived and implemented as a visualization tool for astronomy, recently it evolved in a generic multi-disciplinary service that can be used by any other community that needs 2D and 3D data visualization.

#### Earth Sciences

Earth Science (ES) applications cover various disciplines like seismology, atmospheric modelling, meteorological forecasting, flood forecasting, climate change and many others. The work centred on the implementation and maintenance of interfaces or tools to provide access to ES specific resources from the Grid, in particular to large data infrastructures such as:

* Ground European Network for Earth Science Interoperations - Digital Repositories (GENESI-DR)
* Climate data within the Earth System Grid (ESG)

The community is supported independently by organisations and NGIs, and additional effort is put into fostering the community and to provide value-added services around EGI.

**GENESI-DR**

The GENESI-DR infrastructure provides a standardized data discovery interface based on OpenSearch and metadata standards for a federation of data repositories. While in the European project behind it (GENESI-DEC) focuses on a central portal as an interactive entrance point, the usage on EGI requires versatile clients such as a non-interactive, bulk oriented, tool.

A new version of the GI-cat distributed catalogue service, which is able to broker between heterogeneous search and metadata infrastructures, has been deployed on SCAI’s infrastructure. The Command Line Interface (CLI) and Text User Interface (TUI) gsearch, based on ncurses was adapted to handle this newer version, and provide a better overview of the different search results. Moreover, some misleading navigation errors were resolved and documentation improved. In order to limit the load on the different opensearch sites, gsearch now by default only requests a limited number of results. The user triggers the next request by hand or in the TUI case, by going to the last page of the results. In CLI mode, gsearch has a new batch system, which automatically downloads the requested resources and creates a job submit script. In addition, the user can provide a template containing the user application and settings, which will be used to generate the job submission script and is able to be directly submitted.

There is ongoing effort to separate the opensearch specific parsing and request engine of gsearch into a dedicated development library. Third-party software or simulation applications could directly use the API to access data from opensearch sites and thus benefit from the development done by gsearch for a reliable access to ES data. Although many different cases and scenarios were tested, there are still sites which respond in an unexpected manner. These issues will be further addressed and resolved.

The web interfaces internal search was completely redesigned and now supports threading. Also, the full query at the catalogue sites is now made on user requests. So far, all GI-Cat attached catalogues have been immediately queried without user interaction. Now, based on preliminary information users can decide which site they want to query for full result information (including the file links etc.) The credential handling and job submission with jSAGA were extended and minor bugs have been fixed.

The VO for the VERCE project has been finalised (VERCE.eu) and the first two sites have joined. Deployment of VO software (ObsPy: seismological software) in the VO software area of the sites has started and first tests have been carried out. An official Memorandum of Understanding between EGI.eu and the VERCE EU project is under preparation. Members of the Earth Science Grid community have again arranged for a session at the General Assembly of the European Geosciences Union.

**ESG**

The Earth System Grid Federation (ESGF/ESG) is a distributed infrastructure developed to support CMIP5 (The Coupled Model Intercomparison Project, Phase 5), an internationally co-ordinated set of climate model experiments involving climate model centres from all over the world. Data access within ESGF is provided with two main services: OpeNDAP and GridFTP. A site that hosts these services is called a “Data node”.

The team that works on Earth System Grid (ESG) interoperability has made considerable progress. The intelligent data transfer tool, named “Synchro-data”, that facilitates the command line, bulk oriented access to ESGF data was updated. The tool can download files from the ESGF infrastructure in an easy way, through a list of variables, experiments and ensemble members. The user defines one or many templates that describe the desired data, each of them listing variables, frequencies, experiments and ensemble members. The user separately defines a list of models. Using these templates, the tool explores the ESGF grid and downloads all the corresponding available files. The program may be run regularly to download the potential new files.

Major added features include a new discovery engine, discrepancy detection and data version management.

The new discovery engine (Search-API) gives the ability to use projects other than CMIP5 (until now, Synchro-data was only able to download data from the CMIP5 archives). It is also faster than the previous discovery engine. The "Search-API" discovery engine works by calling a distributed server-side dedicated search API, while the former "THREDDS-catalogue" discovery engine works by parsing THREDDS XML catalogues , which is time consuming.

For the authentication interoperability, the prototype adaption of MyProxy has been released as CTS version 1. From the client side, CTS works as follows. First a "CTS patched MyProxy client" must be installed on an interactive machine (the patch add the "myproxy-bind" command to the myproxy distribution). When a user wants to access ESGF from EGI, he logons on that machine, creates an EGI proxy certificate with the voms-proxy-init command, then binds it with his ESGF account using the "myproxy-bind" command (ESGF password will be prompted at this step). From that moment on, the user can retrieve an ESGF short-lived certificate with the "myproxy-logon" command without entering a password, by just using the EGI proxy certificate. Thus, it is possible to access ESGF data from non-interactive EGI worker node (for better use, a script can wrap the "myproxy-logon" command to make the ESGF authentication step transparent).

On the server side the CTS patch must be installed on the ESGF MyProxy server. The patch makes the server able to process "myproxy-bind" requests, add a new mapping table for EGI<=>ESGF identities bindings, and modify "GET" requests handling the use the new mapping table.

Future plans for CTS include porting the patch to other MyProxy versions, at least 4.6 and 5.9 (HEAD), improving code quality, adding a new option to "myproxy-logon" command and improving the documentation.

#### Services

**Grid Relational Catalog (GRelC)**

The GRelC service is a grid database management service aiming at providing access and management functionalities related to relational and non-relational databases in a grid environment.

The most relevant activities related to this service that have been carried out during PY3 are:

* A new release of GRelC for gLite 3.2 has been released using a new version of the Globus libs (external libraries for GRelC) on SL5. The new rpm replaced the old one for the GRelC release on gLite 3.2 as well as it is needed by the EMI1/EMI2 compliant GRelC releases on SL5 x86\_64. The GRelC rpms and repository (both available at IGI level) have been updated and tested accordingly.
* The porting of GRelC on EMI1 and EMI2 has been investigated. An implementation plan has been jointly defined with the IGI release group and some installation tests to port the GRelC software on EMI1 and EMI2 have been carried out. Consolidated results on the porting activity will be available by April 2013.
* The DashboardDB registry and monitoring gadgets have been refined, fixed and deployed twice. New community-based features and monitoring views have been added to the system. Four permalinks have been made created to export each gadget both in a secure (login-password based) and guest (free access) way into existing web applications just using a single HTML line of code. The permalink feature has been exploited to integrate the DashboardDB application into three different web-applications are importing the two gadgets (EGI Website , GRelC Website , GRelC Desktop application ).
* A web desktop application (called GRelC Desktop) including the two DashboardDB gadgets has been released. The GRelC Desktop is a flexible environment joining the pervasiveness and platform independence of a web-based application with a superior user experience and responsiveness related to a desktop-based application. It includes all of the gadgets implemented during the project and new ones related to well-known social networks like Twitter and Youtube. The GRelC Desktop is very extensible, easy to use and new gadgets can be straightforwardly included as new “apps”. Moreover the desktop approach allows keeping several “apps” active at the same time in separate windows. It is important to remark that the GRelC Desktop provides both “secured” (through login/password) and “guest-based” gadgets (grid-certificates are not needed to carry out the authentication step). Finally, the GRelC Desktop aims at integrating in a web-desktop based environment all of the resources related to the GRelC software (GRelC website, DashboardDB gadgets, dissemination material, community-based gadgets, etc.).
* During PY3, several grid-database services and data providers have been contacted to register/publish their own data resources/services into the DashboardDB system. Some sites (Catania - INFN-CATANIA and Naples - GRISU-NAPOLI), have updated and installed the latest version of GRelC and registered their service instance on the DashboardDB system. Another dissemination task has been the preparation of a short overview related to the two main GRelC gadgets (DashboardDB Monitoring and Registry). This document has been prepared during PY3 with NA2 representatives and posted on the EGI website.

**SOMA2**

SOMA2 is a versatile environment for computational drug discovery and molecular modelling that can be operated through a web browser and offers easy access to third-party scientific applications. The SOMA2 environment offers a full scale modelling environment from inputting molecular data to visualization and analysis of the results, and including a possibility to combine different applications into automatically processed application workflows.

The main achievement during PY3 was the release of SOMA2 (v1.4.1: Aluminium). In addition to bug fixes, this version added support for user generated proxy certificates in Grid use via SOMA2. This release also contained grid enabled versions of SOMA2 demo program descriptions, which make use of the Open Babel program package. These program descriptions are also taken in use in SOMA2 EGI pilot service which was introduced for users in the EGI Community Forum during March 2012. Improvements were also made to common UI elements of SOMA2 while CSC maintained and operated CSC’s SOMA2 services.The SOMA software was stabilised for a public release of SOMA2 version 1.5.0 Silicon.

#### Workflow & Schedulers

Work on Kepler (and the Serpens suite for Kepler) focused on improving the existing scenarios and performing further tests of the existing use cases (for fusion and astrophysics) in order to optimize the workflows. In particular work started on the extension of the workflow for astrophysics and templates for fusion workflows were investigated, for example a Grid application (Fafner) connected to a HPC application EUTERPE.

In addition, the papers presenting the results of the work were prepared and presented at a range of conferences, including HPCS and ICCS conference. In addition to the above, some bug fixes and feature requests were applied to the Kepler actors.

The Kepler and GridWay services have been successfully integrated. This includes the development of the actors and workflows for interacting with GridWay using the GridSAM BES interface implementation and the JSDL job specification format. Small fixes were made to the Astrophysics workflow in response to user requests and changes made to this use case, developed and reported in previous deliverables, were applied. Furthermore, recent work was described in an article prepared for the Fundamenta Informatica journal publications.

Current work is mainly focused on developing the scenarios using the Kepler-Gridway and on providing the fault tolerance framework around the basic actors and workflows. Furthermore, articles for the FI are being improved as a result of the review process. A poster presenting the work of the integration with Gridway will be presented at the EGI Community Forum and a publication summarizing that is under the preparation. It is also planned to evaluate the solution with scientific use cases scenario.

#### MPI

This work has produced numerous MPI workbenches of increasing complexity with specific high impact on the Computational Chemistry, Earth Sciences, Fusion and Astronomy and Astrophysics (A&A) communities. These products are also intended to have an impact on other user communities. In addition, it focuses on ensuring that the user communities and site administrators benefit from several rudimentary improvements to the methodologies used and the available documentation. Many of these objectives are iterative, often requiring updates or fine-tuning. Other objectives, such as participation at the EGI Community Forum and the EGI Technical Forum, will be repeated at regular intervals. The core sub-task objectives (which bring definition to the tasks sustainability) are:

* Improved end-user documentation, addressing MPI application development and job submission in ARC, gLite and UNICORE;
* Quality controlled MPI site deployment documentation;
* Outreach and dissemination at major EGI events and workshops;
* User community, NGI and site engagement, gathering direct input;
* Participation in selected standardisation bodies.

To date, over 120 EGI Sites using the gLite/UMD middleware support MPI.

During PY3 CSIC provided effort to the MPI Virtual Team[[24]](#footnote-24). Actions completed included: improved documentation on the EGI wiki, new Nagios probes, Information System correctness improvements and batch system MPI support improvements. UNIPG provided MPI support on a best effort, unfunded basis. UNIPG has disseminated information regarding the use of MPI with molecular science applications on the Grid at the ICCSA 2012 Conference in Salvador de Bahia. A report was compiled detailing UNIPG’s activities (linear algebra routines, quantum reactive scattering programs and secondary pollutant production Chimere package) and promoting the use of MPI on supercomputers from the Grid. In addition, a white paper is was drafted, outlining the strategies adopted to build a computational chemistry VRC.

TCD helped to establish, and currently leads, the EGI VT-GPGPU virtual team. The team aims to collect detailed requirements from existing and new EGI user communities and their support teams on using GPGPU services in the European Grid Infrastructure. The requirements will used by the EGI Operations community (through the OMB), the EGI User Community (through the UCB) and the EGI Technology Community (through the TCB) to define and implement extensions in the EGI e-infrastructure services in order to meet the communities’ demand for GPGPU computing.

New probes were developed for MPI. These probes are now ready for deployment in the production infrastructure as soon as the new MPI service type is included in GOCDB. CSIC is monitoring the process in collaboration with partners from the MPI-VT.

CSIC has also created a page in the EGI Wiki that collects and provides information about the MPI services and support mechanisms for application developers and resource providers. This was one of the open actions from the MPI-VT. The page contains links to the relevant documentation for both users and administrators about the MPI services in the EGI infrastructure.

The MPI team members have continued with the support in GGUS of MPI related issues via the MPI support unit.

### Software Provisioning

During PY3 the overall software provisioning process of UMD proved to be efficient and functional. Major improvements in the specific technical tools have been deployed to optimize the workflow, reducing the amount of manual actions and consequently reducing the overhead for the SA2 team. The major achievement of the PY3 have been the release of the second major release of UMD, while the updates to the first major release continued independently, and the extension to support multiple operating systems.

During PY3 the Federated Cloud activities have been directly supported by EGI\_InSPIRE as a task within SA2. The activities of the Federated Cloud Task Force have focused on two main topics: the integration of cloud resources in the EGI Core Infrastructure, and the support of new use cases proposed by the user community.

#### Quality Criteria

During PY3 the Quality Criteria document was updated twice, following the schedule of one official release every six months. The 4th[[25]](#footnote-25) and the 5th[[26]](#footnote-26) updates were released respectively in PQ10 and PQ12. The documents were improved by following new requirements from user and operations communities as well as any security advisories from the EGI Software Vulnerability Group, and extending the criteria coverage to the new products distributed in the UMD. Every new document has been peer reviewed by the technology providers and their comments implemented before the official release. The schedule for the future updates of the Quality Criteria document, and the release notes of the documents produced so far are available in the EGI wiki[[27]](#footnote-27).

In every new release of the document, the quality criteria are mapped vs the products released in UMD, and the SA2.2 team updates the documentation wiki pages with the recommended testing procedures for every quality criterion.

The main changes in the latest two documents are: the introduction of additional security related tests, proposed by the Software Vulnerability Group, the verification of GLUE-2 schema publication in the information system and the criteria for the verification of a new set of products – QosCosGrid (QCG) - produced by the PNSC technology provider[[28]](#footnote-28). The activities for the definition of the quality criteria for the new QCG products – and in general for every new product - include the analysis of the products capabilities to understand which criteria are applicable to the products, the definition of new criteria to cover new capabilities and the testing of the set of criteria mapped to the products. During PQ12 a full release of the QCG software successfully underwent a dry run of the UMD software provisioning process, to test the readiness of the workflow.

#### Criteria Verification

While UMD-1 supported only SL5, UMD-2 supports multiple operating systems: SL5, SL6 and Debian6. The verification step must therefore be replicated for every platform supported by the component under verification. This increment in the effort for the verification has been mitigated by the improvements in the process described earlier.

The verification team (TSA2.3) acted upon every new release of the Quality Criteria document and consequently mapped criteria-product, generating a new set of templates for the verification reports, specific for every product. The templates are generated by a set of python scripts that requires small adjustments to be aligned to a new Quality Criteria document. Having a template for the report that contains only the criteria applicable to the product under verification reduces the overhead and makes the verification activity more efficient.

In order to improve the verification process, different level of testing have been defined for different types of software updates released by the technology providers: for the m*ajor updates* verifiers test the full set of criteria including documentation, for the *minor updates* only the criteria affected by the update are verified and for the *revision updates* – which are basically bug fixes releases – verifiers only test that the bugs have been solved. Every verification includes the full installation

of the component from scratch, to verify the packaging of the release done by the developers.

The verification processes and testbed infrastructure has been heavily improved during PY3. Verifiers are now able to instantiate virtual machines based on the supported operating systems. The instantiation of new virtual machines can now be directly requested by the verifiers, using an OCCI interface, so new machines can be available in few minutes upon request. Every machine now contains configuration templates for most of the EMI and IGE products to reduce the time necessary for the verifiers to have a working service. After the verification of a product a golden copy of the machine is saved, to quickly re-deploy a configured service when needed (for example to perform cross-products testing).

During PY3 the verification team took over also the test of the UMD release candidates. Once the products for a UMD release are frozen, a test repository is created with the new packages, and TSA2.2 performs the installation of all the products in the update and the products already in the UMD repositories, to make sure that all the dependencies are satisfied and that the new products are not creating any conflict with the product previously released. This test is performed using a set of automatic scripts and the machines of the verification testbed, the generated report is then analyzed by the SA2 team before the official release.

#### Support Infrastructure

The software provisioning infrastructure has been extended during PY3 to support multiple operating systems as described in Section 3.2.3.2, and multiple UMD major releases. During PY3 UMD-1 had 4 minor releases and 4 revision updates, and UMD-2 had one major release plus 4 minor releases and 4 revision updates.

UMD repositories also contain the Certification Authorities trust anchors releases, used by the EGI PKIX authentication infrastructure, and there were 6 releases.

The Service Availability Monitoring tools, developed within JRA1, are also distributed in the UMD repositories, and during the last 12 months there have been 3 updates (other 3 have been rejected during the testing).

**Repository frontend activities**

No big changes were introduced in the frontend during PY3, since the existing tool was well reliable and did not need to evolve to adapt to the new UMD structure. Mainly maintenance work has been performed on the tool in the last 12 months: bug fixes, content changes and updates of the components of the tool, e.g. wordpress udpates.

**Repository backend**

The repository backend is the subsystem of the EGI software repository that handles the business layer of the Software Release workflow and PY3 it has been further extended to support the changes in the software provisioning workflow.

The production repositories have been duplicated to support multiple major releases, both with a base-updates structure. The support of SL6 has been straightforward since it is very similar to SL5 already in production, and Debian6 requested some developments to support APT based repositories.

The repositories used during verification (previously volatile repositories containing a single product update) have been consolidated in *untested* and *testing* to contain the products in verification and staged rollout respectively. This simplifies the activities of verifiers and early adopters.

During PQ12 was rolled in production an extension of the repositories, interfaced with the EGI AppDB, to provide a “repository as a service” tool for developers and user community who want to distribute software using the UMD repository, without being formally part of UMD.

**Request Tracker (RT)**

The RT system supports the software provisioning tracking the evolution of every product submitted to UMD, therefore most of the changes in the software provisioning process have been reflected in implementation in the RT and its interface with the repository backend. Examples of these developments are new custom attributes for the tickets in the software provisioning queue to distinguish the assigned UMD major release or OS platform.

**IT support**

During PY3 the IT support focused mainly on generic user support and maintenance of the services offered to the community, such as the Single Sign On or specific web sites for the EGI main events. On top of the routine activities there have been some major updates: a forum tool has been made available for the EGI communities, integrated with the SSO authentication system, multiple forums have been created to serve specific topics. The SSO service has been extended to act as an identity provider for the EGI Helpdesk. This is still in a pre-production mode.

#### EGI Federated Cloud

The federated clouds task force was formally recognized at the beginning of the year as an EGI- InSPIRE task, under the SA2 technology coordination umbrella, and integrated in the EGI InSPIRE DoW. The main achievements of the Federated Cloud during PY3 have been the following:

* Accounting profile defined to account cloud resources usage, and a prototype for an accounting system has been deployed
* New service types defined to register Cloud services in the EGI service registry (GOCDB). The resource provider’s parts of the task force are also publishing their information using technologies compatible with the EGI information system (GLUE information schema and OpenLDAP).
* The SAM service has been extended to perform basic checks for the availability of the services part of the Task Force. The monitoring tool is automatically configured retrieving the services from GOCDB.
* Extensions to the mainstream cloud middleware have been implemented to support the OCCI standard for VM management and the X.509 authentication mechanism.
* Seven use cases, coming from WeNMR, EUBrazilOpenBio/BioVel, Peachnote, WS-PGRADE, GAIA-Space, BNCweb and DIRAC have been supported in the testbed and more are in the pipeline.
* At the EGI CF13 in Manchester, UK, the Task Force publicly demonstrated how the Cloud services are coming together
* Also, three (WeNMR, WS-PGRADE, EUBrazilOpenBio/BioVel) of the six use cases were demonstrated at the EGI Community Forum at a dedicated booth.

More information about the task force activities is available in the dedicated wiki area[[29]](#footnote-29).

### Community Engagement

The community engagement activities in PY3 have developed in two directions over the year: activities that continue to develop EGI’s profile and engagement within the European Research Area, and work to develop and utilise the human networks within the EGI community.

To support the development of EGI within the European Research Area the Marketing and Communications team have continued to develop the website and promote EGI and the activities of its users through use cases and other publications. This has taken place at events around the world by ‘going to the user’ and increasingly through the use of social media. A key part of this strategy has been two large meetings that promote engagement within and externally to EGI: the Technical Forum in Prague in September 2012 and the Community Forum in Manchester in April 2013. The Strategy and Policy Team have supported the development of policies that could ‘demonstrate excellent science’ on EGI resources and to explore the issues around the ‘payment for use’ of EGI resources, alongside discussions relating to the sustainability of EGI by understanding legal, technical and financial issues that need to be resolved. Direct technical outreach to new user communities has been undertaken by developing key services centrally provided by EGI (the training marketplace, the applications database and the customer relationship management tool) and supporting direct engagement with users in their technical needs.

Internally, EGI continued to develop its human networks. The NGI International Liaisons (NILs) established in PY2 continued to grow and complement EGI’s strong and established network of NGI Operations Managers. These human networks were expanded in PY3 through the establishment of ‘EGI Champions’ who would act as enthusiastic and proactive promoters of EGI. Nine EGI Champions have been recruited and these have started building links between EGI and their own research communities through EGI’s support to attend outreach events by providing travel, registration and subsistence support. The Virtual Team model that EGI had established across the NILs during PY2 was seen a providing an effective and dynamic approach to tackling community issues. During PY3 the Virtual Team model has continued to develop bringing in experts from across the community (operations and policy) and from other e-Infrastructures.

#### Marketing & Communication

**Main website and wiki**

From the 1 May 2012 to 31 March 2013, web statistics have been gathered for EGI domain egi.eu using Google Analytics. Over 87,000 people unique visitors visited the EGI.eu domain, compared to 67,000 in the previous 12 months, corresponding to 181,000 visits and 642,000 page views. Around 47% were new visitors as defined from IP addresses by Google Analytics, up from 40% the previous year, and 53% were returning visitors. The peak in visits was seen on during the week of 17 September 2012, during the EGI Technical Forum in Prague, with around 1500 visits on one day that week. During the year the most popular pages were the homepage, the timetables for the main events and the conference websites, followed by the request tracker, the SSO ID page, which gives access to EGI’s management tools and the staff page. About 2.3% of referral traffic was from Facebook. Most people who found the site were searching for EGI or one of the events. Some of the measures used to drive traffic to the website included adding links to websites frequented by users, adding case studies across a range of disciplines, publicising the web on printed materials and integrating the website with the EGI blog and social media feeds.

Major web campaigns included the launch of the EGI Champions scheme and the addition of use cases[[30]](#footnote-30), including “Are comets born in asteroid collisions?”, “Climate change and ozone”, “Designing better antibiotics”, “Cheaper biodegradable plastics”, “Cracking Goldbach's Conjecture” and “Predicting the risk of dam failure”.

The wiki site has continued to provide the internal engine for the project, and is also important in driving traffic to the main .egi.eu domain and website, providing the source of 24% of traffic.

**Materials, press and publications**

Four quarterly issues of the EGI Inspired newsletter were issued during the year via email and on the website. The April 2013 issue was sent out in a new email template provided by Mailchimp, which allows for better tracking of statistics of readership in PY4. The project team also produced Director’s letters on a monthly basis, which were distributed to the whole consortium. Articles about EGI were also published in the e-IRG Newsletter, Public Service Review: European Science & Technology, Supercomputing Online, HPC in the Cloud, International Innovation, Public Service Review: European Union, International Innovation and the CERN Bulletin. Articles about EGI were published PanEuropeanNetworks: Science & Technology and there were 23 EGI-related items in iSGTW, an increase from 15 items last year. A press release on the sonification of the CERN Higgs data released by DANTE, mentioning EGI, was picked up by a number of high profile publications, including Bloomberg BusinessWeek, Discovery News and Wired. Press cuttings are featured on the EGI website[[31]](#footnote-31). The press team worked with Public Service Review to produce a dedicated 8 page booklet about EGI, which included an article about Big Data by John Higgins, Director-General of DIGITALEUROPE and a 4 page article on EGI.

The communications team also launched a new monthly publication called the NIL Bulletin. The new publication is issued through Mailchimp to the NILs list and features links to key events, materials and initiatives targeted at new users. Brochures featuring case studies on health and earth sciences have also been produced for events, along with the EGI Annual Report 2012.

An EGI / iSGTW Writing Competition was advertised on AlphaGalileo, Cordis, iSGTW and to European journalists and closed in January 2013. Some articles were received but not enough to form a shortlist. However the writers of the articles have been invited to publish their work on the EGI website and in iSGTW. There are also now 15 case studies published on the website, including case studies from astronomy and astrophysics, earth sciences, physics and climate change, life sciences, chemistry, mathematics and engineering.

EGI also featured in the winning FP7 success story from the WeNMR project in March 2013. WeNMR received a prize for 'Excellent Science' awarded at the European Commission annual e-Infrastructure Concertation meeting. WeNMR also featured in Episode 1 of the ‘Stories from the Grid’ series produced in PY2.

**Social media and videos**

By the end of April 2013, 195 blog posts have been contributed in total to the EGI blog, with 83 added during PY3. Members of the dissemination team have also blogged for the GridCast blog at events such eChallenges, SciTech’12 and ISGC’13. News items published on the website are automatically fed to EGI’s Twitter accounts and Facebook pages via RSS feeds. Following EGI via social media is now easier, as the one click buttons feature on the home page, and on the footer of every webpage. Every webpage and news item also has a ‘share this’ button at the top, making it convenient for visitors to share our contents via their preferred social media channels. The main EGI Twitter account @Europeangrid now has over 600 followers, and is followed by Dell, GlobusOnline, SURFnet, Datanami and a number of European projects as well as CERN, which has 790,000 followers. EGI has around 150 likes on Facebook and 2,800 views on Flickr, a four-fold increase since last year.

Traffic to the website from social media sites has significantly increased. Referrals from Facebook have increased by 90% and from Twitter by 30%. Traffic from iSGTW.org has increased by over 90% and from the e-ScienceTalk website by 190%. Traffic from Wikipedia is up by 80%, while traffic from LinkedIn has dropped slightly by 14%.

EGI has continued to work with a local film production company, Een van de Jongens, to produce further videos in the series “Stories from the grid” which was launched at the end of PY2. These short, YouTube friendly videos aim to introduce some of the work being carried out using the grid. “Episode 2: Reviving the lost sounds of the epigonion” was published on 22 May 2012, “Episode 3: Hunting for the top quark in the Large Hadron Collider” was launched on 8 June 2012, in advance of the announcement of the discovery of the Higgs by CERN. The fourth episode, “Episode 4: Main Belt Com

Comets” was released on 18 March 2013. By the end of PY3, the EGI YouTube channel has over 9000 views, a big increase compared to the 793 views seen by 12 April 2012, with episode 3 being the most popular video with over 3000 views. The EGI YouTube channel also has 77 subscribers[[32]](#footnote-32).

A communications workshop on the production of the videos was held at the EGI Community Forum in Manchester on Friday 12 April, and featured the director and film crew, as well as the participants in the videos. A further documentary style video on EGI itself was filmed at the event for release in PY4.

**Events and marketing to new users**

Outreach at events has focused on key target communities, such as life sciences, environmental sciences and digital heritage. Events attended by EGI through booths and presentations include the European Geophysics Union General Assembly in Vienna and the HealthGrid/IWSG-Life 2012 event in Amsterdam as well as the iPv6 World Launch Day on 6 June 2012 as well as the exhibition at ISC2012, which was attended by more than 2,000 delegates in Hamburg. The Dutch NGI distributed EGI case study brochures on the life sciences at the European Conference on Computational Biology in Basel. EGI was on the agenda at Digital Research 2012, the UK All Hands Meeting and a presentation and poster were given on EGI at eChallenges in Lisbon in October. EGI was also presented at the EUDAT 1st Annual Meeting in Barcelona, and at the EUROMED’12 conference in Cyprus. EGI hosted a booth at the Supercomputing’12 event in Salt Lake City, which gathered over 9000 delegates and also featured in two presentations given by Domenico Vicinanza at the NASA booth at the event, presenting sonified data from Voyager 1.

EGI hosted a booth at SciTech’12 in Brussels in November, an event targeted at policy makers. The Director delivered a masterclass to the delegates and participated in a discussion panel featuring Lord Robert Winston, media science communicator and Fellow of the Academy of Medical Sciences in the UK. EGI presented a demo on federated cloud activities at the CloudScape V event in Brussels, and participated in workshops at the 10th e-Infrastructure Concertation Meeting, also in Brussels. EGI gave presentations at ISGC2012 in Taipei and contributed to the GridCast held at the event.

**EGI Technical Forum 2012**

The EGI Technical Forum which was held in Prague from 17 to 21 September. The event was attended by 415 participants and included over 300 contributions, 203 speakers and 42 session convenors. The communications team coordinated the outreach for the event through the social media channels, such as Twitter, Facebook and Flickr, and also produced the programme, badges and website. During the event, the team staffed and ran the EGI booth in the exhibitions area, and coordinated the media activities at the event. These included attendance by the iSGTW editor, the editor of HPCintheCloud and the GridCast team. During the event, there were over 500 microblog posts on Twitter from 60 users, more than twice the traffic from the previous year’s event. Photos were tagged in Flickr and GridCast published 17 posts from 6 bloggers, including 9 webcasts and 2 demo videos. The Conference4Me app was downloaded by 190 users, nearly half the attendees. A number of articles were published in HPCintheCloud and iSGTW.

The team presented the EGI communications handbook to the NILs and ran a session on marketing and communication. A European version of Globus Online was launched on 20 September, and announced through a joint press release with Globus and IGE. An EC workshop on DCIs for e-Infrastructures was also held on 18 September bringing together key stakeholders from the commercial and academic spheres. From the feedback survey, 126 responses were received. Nearly half the respondents accessed our Twitter account compared to 25% on Facebook, making Twitter the most popular social media channel. Over 35% read iSGTW, and about 25% visited the EGI and GridCast blogs.

**EGI Community Forum 2013**

The EGI Community Forum 2013 took place at the University Place conference centre in Manchester, United Kingdom from 8-12 April 2013. The event was hosted by EGI.eu and UK NGI, a partnership between GridPP and the National e-Infrastructure Service (NES). The Community Forum was held in conjunction with the 3rd EMI Technical Conference and was co-located with the third annual meeting of the European Globus Community Forum (EGCF). In total there were 380 participants, 287 contributions and 199 speakers.

Materials were prepared by the communications team for the Community Forum such as web banners, the sponsorship guide and the exhibition guide in addition to updates to the event website. The event was advertised in the November issue of the EGI-InSPIRED newsletter and promoted by our media partners iSGTW, HPCwire, HPCinthecloud, and Datanami. Journalists from Datanami and iSGTW attended the event, and e-ScienceTalk ran its final major GridCast from the event, featuring videos, blog posts and live reporting via social media channels.

There were nearly 400 micro blog posts from 62 tweeters, with the bulk of posts on the second day of the event. The Flickr account was viewed 250 times and included 69 images tagged with the event hashtag. The GridCast published 14 videos and 24 blog posts. The event website saw 15,000 unique page views with the highest number of page views taking place on the second day. The Conf4Me app was downloaded by 223 users, nearly 60% of delegates. The feedback survey received 115 responses and drew over 30 comments on the programme for the event regarding tracks, speakers and the programme structure. Popular social media channels according to the survey included Twitter, Facebook, GridCast and Flickr.

#### Strategic Planning and Policy Support

The Strategic Planning and Policy Support activity analyses strategic themes and trends and produce documents and reports to inform the EGI management bodies and wider community to support the decision-making process. The results from PY3 are presented by theme.

**Theme: Demonstrating Excellent Science**

One of the main strategic topics that emerged during PY3 as important to be addressed is related to improving the way EGI can demonstrate the excellent science that has been achieved thanks to the use of the infrastructure and all the provided services. This topic has been addressed from two main angles: establishing a central resource allocation process based on scientific evaluation and improving processes and tools around tracking of scientific output.

The initial ideas and strategy have been collected in the policy brief “Demonstrating excellent European science on EGI’s shared resources”[[33]](#footnote-33) that was endorsed by the EGI Council. Following this endorsement, the EGI.eu Strategy and Policy Team (SPT) developed a Terms of reference for the Scientific Review Committee (SRC) [[34]](#footnote-34) and liaised with the EGI.eu Operations team to coordinate for the development of the procedures and tools to manage the resource allocations. A side activity to this was around the investigation on the possibility for EGI to complement the provision of services free at point of delivery with a pay-for option. An initial policy brief was developed “Exploring how researchers can pay for EGI resources”[[35]](#footnote-35). This paper set out the roles, responsibilities and possible models for providing EGI services as a pay-for-use; it also defined a thought experiment to be completed in PY4; this activity is performed in collaboration with JRA1 to align with their accounting and billing work plan; a survey among NGIs and a paper investigating taxation and legal issues were also developed.

In the area of improving processes and tools around tracking scientific output, the activity was kicked off through a dedicated virtual team project and with participation from three NGIs. The team was tasked to identify gap and provide policy recommendations. The first phase of the work was successfully completed with a set of recommendations proposed to the EGI Council and accepted (see “VT Scientific Repository Recommendations”[[36]](#footnote-36)). The implementation phase has started with two virtual team projects:

1. **VT Scientific Discipline Classification** focused on the improvement of the way scientific activities within EGI are classified and to harmonise the taxonomy being used across the different tools; the VT developed a proposal based on the Frascati Field of Science (FOS) and also assessed the needed effort to align the various tools[[37]](#footnote-37)
2. **VT Scientific Repository Implementation** has been established and will kick-off in PY4 to collaborate with OpenAIRE in order to extend their services to be able to automatically or manually associate scientific publications to e-Infrastructures or Virtual Organisation. This will make more transparent and accountable the research output of the various collaborations. This concept has been pioneered by EGI and is being supported by OpenAIRE who see the potential of reusing it for other research infrastructures[[38]](#footnote-38).) The VT will also address the definition of an appropriate communication campaign both to increase the awareness across the user communities on the importance of citing supporting infrastructures and also to educate on the upcoming services provided through OpenAIRE.

**Theme: Evolving the Governance of EGI (and other e-Infrastructures)**

Another key topic in the agenda of this activity was the adoption of the ERIC legal framework for EGI.eu. A dedicated working group with Council representatives was created to comment on a proposal authored by the SPT. The results were incorporated into “EGI.eu transition plan to ERIC”[[39]](#footnote-39) that includes a detailed overview of the ERIC framework, a full draft statutes, revised governance model, and proposed timeline of activities. The proposal is generic enough to encompass a unique high-level governing structure for all e-Infrastructures that ensures appropriate representation from the user communities. This proposal has been presented at the e-IRG meeting in December 2012.

**Theme: Improving Strategic Metrics**

Following up the results of PY2 around improving the strategic metrics to measure the advancements in strategy execution and the acceptance of the balance scorecard approach as a top-level tool, the SPT moved forward with the implementation. The EGI Balanced Scorecard definition was updated and a balanced scorecard data dictionary was defined with the contributions from the various EGI.eu staff[[40]](#footnote-40) . The new tool clearly defines the various strategic metrics explaining the motivation of their usefulness in measuring the impact on the related strategic objective, clarifying how to measure them, how to interpret the value and possible actions to improve the targets.

**Theme: EGI Compendium**

During PY3, the SPT authored the first edition of the EGI Compendium[[41]](#footnote-41) referring to year 2011 . The questionnaire for the EGI Compendium 2012 was drafted and the data collection launched in March 2013[[42]](#footnote-42). In addition, the SPT organised a meeting with TERENA representatives to discuss plans for a common Web tool to collect the data on a yearly basis for both EGI and TERENA Compendium. The goal of this collaboration is to leverage the long-term experience within the networking community and to exploit their work on tool development for compendium data collection and publications so to not duplicate effort and optimise public money spending.

**Theme: EGI Sustainability**

With inputs from the EGI.eu Director and the EGI Council, the SPT authored the “EGI Sustainability Plan”[[43]](#footnote-43) . This work benefited from several activities performed during the year. First of all, the SPT in collaboration with the EU-funded FedSM project (and the former EU-funded gSLM project) agreed on a template to structure a proper service portfolio and refactored the EGI Global Tasks into a well-defined EGI.eu Service Portfolio. This served to re-organise the structure of EGI Global Tasks and related costs[[44]](#footnote-44) and also supported a cost analysis by service (regardless the project structure) splitting the costs into operation, maintenance, development, coordination and support) and prioritisation by impact for not funding. The EGI.eu Service Portfolio increases the clarity of the services being provided and their related value to the consumers, while the cost analysis served to support the scenario planning with different hypotheses around future funding. The document also proposes a grand vision that could be achieved if the necessary resources can be obtained.

**Theme: Influencing Policies Makers**

For strategic policy matters relating to the EC, the SPT provided inputs by participating in a number of surveys either by answering the questionnaires or by submitting a position paper. EGI.eu has provided inputs to four European Commission’s surveys: “State of Play concerning ERA”, “DG Connect Stakeholder Survey”, "EC Survey on the right analysis for the best possible impact" and “Survey on the use of Internet Protocol version 6 (IPv6) by research projects funded under the Framework Programme 7 (FP7)”. Updates on the existence and status of EGI were also submitted to the MERIL portal[[45]](#footnote-45) . Participation of EGI members has been ensured to both e-IRG meetings as well as to the e-Concertation meeting. An analysis of the EGI contribution to the EU2020 strategy has been also evolved[[46]](#footnote-46) .

**Theme: Collaborations**

External collaborations[[47]](#footnote-47) continued to be established during PY3 with 4 new signed MoUs in the following categories: Technology providers (UVACSE/Genesis, PSNC), Resource Providers (Academia Sinica Grid Computing Centre/ASGC), other organisations (DANTE). Since the beginning of the EGI-InSPIRE project, a total of 27 MoUs were signed. One more MoU under active negotiation is with VERCE VRC. A Letter of Intent (LoI) for the Digital Cultural Heritage (DCH) community was also signed. In terms of established MoUs, the progress about activities for existing MoUs have been regularly reviewed. The SPT compiled an annual report of its more than twenty agreements serving as an opportunity to monitor the progress of the individual milestones within the agreements and evaluate strategic impact moving forward. The progress of activities within the current MoUs are monitored through established milestones direct engagement with the partners and the progress is recorded and accessible for the partners while all the reports are stored in the EGI document repository. During PY3, a simplified MoU advancement dashboard was developed[[48]](#footnote-48).

**Theme: Communications**

The website and wiki of EGI have been regularly updated to reflect the SPT’s activities by creating dedicated collaboration pages for each of collaborating partners, integrate the glossary on the main EGI website and refactoring the SPT wiki section. The SPT regularly updated the list of policies and procedures on the EGI.eu. External articles were published through the e-IRG newsletter: “The First Edition of the EGI Compendium is Out” and “Demonstrate the Scientific Impact of Publicly-Funded Infrastructures”. An article titled “EGI and Horizon 2020” was also published in the EuroFocus edition of International Innovation[[49]](#footnote-49). The SPT also authored a section on security for the e-IRG Blue Paper on Data Management[[50]](#footnote-50). In addition, EGI published a paper for e-Challenges 2012[[51]](#footnote-51) . In terms of message delivery through the EGI blog, the SPT authored 8 articles in the EGI blog: New Scientific Discipline Classification for EGI – Open for Comments; The RAMIRI Handbook; Discussing prospects of common e-Infrastructures governance for digital research; Addressing gender equality to enhance excellence in research and science; Adding Pay-for-Use Models within EGI; Broadening Horizons from Brussels; The EGI Compendium 2011 is Out; Strengthening the European Research Area; The EGI Glossary; Applying for Structural Funds. The SPT also regularly contributed to the EGI Inspired newsletter: Envisioning the future: Strategy plan and EGI's role in the ERA, Adding Pay-for-Use Models within EGI proof of concept; [The cost of e-science](http://www.egi.eu/news-and-media/newsletters/Inspired_Summer_2012/cost_e-science.html) - the price tag of ICT support for research.

**Theme: Security Policy Coordination**

The Security and Policy Group (SPG) chair successfully led the group to work on a number of different policy issues including the following:

* Revision of the Service Operations Security Policy to clarify the requirement to upgrade old software with no on-going security support, to remove the statement on IPR as this is now covered in the OLA, and to add a new statement on emergency user suspension systems.
* Policy input to discussions on the implementation of the new central emergency user suspension system.
* Policy statement on proxy certificate and attribute certificate maximum lifetimes.
* Modification of the User Acceptable Use Policy to include the requirement for acknowledgment and record of use of EGI.
* Revision of the top-level Security Policy document to use new glossary terms and to generalise so as to address use of new technologies, e.g. federated Cloud services.
* Expansion of the Accounting data protection policy to also include storage accounting.

Formal approval and adoption of these new policy documents are being sought during 2013. The SPG chair also has been leading the Security for Collaborating Infrastructure (SCI), a collaborative activity of information security officers from several large-scale distributed computing infrastructures, including EGI, OSG, PRACE, EUDAT, CHAIN, WLCG, and XSEDE. SCI is developing a framework to enable interoperation of collaborating Grids with the aim of managing cross-Grid operational security risks and to build trust and develop policy standards for collaboration especially in cases where we cannot just share identical security policy documents.

**Theme: Liaison with IGTF/EUGridPMA**

Through its participation in the European Policy Management Authority for grid authentication in eScience (EUGridPMA) and the International Grid Trust Federation (IGTF), EGI helped to continuously improve the management of identities for researchers in Europe, and ensures that the resources participating in EGI can rely on traceable and auditable identities on which access control and incident response are based[[52]](#footnote-52).

#### Technical Outreach to New Communities

##### Overview of activity groups of EGI.eu

The Technical Outreach to New Communities (TONC) provides services and support that help converting new user communities into active user communities (i.e. users of the EGI production infrastructure). In PY3 the task was active in four areas (in no particular order):

1. Focussed projects: Setup and participate in short, focussed projects that reach out to new e-infrastructure communities and/or work with new communities on topics related to the use of EGI’s production infrastructure.
2. Engagement with new communities: Represent EGI at various face-to-face and online events where new communities are present. Use these events to promote EGI services to these communities, and to identify leads, and technical areas for joint work.
3. Virtual Research Environments: Simplify the development and deployment of community-specific Virtual Research Environments on EGI’s production infrastructure.
4. Technical services: Provide and extend the Applications Database, the Training Marketplace and the Client Relationship Management systems, in order to facilitate information sharing and structured interactions among the NGIs, technology projects and scientific groups inside and beyond EGI.

The next subsections provide details on the PY3 achievements and PY4 plans of these four activity areas.

##### Focussed projects

The EGI.eu TONC group was involved in several short, focussed projects that reach out to new communities and/or work with new communities on topics related to the use of EGI’s production infrastructure. These projects therefore directly or indirectly help new communities become active in EGI’s production infrastructure. Each project covered one or more of these work areas:

* Identify contact points in specific multi-national scientific groups or communities of interest. (The groups or communities have been discovered/linked to EGI prior to the focussed project.) Identifying multiple contact points within the same community is necessary because scientific communities are often multi-national, their members are at different levels of understanding of e-infrastructures, and may have different e-infrastructure use cases. Even though many scientific communities are grouped into ESFRI projects and/or ESFRI-cluster projects, experience shows that these groupings are loose and do not homogenise their members, do not always provide centralised entry points for EGI to talk to scientific communities about e-infrastructure needs, services and use cases.
* Collect and categorise e-infrastructure requirements from scientific communities. The activity requires a coordinated action in multiple countries and aims to gather specific requirements that technical experts and projects within EGI can address using existing application solutions, or through developing new ones.
* Identify and arrange existing solutions from EGI, to address these requirements. The activity requires knowledge of existing applications, environments and other types of services across EGI and establishes dialogues between the new community and technical experts within EGI. The dialogs result in a plan, agreed by both parties, that – if executed – will address the e-infrastructure requirements of the new community.
* Kick-start focused development activities to implement new services that can address unique community requirements. The development activities require resources from both the new community and from EGI’s stakeholders (typically from specific projects, from NGIs, and from EGI.eu)

Focussed projects that run with TONC involvement during PY3 were:

* Virtual Team projects (See report about these in separate section of this document):
  + NGI – ELIXIR collaboration (To finish in PQ13)
  + Technology study for the Cherenkov Telescope Array (To finish in PQ14)
  + Speech on the grid (to finish in PQ14)
  + Towards a Chemistry; Molecular & Materials Science and Technology Virtual Research Community (To finish in PQ15)
  + Biodiversity and Environmental sciences (To finish in PQ15)
  + GPGPU (Finished in PQ12)
  + Science Gateway Primer (Finished in PQ12)
  + Fire and Smoke Simulation (Finished in PQ12)
  + MPI in EGI (Finished in PQ9)
* EGI-EUDAT-PRACE pilots: As an outcome of the EGI/EUDAT/PRACE workshop on 26-27- Nov 2012 at SARA/Amsterdam 4 pilot projects have been launched with the involvement of e-infrastructure providers (EGI, EUDAT, PRACE) and scientific communities (DRIHMS, MAPPER – VPH, VERCE). The pilots aim to support workflow use cases that are provided by the scientific communities and that need the joint use of at least two of the three e-infrastructures. EGI.eu UCST participates in two pilots that at the beginning in 2013 have been merged into one: “Data sharing and uniform data access across e-infrastructures and community centres”[[53]](#footnote-53). This pilot identifies common data access and transfer tools and protocols which can be provided by all three e-infrastructures and which are useful for the collaborating user communities’ workflow use cases. The pilot will deliver solutions in PY4 directly for the VERCE (seismology) and VPH (life sciences) communities, but the pilot results are expected to be relevant and reusable also for other communities of the ERA. Discussions with the Computational Chemistry community about this are already on-going (within the ‘Towards a Chemistry; Molecular & Materials Science and Technology Virtual Research Community’ Virtual Team project).
* ENVRI case study:In early 2013 a study case project[[54]](#footnote-54) was set up under the ENVRI ESFRI cluster project to help ENVRI understand which needs of its ESFRI projects can be fulfilled by EGI. Within the study case project two ESFRIs (EISCAT-3D, EURO-ARGO) are involved besides EGI.eu. The two ESFRIs were selected because of their strong need for data processing. In cooperation with EISCAT-3D and EURO-ARGO representatives in ENVRI, EGI.eu will try to find best suitable solutions for data pre-processing of primary data and post-processing toward publishing. The study case project will deliver output during PY4.
* Mini-projects: The EGI.eu TONC team has been involved in the preparation of two mini-projects:
  + Evaluation of Liferay modules[[55]](#footnote-55): The mini-project will carry out a systematic evaluation of the Social Office and Sync Liferay modules of Liferay and will deliver its findings in a document that will include recommendations concerning the best ways to use the modules for the benefit of individual EGI stakeholders, as well as for the benefit of EGI as a community. Members of the project will use the document to extend their portals with new capabilities outside of the project.
  + Massive Open Online Course Development: Recent developments in platforms for ‘Massive Open Online Courses’ (MOOC) made the development and distribution of Educational content to wide audiences available for everyone. This project will develop a MOOC about a number of e-infrastructure topics and will make the content available for worldwide distribution on a MOOC platform to be identified within the project.

Because of the shift of focus of work in PY4, and because of the expected reduction of the size of the EGI.eu organisation during 2013, the EGI.eu TONC team withdrew from both of these mini-projects at the end of April 2013. Further information about the motivations behind this step is given below in the section titled ‘Plans for PY4’.

##### Engagement with new communities

The EGI.eu TONC team represented EGI at various face-to-face and online events where new communities were present. These occasions were used to promote EGI services to these communities, and to identify leads, and technical areas for joint work. The following activities were carried out:

* The team has organised a discussion session at the ‘International Workshop on Science Gateways for Life Sciences (IWSG-Life)’ in Amsterdam to brief the life sciences community about recent developments and directions in EGI, and to gather feedback from the community about these.
* Presented EGI for the astronomy community at the ‘The Milky Way: Stars, Gas, Dust and Magnetic Fields in 3D’ workshop. Started discussions with members of the domain about using EGI services for modelling the Milky Way. An FP7 proposal has been emerged from these discussions, but the project has not been invited for hearing.
* Attended the ‘4th Federated Identity Management’ workshop and gave a presentation about federated identity management activities of EGI, including related VT (run in PY2). After the workshop EGI joint as an Identity provider (IdP) to the Grid Identity Pool federation with its Single Sign On system. Related workshops have been organized at the EGI Technical and Community Forums to identify ways forward in adopting federated identity solutions in the EGI production infrastructure. Due to the strong integration of X509 certificates with UMD services, and with the EGI Federated Cloud, there is little change of moving the infrastructure to federated identity based authentication (e.g. SAML). However, federated identity  X509 translator solutions are emerging, and some of the ‘community platform services’ (e.g. dCache) are working on releases of their software that would be able to directly participate in identity federations. The first releases of these are expected in PY4.
* The team organised teleconference with the DRIHM[[56]](#footnote-56) project (hydrometeorology) to identify topics for joint technical work. Workflow development, sharing and execution have been identified as a topic with mutual interest. Representatives of the DRIHM project attended the ‘Workflow porting workshop’ that was organised by the ER-flow project in London in March 2013. Since this event the DRIHM project works in close collaboration with the ER-flow[[57]](#footnote-57), SCI-BUS[[58]](#footnote-58) and the IGE projects on integrating hydrology and meteorology applications into workflows which are capable to utilise Globus sites in EGI. The first results are expected in PY4.
* The team organised teleconference with the delegated IT expert of ELI-HU. ELI-HU is a non-profit organisation that coordinates the setup of the Hungarian site of the Extreme Light Infrastructure ESFRI. The NIL of the Hungarian NGI was also in the call, not only because of their nationality, but also because of their involvement in the CRISP ESFRI Cluster project, which also includes ELI. During the meeting we learnt that ELI-HU is currently focused on the setup of its ‘core laser’ infrastructure, core office infrastructures, and experiment management. They are likely to proceed to ‘research and analysis tools’ later, and this is the stage when EGI’s and the NGIs’ could support ELI-HU.
* The team is involved in the setup of the EGI-EUDAT-PRACE data management workshop[[59]](#footnote-59) (Amsterdam, 26-27th of November) which led to the kick-off the two pilot projects. (See information about the pilots in the previous section.)
* The team wrote and submitted two presentation abstracts to the European Geosciences Union (EGU) General Assembly 2013: One about the EGI Federated Cloud and one relating to the workflow services of EGI-InSPIRE and the ER-flow project. The abstracts have been accepted in the "ESSI2.8 Earth science on Cloud, HPC and Grid" workshop of the "Earth & Space Science Informatics" session. Because EGU was held at the same time (7-12 April, Vienna) as the EGI Community Forum, and because Austria is not in EGI, the abstracts were presented by a representative from MTA SZTAKI, member of the Hungarian NGI. MTA SZTAKI was an ideal candidate not only because of the location, but also because it provides a site in the EGI Federated Cloud testbed, and is involved in both the EGI-InSPIRE and the ER-flow project. The experiences and feedback from the event is still to be discussed with MTA SZTAKI and with the workshop organisers (who are involved in EGI-InSPIRE SA3). A face-to-face meeting will take place with them around the beginning of May 2013.
* The team was responsible for the setup of the ‘Virtual Research Environments’ track of the EGI Technical Forum in 2012, and of the EGI Community Forum in 2013. These tracks included:
  + A 2x90 minutes long session on Research Infrastructure – NGI collaborations
  + A 1x90 minutes long session about ‘Software services for community building and support’
  + AAI/Federated Identity workshops, jointly organized with the Resource Infrastructure Services track.
  + ‘Science Gateways: Harmonising Development and Provisioning’ workshops
  + ‘Workflow community’ and ‘Workflow collaboration’ workshops (co-organised with the SHIWA and ER-flow projects)
  + Sessions with various Virtual Research Environment -related contributions from the community
  + Demonstrations of the Technical Services that are provided under the TNA2.5 task (See dedicated section about these services below)

The presented EGI slides about all these events are available in the EGI Document Database or in the EGI Indico system.

##### Virtual Research Environments

All the activities that have been described in the previous two subsections have strong focus on supporting the development of Virtual Research Environments within new communities. Besides those, the EGI.eu TONC team carried out the following activities for the benefit of VRE developers:

* Created short, focused presentation about support services and activities that exist in EGI for VRE developers of (new) communities. Presentations about ‘Requirement management tools’, ‘Science gateways’, ‘Workflows and workflow systems’ and ‘EGI services’ (e.g. resource allocation, operation tools, etc.) have been created and shared with the community through the EGI Training Marketplace.
* Blog posts and articles in the Inspired Newsletter have been written by the team on a regular basis to promote established VRE component/framework solutions.
* Setup a new section on the EGI website[[60]](#footnote-60) for potential users of the EGI Federated Cloud. The site describes the concept and the benefits of the EGI Federated Cloud model, and provides practical information on getting access to the Federated Cloud testbed. The site will be extended during PY4 with practical information on using the testbed (VM preparation, contextualisation, roll-out & operation, etc.) The development of related support materials will be driven by a mini-project, with which EGI.eu TONC will work together (despite EGI.eu is formally not member of this mini-project)
* Members of the team worked with two user cases of the EGI Federated Cloud testbed: OpenModeller[[61]](#footnote-61) (in collaboration with the Biovel and EUBrazilOpenBio projects) and with PeachNote[[62]](#footnote-62). The OpenModeller use case has been setup and was demonstrated at various events (e.g. Cloudscape V and the EGI Community Forum). The PeachNote use case did not become operational because the owner (external to EGI) had no time for the joint work with EGI.
* Collected, categorised and made visible in the EGI Applications Database and in the EGI Science Gateway Primer those reusable portal frameworks, tools and components that simplify VRE development.
* Performed tests with the European part of the Globus Online service[[63]](#footnote-63) which were released in September 2012. A summary of the tests were presented to the EGI Technology Coordination Board in early November 2012[[64]](#footnote-64). The presentation was found useful by the TCB, but the TCB agreed that the method suggested in the ‘Globus Online Cookbook for EGI VOs’ to interact with EGI Storage sites may lead to instability of those storage systems. Since November the EGI.eu TONC team carried out several discussions with various representatives of the SRM storage developer communities in order to find a reliable method for accessing those storages via Globus Online. The TONC team currently carries out tests to check that the new solutions work. If so, the Cookbook will be updated and then will be promoted to existing and to new communities. The communities involved in the EGI-EUDAT-PRACE pilots are of prime targets for this.
* In March 2013 the team established the ‘EGI Webinar Programme’[[65]](#footnote-65), a forum for presentations and discussions around established and emerging solutions for VREs.
* Performed technology evaluations and/or helped the setup of ‘catch-all’ services based on these technologies to simplify the uptake of EGI’s production infrastructure by new communities. Such services were Globus Online, EUDAT File Staging service and CKAN[[66]](#footnote-66).
* In February 2013 the team kicked off a joint initiative with the EGI Operations team to setup Cookbooks (manuals) on how the services of the EGI Core Infrastructure Platform can be used by VRE developers and operators for the monitoring, accounting and registration of VRE services (e.g. portals, workflow engines). The initial findings show that some of the EGI core infrastructure services have limited reusability outside of the ‘grid middleware’, and additional development in these tools are required to make them attractive and valuable for VRE developers. Some, but not all of these developments are already scheduled for implementation within EGI-InSPIRE mini-projects. The findings will be documented in PY4.
* Progress with addressing users’ and user communities’ requirements: During PY3 solution for 13[[67]](#footnote-67) requirements have been provided by external technology providers through the EGI Helpdesk. Solutions to an additional 4 requirements and 2 requirement topics have been delivered[[68]](#footnote-68) to requesters through the Technology Coordination Board. Five requirements and 3 requirement topics[[69]](#footnote-69) could not be addressed and have been returned first through the EGI Helpdesk, then by the TCB without solution. At the time of writing only 1 requirement and 1 requirement topic are still open for the TCB (in ‘Endorsed’ status)[[70]](#footnote-70). All the details about the requirements can be found on the EGI Requirements tracking page[[71]](#footnote-71).

##### Applications Database (AppDB)

Development and other activities during PY3 were:

* API for third party integration: A REST API[[72]](#footnote-72) has been developed for AppDB that supports authenticated writes and updates of the database. Third party application providers can make use of the API by forwarding their users' EGI SSO credentials, or by creating an AppDB system account to act on behalf of their users, in order to modify content and to read content that is not open to the general public.
* New content quality control tools:
  + A broken link notification subsystem, which automatically sends out e-mail notifications and reminders to application owners if broken link is found. With the new system the number of broken links has been kept under acceptable limit (around 20 / month).
  + A mechanism that identifies application entries that have not been updated for a period of over 12 months. Such applications are tagged with a small emblem that notifies users about the possibly of a not fully up to date entry. Users can exclude such entries from the hit list in searches. The owners of not up to date items are invited by the system to update the entries (or confirm that it is still up to date).
* A mechanism that enables the community to classify the registered software items into various high level categories. Besides the existing ‘Tools’ and ‘Applications’ categories ‘Science Gateways’ and ‘Workflows’ have been added.
* A dissemination/outreach tool, which allows those who hold ‘manager’ role in the system to send out e-mail messages from the portal to certain group of users. This can be useful e.g. to the EGI.eu teams to inform certain users about new services or changes in EGI.
* The front-end of the Applications Database portal has been redesigned. Besides many other changes, the new interface displays the most recent and the most popular items based on rating and visitor statistics. The FAQ section became editable by members of UCST.
* Various smaller changes, for example history and rollback for software content editors, RSS subscription possibility for each registered items, caching of search results and more intelligent ordering of search hits.
* In PQ12 the team has extended with repository functions, mainly to support ‘Community Technology Providers’, a specific type of middleware developers who will become part of EGI after April 2013, after the end of the EMI and IGE projects. Community Technology Providers will not provide strong quality guarantees on their software (such as SLA or MoU). They will simply upload their software packages into the Applications Database, where potential user communities (primarily platform integrators from those communities) can access the packages and can integrate into Community Platforms.
* With the support of the EGI.eu UCST, the AppDB developer team in Greece (at IASA) promoted the service to the EGI community in blog posts, the NIL dispatch, and via demos and presentations at the EGI Forums.

##### Training Marketplace (TMP)

Development and other activities during PY3 were:

* The behaviour of existing gadgets have been improved to allow correct resizing of an events calendar within the iframe environment and the ability to include a calendar alongside a list displaying details of the events.
* Functionality of existing gadgets have been improved with includes filters to allow the user to display local NGI based events by default, whilst maintaining links to the full database. The gadget now provides a customisable appearance so the user can embed it into a website, matching colours, fonts and styles.
* The functionality of the marketplace has been extended with various new items, e.g. permalinks to event entries; Sending out invitation emails to report the number of attendees to UCST after the event took place; Writing documentation to UCST about content management.
* The Training Market Place (TMP) instance used in the EGI Website has been improved with writing a description of the different content types for users, adding key word tagging, and matching the colour schema with the new design of the EGI website.
* During PQ9 a large number of spam started to appear as comments on events that are registered in the Training Marketplace. Later the spams started to spread as fake event registrations. The team first deployed a CAPTCHA[[73]](#footnote-73), then later a ReCAPTCHA module into the tool in order to protect the content from spammers. Unfortunately none of these solutions could stop spammers, so in PQ12 the comments had to be turned into ‘moderation’ mode, meaning that new comments become visible only after approval by a UCST member. (New events were in such mode since the beginning.) At the end of PY3 the system still attracts spams (around 3/day), but these are not approved by UCST.
* Developed a script to monitor usage of Training Marketplace gadgets and to differentiate website hits from the main and gadget interfaces.
* Promotion of the Training Marketplace tool in the UK, at the Digital Research 2012 Conference, at the Research Council (EPSRC) meeting, and at the National Service for Computational Chemistry Software (NSCCS) User Meeting (with representatives of NCSS and HeCTOR, UK’s HPC facility) and most recently at the e-Infrastructure Academic User Community Forum. The sustainability of core tools and services, such as training, have been discussed and debated about at these events. HeCTOR and NSCCS expressed an interest in using a customised version of the Training Marketplace that could show events relevant to their community. The requested features are exactly the same that were developed by STFC in PQ12.
* With the support of the EGI.eu UCST the STFC team promoted the service to the EGI community in a webinar presentation (PQ9), in blog posts, the NIL dispatch, and via demos and presentations at the EGI Forums. Also at the EGI Community Forum a video demo[[74]](#footnote-74) was produced and featured on the GridCast site.
* During PQ11 and PQ12 the main development was focussed on increasing the functionality of the TMP event display gadget by increasing the number of filters that can be applied to it. This was demonstrated at the EGI Community Forum 2013, and went into production after that. The gadet can create a training marketplace instance that displays results filtered by location, project and/or research community.

##### Client Relationship Management system

The work in PQ9 focused on increasing the usability and robustness of the CRM service after its introduction as a production service in the beginning of April 2012. The first 3 months operating the service as a production product showed that it needs continue customisation to cope with constant emerging requests from the EGI community. While some of the requirements could be addressed with the vTiger version of the time, others could only be solved in a more recent version (5.4.0). The team therefore upgraded the system in PQ10 and implemented all the requested changes/fixes/further developments during PQ10 and PQ11 with gradual updates.

A key new feature in the system is the monitoring and reporting functionalities implemented on top of the vTiger ModTracker Module, and exposed via a metrics web portal[[75]](#footnote-75). The web portal provides the changes, new additions and deletions made on items stored within the system during a customizable time period. The results are broken down per NGI, so both the NILs and the outreach coordination team of EGI.eu can monitor progress and uptake of the CRM itself. Moreover, a monthly snapshot of the results is captured and stored in a reports repository[[76]](#footnote-76), and distributed to the NILs via NIL dispatch.

During PQ12, a strong effort was put on addressing important usability issues focused on the CRM User interface. The Main enhancements were:

* The introduction of a section for messages and informative tabs.
* The implementation of different web forms to address / support information from different types of institutions.
* The implementation of content quality control rules to guarantee the correct execution of the internal workflows.
* A customizable user home page with graphical views regarding the number of different objects assigned to the user’s NGI (group), the percentage of objects with incomplete / missing information, and the top-5 NGI (groups) with the higher number of assigned objects.

The Wiki based EGI CRM documentation was reviewed and updated several times to follow the evolution of the service.

The CRM team from LIP and CSIC, with the support of the EGI.eu UCST, promoted the service to the EGI community and especially to the NGI International Liaisons through the NIL dispatch, presentations and trainings at the EGI Forums.

#### NGI International Liaisons and Virtual Teams

##### Context

In 2011 the EGI-InSPIRE project revised its user engagement activities and defined a new structure for the NA2 work package within an updated Description of Work. The purpose of the restructuring was to improve the efficiency and flexibility of the interaction between the NGIs, EGI.eu and other organisations to achieve common goals in the field of "Engaging with New User Communities". The new structure consists of two key elements:

* **Virtual Team framework**: The Virtual Team (VT) framework (see source document[[77]](#footnote-77)) enables NGI and EGI.eu staff to initiate and participate in short-lived projects (known as VT projects) that focus on well-defined, non-operational activities relevant to the production infrastructure. These activities cover areas such as marketing & communication, strategic planning and policy support, community outreach and events for new users, technical outreach and support to new communities. VT projects focus around new communities and/or sustainability. The framework allows the EGI community to plan all related activities in conjunction and collaboration with the NGIs. The VT project framework was developed within the NA2 activity of the EGI-InSPIRE project, but it is also open to NGIs, countries and regions that are not involved in NA2 or in EGI-InSPIRE. These entities can join existing VTs or propose new VTs.
* **NGI International Liaisons**: The interaction between the NGI teams and EGI.eu on non-operational activities is undertaken through an "NGI International Liaisons" (NILs in short), who are responsible within the NGIs for the delivery and interaction of non-operational tasks. Non-operational activities cover areas such as marketing & communication, strategic planning and policy support, community outreach and events for new users, technical outreach and support to new communities. The role of the NIL recognises the complexity and diversity of each NGIs yet the need for these NGIs to be involved in the pan-European, coordinated, non-technical activities of EGI. It is not necessarily the NILs who undertake any of the non-technical activities, but instead they make sure the appropriate individuals or teams within the NGIs respond to any particular activity or issue that arises. These activities and issues arise within the VT framework, typically as requests to join a new VT or to react to some issue identified by a VT.

##### Setting up the Virtual Teams

Requests to form a VT can come from any NGI or even from internal to EGI.eu management. Such requests are reviewed by the NA2 task-leaders of EGI-InSPIRE for purpose and potential value to the EGI, clarity, resource requirements, completeness and achievability.

After a project is accepted it gets an entry in the "Active Virtual Teams" section of the EGI Wiki site and a request to join the project is sent to the NILs. They in turn ensure that the NGI as a whole or appropriate individuals or teams within the NGIs respond to the participation request. Some NILs may decide on their own on participation, others may need approval from NGI Coordinator or from NGI members. Note that because Virtual Teams have a relatively short lifetime (up to six month), the window of opportunity for NGIs to respond is expected to be short too.

A positive answer from at least two NGIs is enough to establish a VT. Teams with only one NGI cannot be active within the EGI-InSPIRE VT framework. The leader of a VT must be an individual from an NGI or from EGI.eu. If the team is led by an NGI member then an "EGI.eu buddy" is provided for the team to facilitate the integration into the EGI ecosystem.

EGI.eu TONC provides consultancy for and supervision of the VTs and supports them with a range of tools for teleconferencing, meeting planning and information dissemination through the EGI Webex, INDICO, Wiki and Webpages. Additionally, template documents have been generated to assist team leaders in starting up and completing their projects such as a template Project Initiation Document (PID) and a template Final Project Report. These try to capture and present best practice and have already proven useful in setting up a number of new VTs. The EGI Wiki[[78]](#footnote-78) is a useful repository of information for the VTs.

Success of the VT framework that was initially established for unfunded work has led to the scheme’s expansion in early 2013. This resulted in the approval of a number of similar but funded “mini-projects” and lessons learned from the unfunded VTs has been transferred to the funded mini projects, particularly in the setting up of the dedicated Wiki overview page[[79]](#footnote-79) and template Wiki page[[80]](#footnote-80)

##### Working with the NGI International Liaisons

Working with NILs over the first year of the scheme’s existence has brought improvements in cooperation and coordination and it is largely through the NILs that the VT scheme has been successful in identifying the correct points of contact to involve in project teams. But experience has brought about proactive initiatives from many individuals and the implementation of such initiatives has in turn brought valuable Lessons Learned – and these need to be acted upon over the coming months. For example, one step forwards was to gather data on the effort and work done by the NILs via EGI’s PPT system. Analysis of the data once a sufficiently large sample had been compiled revealed that PPT inputs were inconsistent. Issues were addressed with the NILs during EGI CF13 and management actions to bring consistency and value to the effort reporting procedures will be established over the following months.

##### Status of the Virtual Teams

Nearly 15 VT projects were undertaken and completed in 2012. At the time of preparing this report, a further 4 have been completed or are in course of closure and 4 more are under way. The status of the projects is presented via the EGI VT Wiki[[81]](#footnote-81) pages and weekly progress reporting is compiled and provided to the EGI.eu Director.

Most projects have been very successful but even where projects have not come to a complete and resounding conclusion; the results have been very valuable. One example of this has been the “Science Gateway Primer”, a project that sought to generate a guidebook for best practice on building Science Gateways. Amongst many potential Science Gateway solutions for the EGI community as a whole, there are 2 that are emerging at the forefront of this area of work. The “Primer” that evolved from this VT project is a very substantial document and is thus a valuable step forwards but it did not gain universal support because it lacked balance. The final report has been accepted but a further project will be established to build on this good start and bring the other half of the picture so as to present a full and well-balanced final “Primer”.

The current status of projects is summarised in the Table that follows:

**Virtual Team Projects Status Summary**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Project title** | **Project status** | **Start Date** | **End Date** | **Project leader** | **Project website** |
| SPEEch on the griD (SPEED) | Running | 7/3/12 | in course of closure | Ing. Milan Rusko <milan.rusko@savba.sk>, IISAS, Slovakia | [VT SPEED](https://wiki.egi.eu/wiki/VT_SPEED) |
| Environmental & Biodiversity | Running (NGIs can still join) | 1/10/12 | Running | Yannick Legre (Idgrilles) | [VT E and B](https://wiki.egi.eu/wiki/VT_E_and_B) |
| Collaboration between EGI/NGIs and large ESFRI project ELIXIR | Running (NGIs can still join) | 1/10/12 | in course of closure | Pavel Fibich - NGI\_CZ, <pavel.fibich@prf.jcu.cz> | [VT ELIXIR](https://wiki.egi.eu/wiki/VT_ELIXIR) |
| Collaboration between EGI/NGIs and large ESFRI project ELIXIR | Running (NGIs can still join) | 1/10/12 | in course of closure | Pavel Fibich - NGI\_CZ, <pavel.fibich@prf.jcu.cz> | [VT ELIXIR](https://wiki.egi.eu/wiki/VT_ELIXIR) |
| Scientific Discipline Classification | Running | 12/12/12 | in course of closure | Sy Holsinger (EGI.eu) | [VT Scientific Discipline Classification](https://wiki.egi.eu/wiki/VT_Scientific_Discipline_Classification) |
| Technology study for CTA (Cherenkov Telescope Array) | Running | 7/1/13 | 7/7/13 | Claudio Vuerli (INAF) | [VT Technology study for CTA](https://wiki.egi.eu/wiki/VT_Technology_study_for_CTA) |
| Towards a Chemistry, Molecular & Materials Science and Technology (CMMST) Virtual Research Community (VRC) | Running | 19/2/13 | 4/8/13 | Antonio Lagana (University of Perugia) | [Towards a CMMST VRC](https://wiki.egi.eu/wiki/Towards_a_CMMST_VRC) |
| Scientific Publications Repository Implementation | Running | 1/5/13 | 30/4/14 | Sergio Andreozzi, EGI.eu | [VT Scientific Publications Repository Implementation](https://wiki.egi.eu/wiki/VT_Scientific_Publications_Repository_Implementation) |
| GPGPU requirements (General-Purpose computation on Graphics Processing Units) | Finished | 21/5/12 | 31/11/12 | John Walsh (TCD, Ireland) | [VT GPGPU](https://wiki.egi.eu/wiki/VT_GPGPU) |
| Inter NGI Usage Report (second phase) | Finished | 30/5/12 | 5/4/13 | Kostas Koumamtaros (GRNET) and Sara Coelho (EGI.eu) | [VT Inter-Usage Report, part II](https://wiki.egi.eu/wiki/VT_Inter-Usage_Report,_part_II) |
| Science gateway primer | Finished | 16/5/12 | 31/12/12 | Robert Lovas (NGI\_HU) | [VT Science Gateway Primer](https://wiki.egi.eu/wiki/VT_Science_Gateway_Primer) |
| Scientific Publications Repository | Finished | 20/6/12 | 18/10/12 | Sergio Andreozzi (EGI.eu) | [VT Scientific Publications Repository](https://wiki.egi.eu/wiki/VT_Scientific_Publications_Repository) |
| Fire and Smoke Simulation | Finished | 31/1/12 | 30/06/12 (report published in 9/12) | Ladislav Hluchý <hluchy.ui@savba.sk>, IISAS, Slovakia | [VT Fire Simulation](https://wiki.egi.eu/wiki/VT_Fire_Simulation) |
| EGI Champions - establish the process for creating a network of EGI champions. | Finished | 21/5/12 | 11/9/12 | Steve Brewer (EGI.eu) | [VT EGI Champions](https://wiki.egi.eu/wiki/VT_EGI_Champions) |
| DCH-EGI Integration | Finished | 1/2/12 | 10/7/12 | Steve Brewer (EGI.eu) | [DCH-EGI\_Integration](https://wiki.egi.eu/wiki/DCH-EGI_Integration) |
| MPI within EGI | Finished | 10/11/11 | 27/7/12 | Alvaro Simon (CESGA) and Zdenek Sustr (CESNET) | [VT MPI within EGI](https://wiki.egi.eu/wiki/VT_MPI_within_EGI) |
| Assessing the adoption of Federated Identity Providers within the EGI Community | Finished | 10/11/11 | 12/7/12 | Daniel Kouril (CESNET), Gergely Sipos (EGI.eu) | [VT Federated Identity Providers Assessment](https://wiki.egi.eu/wiki/VT_Federated_Identity_Providers_Assessment) |

##### Summary and plans for PY4

The VT framework has proved to be a very effective method for undertaking small projects for the benefit of the EGI ecosystem but the effort expended has been unfunded. This means that to a large extent, VT projects have been run on a ‘best effort’ basis. In most cases this has imposed significant burdens on some participants while others participants have been unable to contribute as much (if any) as they had initially intended. EGI.eu’s TONC team has already seen steady improvement in the structuring and management of new VTs, mainly as a result of initiatives to provide project management consultancy and assistance through the project start-up phase and in planning and conduct of project progress meeting. This approach will continue to be developed through PY4 with Lessons Learned being fed back into the VT process – template project documents, procedures, assistance in the use of available tools (e.g. Webex teleconferencing) and advice. Tighter management with better assistance from the very start of projects through to their conclusion will help ensure VTs are more able to focus on what needs to be done and by who.

For PY4 funded mini-projects’ will be introduced . At this stage there are 11 approved ‘funded mini-projects’ which are already being formed using the VT framework – the EGI “Funded Virtual Team project” Wiki pages[[82]](#footnote-82) have been established and guidance on reporting procedures and available support was issued during a dedicated session at the EGI Community Forum 2013 in Manchester.

##### Summary of Virtual Team Participation

The impressive results of the VT project scheme as summarised above is testament to the positive and proactive approach of all those involved, taking these short lived 6 month projects from no more than an embryonic requirement or idea through to the delivery of real and practical results. The NGIs, their NILs and all those who participate and contribute in these projects are therefore to be highly commended for finding the resources to dedicate to the necessary work. Nevertheless, it would be wrong to conclude that VT participation is equally good in all areas and it is important to note that in almost every one of the VTs, there are participants who genuinely dedicate considerable effort to the project, and there are bystanders who do little more than wait for results. It is clear that real effort comes from the participants with a vested interest in the project. On the other hand, the projects that have struggled to make progress are those where the goals have been hard to understand and break down into achievable sub tasks. This in turn highlights the management challenge within the VT projects, where goals and tasks need to be clearly recognised, even more clearly enunciated and then assigned to people who properly understand what is required of them and how their contribution will be important to overall success.

##### EGI Champions

The broad concept of establishing a cadre of ‘ambassadors’ who would act as enthusiastic and proactive promoters of EGI was launched under the banner of “EGI Champions” during the EGI Technical Forum in Prague in September 2012. Since then, the practical implementation of this concept has been set in place, firstly via the EGI Web site and Wiki pages which provided greater detail to the new initiative and subsequently through the recruitment and selection of the 1st cohort of six EGI Champions in November 2012 followed by a 2nd cohort of 3 in February 2013.

The EGI Champions have been briefed by EGI.eu on their envisaged role and the support mechanisms and processes that would be put in place. The Champions have also been instrumental in shaping the support by identifying where additional support and information is required. One of these support mechanisms is to provide travel, registration and subsistence support to attend EGI meetings and for the Champions to engage with their own community in promoting the work that they are doing with EGI.

## Project Issues

### Operations

Participation of expert Resource Centre to staged rollout of software updates for the verification of new product releases increased progressively during PY3. Thanks to this, it was possible to expand the number of software releases verified, the OS platforms supported (SL5, SL6 and Debian) and to include both EGI and IGE software products into the Unified Middleware Distribution.

Performance of various small or emerging NGIs consolidated during PY3. Catch-all services replaced the use of NGI-provided services that suffered from instability. Training sessions for Resource Centre administrators and NGI operations were organized at the EGITF 2012 and representatives of relevant NGIs were funded to EGI.eu to attend: Albania, Colombia, Moldova, FYR of Montenegro and Macedonia. The performance of Armenia and Montenegro stabilized, as well as the one of FYR of Macedonia.

Continued technology maintenance and innovation together with third level support of deployed software in EGI, are paramount. Continuity of support is challenged by the end of the two main projects that currently ensure provisioning of deployed software (EMI and IGE). The risks that are being faced are the discontinuation of maintenance and support of a subset of products, lower quality of the support that is currently subject to SLAs, phasing out of the external repositories, and a change in the software distribution processes that require changes in the EGI software provisioning processes. EGI support structures (continuity of support through the EGI helpdesk, quality of support provided to users and operators, reorganization of Product Teams) were assessed and a plan was defined to adapt these to the new environment. The Unified Middleware Distribution Release Team mandate and scope was defined after various iterations with the Technology Providers, and this board was kicked off at the beginning of PY4. The continuity of support of various products and the impact of discontinuation are still work in progress.

A survey conducted in September 2012 indicated that a small percentage of NGIs improved its funding structure, as requested to compensate for the end of EC financial support to national operational activities in April 2014. The impact of the funding position of NGI operational activities was re-assessed in a new survey in February 2013 in preparation to the assessment of the NGI international tasks. The sustainability of the current level of service guaranteed by operations is an area of concern for many NGIs. During PY3 two operations centres were closed because of lack of financial sustainability: Ireland and Iniciativa de Grid de America Latina – Caribe (whose operations were sustained by the GISELA EC project). According to the NGI assessment, lack of funding will likely cause a degraded performance of the services provided: services will be offered on a best effort service basis or will be re-scooped and/or reduced. The federation of NGI services to support each other’s provisioning, especially for the most effort intensive ones like user and operations support and the running of NGI technical services, will be sought for in PY4 as a partial mitigation action. Interest in federating services was collected in a survey conducted in January 2013, and implementation plan will be defined in PQ13.

### Software Development

The support given to two of EGI’s main technology providers by the European Commission through the EMI and IGE projects will end in PQ12. Most of the product teams, based on the information currently available, are planning to continue the support of their products, although with different effort level. The most significant gap is the end of the coordination effort carried out by the EMI and IGE projects across their respective product teams in order to have coherent and integrated releases.

SA2 is designing a new UMD structure to be more flexible to accommodate more and less coordinated product teams. Discussions have been done during the second half of PY3 with EMI and the individual product teams to identify the new workflows. The role of IGE will be partly replaced by EGCF; therefore the situation for the Globus products is less critical.

Status: Open. The main mitigating actions will be implemented during the first part of PY4.

### Community Engagement

## Project Management

Two amendments were processed during the year by the European Commission and a third change amendment will be discussed during the review. The first amendment related to:

* Merger of SA2.5 and SA1.7: This would rebalance and reallocate effort between the two tasks to ensure support for both the deployed middleware and operational tools.
* Establishing a federated cloud: EGI had been operating a federated cloud task force for nearly a year on a voluntary basis and this work was now to be consolidated as a project task (TSA2.6)
* Moving coordination of document & interoperation: This activity was moved to EGI.eu to streamline the management of this activity.
* Administrative Changes: Responsibility for part of the SA3 activity moved from INFN to CERN, preparations were made for TCD to leave the EGI-InSPIRE project and changes to the Russian JRU were reported.

The second amendment primarily introduced a new work package SA4 into the project that defined 11 activities that would accelerate EGI’s strategic objectives. These activities had been proposed through a call to the partners within the EGI-InSPIRE project for short-term (6-12 months) activities that would cost around €60K. These proposed activities had been reviewed and prioritised by the Project Management Board using unspent funds allocated to partners during the first two years of the project. The majority of these activities were scheduled to begin in May 2013 at the start of PY4.

As the European Commission began to make clear in Spring 2013 the likely timetable for Horizon 2020 calls (closing in Spring 2014 with projects starting in Autumn 2014) it became clear that if EGI-InSPIRE ended in April 2014 that there would be at least a 6 month gap before any follow-on project could start. To ensure some measure of continuity of critical staff and activities during this period a 6 month project extension was proposed. This would allow partners to reduce their effort in PY4 in order to extend support into a 6 month PY5. The tasks that needed to be sustained centrally during this period had been defined at the ‘Evolving EGI Workshop’ in January 2013 and these were now described in a proposed project extension.

### Project Management Metrics

The project was managed through regular meetings defined by the Consortium Agreement:

* Collaboration Board: Composed of representatives from the partners, the group met twice during the project year in September 2012 and April 2013. Besides discussing the general project status two amendments were presented. The first established the Federated Cloud task force as a project task in SA2, merged support activities between SA2 and SA1 to provide both middleware and operational tools support, and moved coordination of interoperation and documentation to EGI.eu. The second discussed the approval of the mini-projects and the extension of the project for an additional 6 months to bridge the emerging gap between the currently planned end of the project and the estimated start of any projects funded through Horizon 2020.
* Project Management Board: Composed of representations of partner groupings within the project it met 7 times during the year (both F2F and via telecon) to develop the project amendments and to review and approve the results from the mini-projects call.
* 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

<<NA1 and PO>>

### Cooperation with Other Projects

<<NA1 and PO with input from the Policy Team and USCT>>

# Deliverables and Milestones

## Deliverables

| **Id** | **Activity No** | **Deliverable / Milestone title** | **Lead partner** | **OriginalDelivery date(\*)[[83]](#footnote-83)** | **Revised delivery date(\*)** | **Status**  **(\*\*)** |
| --- | --- | --- | --- | --- | --- | --- |
| D2.16 | WP2 | EGI-InSPIRE Presentation  <https://documents.egi.eu/document/1145> | EGI.eu | 25 |  | PMB Approved |
| D1.10 | WP1 | Gender Action Plan  <https://documents.egi.eu/document/1270> | EGI.eu | 28 | 29 | PMB Approved |
| D2.17 | WP2 | EGI-InSPIRE Paper  <https://documents.egi.eu/document/1258> | EGI.eu | 28 |  | PMB Approved |
| D4.6 | WP4 | EGI.eu Operations Architecture: Infrastructure Platform and Collaboration Platform Integration <https://documents.egi.eu/document/1309> | EGI.eu | 29 | 31 | PMB Approved |
| D2.11 | WP2 | EGI.eu Transition Plan to ERIC  <https://documents.egi.eu/document/1339> | EGI.eu | 30 | 31 | PMB Approved |
| D4.7 | WP4 | EGI.eu Sustainability Assessment of Operational Services  <https://documents.egi.eu/document/1471> | EGI.eu | 31 | 33 | PMB Approved |
| D6.8 | WP6 | Sustainability Plans for the HUC Activities<https://documents.egi.eu/document/744> | CERN | 33 | 35 | PMB Approved |
| D2.20 | WP2 | EGI Sustainability Plan  <https://documents.egi.eu/document/1570> | EGI.eu | 34 | 38\* | PMB Approved |
| D1.11 | WP1 | EGI.eu Annual Report on Quality Status<https://documents.egi.eu/document/1587> | EGI.eu | 35 | 37 | PMB Approved |
| D2.21 | WP2 | Annual Report on EGI and its External Relations Activities  <https://documents.egi.eu/document/1578> | EGI.eu | 35 | 37 | PMB Approved |
| D4.8 | WP4 | Annual Report on the EGI Production Infrastructure <https://documents.egi.eu/document/1664> | EGI.eu | 35 | 37 | PMB Approved |
| D5.9 | WP5 | Annual Report on the Status of Software Provisioning Activy  <https://documents.egi.eu/document/1657> | EGI.eu | 35 | 36 | PMB Approved |
| D6.9 | WP6 | Annual Report on the HUC Tools and Services  <https://documents.egi.eu/document/745> | CERN | 35 | 37 | PMB Approved |
| D7.3 | WP7 | Annual report on Operational Tool Maintenance and Development Activity  <https://documents.egi.eu/document/1562> | INFN | 35 | 37 | PMB Approved |
| D1.12 | WP1 | Annual Project Report  <https://documents.egi.eu/document/1713> | EGI.eu | 36 | 37 | PMB Approved |
| D1.13 | WP1 | Quality Plan and Project Metrics  <https://documents.egi.eu/document/1757> | EGI.eu | 36 | 37 | PMB Approved |
| D2.22 | WP2 | Marketing and Communication Plan  <https://documents.egi.eu/document/1762> | EGI.eu | 36 | 37 | PMB Approved |
| D2.33 | WP2 | EGI Technical Roadmap  <https://documents.egi.eu/document/1706> | EGI.eu | 36 | 37 | PMB Approved |

## Milestones

| **Id** | **Activity No** | **Deliverable / Milestone title** | **Lead partner** | **OriginalDelivery date(\*)[[84]](#footnote-84)** | **Revised delivery date(\*)** | **Status**  **(\*\*)** |
| --- | --- | --- | --- | --- | --- | --- |
| MS228 | WP2 | Marketing and Communication Handbook  <https://documents.egi.eu/document/1160> | EGI.eu | 26 | 27 | PMB Approved |
| MS511 | WP5 | Deployment Middleware Support Unit Operations Procedures  <https://documents.egi.eu/document/1134> | EGI.eu | 26 | 28 | PMB Approved |
| MS512 | WP5 | Software Provisioning Process  <https://documents.egi.eu/document/1135> | CESGA | 26 | 27 | PMB Approved |
| MS616 | WP6 | Services for High Energy Physics  <https://documents.egi.eu/document/747> | EGI.eu | 27 |  | PMB Approved |
| MS617 | WP6 | Services for the Life Sciences Community  <https://documents.egi.eu/document/1289> | EGI.eu | 27 | 28 | PMB Approved |
| MS119 | WP1 | EGI-InSPIRE Quarterly Report 9  <https://documents.egi.eu/document/1338> | EGI.eu | 28 | 29 | PMB Approved |
| MS231 | WP2 | Review of EGI Website  <https://documents.egi.eu/document/1259> | EGI.eu | 28 |  | PMB Approved |
| MS421 | WP4 | Integrated Resources into the EGI Production Infrastructure  <https://documents.egi.eu/document/1308> | SRCE | 28 | 30 | PMB Approved |
| MS232 | WP2 | EGI Technical Forum  <https://documents.egi.eu/document/1381> | EGI.eu | 30 |  | PMB Approved |
| MS620 | WP6 | HUC Software Roadmap  <https://documents.egi.eu/document/750> | EGI.eu | 30 | 29 | PMB Approved |
| MS121 | WP1 | EGI-InSPIRE Quarterly Report 10  <https://documents.egi.eu/document/1486> | EGI.eu | 31 | 32 | PMB Approved |
| MS122 | WP1 | EGI-InSPIRE Quarterly Report 11  <https://documents.egi.eu/document/1620> | EGI.eu | 34 | 35 | PMB Approved |
| MS123 | WP1 | EGI Global Task Review  <https://documents.egi.eu/document/1566> | EGI.eu | 34 | 36 | PMB Approved |
| MS124 | WP1 | NGI International Task Review  <https://documents.egi.eu/document/1568> | EGI.eu | 34 | 36 | PMB Approved |
| MS235 | WP2 | Security Activity within EGI  <https://documents.egi.eu/document/1520> | EGI.eu | 34 | 35 | PMB Approved |
| MS514 | WP5 | EGI Platforms Roadmap  <https://documents.egi.eu/document/1624> | EGI.eu | 34 | 35 | PMB Approved |
| MS520 | WP5 | EGI Federated Cloud Blueprint V1  https://documents.egi.eu/document/1773 | EGI.eu | 34 | 37 | PMB Approved |
| MS710 | WP7 | Roadmap for the Maintenance and Development of the Deployed Operational Tools  <https://documents.egi.eu/document/1501> | KIT | 34 | 35 | PMB Approved |
| MS125 | WP1 | Work of the Asia- Pacific Region  <https://documents.egi.eu/document/1724> | EGI.eu | 35 | 37 | PMB Approved |
| MS619 | WP6 | Training and dissemination events at the EGI Community Forum 2013 for all shared services and the other tasks of the SA3 Activity  <https://documents.egi.eu/document/1690> | EGI.eu | 35 | 36 | PMB Approved |
| MS237 | WP2 | EGI Community Forum 2013  <https://documents.egi.eu/document/1729> | EGI.eu | 36 | 37 | PMB Approved |
| MS425 | WP4 | Operational Level Agreements (OLA’s) within the EGI Production Infrastructure  <https://documents.egi.eu/document/1712> | EGI.eu | 36 | 38 | PMB Approved |

# Explanation of the use of Resources

## Summary

### NA1

### NA2

TNA2.1N represents the NGI International Liaison role (NIL). With the introduction of the role in Jan 2012 (but created in Nov 2011), NGIs were advised that up to 2 members of staff working as NGI International Liaisons could report under NA2.1N to represent the effort by their NILs. Once sufficient data was available to perform trend analysis, a review of the recorded inputs was carried out by EGI.eu in early 2013 and this revealed marked inconsistencies in how different NGIs were reporting effort; some NGIs failed to report any effort at all while some reported effort not just by their NILs but also by a range of other people. Such variance was shown to the NILs at the EGI CF13 in Manchester and attention is now being dedicated to align the procedures used by all NGIs for this reporting and for EGI.eu management staff to routinely assess the effort against achievements. Erroneous as the data may be, a total effort for the period of 128 PMs has been reported by 9 partners declaring between 90% and 239% of the committed effort, 15 partners declaring an average of 50% against commitment and finally, 20 partners declaring no effort at all (or negligible).

TNA2.6 represents the Virtual Team role. The Virtual Team concept was set in place in Jan 2012 and sought to motivate groups of EGI users who shared common needs on the grid to volunteer their efforts in developing solutions for the community. The resulting work would thus be unfunded (ie 0% Committed). NGI staff other than NILs could report under NA2.6N if they were working as part of recognised Virtual Team. As for TNA 2.1 above, scrutiny of the data once available for trending analysis revealed inconsistencies. Nevertheless, the error in reporting is likely to range from effort not being reported up to effort being correctly reported. As such, a total effort of some 70 PMs is most probably an ‘under-report’ that nevertheless represents part of what has been a very valuable contribution to the community.

The AppDB developer team (IASA and GRNET, NGI Greece) used slightly less effort that was planned for PY3 (10.6PM from 11.5PM, 92%). The under spending compensated to the overspending of PY1 that the teams carried since 2011, and resulted a 96% of resource use over the first three years of the project (33.6PM from 35.1PM, 96%).

The Training Marketplace developer team (STFC, NGI UK) used slightly more effort that was planned for PY3 (7.7PM from 7.3PM, 105%). This results a very slight overspending over the first three years of the project for STFC in the TNA2.5E activity (17.2PM from 16.7PM, 103%).

The CRM developer team (CSIC and LIP, NGI Ibergrid) used slightly less effort that was planned for PY3 (4.9PM from 5.7PM, 86%). The under spending compensated a bit to the overspending of PY1 and PY2 (used to be called VO Services team), and resulted a 121% of resource use over the first three years of the project (21.6PM from 17.8PM, 121%).

### SA1

The PY3 overall usage of WP4 resources is in-line with the project plan both for EGI Global Tasks (92% achieved of the Person Months committed) and NGI International Tasks (105% achieved of the Person Months committed). The aggregated Person Months achieved in WP4 are 103% of the committed effort.

For the EGI Global Tasks, the amount of PM achieved in PY3 by EGI.eu for operations coordination (task TSA1.1E) amounts to 173% of the committed PMs. This compensates the lower achieved PM rates of PY1 (60%) and PY2 (70%).

The rate of PMs achieved in PY3 by GRNET for service level management and the provisioning of various support services (task TSA1.8E), amounts to 27% because of austerity measures that affect GRNET: no hiring of new personnel is possible and the person month cost of existing staff was cut compared to the project plans. Because of this, the lower achieved rates of PY1 and PY2 could not be compensated in PY3. However, this had no impact on technical activities delivered to the project.

### SA2

The overall effort consumption has been 93% of the total allocated hours. Breaking down the figures to the single task the effort consumption has been less than the allocated person months for TSA2.2 (-12%) and TSA2.4 (-13%), and there has been overspending for the task TSA2.3 (+9%). While the overspending has been compensated by the under spending in TSA2.2, since there are institutions participating to both, the under spending for TSA2.4 is still affected by the hiring block for the GRNET partners.

### SA3

### JRA1

The total TJRA1.2 effort consumption is in line with the committed effort. The main deviations highlighted at the end of PY2 are even now present but they have been partly mitigated during PY3. GRNET under-reporting has been reduced during PY3. FCTSG/CSIC over-reporting will be naturally mitigated in PY4 when FCTSG/CSIC will focus its effort in TJRA1.4 activities as planned in the activity roadmap.

TJRA1.4 still shows a rather significant under-reporting although it has been partly mitigated during PY3. This under-reporting can be considered fairly natural taking into account the type of activities planned for this task, activities that requires an extensive study and a careful requirements collection before starting with the development phase. FCTSG/CSIC underreporting has already been mitigated during PY3 and will be strongly reduced during PY4 when they focus their effort on TJRA1.4 activities as explained above. An activities roadmap for INFN has been defined to considerably reduce its underreporting in PY4. The actions described above should largely compensate for the task underreporting before the end of the project.

TJRA1.5 completed its activities at the end of PY3 and shows no large deviations from the committed effort.

# Financial Statements Per Beneficiary

## Summary

*<<Provided by the PO>>*

### Consumption of Effort

***Selected period: PM25 to PM36 (May 2012 to April 2013)***

***Report extracted on 17 May 2013 08:00:52***

**Project Period 3**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Work Package** | **Worked Hours Funded** | **Worked PM Funded** | **Committed PM** | **Achieved PY3 PM %** | **Achieved PY2 PM %** | **Achieved PY1 PM %** |
| **MGT** | **WP1** | 10,896.0 | 75.7 | 84.2 | 90% | 99% | 75% |
| **COORD** | **WP2** | 46,728.9 | 340.2 | 446.0 | 76% | 91% | 107% |
| **COORD**  **end 30/10/11** | **WP3** | n/a | n/a | n/a | n/a | 128% | 106% |
| **SUPPORT** | **WP4** | 173,369.8 | 1,277.9 | 1,229.5 | 104% | 108% | 100% |
| **SUPPORT** | **WP5** | 16,267.7 | 120.4 | 134.8 | 89% | 99% | 87% |
| **SUPPORT** | **WP6** | 30,348.1 | 219.3 | 249.0 | 88% | 104% | 83% |
| **SUPPORT** | **WP8** | 1,064.3 | 7.9 | 17.3 | 46% | n/a | n/a |
| **RTD** | **WP7** | 10,615.3 | 79.5 | 86.1 | 92% | 87% | 93% |
|  | **Total** | 289,290.0 | 2,120.9 | 2,246.9 | 94% | 104% | 97% |

The detailed breakdown of effort contributed to each work package by each partner is provided in the following tables for PY3. 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.

A new work package, WP8 started in March 2013 has been added as part of the SUPPORT activities.

**Selected period: PM25 to PM36 (May 2012 to April 2013)**

**Report extracted on 17 May 2013 08:00:52**

**Project PERIOD 3**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **WP1-E - WP1 (NA1) - NA1 Management (EGI)** | | | | |
|  |  |  |  |  |
|  | **PY3** | | |  |
| **Partner** | **Worked PM Funded** | **Committed PM** | **Achieved PM %** |  |
| **1-EGI.EU** | 33.9 | 37.3 | 91% |  |
| **Total:** | 33.9 | 37.3 | 91% |  |
|  |  |  |  |  |
| **WP1-M - WP1 (NA1) - NA1 Management** | | | | |
|  |  |  |  |  |
|  | **PY3** | | |  |
| **Partner** | **Worked PM Funded** | **Committed PM** | **Achieved PM %** |  |
| **1-EGI.EU** | 41.7 | 44.8 | 93% |  |
| **Total:** | 41.7 | 44.8 | 93% |  |
|  |  |  |  |  |
| **WP2-E - WP2 (NA2) - NA2 Community Engagement (EGI)** | | | | |
|  |  |  |  |  |
|  | **PY3** | | |  |
| **Partner** | **Worked PM Funded** | **Committed PM** | **Achieved PM %** |  |
| **1-EGI.EU** | 112.5 | 133.7 | 84% |  |
| **12A-CSIC** | 0 | 2.5 | 0% |  |
| **16A-GRNET** | 4.4 | 8.9 | 50% |  |
| **16E-IASA** | 6.5 | 2.6 | 250% |  |
| **26A-FOM** | 1.6 | 1.2 | 135% |  |
| **29-LIP** | 4.9 | 3.2 | 155% |  |
| **34A-STFC** | 12.1 | 12.4 | 98% |  |
| **Total:** | 142.0 | 164.4 | 86% |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **WP2-N - WP2 (NA2) - NA2 Community Engagement** | | | | |
|  |  |  |  |  |
|  | **PY3** | | |  |
| **Partner** | **Worked PM Funded** | **Committed PM** | **Achieved PM %** |  |
| **2-UPT** | 0 | 10.0 | 0% |  |
| **3-IIAP NAS RA** | 0 | 2.4 | 0% |  |
| **5A-IICT-BAS** | 0 | 5.7 | 0% |  |
| **7A-ETH ZURICH** | 0 | 1.5 | 0% |  |
| **7B-UZH** | 2.4 | 2.3 | 105% |  |
| **7C-SWITCH** | 0.0 | 2.7 | 0% |  |
| **8-UCY** | 2.1 | 4.1 | 51% |  |
| **9-CESNET** | 7.3 | 9.6 | 77% |  |
| **10B-KIT-G** | 19.3 | 18.5 | 104% |  |
| **12A-CSIC** | 28.9 | 5.6 | 519% |  |
| **12D-UPVLC** | 14.0 | 10.8 | 129% |  |
| **13-CSC** | 3.8 | 11.9 | 32% |  |
| **14A-CNRS** | 11.2 | 11.7 | 95% |  |
| **14B-CEA** | 1.0 | 4.4 | 23% |  |
| **15-GRENA** | 1.6 | 1.6 | 100% |  |
| **18A-MTA KFKI** | 0.7 | 2.2 | 33% |  |
| **18B-BME** | 0.4 | 2.0 | 23% |  |
| **18C-MTA SZTAKI** | 2.4 | 2.3 | 105% |  |
| **19-TCD** | 1.5 | 1.2 | 127% |  |
| **20-IUCC** | 5.0 | 3.0 | 165% |  |
| **21A-INFN** | 24.4 | 17.2 | 142% |  |
| **22-VU** | 1.7 | 11.4 | 14% |  |
| **23-RENAM** | 0.7 | 0.6 | 121% |  |
| **26A-FOM** | 1.3 | 2.1 | 62% |  |
| **26B-SARA** | 1.8 | 2.1 | 85% |  |
| **27A-SIGMA** | 0 | 4.0 | 0% |  |
| **27B-UIO** | 0 | 2.8 | 0% |  |
| **27C-URA** | 0 | 6.1 | 0% |  |
| **28A-CYFRONET** | 3.2 | 5.6 | 58% |  |
| **28B-UWAR** | 7.4 | 5.5 | 134% |  |
| **28C-ICBP** | 0 | 3.9 | 0% |  |
| **29-LIP** | 0 | 10.3 | 0% |  |
| **30-IPB** | 7.3 | 7.3 | 100% |  |
|  | **PY3** | | |  |
| **Partner** | **Worked PM Funded** | **Committed PM** | **Achieved PM %** |  |
| **31-ARNES** | 0.9 | 9.1 | 10% |  |
| **31B-JSI** | 0 | 4.6 | 0% |  |
| **32-UI SAV** | 10.8 | 13.9 | 78% |  |
| **33-TUBITAK ULAKBIM** | 12.6 | 13.4 | 94% |  |
| **34A-STFC** | 11.0 | 11.9 | 92% |  |
| **34C-UG** | 1.0 | 1.3 | 76% |  |
| **34D-IMPERIAL** | 0 | 1.6 | 0% |  |
| **34E-MANCHESTER** | 0 | 1.6 | 0% |  |
| **36-UCPH** | 3.9 | 12.1 | 33% |  |
| **38-VR-SNIC** | 0 | 0.7 | 0% |  |
| **38A-KTH** | 4.1 | 5.6 | 75% |  |
| **39-IMCS-UL** | 0.3 | 8.3 | 4% |  |
| **40A-E-ARENA** | 4.2 | 5.2 | 81% |  |
| **Total:** | 198.3 | 281.6 | 70% |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **WP4-E - WP4 (SA1) - SA1 Operations (EGI)** | | | | |
|  |  |  |  |  |
|  | **PY3** | | |  |
| **Partner** | **Worked PM Funded** | **Committed PM** | **Achieved PM %** |  |
| **1-EGI.EU** | 30.1 | 23.4 | 128% |  |
| **9-CESNET** | 9.7 | 20.8 | 47% |  |
| **10B-KIT-G** | 18.5 | 20.5 | 90% |  |
| **10D-JUELICH** | 2.0 | 3.0 | 67% |  |
| **12A-CSIC** | 18.5 | 4.3 | 435% |  |
| **12B-FCTSG** | 3.0 | 3.0 | 99% |  |
| **13-CSC** | 0.0 | 2.0 | 2% |  |
| **14A-CNRS** | 2.8 | 3.0 | 94% |  |
| **16A-GRNET** | 8.6 | 17.5 | 49% |  |
| **17-SRCE** | 14.8 | 9.8 | 152% |  |
| **21A-INFN** | 19.3 | 25.4 | 76% |  |
| **21B-GARR** | 1.9 | 3.0 | 62% |  |
| **26A-FOM** | 4.0 | 3.0 | 134% |  |
| **26B-SARA** | 4.8 | 5.8 | 84% |  |
| **28A-CYFRONET** | 3.7 | 5.8 | 64% |  |
| **29-LIP** | 4.9 | 7.3 | 67% |  |
| **34A-STFC** | 19.0 | 19.8 | 96% |  |
| **35-CERN** | 14.7 | 14.8 | 100% |  |
| **38A-KTH** | 0 | 2.8 | 0% |  |
| **38B-LIU** | 3.2 | 3.0 | 107% |  |
| **Total:** | 183.7 | 197.6 | 93% |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **WP4-N - WP4 (SA1) - SA1 Operations** | | | | |
|  |  |  |  |  |
|  | **PY3** | | |  |
| **Partner** | **Worked PM Funded** | **Committed PM** | **Achieved PM %** |  |
| **2-UPT** | 0 | 8.1 | 0% |  |
| **3-IIAP NAS RA** | 6.4 | 4.8 | 134% |  |
| **5A-IICT-BAS** | 1.9 | 20.0 | 9% |  |
| **5B-IOCCP-BAS** | 0.9 | 2.0 | 43% |  |
| **5C-NIGGG-BAS** | 6.1 | 6.0 | 102% |  |
| **6-UIIP NASB** | 5.0 | 7.6 | 66% |  |
| **7A-ETH ZURICH** | 3.9 | 8.5 | 46% |  |
| **7B-UZH** | 1.3 | 4.5 | 30% |  |
| **7C-SWITCH** | 4.1 | 8.6 | 48% |  |
| **8-UCY** | 6.2 | 12.0 | 52% |  |
| **9-CESNET** | 26.9 | 31.4 | 86% |  |
| **10B-KIT-G** | 23.8 | 28.0 | 85% |  |
| **10C-DESY** | 10.2 | 7.8 | 131% |  |
| **10D-JUELICH** | 5.1 | 5.8 | 89% |  |
| **10E-BADW** | 7.8 | 12.0 | 65% |  |
| **10G-FRAUNHOFER** | 7.3 | 7.7 | 95% |  |
| **10H-LUH** | 6.7 | 5.5 | 122% |  |
| **11-UNI BL** | 13.6 | 18.9 | 72% |  |
| **12A-CSIC** | 22.9 | 11.1 | 206% |  |
| **12B-FCTSG** | 33.5 | 16.6 | 201% |  |
| **12C-CIEMAT** | 13.2 | 9.5 | 138% |  |
| **12D-UPVLC** | 7.7 | 7.0 | 111% |  |
| **12E-IFAE** | 13.4 | 11.5 | 116% |  |
| **12F-RED.ES** | 24.4 | 13.0 | 188% |  |
| **12G-UNIZAR-I3A** | 12.1 | 13.0 | 93% |  |
| **12H-UAB** | 10.5 | 10.0 | 105% |  |
| **13-CSC** | 25.6 | 16.9 | 152% |  |
| **14A-CNRS** | 55.4 | 60.6 | 91% |  |
| **14B-CEA** | 34.8 | 16.0 | 218% |  |
| **15-GRENA** | 4.4 | 4.8 | 92% |  |
| **16A-GRNET** | 42.6 | 30.9 | 138% |  |
| **16B-AUTH** | 0 | 3.3 | 0% |  |
| **16C-CTI** | 0.6 | 3.3 | 17% |  |
|  | **PY3** | | |  |
| **Partner** | **Worked PM Funded** | **Committed PM** | **Achieved PM %** |  |
| **16D-FORTH** | 6.9 | 3.3 | 212% |  |
| **16G-UI** | 2.1 | 2.0 | 103% |  |
| **16H-UP** | 2.8 | 2.5 | 112% |  |
| **17-SRCE** | 19.1 | 18.0 | 106% |  |
| **18A-MTA KFKI** | 17.2 | 16.4 | 105% |  |
| **18B-BME** | 12.1 | 7.4 | 164% |  |
| **18C-MTA SZTAKI** | 5.1 | 6.1 | 83% |  |
| **19-TCD** | 8.6 | 13.4 | 64% |  |
| **20-IUCC** | 8.4 | 6.3 | 135% |  |
| **21A-INFN** | 115.5 | 89.1 | 130% |  |
| **21B-GARR** | 0.6 | 3.0 | 19% |  |
| **22-VU** | 13.3 | 5.5 | 242% |  |
| **23-RENAM** | 6.1 | 5.1 | 119% |  |
| **24-UOM** | 11.5 | 17.8 | 65% |  |
| **25-UKIM** | 19.7 | 17.8 | 111% |  |
| **26A-FOM** | 18.6 | 8.0 | 233% |  |
| **26B-SARA** | 21.8 | 30.4 | 72% |  |
| **27A-SIGMA** | 0 | 10.1 | 0% |  |
| **27B-UIO** | 10.6 | 7.0 | 152% |  |
| **27C-URA** | 8.0 | 3.5 | 228% |  |
| **28A-CYFRONET** | 35.6 | 29.0 | 123% |  |
| **28B-UWAR** | 6.5 | 1.7 | 390% |  |
| **28C-ICBP** | 9.9 | 4.5 | 220% |  |
| **28D-POLITECHNIKA WROCLAWSKA** | 8.4 | 4.0 | 211% |  |
| **29-LIP** | 19.1 | 26.9 | 71% |  |
| **30-IPB** | 29.3 | 29.6 | 99% |  |
| **31-ARNES** | 13.8 | 10.8 | 128% |  |
| **31B-JSI** | 14.0 | 12.8 | 110% |  |
| **32-UI SAV** | 22.6 | 24.1 | 94% |  |
| **33-TUBITAK ULAKBIM** | 30.7 | 32.6 | 94% |  |
| **34A-STFC** | 34.2 | 25.9 | 132% |  |
| **34C-UG** | 14.1 | 14.5 | 97% |  |
| **34D-IMPERIAL** | 20.6 | 14.5 | 142% |  |
| **34E-MANCHESTER** | 19.1 | 14.5 | 132% |  |
|  | **PY3** | | |  |
| **Partner** | **Worked PM Funded** | **Committed PM** | **Achieved PM %** |  |
| **35-CERN** | 2.5 | 1.1 | 220% |  |
| **36-UCPH** | 6.9 | 20.3 | 34% |  |
| **38A-KTH** | 1.2 | 1.5 | 77% |  |
| **38B-LIU** | 5.0 | 7.5 | 67% |  |
| **38C-UMEA** | 13.2 | 12.1 | 109% |  |
| **39-IMCS-UL** | 6.2 | 13.1 | 47% |  |
| **40A-E-ARENA** | 2.1 | 0 | #DIV/0 |  |
| **40B-SINP MSU** | 9.8 | 5.0 | 196% |  |
| **40C-JINR** | 3.9 | 3.3 | 119% |  |
| **40D-RRCKI** | 3.9 | 3.3 | 119% |  |
| **40F-ITEP** | 3.6 | 3.0 | 119% |  |
| **40G-PNPI** | 0 | 3.3 | 0% |  |
| **51A-ICI** | 6.2 | 5.6 | 111% |  |
| **51C-UPB** | 0 | 3.3 | 0% |  |
| **51D-UVDT** | 5.1 | 2.3 | 228% |  |
| **51E-UTC** | 0 | 2.3 | 0% |  |
| **51H-INCAS** | 0 | 0.8 | 0% |  |
| **51J-UB** | 0.4 | 0.5 | 86% |  |
| **Total:** | 1,094.2 | 1,031.9 | 106% |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **WP5-E - WP5 (SA2) - SA2 Provisioning Soft. Infrastr. (EGI)** | | | | |
|  |  |  |  |  |
|  | **PY3** | | |  |
| **Partner** | **Worked PM Funded** | **Committed PM** | **Achieved PM %** |  |
| **1-EGI.EU** | 6.8 | 9.0 | 76% |  |
| **9-CESNET** | 15.6 | 17.8 | 88% |  |
| **10D-JUELICH** | 0.7 | 1.3 | 53% |  |
| **12A-CSIC** | 9.5 | 13.3 | 72% |  |
| **12B-FCTSG** | 7.4 | 4.3 | 175% |  |
| **16A-GRNET** | 8.6 | 14.0 | 62% |  |
| **16B-AUTH** | 0 | 3.3 | 0% |  |
| **16E-IASA** | 6.5 | 3.3 | 200% |  |
| **16F-ICCS** | 6.0 | 3.3 | 186% |  |
| **21A-INFN** | 5.1 | 3.2 | 159% |  |
| **29-LIP** | 17.6 | 17.5 | 100% |  |
| **38B-LIU** | 1.0 | 1.2 | 84% |  |
| **Total:** | 85.0 | 91.3 | 93% |  |
|  |  |  |  |  |
| **WP5-N - WP5 (SA2) - SA2 Provisioning Soft. Infrastr.** | | | | |
|  |  |  |  |  |
|  | **PY3** | | |  |
| **Partner** | **Worked PM Funded** | **Committed PM** | **Achieved PM %** |  |
| **9-CESNET** | 2.2 | 1.5 | 149% |  |
| **10B-KIT-G** | 5.6 | 6.0 | 94% |  |
| **10D-JUELICH** | 3.0 | 3.0 | 100% |  |
| **10H-LUH** | 0.5 | 2.0 | 23% |  |
| **12B-FCTSG** | 3.2 | 3.0 | 107% |  |
| **14A-CNRS** | 2.0 | 5.0 | 41% |  |
| **21A-INFN** | 7.6 | 11.0 | 69% |  |
| **26B-SARA** | 1.0 | 3.0 | 32% |  |
| **32-UI SAV** | 6.5 | 6.0 | 108% |  |
| **34F-OXFORD** | 3.8 | 3.0 | 128% |  |
| **Total:** | 35.4 | 43.5 | 81% |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **WP6-G - WP6 (SA3) - SA3 Sces for Heavy User Comm.** | | | | |
|  |  |  |  |  |
|  | **PY3** | | |  |
| **Partner** | **Worked PM Funded** | **Committed PM** | **Achieved PM %** |  |
| **10G-FRAUNHOFER** | 11.0 | 9.0 | 122% |  |
| **12A-CSIC** | 5.4 | 9.0 | 60% |  |
| **12C-CIEMAT** | 7.4 | 6.0 | 123% |  |
| **13-CSC** | 3.7 | 6.0 | 61% |  |
| **14A-CNRS** | 13.5 | 23.2 | 58% |  |
| **14B-CEA** | 0 | 2.7 | 0% |  |
| **14C-HealthGrid** | 0 | 1.8 | 0% |  |
| **19-TCD** | 2.9 | 5.6 | 51% |  |
| **21A-INFN** | 6.4 | 8.0 | 80% |  |
| **21C-INAF** | 8.8 | 10.0 | 88% |  |
| **21D-UNIPG** | 0.0 | 3.0 | 1% |  |
| **21E-SPACI** | 7.1 | 9.0 | 79% |  |
| **28C-ICBP** | 1.6 | 2.0 | 81% |  |
| **31B-JSI** | 4.8 | 1.0 | 483% |  |
| **32-UI SAV** | 0.8 | 2.7 | 31% |  |
| **35-CERN** | 145.9 | 137.7 | 106% |  |
| **37-EMBL** | 0 | 12.3 | 0% |  |
| **Total:** | 219.3 | 249.0 | 88% |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **WP7-E - WP7 (JRA1) - JRA1 Operational Tools (EGI)** | | | | |
|  |  |  |  |  |
|  | **PY3** | | |  |
| **Partner** | **Worked PM Funded** | **Committed PM** | **Achieved PM %** |  |
| **10B-KIT-G** | 12.3 | 11.8 | 105% |  |
| **12B-FCTSG** | 2.3 | 3.0 | 78% |  |
| **14A-CNRS** | 2.2 | 3.0 | 73% |  |
| **16A-GRNET** | 2.2 | 3.0 | 72% |  |
| **17-SRCE** | 3.5 | 3.0 | 116% |  |
| **21A-INFN** | 6.2 | 6.0 | 103% |  |
| **34A-STFC** | 6.0 | 6.0 | 100% |  |
| **35-CERN** | 3.0 | 3.0 | 100% |  |
| **Total:** | 37.7 | 38.8 | 97% |  |
|  |  |  |  |  |
| **WP7-G - WP7 (JRA1) - JRA1 Operational Tools** | | | | |
|  |  |  |  |  |
|  | **PY3** | | |  |
| **Partner** | **Worked PM Funded** | **Committed PM** | **Achieved PM %** |  |
| **10H-LUH** | 4.8 | 6.0 | 81% |  |
| **12B-FCTSG** | 4.8 | 6.0 | 79% |  |
| **14A-CNRS** | 21.6 | 17.7 | 122% |  |
| **21A-INFN** | 3.9 | 8.7 | 45% |  |
| **34A-STFC** | 6.7 | 9.0 | 74% |  |
| **Total:** | 41.8 | 47.3 | 88% |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **WP8-S - WP8 (SA4) - SA4 Advancing EGI’s Strategic Goals** | | | | |
|  |  |  |  |  |
|  | **PY3** | | |  |
| **Partner** | **Worked PM Funded** | **Committed PM** | **Achieved PM %** |  |
| **1-EGI.EU** | 0 | 0.9 | 0% |  |
| **9-CESNET** | 1.1 | 2.1 | 50% |  |
| **10D-JUELICH** | 0 | 0.6 | 0% |  |
| **12A-CSIC** | 1.0 | 1.3 | 75% |  |
| **12B-FCTSG** | 1.0 | 1.3 | 76% |  |
| **14A-CNRS** | 1.0 | 3.6 | 28% |  |
| **16A-GRNET** | 0.1 | 1.0 | 7% |  |
| **17-SRCE** | 0.4 | 0.7 | 58% |  |
| **18C-MTA SZTAKI** | 0 | 0.4 | 0% |  |
| **21A-INFN** | 0.0 | 0.3 | 8% |  |
| **26B-SARA** | 0.5 | 1.7 | 29% |  |
| **28A-CYFRONET** | 0.1 | 0.8 | 17% |  |
| **34A-STFC** | 2.2 | 1.7 | 127% |  |
| **38A-KTH** | 0.6 | 0.9 | 69% |  |
| **Total:** | 7.9 | 17.3 | 46% |  |

### Overall Financial Status

*Provided by the PO from the partner cost claims. Partners will be asked to provide responses to financial consumption that is significantly above or below plans.*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **PY3** | | | | |
| **Partner** | **Worked PM Funded** | **Committed PM** | **Achieved PM** | **Eligible Cost Estimate** | **Estimated Funding** |
| **1-EGI.EU** | 225.1 | 249.1 | 90% | 1,998,493 | 1,184,493 |
| **2-UPT** | 0 | 18.1 | 0% | 0 | 0 |
| **3-IIAP NAS RA** | 6.4 | 7.2 | 89% | 19,032 | 6,280 |
| **5A-IICT-BAS** | 1.9 | 25.7 | 7% | 11,529 | 3,805 |
| **5B-IOCCP-BAS** | 0.9 | 2.0 | 43% | 5,233 | 1,727 |
| **5C-NIGGG-BAS** | 6.1 | 6.0 | 102% | 37,352 | 12,326 |
| **6-UIIP NASB** | 5.0 | 7.6 | 66% | 19,200 | 6,336 |
| **7A-ETH ZURICH** | 3.9 | 10.0 | 39% | 33,762 | 11,142 |
| **7B-UZH** | 3.8 | 6.8 | 55% | 26,362 | 8,699 |
| **7C-SWITCH** | 4.1 | 11.3 | 37% | 57,261 | 18,896 |
| **8-UCY** | 8.3 | 16.1 | 52% | 71,881 | 23,721 |
| **9-CESNET** | 62.9 | 83.2 | 76% | 414,014 | 167,955 |
| **10B-KIT-G** | 79.5 | 84.7 | 94% | 707,435 | 280,062 |
| **10C-DESY** | 10.2 | 7.8 | 131% | 90,612 | 29,902 |
| **10D-JUELICH** | 10.8 | 13.7 | 79% | 96,489 | 35,977 |
| **10E-BADW** | 7.8 | 12.0 | 65% | 69,444 | 22,916 |
| **10G-FRAUNHOFER** | 18.3 | 16.7 | 110% | 162,707 | 60,520 |
| **10H-LUH** | 12.0 | 13.5 | 89% | 106,740 | 38,235 |
| **11-UNI BL** | 13.6 | 18.9 | 72% | 55,457 | 18,301 |
| **12A-CSIC** | 86.2 | 46.9 | 184% | 674,060 | 265,788 |
| **12B-FCTSG** | 55.2 | 37.2 | 148% | 431,310 | 165,087 |
| **12C-CIEMAT** | 20.5 | 15.5 | 132% | 160,446 | 56,980 |
| **12D-UPVLC** | 21.7 | 17.8 | 122% | 169,704 | 56,002 |
| **12E-IFAE** | 13.4 | 11.5 | 116% | 104,587 | 34,514 |
| **12F-RED.ES** | 24.4 | 13.0 | 188% | 191,138 | 63,075 |
| **12G-UNIZAR-I3A** | 12.1 | 13.0 | 93% | 94,704 | 31,252 |
| **12H-UAB** | 10.5 | 10.0 | 105% | 82,386 | 27,187 |
| **13-CSC** | 33.1 | 36.8 | 90% | 341,188 | 115,329 |
| **14A-CNRS** | 109.7 | 127.7 | 86% | 947,678 | 344,953 |
|  | **PY3** | | | | |
| **Partner** | **Worked PM Funded** | **Committed PM** | **Achieved PM** | **Eligible Cost Estimate** | **Estimated Funding** |
| **14B-CEA** | 35.8 | 23.1 | 155% | 309,594 | 102,166 |
| **14C-HealthGrid ending Dec. 2011** | 0 | 0 | 0% | 0 | 0 |
| **15-GRENA** | 6.0 | 6.4 | 94% | 14,760 | 4,871 |
| **16A-GRNET** | 66.5 | 75.2 | 88% | 514,766 | 201,410 |
| **16B-AUTH** | 0 | 6.5 | 0% | 0 | 0 |
| **16C-CTI** | 0.6 | 3.3 | 17% | 4,275 | 1,411 |
| **16D-FORTH** | 6.9 | 3.3 | 212% | 53,369 | 17,612 |
| **16E-IASA** | 13.0 | 5.9 | 222% | 100,714 | 50,357 |
| **16F-ICCS** | 6.0 | 3.3 | 186% | 46,764 | 23,382 |
| **16G-UI** | 2.1 | 2.0 | 103% | 15,952 | 5,264 |
| **16H-UP** | 2.8 | 2.5 | 112% | 21,701 | 7,161 |
| **17-SRCE** | 37.7 | 31.5 | 120% | 187,200 | 78,051 |
| **18A-MTA KFKI** | 17.9 | 18.6 | 97% | 70,427 | 23,241 |
| **18B-BME** | 12.5 | 9.3 | 134% | 69,197 | 22,835 |
| **18C-MTA SZTAKI** | 7.5 | 8.8 | 85% | 45,540 | 15,028 |
| **19-TCD ending Dec. 2012** | 13.0 | 20.2 | 64% | 126,256 | 43,628 |
| **20-IUCC** | 13.4 | 9.3 | 145% | 173,427 | 57,231 |
| **21A-INFN** | 188.4 | 168.9 | 112% | 1,231,225 | 445,137 |
| **21B-GARR** | 2.4 | 6.0 | 41% | 17,960 | 8,264 |
| **21C-INAF** | 8.8 | 10.0 | 88% | 65,052 | 26,021 |
| **21D-UNIPG** | 0.0 | 3.0 | 1% | 234 | 94 |
| **21E-SPACI** | 7.1 | 9.0 | 79% | 52,182 | 20,873 |
| **22-VU** | 15.0 | 16.9 | 88% | 124,398 | 41,051 |
| **23-RENAM** | 6.8 | 5.7 | 119% | 20,421 | 6,739 |
| **24-UOM** | 11.5 | 17.8 | 65% | 27,448 | 9,058 |
| **25-UKIM** | 19.7 | 17.8 | 111% | 78,771 | 25,995 |
| **26A-FOM** | 25.6 | 14.3 | 179% | 261,658 | 96,165 |
| **26B-SARA** | 29.9 | 42.9 | 70% | 305,980 | 111,492 |
| **27A-SIGMA** | 0 | 14.1 | 0% | 0 | 0 |
| **27B-UIO** | 10.6 | 9.8 | 108% | 105,311 | 34,753 |
| **27C-URA** | 8.0 | 9.6 | 83% | 79,207 | 26,138 |
| **28A-CYFRONET** | 42.7 | 41.1 | 104% | 365,359 | 126,470 |
| **28B-UWAR** | 13.9 | 7.2 | 194% | 119,394 | 39,400 |
|  | **PY3** | | | | |
| **Partner** | **Worked PM Funded** | **Committed PM** | **Achieved PM** | **Eligible Cost Estimate** | **Estimated Funding** |
| **28C-ICBP** | 11.5 | 10.4 | 111% | 98,582 | 33,503 |
| **28D-POLITECHNIKA WROCLAWSKA** | 8.4 | 4.0 | 211% | 71,685 | 23,656 |
| **29-LIP** | 46.4 | 65.1 | 71% | 254,432 | 109,417 |
| **30-IPB** | 36.6 | 36.9 | 99% | 199,601 | 65,868 |
| **31-ARNES** | 14.7 | 19.9 | 74% | 88,369 | 29,162 |
| **31B-JSI** | 18.9 | 18.4 | 103% | 113,150 | 39,365 |
| **32-UI SAV** | 40.8 | 46.7 | 87% | 326,037 | 108,060 |
| **33-TUBITAK ULAKBIM** | 43.3 | 46.0 | 94% | 304,530 | 100,495 |
| **34A-STFC** | 91.1 | 86.6 | 105% | 935,954 | 387,769 |
| **34C-UG** | 15.1 | 15.8 | 96% | 155,490 | 51,312 |
| **34D-IMPERIAL** | 20.6 | 16.1 | 128% | 211,357 | 69,748 |
| **34E-MANCHESTER** | 19.1 | 16.1 | 119% | 196,661 | 64,898 |
| **34F-OXFORD** | 3.8 | 3.0 | 128% | 39,343 | 12,983 |
| **35-CERN** | 166.1 | 158.7 | 105% | 2,391,241 | 1,095,220 |
| **36-UCPH** | 10.8 | 32.3 | 33% | 119,257 | 39,355 |
| **37-EMBL** | 0 | 12.3 | 0% | 0 | 0 |
| **38-VR-SNIC** | 0 | 0.7 | 0% | 0 | 0 |
| **38A-KTH** | 5.9 | 10.7 | 55% | 67,454 | 25,107 |
| **38B-LIU** | 9.3 | 11.7 | 79% | 105,926 | 43,144 |
| **38C-UMEA** | 13.2 | 12.1 | 109% | 151,347 | 49,944 |
| **39-IMCS-UL** | 6.6 | 21.4 | 31% | 51,408 | 16,965 |
| **40A-E-ARENA** | 6.2 | 5.2 | 121% | 24,669 | 8,141 |
| **40B-SINP MSU** | 9.8 | 5.0 | 196% | 38,760 | 12,791 |
| **40C-JINR** | 3.9 | 3.3 | 119% | 15,277 | 5,041 |
| **40D-RRCKI** | 3.9 | 3.3 | 119% | 15,274 | 5,041 |
| **40F-ITEP** | 3.6 | 3.0 | 119% | 14,101 | 4,653 |
| **40G-PNPI** | 0 | 3.3 | 0% | 0 | 0 |
| **51A-ICI** | 6.2 | 5.6 | 111% | 37,963 | 12,528 |
| **51C-UPB** | 0 | 3.3 | 0% | 0 | 0 |
| **51D-UVDT** | 5.1 | 2.3 | 228% | 31,148 | 10,279 |
| **51E-UTC** | 0 | 2.3 | 0% | 0 | 0 |
| **51H-INCAS** | 0 | 0.8 | 0% | 0 | 0 |
|  | **PY3** | | | | |
| **Partner** | **Worked PM Funded** | **Committed PM** | **Achieved PM** | **Eligible Cost Estimate** | **Estimated Funding** |
| **51J-UB** | 0.4 | 0.5 | 86% | 2,606 | 860 |
| **Total:** | 2,120.9 | 2,246.9 | 94% | 17,850,369 | 7,188,061 |

### Issues and mitigation

### Deviations from linear plan

The following partners are deviating from the linear plan committed to the project. The deviation will be monitored during the subsequent quarter when it occurs again. On the other hand, it is not possible to adjust the duration of a task in PPT to the start date of a partner or a member who is reporting within this task. Thus some deviations due to this cannot be corrected but noted.

# Certificates

*<<Provided by the PO >>*

# Annex A1: Dissemination and Use

## Main Project and Activity Meetings

| **Date** | **Location** | **Title** | **Participants** | **Outcome (Short report & Indico URL)** |
| --- | --- | --- | --- | --- |
| 27-28/6  2012 | Amsterdam NL | 2nd EGI-Inspire Review | 80 | http://indico.egi.eu/indico/conferenceDisplay.py?confId=1046 |
| 29/11/  2012 | EVO | GGUS Advisory board meeting | Representative from user communities, NGIs, EGI, technology providers | Further development of GGUS system.  <https://indico.egi.eu/indico/conferenceDisplay.py?confId=1259> |
| 29-30/  01/2013 | Amsterdam,   Netherlands | Evolving EGI Workshop | 78 | This workshop offered an opportunity for key members across the EGI community, both technical and management, to come together and discuss specific topics and new directions on how EGI is evolving in the short- to medium-term. Topics addressed were: EGI pay-for-use, federated resource allocation, scientific publications repository, EGI.eu service portfolio, cost and priorities. <https://indico.egi.eu/indico/conferenceDisplay.py?confId=1252> |

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

## Conferences/Workshops Organised

| **Date** | **Location** | | | **Title** | **Participants** | **Outcome (Short report & Indico URL)** | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 07-09/  5/ 2012 | Karlsruhe, Germany | | | The 25th EUGridPMA and IGTF All Hands meeting | Members of the European Grid Policy Management Authority and members of the International Grid Trust Federation | Report and discussion on SHA-1 Risk assessment; updating of the Attribute Authority Operations guidelines; and so on. <https://indico.scc.kit.edu/indico/conferenceDisplay.py?ovw=True&confId=11> | |
| 10- 11/  5/2012 | Karlsruhe, Germany | | | Security for Collaborating Infrastructures (SCI) meeting | security staff of EGI, OSG, PRACE, WLCG, and XSEDE | D. Kelsey/STFC organised and chaired the meeting. Produced a good draft of the document describing the requirements and best practices. <http://indico.cern.ch/conferenceDisplay.py?confId=183229>  Discussion of the current draft text (V6) of the SCI document; creation of a complete first draft of the SCI document. <http://indico.scc.kit.edu/indico/conferenceDisplay.py?confId=12> | |
| 16/5/  2012 | Madrid, Spain | | | LDAP, Security Policies | 30 | LIP-LISBON - <http://www.e-ciencia.es/FichaEvento.jsp?externos=null&IDEvento=26> | |
| 16/5  2012 | Madrid, Spain | | | Proyecto IMED: desarrollo y resultados. Explotación de e-Infraestructuras para la investigación en el diagnóstico de cáncer de mama | 2 | CETA-CIEMAT - Presentation: http://www.e-ciencia.es/indico//contributionDisplay.py?contribId=10&sessionId=4&confId=16 , <http://www.e-ciencia.es/FichaEvento.jsp?IDEvento=26> | |
| 17-18/  5/2012 | Technical University of Moldova | | | Annual RENAM Users’ Conference | Representatives from research institutions of the Academy of Sciences, universities of Moldova, students | Several presentations dedicated to the National eInfrastructure developments and new services for R&E community were presented. Special emphasize was done in the report presented by Mr. Nicolai Iliuha to the current state and perspectives of the regional HPC infrastructure development and mode of access to HPC resources for Moldavian researches. | |
| 20-22/  5/2012 | Reykjavik, Iceland | | | TERENA Networking Conference 2012 & REFEDS workshop |  | D. Kelsey/STFC was the Chair of the Programme Committee and also presented on eScience requirements for Federated Identity Management at the REFEDS workshop. https://tnc2012.terena.org/ and <https://refeds.org/meetings/may12/index.html> | |
| 21-23/  05/2012 | Amsterdam | | | HealthGrid conference | 50 | <http://amsterdam2012.healthgrid.org> | |
| 28/05/  2012 | Institute of Physics Belgrade, Serbia | | | Grid Training for Power Users | 19 | The Scientific Computing Laboratory of the Institute of Physics Belgrade organized an EGI training event for the AEGIS user community held on 28 May 2012. The goal of this one-day training event was to introduce utilization of the Grid resources to AEGIS users through the series of hands-on sessions. It included practical guides for submitting simple jobs, data manipulation, interaction with file catalogs on Grid and submitting advanced jobs. Participants also had an opportunity to learn about the mechanism of authorization and authentication of Grid users, and gLite services architecture. More information are available at: <http://www.scl.rs/news/787> | |
| 30/5/  2012 | Institute of Mathematics and Computer Science of the Academy of Sciences of Moldova | | | “Access to regional High Performance Computing (HPC) resources” | Research personnel and specialists from scientific subdivisions of the Academy of Sciences of Moldova and universities of Moldova | Institute of Mathematics and Computer Science of the Academy of Sciences of Moldova in cooperation with RENAM Association organize the first session of the cycle of technical-scientific workshops, training events and courses for research personnel and specialists from Moldova devoted to rising awareness and skills in HPC, Grid and Cloud computing infrastructures utilization. The program of the first session included two presentations. Dr. P. Bogatencov made the presentation “International and regional projects for computing technologies development”. Mr. Nicolai Iliuha made the presentation entitled “Access to regional High Performance Computing (HPC) resources” <http://www.math.md/en/news/2012/11073/> | |
| several days in may | Amsterdam | | | Turorials on Grid and Cloud | 10 |  | |
| 1/6/  2012 | VCONF | | | IPv6 testing activities | Barbara Krasovec (ARNES); Tomas Kouba (FZU); Mario Reale (GARR) | Plans for testing og gLite and ARC <https://wiki.egi.eu/w/images/c/c4/EGI_IPv6_VCONF_-_1_-_June_-2012.pdf> | |
| 6/6/  2012 | VCONF | | | HINTS-pS-MDM possible integration | Olivier Lenormand, Domenico Vicinanza, Gilian Gambini, Mario Reale, Roland Karch, Susanne Naegele-Jackson, Buelent Arslan, Christian Naensch, Hakan Calim | A first general discussion on possible integration between the deployment modules of HINTS and PerfSONAR MDM took place. Decision taken to organize further meeting to deepen technical details <https://wiki.egi.eu/w/images/1/15/HINTS-PerfSONAR-VCONF-v1.0-1.pdf> | |
| 6-7/  6/2012 | Valencia, Spain | | | Master course on LDAP | 7 | LIP-LISBON - <http://www.lip.pt/computing/index.php?L=n&O=5> | |
| 18-26/ 6/2012 | México | | | Joint CHAIN/GISELA/EPIKH School for Application Porting to Science | 1 | CETA-CIEMAT - APPLICATION PORTING section, <http://agenda.ct.infn.it/conferenceOtherViews.py?view=standard&confId=783> | |
| 24-26/  6/2012 | Prague | | | Auger Software Tutorial | 36 | <https://indico.nucleares.unam.mx/conferenceDisplay.py?confId=641> | |
|  | Lille | | | France Grilles operations and cloud workshop | 26 | <https://indico.in2p3.fr/conferenceDisplay.py?confId=6447> | |
| 27/06/  2012 | Lyon | | | Security Workshop | 21 | <https://indico.in2p3.fr/conferenceDisplay.py?confId=6928> | |
| 27-29/  6/2012 | México | | | Developing a portlet for the GISELA Science Gateway to process hyperspectral images | 1 | CETA-CIEMAT - <http://indico.ceta-ciemat.es//subContributionDisplay.py?subContId=9&contribId=17&sessionId=2&confId=26> | |
| 27-29/  6/2012 | México | | | Clarabox: A platform to manage easily Grid storage | 1 | CETA-CIEMAT - <http://indico.ceta-ciemat.es//subContributionDisplay.py?subContId=3&contribId=13&sessionId=1&confId=26> | |
| 27-29/  6/2012 | México | | | The IMED project: first results - Exploiting e-infrastructures for research in breast cancer CAD methods | 1 | CETA-CIEMAT - <http://indico.ceta-ciemat.es//subContributionDisplay.py?subContId=3&contribId=6&sessionId=0&confId=26> | |
| 8-12/  8/2012 | | Abingdon | Using e-Infrastructures for Research | | 29 | [Summer School: http://www.ngs.ac.uk/communities/using-e-infrastructures-for-research-summer-school-2012](http://www.ngs.ac.uk/communities/using-e-infrastructures-for-research-summer-school-2012) |
| 20/8 -12/10 2012 | | University of Eastern  Finland.  University of  Jyväskylä.  University of  Oulu.  Tampere  University of  Technology.   |  | | --- | | Aalto University  University of Helsinki  Viikki University of  Helsinki  Kumpula campus | |  | | 119 | FGI national dissemination Tour |
| 27-31/  8/2012 | | Karlsruhe, Germany | GridKa School 2012 | | 140 | Training in Grid, Cloud, and virtualization |
| 5-6/9  /2012 | | Karlsruhe, Germany | Long Term Sustainability of Operational and Security Tools F2F | |  | <https://indico.egi.eu/indico/conferenceDisplay.py?confId=1132> |
| 12/09  /2012 | | Prague | Open Cloud Initiative | |  | <http://www.meetup.com/zhgeeks/events/70109912/> |
| 17-21  9/2012 | | Prague | EGI.eu Technical Forum | | 500 | LS VRC building and management meetings |
| 21-23/  09/2012 | | Lyon | Security for Collaborating Infrastructure | | 50 | <http://indico.cern.ch/conferenceDisplay.py?confId=207432> David Kelsey organized and chaired the meeting. Produced version 1 of the document describing the requirements and best practices |
| 23-29/  9/2012 | | Coral Bay Hotel, Paphos | Theory and Practice of Digital Libraries Conference (TPDL 2012) | | 125 | [Theory and Practice of Digital Libraries Conference (TPDL 2012), organised by the Cyprus University of Technology (CUT) in collaboration with the University of Cyprus and the City University London http://www.tpdl2012.org/](http://www.tpdl2012.org/) |
| 26/09/  2012 | | Amsterdam | BiGGrid and Beyond workshop | | 50 | <http://www.biggrid.nl/big-grid-and-beyond-26-september-2012/> |
| 1-3/10  /2012 | | Bologna | V site managers school | | 20 | [web site event (in italian)](https://agenda.italiangrid.it/conferenceDisplay.py?confId=785) |
| 1-3/10  /2012 | | Paris, France | Journées scientifiques mésocentres et France Grilles | | 371  147 registered and 224 unique views through webcast during the event | <http://mesogrilles2012.sciencesconf.org/>  12 oral scientific presentations, 10 posters, 3  demonstrations, all related to grid or HPC scientific users in France presentation of France Grilles as French NGI. |
| 4/10/  2012 | | Amsterdam | NL-HUG | | 60 | <http://www.nlhug.org/events/83737952/> |
| 05/10  2012 | | Valencia, Spain | Mini workshop SuperComputing + Grid | | 5 | IFIC: Programme available at <http://ivicfa.uv.es/wp-content/uploads/2012/10/Programme_oct-5.pdf> |
| 23-24/  10/2012 | | Karlsruhe, Germany | Workshop of NGI-DE general operations “Grid in Germany” | | NGI-DE grid sites | Prepare common and sustainable Operations Procedures for NGI-DE (EGI compatible) valid for 2013 and beyond. |
| 25/10/  2012 | | EVO | GGUS Advisory Board | | 10 | <https://indico.egi.eu/indico/conferenceDisplay.py?confId=1215> |
| 07/11  2012 | | Chisinau, Moldova, State University | Problems of high-performance computing and modern ICT technologies | | Representatives from research institutions of the Academy of Sciences, universities of Moldova, students | Two presentations dedicated to the National e‑Infrastructure developments. “National, regional and European Grid infrastructures; participation of Moldova in EGI-Inspire project” Nicolai Iliuha, RENAM. “Using parallel cluster at Faculty of Mathematics and Computer Science, MSU, in the process of training and research: achievements and perspectives”, Boris Hancu, MSU | |
| 7-9/  11/2012 | | Lisbon, Portugal | IBERGRID 2012, 6th Iberian Grid Infrastructure Conference | | 50 | [The 2012 IBERGRID conference was organized by LIP in Lisbon, Portugal. The main topics of IBERGRID 2012 Conference were: Infrastructures, Services and Operations, Innovation in the provision of IT services: virtualization and cloud computing, Data Management and Storage Systems, IT Management and Green Computing, EGI and WLCG Grid Computing Activities, Digital Repositories and Preservation,Community Oriented Services, User and Applications, Technology Transfer to Society. This is the annual meeting gathering IBERGRID operators and user communities to reassess the past activities, debate problems and define joint strategies. Conference URL](http://www.ibergrid.eu/2012)  <http://www.ibergrid.eu/2012/> | |
| 19 /11/  2012 | | Bern | SDCD 2012: Supporting Science with Cloud Computing | | 90 | <http://www.swing-grid.ch/event/1057179-sdcd-2012-supporting-science-with-cloud> | |
| 23/11/  2012 | | School of Electrical Engineering, University of Belgrade | EGI Hands-On Training for AEGIS Site Administrators | | 8 | Scientific Computing Laboratory of the Institute of Physics Belgrade organized training event for AEGIS Grid site administrators that was held More information are available at: http://www.scl.rs/news/833 on 23 November 2012 as a part of NA3 activity of EGI-InSPIRE project. Training was held at the School of Electrical Engineering of the University of Belgrade. The goal of this training was to introduce administrators of AEGIS sites with installation of services based on the latest versions of Grid middleware as well as with the EGI-InSPIRE monitoring and operations procedures. More information are available at: <http://www.scl.rs/news/833> | |
| 29-30/  11/2012 | | Rome (Italy) | WORKSHOP GARR - CALCOLO E STORAGE DISTRIBUITO | | 8 | [National workshop about Grid and Cloud. Agenda (in Italian):](http://www.garr.it/a/workshop-garr-calcolo-e-storage-distribuito/programma)  <http://www.garr.it/a/workshop-garr-calcolo-e-storage-distribuito/programma> | |
| 29-30/  11/2012 | | Bordeaux | FG Operations workshop and FG Cloud workshop | | 50 | <https://indico.in2p3.fr/conferenceTimeTable.py?confId=6900#20121129>  <https://indico.in2p3.fr/conferenceTimeTable.py?confId=6900#20121130> | |
| 11-12/  12/2012 | | Chisinau Moldova, Academy of Sciences | (Workshop aimed at improving e-Infrastructures in Eastern Partnership countries | | Participants from 16 countries: Policy makers, ministries representatives, head of Academies of Sciences. Prominent scientists. Coordinators and members of European Infrastructures development projects. NRENs managers and networking | [The stated aims of this important event were: to improve awareness of the importance of computer networks and their impact on a country’s development; possible greater integration of Eastern partnership countries with the pan-European GÉANT network; a sustainable future for research and education networks. The event was organised by the GÉANT Development Support Activity and the Academy of Sciences of Moldova under the auspices of the European Union’s Eastern Partnership Platform 4. This aims to improve e-Infrastructures in the partner countries of Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine by providing an opportunity for stakeholders to meet with policy makers in order to raise awareness of the importance of computer networks and services. http://www.renam.md/index.php?option=com\_content&task=view&id=158&Itemid=1](http://www.renam.md/index.php?option=com_content&task=view&id=158&Itemid=1) | |
| 17/12/  2012 | | Tallink Hotel, Riga | Security and Transparency | | Edgars Znots | Presentation on use of open-source software in HPC and grid infrastructures.  Conference programme: <http://lata.org.lv/?page_id=865>  Slides: [http://lata.org.lv/wp- ontent/conf/Drosiba/LATA\_APP\_Skaitlosana\_EdgarsZnots.pdf](http://lata.org.lv/wp-%20ontent/conf/Drosiba/LATA_APP_Skaitlosana_EdgarsZnots.pdf) | |
| 28/12/  2012 | | Chisinau, Moldova, Information Society Development Institute | Workshop from cycle of seminars/trainings devoted to the problems of high-performance computing and modern ICT technologies | | Representatives from research institutions of the Academy of Sciences, universities of Moldova, participants of eGoverment Program. | Discussions on the implementation of centralized identity management system showed interest not only for members of the academic community, but also representative of the Centre for Electronic Governance, who shared the experience of his team on the implementation of the authentication system.  Presentations: - Premise pentru implementarea sistemului centralizat de management al identităţii în cadrul RŞEN Raportor: Valentin Pocotilenco (RENAM) - Starea actuală privind implementarea şi utilizarea serviciilor în comunitatea ştiinţifico-educativă Rapoarte: RENAM, IDSI <http://idsi.md/node/1040>, <http://idsi.md/node/1041>, <http://idsi.md/node/1042> | |
| Dec 2012/  Jan 2013 | | Faculty of Electrical Engineering Banja Luka | Introduction to grid computing and parallel programming | | 35 | The lectures were given for 35 students of 3rd year of CS/CE course of ETFBL | |
| Dec-2012 to Jan-13 | | Department of computer Science, University of Cyprus | Interacting with Cloud/Grid infrastructures using the Eclipse platform | | 10 | [The objective of these events is to provide an in-depth coverage of the Eclipse platform and its capabilities to prospective Cloud/Grid application and services developers. http://cygrid.org.cy/events.php](http://cygrid.org.cy/events.php) | |

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| 11-12/  2/2013 | NBI,Copenhagen,Denmark | NDGF All-Hands | 24 | <https://indico.nbi.ku.dk/conferenceDisplay.py?ovw=True&confId=534> |
| 26/02/  2013 | UNIBE | ARC Tutorial | ~20 | - |
| 5- 8/3  /2013 | CSC | CSC Winter School in Bioinformatics 2013 | 23 | Grid training included |
| 06/03/  2013 | Chisinau, Centrul Naţional ştiinţifico-practic de Medicină Urgentă; | Workshop from cycle of seminars / trainings devoted to the problems of high-performance computing and modern ICT technologies: ” HPC and Grid Computing” | Representatives from research institutions of the Academy of Sciences, universities of Moldova, staff of National Scientific and Practical Center for Emergency Medicine | Three presentations about using Grid and HPC technologies in medicine and about Grid and HPC Projects: Alexandr Golubev, Leading Specialist of RENAM and IMSP CNŞPMU "Using GRID and HPC resources in Medicine", “DICOM Network solutions”; Nicolai Iliuha, Researcher, "IMI AŞM "Access to regional high performance computing resources" |
| 12-13/  3/2013 | UZH | Python training organized at UZH. | 15 | <http://www.gc3.uzh.ch/teaching/2013/python-march/> |
| 17/3/  2013 | Taipei | Security Workshop at ISGC2013 | 1 | [http://event.twgrid.org/isgc2013/SecurityWorkshop.html Co-organised training event with 20 participants in security forensics.](http://event.twgrid.org/isgc2013/SecurityWorkshop.html) |
| 21/03/  2013 | Lugano (CSCS) | CHIPP-CSCS/NGI-CH | ~20 | - |
| 8-12/ 4/2013 | Manchester | EGI Community Forum | 8 | 8-12 April |
| 24/4/  2013 | Chisunau, Institute of Mathematics and Computer Science of the Academy of Sciences of Moldova | Workshop from cycle of seminars / trainings devoted to the problems of high-performance computing and modern ICT technologies: "Projects to development and use of HPC and Grid infrastructure in Moldova" | Representatives from research institutions of the Academy of Sciences, universities of Moldova, Representatives from research institutions of the Academy of Sciences and universities of Moldova, students | Three presentations about Grid and HPC Projects and projects of development HPC and Grid infrastructures in Moldova: Nicolai Iliuha, Researcher, "Projects to development and use of HPC and Grid infrastructure in Moldova"; Nicolae Secrieru, dr., conf. univ., departamentul TI, UTM, "High Performance Computing research projects at the Technical University of Moldova"; Boris Hancu, dr., conf. univ., departamentul Matematica Aplicata, USM, "Soft issues for parallel programming models" |

## Conferences/Workshops Attended

| **Date** | **Location** | **Title** | **Participants** | **Outcome (Short report & Document Server URL to presentations made)** | | |
| --- | --- | --- | --- | --- | --- | --- |
| 7-9 /  5/2012 | KIT, Karlsruhe, DE | EU Grid PMA | 32 | D. Kelsey/STFC attended this IGTF meeting to represent interests of EGI and WLCG as a Relying Party and gave presentations on several topics  <http://www.eugridpma.org/meetings/2012->  05/<https://agenda.nikhef.nl/conferenceTimeTable.py?confId=1890> 1 NGI\_IE ops member attended  <http://www.eugridpma.org> | | |
| 9-11/  5/2012 | Gothenburg (Sweden) | BioVeL MS6 workshop | 1 | Presenting Web Service solution for exploiting IGI/EGI resource using Taverna, <http://www.biovel.eu/index.php?option=com_content&view=article&id=43:ms6->  workshop&catid=22: biovel-meetings&Itemid=122 | | |
| 10-11/  /5/2012 | Amsterdam, Netherlands | 36th TF-CSIRT meeting | 1 | <http://www.terena.org/activities/tf-csirt/meeting36/> | | |
| 10/5/ 2012 | Brussels, BE | Removing barriers to Cloud Computing in Europe | around 100 |  | | |
| 13-14/  5/2012 | Amsterdam, Netherlands | Project Managment Board of EGI-InSpire project | 1 |  | | |
| 14-17/  5/2012 | Naples (Italy) | Workshop INFN GARR 2012 | Giacinto Donvito, Marco Bencivenni, Luciano Gaido | Talks about: Report TEG WLCG data mgmt, Web Interfaces for distribute compute and storage resources, Cloud experiences in Italian communities - agenda (in italian): <http://agenda.infn.it/conferenceOtherViews.py?view=standard&confId=4801> | | |
| 18/5/  2012 | Belgrade, Serbia | Fifth Belgrade International Open Access Conference 2012 | 75 | SCL's Antun Balaz, Dusan Vudragovic and Vladimir Slavnic participated in the Fifth Belgrade International Open Access Conference 2012, which was held on 18-19 May 2012. During the agINFRA workshop, Antun Balaz gave an overview of High Performance Computing and Grid eInfrastructure available for agriculture. More information are available at: <http://www.scl.rs/news/786> | | |
| 19/05  /2012 | New York | WLCG Workshop | 2 | - | | |
| 20/5  /2012 | Reykjavic | TERENA Neetworking Conference 2012 & REFEDS workshop | 1 | - | | |
| 21/05  /2012 | New York | CHEP Conference | 3 | - | | |
| 22-23/  5/2012 | Amsterdam | N4U plenary meeting | 30 | Discussion on EGI infrastructure usage for the N4U community. | | |
| 30/5-1/6/2012 | Uppsala, SE | NorduGrid 2012 conference | 4 | Defined way forward for establishing operational solutions still missing from ARC middleware for: APEL accounting (affects CSCS, Unibe, Unige), information system, full integration with ATLAS operations.  <http://indico.hep.lu.se/conferenceDisplay.py?confId=1185> | | |
| 30/5/  2012 | Brussels | H2020 Workshop on human Resources for e-Infrastructure | 1 | <http://cordis.europa.eu/fp7/ict/e-infrastructure/human-skills-workshop_en.html> | | |
| 2-6/  7/2012 | Madrid, Spain | Workshop on Fusion Distributed Applications (WFDA 2012), Intl. Conf. High Performance Computing and Simulation (HPCS 2012) | 1 | <http://hpcs2012.cisedu.info/2-conference/workshops/workshop-21-wfda> | | |
| 4-6/  6/2012 | Omaha, Nebraska | ICCS 2012, International Conference on Computational Science | 1 | <http://www.iccs-meeting.org/> | | |
| 5-6/  /2012 | Omaha, Nebraska | ICCS 2012, International Conference on Computational Science |  | Application Scenarios  Using Serpens Suite  for Kepler Marcin Płóciennik, Michał Owsiak, Tomasz Zok, Bartek Palak, Antonio Gómez- Iglesias, Francisco Castejón, Marcos Lopez-Caniego, Isabel Campos Plasencia, Alessandro Costantini, Dimitriy Yadykin, Pär Strand | | |
| 5-7/6  /2012 | Sardinia | SHIWA plenary meeting | 20 | Demonstration of the user of SHIWA workflow management platform interfaced to the EGI infrastructure. | | |
| 7th June | Barcelona | DIRAC tutorial | 1 | BIFI - <http://icc.ub.edu/gr_DIRAC.php> | | |
| 11-12/  6/ 2012 | Copenhagen, DK | e-IRG Workshop | 79 | <http://www.e-irg.eu/e-irg-events/workshop-11-12-june-copenhagen/participants.html> | | |
| 13/06/  2012 | CERN | WLCG GDB | 1 | - | | |
| 14-15/  6/2012 | CERN | HEPiX IPv6 | Mario Reale | Decision to integrate IPv6 testbeds servers and resources of HEPiX, EGI and EMI and to support 3 VOs. | | |
| 17/6  /2012 | Delft, NL | OGF35 | 70? | S. Andreozzi/EGI.eu attended the GLUE workshop S. Newhouse/EGI.eu attended the event  D. Kelsey/STFC participated in all security related activitites <http://www.ogf.org/OGF35/> | | |
| 18/6/  2012 | Tbilisi,Georgia | Workshop at EU Delegation | 25 | EU projects in which Georgian researchers are participating were discussed. R. Kvatadze made presentation "Participation of GRENA in European Commission projects". | | |
| 18- 20  /6/2012 | Hamburg, Germany | International Supercomputing Conference 2012 | 1 | <http://www.isc-events.com/isc12/>  Participation in the talks of the conference. | | |
| 21-22/  6/ 2012 | Nijmegen, NL | Federated IdM workshop |  | D. Kelsey/STFC attended the meeting. Good progress on requirements for federated IdM in eScience and also presented on HEP needs  <http://www.clarin.eu/events/3501> | | |
| 25-27/  6/2012 | Liverpool, UK | 14th IEEE International Conference on High Performance Computing and Communications (HPCC-2012) | 2 | CIEMAT-LCG2 - Evaluation of the Broadcast Operation in Kademlia | | |
| 25-29/ 6/2012 | Garching near Munich, Germany | ISPDC2012 | LRZ staff | Participation in the talks of the conference | | |
| 25-29/  6/2012 | Cetraro, IT | Int. Adv. Res. Workshop on High Performance Computing, Grid and Clouds | Sergio Maffioletti | The main focus was on how to prepare providers and community support for next generation large scale data analysis, with an emphasis on cloud computing. | | |
| 27-28/  6/2012 | Tbilisi, Georgia | EC funded GEO-RECAP project networking and IDEALIST project twinning meetings | 35 | Results obtained in the framework of the projects and possibilities of future cooperation were discussed. Representatives from Georgia, Ukraine, Azerbaijan, France and Sweden attended the meetings.  Agenda of the meetings can be found at:  <http://indico.ipb.ac.rs/conferenceDisplay.py?confId=290> R. Kvatadze made presentation: E-infrastructure in South Caucasus Countries for Science | | |
| 27-29/  6/2012 | México | Joint CHAIN/GISELA/EPIKH School for Application Porting to Science | 1 | CETA-CIEMAT - <http://indico.ceta-ciemat.es//conferenceDisplay.py?confId=26> | | |
| Madrid, Spain | 6ª Reunión Plenaria de la Red Española de e-Ciencia |  | 5 | BIFI - <http://www.e-ciencia.es/FichaEvento.jsp?externos=null&IDEvento=26> CETA-CIEMAT - <http://www.e-ciencia.es/FichaEvento.jsp?IDEvento=26> | | |
| 3-4/7  2012 | Samos (Greece) | 2nd e-Fiscal Workshop | 2 | IFAE - Attendance to the workshop of the e-fiscal EU project. Collaborating in the study of the cost of research e-infrastructures carried out by this project. <http://www.efiscal.eu/2nd-workshop> | | |
| 3-4/7  2012 | México | Joint CHAIN/GISELA/EPIKH School for Application Porting to Science | 1 | CETA-CIEMAT - <http://indico.ceta-ciemat.es//conferenceDisplay.py?confId=26> | | |
| 2-6/7  /2012 | Budapest, Hungary | SCI-BUS, SHIWA, EDGI joint Summer School on Workflows and Gateways for Grids and Clouds | 1 | IFAE - Attendance to workshop to learn and evaluate workflow engines potentially pluggable to the a generic Grid framework such as DIRAC. <http://www.lpds.sztaki.hu/summerschool2012/?m=0> | | |
| 4-6/7  2012 | Palermo (Italy) | The Sixth International Conference on Complex, Intelligent, and Software Intensive Systems (CISIS-2012) | Vania Boccia | Talk about "Modelling the Behaviour of an Adaptive Scheduling Controller", <http://voyager.ce.fit.ac.jp/conf/cisis/2012/> | | |
| 5/7/2012 | Madrid | Workshop on Fusion Distributed Applications (WFDA 2012), Intl. Conf. High Performance Computing and Simulation (HPCS 2012) |  | Workflows Orchestration In Distributed Computing Infrastructures"  Marcin Płociennik , Tomasz Zok , Antonio Gomez-Iglesias, Francisco Castejon, Andres Bustos, Manuel Aurelio Rodrıguez-Pascual, and Jose Luis Velasco | | |
| 12/7/ 2012 | Brussels, BE | AAA Study Workshop |  | D. Kelsey/STFC presented work of the Federated IdM for Research activity and sat on panel.<https://confluence.terena.org/display/aaastudy/> AAA+Study+Workshop | | |
| 12-13/7  2012 | NIKHEF, Science Park, Amsterdam Netherlands | EGI Federated Cloud Task Force user Plugfest | 3 | CESGA - EGI organised a two day workshop that brought together the members of the Federated Cloud Task Force together with representatives from user communities who are interested in adopting EGI's Cloud Infrastructure platform. <https://indico.egi.eu/indico/conferenceDisplay.py?confId=1102> <http://www.egi.eu> | | |
| 13/07/  2012 | Petnica Science Center, Serbia | Trans European School of High Energy Physics | 40 | SCL members participated in „The Trans-European School of High Energy Physics“, a summer school which lasted from July 13th to July 20th 2012 in Petnica Science Center, Serbia. Dr Aleksandar Belic, the director of the Institute of Physics Belgrade, gave an invited talk to all lecturers and participiants of the school. Dr Antun Balaz was one of the organizers and lecturers. The seminar "Grid and High Performance Computing in Physics" focused on the use of Grid computing as a crucial tool in modern High Energy Physics. Milica Cvetkovic was a participant of the school. | | |
| 16-20/  7/2012 | Dubna | GRID 2012 | 2 | <http://grid2012.jinr.ru/programme.php>  We participated with a talk "Prague TIER-2 operations" | | |
| New York, USA | Computing in High Energy Physics 2012 |  | 2 | IFAE - Presentations made on HTC services at PIC (<http://indico.cern.ch/contributionDisplay.py?contribId=277&sessionId=5&confId=149557>) and extensions to the DIRAC Grid framework for running jobs on VMs  (<http://indico.cern.ch/contributionDisplay.py?contribId=164&sessionId=4&confId=149557>) | | |
| 1-3/8/  2012 | Macugnaga, Italy | N4U plenary meeting | 30 | Discussion on EGI infrastructure usage for the N4U community | |
| 5/8/  2012 | Hamburg DESY | EMI AHM | 2 | - | |
| 12/08/  2012 | Karlsruhe (DE) | GridKa school | 2 | Various topics of interest for Grid site administrators, community networking | |
| 23-26 /  8/2012 | Brussels, Belgium | EuroSciPy | 1 |  | |
| 27-31/  8/2012 | Karlsruhe | GridKa School 2012 | 2 | <http://indico.scc.kit.edu/indico/conferenceDisplay.py?ovw=True&confId=6> | |
| 29-30/8  /2012 | Panama City | TAGPMA Meeting | 1 | Representing interests of EGI and WLCG: http://indico.rnp.br/conferencedisplay.py?confId=142 | |
| 3-5/9  /2012 | Liverpool | VERCE Training | LRZ staff | Training in VERSE platform: a service-oriented architecture and a data-intensive platform delivering services, workflow tools, and software as a service for the seismology community | |
| 4-6/9  /2012 | Karlsruhe | Operational Tools Sustainability | 3 | <http://www.ogf.org/OGF36/> | |
| 6-/9  /2012 | Utrecht | TERENA VAMP Meeting | 1 | 2 presentations on FIM4R activity | |
| 10-12/  9/2012 | Lyon, France | 26th EU Grid PMA meeting | 27 | <https://agenda.nikhef.nl/conferenceTimeTable.py?confId=2083> 1 NGI\_IE ops member (DO'C) attended | |
| 18-20/  9/2012 | Palma, Spain | FisEs'12 | 2 | IFISC-GRID: Poster presentation "Grid computing for statistical and non-linear physics", <http://www.gefenol.es/FisEs/12/uploads/contributions_pdf/e9fbf696006238538938398a7ad88377b4d97849.pdf> | |
| 17-21/9  /2012 | Prague | EGI.eu  Technical Forum | 12 | [web site event](https://indico.egi.eu/indico/conferenceDisplay.py?ovw=True&confId=1019) | |
| 23-29/  9/ 2012 | Coral Bay Hotel, Paphos | Theory and Practice of Digital Libraries Conference (TPDL 2012) | 125 | [Theory and Practice of Digital Libraries Conference (TPDL 2012), organised by the Cyprus University of Technology (CUT) in collaboration with the University of Cyprus and the City University London http://www.tpdl2012.org/](http://www.tpdl2012.org/) | |
| 26-27/9  /2012 | Oxford | GridPP29 | 10 | [GridPP Collaboration http://www.gridpp.ac.uk/gridpp29/](http://www.gridpp.ac.uk/gridpp29/) | |
| 27-28/  9/2012 | Ljublana | Terena TF-SCIRT Meeting | 1 |  | |
| 2-4/10  /2012 | Tarragona, Spain | 1st International Conference on the Theory and Practice of Natural Computing | 1 | CETA-GRID: Programme available at <http://grammars.grlmc.com/tpnc2012/> | |
| 10-11/  10/ 2012 | Mediterranean Hotel, Limassol | Annual Privacy Forum 2012 (APF 2012) | 75 | [Annual Privacy Forum 2012 (APF 2012): Closing the loop from research to policy. Co-organised by the European Network and Information Security Agency (ENISA) and the European Commission Directorate General for Communications Networks, Content and Technology (DG CONNECT), with the support of the Department of Computer Science of the University of Cyprus. http://privacyforum.eu/](http://privacyforum.eu/) | |
| 12/10/  2012 | Lugano (CH) | Lugano (CH) | 5 | Talk: 'Disk Pool Manager Storage Systems at the Universities of Bern and Geneva' S.Gadomski (UNIGE-DPNC) and G.Sciacca (UNIBE-LHEP) | |
| 14-18/  10/2012 | Shonan, Japan | Grid and Cloud Security | 1 | <http://www.nii.ac.jp/shonan/> | |
| 15/10/  2012 | Ankara, Turkey | INDICATE final conference | 30 | Presentation on EGI’s support for DCH given remotely via EVO from the Collaboratorium in SARA. <http://www.indicate-project.eu/index.php?en/181/indicate-final-conference> | |
| 15-19/  10/2012 | Beijing, China | HEPiX Fall Meeting | 3 | <http://indico.ihep.ac.cn/internalPage.py?pageId=3&confId=2664> | |
| 17-18/  10/2012 | CERN | Atlas Software and Computing Workshop | 2 |  | |
| 17-19/  10/2012 | Georgia, Tbilisi | The 6th International Conference on Application of Information and Communication Technologies | AICT was joined by hundreds of participants from several countries including Azerbaijan, Uzbekistan, Sweden, Canada, China, Finland, Turkey, Russia, Georgia, Romania, Moldova, Iran.. | (<http://aict.info/2012/>) AICT2012 topics include, but are not limited to, the following research and development areas/fields (more than 80 topics for more information visit Sessions / Topics): | |
| 23-26/  10/2012 | Tbilisi, Georgia | Tbilisi, Georgia | 72 | [This event follows on from the first workshop (SCSWT'2010) in October 2010 that brought together for the first time the ATLAS groups from the South Caucasus countries (Armenia, Azerbaijan and Georgia) to discuss common computing related issues. It aims at fostering contacts between ATLAS collaborators and computing people in these countries and experts in ATLAS software and Grid computing technologies. R. Kvatadze made presentation "E-Infrastructure for Science in Georgia" http://dmu-atlas.web.cern.ch/dmu-atlas/2012/index.html](http://dmu-atlas.web.cern.ch/dmu-atlas/2012/index.html) | |
| 25/102012 | York, UK | OSS-METER project kick-off | 15 | S Brewer invited as External Advisor. Presentation given on EGI and opportunities for collaboration. Resulted in interest in a workshop at CF13 to be organized by the National Centre for Text Mining, UK. | |
| 31/10/  1/11/  2012 | Limassol, Cypress | EuroMed2012 | 100s | Presentation on EGI’s involvement with ad support for Digital Cultural Heritage community. Participation in session organized by EC t osupport interation between infrastructure providers and projects and DCH community. [http://www.euromed2012.eu](http://www.euromed2012.eu/) | |
| 7-9/  11/2012 | Lisbon, Portugal | IBERGRID 2012, 6th Iberian Grid Infrastructure Conference | 50 | Conference Programe URL: <http://www.ibergrid.eu/2012/index.php?option=2> | | |
| 16/11/  2012 | |  | | --- | | Madrid (Spain) | | | |  | | --- | | BigData Spain 2012 | | | |  | | --- | | 1 | | | |  | | --- | | [IFISC-GRID: Programme available at](http://www.bigdataspain.org/en/)  <http://www.bigdataspain.org/> | | | | |
| 16/11/  2012 | Salt Lake City  **(USA)** | Supercomputing 2012 | **3** | This event attracted 9000 delegates; EGI hosted a booth in the exhibition hall, participated in the press tour, distributed materials and demonstrated the Real Time Monitor.  Movie/dissemination on the DashboardDB application and DashboardDB Desktop (carried out in the IGI Booth) <http://sc12.supercomputing.org/> | | |
| 21-22 /  11/2012 | Göttingen, Germany | OpenAIRE Conference | 100 | S. Andreozzi from EGI.eu presented the collaboration among EGI and OpenAIRE <http://www.openaire.eu/en/programme> | | |
| 21-22/  11/2012 | Amsterdam | EGI EU Council Meeting | 1 |  | | |
| 23 /11  2012 | Brussels, Belgium | SciTech Europe: Broadening Horizons – Creating a Single Market for Knowledge, Research and Innovation | 200 | Attended the event for networking and updates on high-level policies. EGI hosted a booth in the exhibition, distributed materials, took part in the networking sessions and the Director delivered a master class as well as participating in a discussion panel. <http://www.publicserviceevents.co.uk/227/scitech-europe-2012> | | |
| 28-29/  11/2012 | Bilbao (Spain) | RedIris Network | 20 | Annual workshop organised by NREN. Followup of technical issues related to network, programme available at <http://www.rediris.es/jt/jt2012>  IFAE: Presentation from PIC on the plans from LHC to exploit the new high performance network infrastructure Rediris-Nova through LHCONE IFIC RedIRIS USC | | |
| 3-4/12  2012 | Amsterdam, The Netherlands | e-IRG workshop | 108 | EGI.eu members attended to track the evolution of the discussion at strategic policy level among the e-Infrastructures. <http://www.e-irg.eu/e-irg-events/events-archive/2012/workshop-3-4-december.html> | | |
| 3-4/12/  2012 | LAL, Orsay, France | 2nd DPM Community Workshop | 2 | Involvement in DPM community, clarifications of DPM -- Globus Online integration | | |
| 06/12/  2012 | Hannover, Germany | DGI-2 Project finalization meeting | NGI-DE Grid sites (LRZ etc.) | Summary of the work in 2012 | | |
| 11-12/  12/2012 | Chisinau, Moldova | European Commission Eastern Partnership Event | approx. 70 person | [The main objectives of this event were:to raise awareness of the importance of e-Infrastructures amongst politicians, civil servants and funding agencies in the Eastern Partnership countries and to make the case for the development of research and education networks in the countries concerned and to encourage further integration of those networks with GÉANT. R. Kvatadze made short presentation.](http://www.terena.org/activities/development-support/epe2012/index.php)  <http://www.terena.org/activities/development-support/epe2012/index.php> | | |
| 13-14/  12/2012 | CERN | LHCONE Point-to-Point Service Workshop | 1 | [IFAE: Network workshop focused on the technical details of the deployment of a dedicated high performance network infrastructure to connect Tier2s and Tier1s, https://indico.cern.ch/conferenceDisplay.py?confId=215393](https://indico.cern.ch/conferenceDisplay.py?confId=215393) | | |
| 17-18/ 12/2012 | FNAL, Chicago, USA | WLCG Security Coordination Meeting |  | <https://indico.cern.ch/conferenceDisplay.py?confId=221987> D. Kelsey organised and chaired this meeting which discussed all operational and policy issues for security and the coordination between EGI, OSG and NDGF | | |
| 14-16/ 1/2013 | Rome, Italy | EUGridPMA |  | <http://www.eugridpma.org/meetings/2013-01/> Attended this IGTF meeting to represent interests of EGI and WLCG as a Relying Party | | |
| 15-18/ 1/2013 | Frascati, Rome, Italy | Helix Nebula Workshop | 120 | This event is organised by the Helix Nebula project with the General Assembly of the consortium and an open day; EGI.eu supported the discussion about interoperability of e-infrastructures with commercial cloud providers  <http://indico.cern.ch/conferenceDisplay.py?confId=216509> | | |
| 16-17/ 1/2013 | Rome, Italy | SCI meeting |  | <http://indico.cern.ch/conferenceDisplay.py?confId=227273> I organised and chaired the meeting. Produced the final version 1 of the document describing the requirements and best practices and considered 3 self-assessments against these criteria | | |
| 17/1/  2013 | Tallink Hotel, Riga | Security and Transparency | Edgars Znots | Presentation on use of open-source software in HPC and grid infrastructures. Conference programme: http://lata.org.lv/?page\_id=865 Slides: <http://lata.org.lv/wp-content/conf/Drosiba/LATA_APP_Skaitlosana_EdgarsZnots.pdf> | | |
| 17-19/ 1/2013 | Romania, Sinaia | „RoEduNet 11th International Conference: Networking in Education and Research” | Over 120 attendees from 12 countries including USA, Canada, Bulgaria, Poland, Romania, Moldova, | <http://conference.roedu.net/index.php/roedunet2012/roedunet1>  1 | | |
| 28/1/  2013 | Amsterdam | e- Fiscal  Workshop | 78 | EGI.eu contributed to the the workshop  as local organiser; furthermore S. Andreozzi presented about business and pricing models, while S. Newhouse reported on the evaluation of results from the EGI viewpoint  <http://www.efiscal.eu/final-workshop> | | |
| 28-30/  1/2013 | Amsterdam | EGI.EU Council Meeting | 30 |  | | |
| 28-31/  1/2013 | Lisbon | FIRST/TF-CSIRT Technical Colloquium | 1 | <http://www.terena.org/activities/tf-csirt/meeting38/> | | |
| 28/01/  2013 | Amsterdam | Evolving EGI and e-FISCAL workshop | 1 | <https://indico.egi.eu/indico/conferenceDisplay.py?confid=1252> |
| 01.02.2013 | Geneva | IT requirements for the next generation research infrastructures workshop | 120 | <https://indico.cern.ch/conferenceDisplay.py?confId=212402> |
| 13-Feb-13 | CERN | GDB | 1 |  |
| Feb 10-15 2013 | Las Palmas de Gran Canaria, Spain | EUROCAST | 1 | <http://www.iuctc.ulpgc.es/spain/eurocast2013/> |
| 27-Feb-13 | Ankara | Round Table Community Meeting for National Bioinformatics | 2 | Open discussions were held to understand the existing bioinformatics resources of Turkey as well as needs for the ELIXIR infrastructure. |
| 28-Feb-13 | Ankara | Bioinformatics Community Seminar |  | The coordination possibility of national bioinformatics partners was discussed and feature collaborations with EMBL and ELIXIR was elaborated. |
| 28-30 February 2013 | Amsterdam | EGI Futures Meeting | 1 |  |
| 1.03.2013 | Amsterdam | EGI.EU Council Meeting | 1 |  |
| 11-Mar-13 | CERN | Atlas Software and Computing | 1 |  |
| 11-12 March 2013 | Oxford | Recognising "Research Technologists" in research workshop eIPG/EC/JISC workshop | 1 |  |
| March12-13, 2013 | Karlsruhe, Germany | WICK GDB Meeting | NGI-DE KIT staff | [Cloud discussion, EMI 3, information system, etc. https://indico.cern.ch/conferenceDisplay.py?confId=197801](https://indico.cern.ch/conferenceDisplay.py?confId=197801) |
| 11-13 March 2013 | Charlottesville, Virginia (US) | OGF 37 | 1 | http://www.ogf.org/gf/event\_schedule/index.php?event\_id=28, Presentation of the UR2.0 P-REC (Proposed Recommendation). |
| Mar 12 2013 | CERN, Switzerland | ATLAS Software and Computing Week | Alexei Sedov | [https://indico.cern.ch/conferenceDisplay.py?confId=210656 ADC shifts and Cloud support squads. Introduction and news](https://indico.cern.ch/conferenceDisplay.py?confId=210656) |
| Mar 13 2013 | KIT, Germany | Grid Deployment Board | Josep Flix | <http://indico.cern.ch/conferenceOtherViews.py?view=standard&confId=197801> |
| 13-14.03.2013 | Kharkiv, Institute for Scintillation Materials of NAS of Ukraine | International Conference on Parallel and Distributed Computing Systems (PDCS 2013) | More than 130 researchers, engineers, developers and state representatives from 13 countries | [This was the first large HPC event in Kharkiv, former capital of Ukraine and its scientific center with many research institutes. The first day talks were devoted mainly to supercomputer architecture design, HPC system software and parallel numerical methods. The second day was marked by Industrial session which gathered Ukrainian and foreign specialists and developers from high-technology areas like aircraft and ship design, construction of military equipment and nuclear reactors. http://hpc-ua.org/pdcs-13/](http://hpc-ua.org/pdcs-13/) |
| 16 and 18 March 2013 | Faculty of Sciences, University of Novi Sad and Faculty of Physics, University of Belgrade | 2013 International Particle Physics MasterClass | 60 | [The 2013 International Particle Physics MasterClass (http://www.physicsmasterclasses.org/) in Serbia was organized by the University of Belgrade, in collaboration with the European Particle Physics Outreach Group, and was held on 16 March 2013 at the Faculty of Sciences, University of Novi Sad and on 18 March at the Faculty of Physics, University of Belgrade. IPB's Dusan Vudragovic and Vladimir Slavnic gave a talk to high school students on utilization of the Serbian Grid and High Performance Computing (HPC) resources. The aim of the MasterClass is to introduce an exciting and rapidly developing scientific field dealing with some of the fundamental secrets of the nature to the 4th-year high school students. The lectures given by active researchers and university professors bring insight into topics and methods of fundamental research of matter, but distributed computing infrastructures are presented as well. During the Grid and HPC computing session, the aims of EGI-InSPIRE project are presented. http://www.df.uns.ac.rs/vesti/najave/cern\_masterclass](http://www.physicsmasterclasses.org/) |
| 19-22 March 2013 | Taipei | ISGC 2013 Conference and APGridPMA Meeting | 1 | [http://event.twgrid.org/isgc2013, chaired two sessions and gave security policy talk on IPv6](http://event.twgrid.org/isgc2013) |
| 20-21 March 2013 | Switzerland | FIM4R | 1 | <https://indico.psi.ch/conferenceDi> |
| Apr 3-5 2013 | Vienna, Austria | 16th European Conference, EvoApplications 2013 | Maria Botón | <http://www.kevinsim.co.uk/evostar2013/> |
| 08-12.04.2013 | Manchester | EGI Community Forum 2013 | 400 | <http://cf2013.egi.eu/> |
| Apr 8-9 2013 | London, UK | MongoDB Days | Antònia Tugores | <http://www.10gen.com/events/mongodb-london-2013> |
| 15-19 April 2013 | Bologna, IT | HEPIX | 3 | <http://indico.cern.ch/conferenceDisplay.py?ovw=True&confId=220443/> |
| 15-22/04 | Bologna | HEPiX spring13 | 10 | http://indico.cern.ch/event/hepix-spring2013 |
| 24-25.04.2013 | Linkoping, Sweden | EGI-CSIRT Face2Face Meeting | 4 | regular technical meeting of EGI-CSIRT grou |
| Apr 25 2013 | Barcelona, Spain | Big Data Week Conference | Josep Flix | http://www.amiando.com/BDWBarcelona2013Conference.html?page=948493 "Big Data" per entendre el Big Bang: la gestió de dades produïdes per l'accelerador LHC al CERN |
| 26-27 March 2013 | Glasgow | GridPP30 | 5 | [http://www.gridpp.ac.uk/Talk on LHCb clouds and virtual machines](http://www.gridpp.ac.uk/Talk) |
| 27-28 Feb 2013 | Brussels, Belgium | CloudScape V | 100 | Provided a presentation on EGI Federated Cloud plus poster and demo |
| 3-4 Apr 2013 | Brussels, Belgium | Final RAMIRI Workshop | 50 | <http://www.egi.eu/blog/2013/04/04/the_ramiri_handbook.html> |

## Publications

| **Publication title** | **Journal / Proceedings title** | | **DOI code** | | **Journal references**  *Volume number*  *Issue*  *Pages from - to* | **Authors**  *Surname* | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Scalable and Resilient Workflow Executions on Production Distributed Computing Infrastructures | International Symposium on Parallel and Distributed Computing (ISPDC 2012) | |  | | Munich, Germany, 25-29 June 2012 | 1. J. Rojas  2.T. Balderrama  3.Truong Huu  4.. J. Montagnat | |
| Enabling Large-Scale Linear Systems of Equations on Hybrid HPC Infrastructures, | Proceedings of ICT’2011 Innovations, September 4-16, Skopje, Macedonia | |  | | Springer Advances in Intelligent and Soft Computing, 2012, Volume 150/2012, 239-245, DOI: 10.1007/978-3-642-28664-3\_22 | 1.Hrachya Astsatryan, 2.Vladimir Sahakyan, 3.Yuri Shoukourian,  4. Michel Dayde  5. Aurelie Hurault | |
| NAMD Package Benchmarking on the Base of Armenian Grid Infrastructure, | Journal of Communications and Network,  Scientific Research | |  | | Publishing, Vol. 4 No. 1, 2012, pp. 34-40, doi:10.4236/cn.2012.41005 | 1. A. Poghosyan,  2. L. Arsenyan  3. H. Astsatryan  4. M. Gyurjyan  5. 6. H. Keropyan  7. A. Shahinyan | |
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| [View on the Magnetic Properties of Nanoparticles Com (m=6,8,10,12,14) and Co6On (n=1-9)](http://www.intechopen.com/books/smart-nanoparticles-technology/study-of-geometric-structure-and-magnetic-properties-of-conom-n-2-6-8-10-12-m-0-9-nanoparticles) | Smart nanoparticles technology | | ISBN 978-953-51-0500-8 | | InTech, Published: April 18, 2012 under [CC BY 3.0 license](http://creativecommons.org/licenses/by/3.0/), in subject [Nanotechnology and Nanomaterials](http://www.intechopen.com/subjects/nanotechnology-and-nanomaterials) | 1. J. Tamuliene  2. R.Vaisnoras  3. G.Badenes  4. M.L. Balevicius | |
| [Electron-impact and thermal fragmentation of amino acid molecules: Mechanisms and structure of the molecules](http://www.sciencedirect.com/science/article/pii/S0168583X1100961X) | Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms, | |  | | Volume 279, 15 May 2012, Pages 128-134, | 1. J. Tamuliene  2. L.G. Romanova  3. V.S. Vukstich  4. A.V. negursky | |
| [Mechanisms of the electron-impact-induced glycine molecule fragmentation](http://www.sciencedirect.com/science/article/pii/S0301010412000481) | *Chemical Physics* | | <http://dx.doi.org/10.1016/j.chemphys.2012.01.019> | | *In Press, Available online 8 February 2012* | 1. J. Tamuliene  2. L.G. Romanova  3. V.S. Vukstich  4. A.V. Snegursky | |
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| Application Scenarios Using Serpens Suite for Kepler Scientific Workflow System | Procedia Computer Science | | Volume 9, 2012, Pages 1604-1613 | |  | 1. Marcin Płóciennik  2. [Michał Owsiak](http://www.sciencedirect.com/science/article/pii/S1877050912002979)  3. [Tomasz Zok](http://www.sciencedirect.com/science/article/pii/S1877050912002979),  4. [Bartek Palak](http://www.sciencedirect.com/science/article/pii/S1877050912002979)  5.[Antonio Gómez-Iglesias](http://www.sciencedirect.com/science/article/pii/S1877050912002979)  6. [Francisco Castejón](http://www.sciencedirect.com/science/article/pii/S1877050912002979),  7. [Marcos Lopez-Caniego](http://www.sciencedirect.com/science/article/pii/S1877050912002979)[c](http://www.sciencedirect.com/science/article/pii/S1877050912002979#aff0015),  8. [Isabel Campos Plasencia](http://www.sciencedirect.com/science/article/pii/S1877050912002979)  9 [Alessandro Costantini](http://www.sciencedirect.com/science/article/pii/S1877050912002979)[d](http://www.sciencedirect.com/science/article/pii/S1877050912002979#aff0020),  10 [Dimitriy Yadykin](http://www.sciencedirect.com/science/article/pii/S1877050912002979),  11. [PŠr Strand](http://www.sciencedirect.com/science/article/pii/S1877050912002979)[e](http://www.sciencedirect.com/science/article/pii/S1877050912002979#aff0025) | |
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83. *(\*) 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-83)
84. *(\*) 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-84)