EGI-InSPIRE

QUARTERLY REPORT 13

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Abstract

Report describing the EGI-InSPIRE project's activities from 1st May 2013 to 31st July 2013.



I. COPYRIGHT NOTICE

II. DELIVERY SLIP

	Name	Partner/Activity	Date
From	Steven Newhouse	EGI.eu	21/08/2013
Reviewed by	**AMB &PMB**	EGI.eu	29/8/2013
Approved by	**AMB & PMB**		6/9/2013

III. DOCUMENT LOG

Issue	Date	Comment	Author/Partner
1	27/08/2013	First integrated draft	Joan Maycock & Steven Newhouse / EGI.eu
2	4/9/2013	Final draft	Steven Newhouse / EGI.eu

IV. APPLICATION AREA

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

V. DOCUMENT AMENDMENT PROCEDURE

Amendments, comments and suggestions should be sent to the authors. The procedures documented in the EGI-InSPIRE "Document Management Procedure" will be followed: https://wiki.egi.eu/wiki/Procedures

VI. TERMINOLOGY

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

VII. PROJECT SUMMARY

To support science and innovation, a lasting operational model for e-Science is needed − both for coordinating the infrastructure and for delivering integrated services that cross national borders. The EGI-InSPIRE project will support the transition from a project-based system to a sustainable pan-European e-Infrastructure, by supporting 'grids' of high-performance computing (HPC) and high-throughput computing (HTC) resources. EGI-InSPIRE will also be ideally placed to integrate new Distributed Computing Infrastructures (DCIs) such as clouds, supercomputing networks and desktop grids, to benefit user communities within the European Research Area.

EGI-InSPIRE will collect user requirements and provide support for the current and potential new user communities, for example within the ESFRI projects. Additional support will also be given to the current heavy users of the infrastructure, such as high energy physics, computational chemistry and life sciences, as they move their critical services and tools from a centralised support model to one driven by their own individual communities.

The objectives of the project are:

1. The continued operation and expansion of today's production infrastructure by transitioning to a governance model and operational infrastructure that can be increasingly sustained outside of specific project funding.
2. The continued support of researchers within Europe and their international collaborators that are using the current production infrastructure.
3. The support for current heavy users of the infrastructure in earth science, astronomy and astrophysics, fusion, computational chemistry and materials science technology, life sciences and high energy physics as they move to sustainable support models for their own communities.
4. Interfaces that expand access to new user communities including new potential heavy users of the infrastructure from the ESFRI projects.
5. Mechanisms to integrate existing infrastructure providers in Europe and around the world into the production infrastructure, so as to provide transparent access to all authorised users.
6. Establish processes and procedures to allow the integration of new DCI technologies (e.g. clouds, volunteer desktop grids) and heterogeneous resources (e.g. HTC and HPC) into a seamless production infrastructure as they mature and demonstrate value to the EGI community.

The EGI community is a federation of independent national and community resource providers, whose resources support specific research communities and international collaborators both within Europe and worldwide. EGI.eu, coordinator of EGI-InSPIRE, brings together partner institutions established within the community to provide a set of essential human and technical services that enable secure integrated access to distributed resources on behalf of the community.

The production infrastructure supports Virtual Research Communities (VRCs) − structured international user communities − that are grouped into specific research domains. VRCs are formally represented within EGI at both a technical and strategic level.

VIII. EXECUTIVE SUMMARY

PQ13 saw the completion of the 3rd project year and the subsequent project review that took place in Amsterdam on the 25-26th June 2013. Feedback from the review was received just before the end of the reporting period at the end of the July and will be reflected on by the project in PQ14. The project is considering at least a 6 month extension to the project to minimise the break between the end of EGI-InSPIRE and any subsequent project so that staff and activities could be maintained. The new work package relating to the 'Accelerating EGI's Strategic Objectives' has started successfully. All the partners are now active in the work package.

A key output during this period across the project was the definition and publishing of the EGI service portfolio and solutions portfolio. The solutions portfolio included federated operations, federated cloud services, high throughput data analysis, community networks and support, and community driven innovation. These solutions are currently supported by a subset of EGI's Global Tasks defined within the service portfolio. In preparation for the end of the support provided by EGI-InSPIRE, a subset of these tasks (the Core EGI Activities) have been assessed as critical for EGI and a bidding process was launched towards the end of PQ13 for the community to offer support to continue these services and the responses will be analysed in PQ14.

Planning for the EGI Technical Forum in Madrid that will be held in 16-20th September 2013 continued with workshop, technical contributions and training sessions coming from across the project.

The Operations activity strengthened collaborations with the USA with a BoF at XSEDE 2013 and signing an MoU with Open Science Grid. Regional cooperation with South African restarted with discussion around the integration of their Grid resources. Support of particular research communities continued with pre-production testing of resources to support the DRIHM community's simulations, and the continued integration of accounting records coming from software operated to meet the needs of different research communities.

The new data retention policy requiring the retention of personal data for a maximum duration of 18 months was enforced as of the 1st of July. This affected accounting views displaying information aggregated per User DN. No accounting information was lost in this operation, and aggregated accounting information is still available in summarized form.

The re-structuring of EGI's software management model due to the end of the EMI and IGE projects has so far led to a smooth transition thanks to the cooperation provided by the relevant developer teams and no problems affected UMD software provisioning and the 3rd level technical support offered have been observed. PQ13 saw a major release of the UMD (UMD-3) that incorporates all the EMI-3 products. After the major release two updates were already released UMD-3.1.0 and UMD-3.1.1. In total over 50 products and sub-components were deployed and tested with two being rejected.

The quality criteria have been translated to YAML in order to improve the process of criteria definition and their management. The criteria document is being reviewed and a new release is expected in PQ14. The verification templates have been aligned with the new criteria. The verification testbeds processes' have been further integrated into EGI's Federated Cloud activities allowing virtual middleware machine images to be made available for deployment by any integrated resource provider.

EGI's Federated Clouds taskforce is progressing towards the goal of providing production level resources to the EGI users through the integration with the EGI operational infrastructure, including a commercial provider.

The mini-projects commissioned by the project to accelerate the achievement of EGI's strategic objectives have all come up to speed during PQ13. Sessions at EGICF13, and subsequent management activities, have worked to build collaborations between mini-projects where needed and desirable. Technical management of the mini-projects are conducted by shepherds (generally work package managers) and project management provided by EGI.eu. Following a phase of investigation, the first tangible results are available or are about to be published.

EGI's community engagement activities continued across technical and non-technical areas, both within and external to the EGI Community, supported by a professional Marketing and Communications team. EGI had a presence at the International Supercomputing Conference in Leipzig, the 9th European Biophysics Congress in Lisbon and ISMB/ECCB 2013 in Berlin, and new brochures were produced to support the EGI Champions. The 9 EGI Champions remain active attending events in their own communities supported by EGI.eu. The strengthening of the EGI Champions has continued through a series of webinars and collaborations with a similar programme in XSEDE. The EGI Council endorsed a 'Scientific Review Process to support Excellent Science in EGI' as well as a new Scientific Discipline classification for adoption within EGI's tools. The established collaboration with OpenAIRE has progressed by publishing the first data mining results that will allow EGI to find publications that have been generated using resource from within the NGIs. Through a collaboration with the HelixNebula project the use of commercial cloud providers alongside those within EGI's Federated Cloud will be undertaken. This will help inform EGI's pay-for-use experiments. Technical outreach through specific consultancy and engagement through virtual teams has continued with support of NGI activity in the ELIXIR, CTA and Computational Chemistry and Materials Science virtual teams and collaboration with the ENVIRI and DHRIM projects. A broader collaboration between EGI/EUDAT/PRACE relating to various data issues is being supported by preparation of how EGI storage resources can be integrated and used by the Globus Online service.



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1. OPERATIONS

1.1. Summary

Management activities during PQ13 included the definition and publishing of the Operations service portfolio and the Federated Operations Solution[1]. This will facilitate the reuse of existing EGI operations services, procedures and policies by other distributed infrastructures. The technical definition of the EGI Core Activities that will be operated after April 2014 were defined in preparation for the bidding process and many partners participated with the submission of expressions of interest. These will be evaluated in PQ14. The programme of the Core Infrastructure Platform track of the EGITF13 was defined and contributions are being prepared. The EGITF13 will host many technical meetings, workshops and training sessions in security, accounting and network performance troubleshooting.

Collaborative activities progressed, with the restarting of the South African Grid integration, and an operations MoU was defined with Open Science Grid[2] strengthening the collaboration and integration between the two infrastructures to support international user communities. The collaboration with the XSEDE infrastructure also strengthened through a joint BoF at the XSEDE 2013 meeting in San Diego. Information about procedures, resource allocation, operations tools and support processes will be exchanged with the purpose of facilitating the use of XSEDE and EGI resources by scientists. The collaboration with the DRIHM community[3] strengthened with testing activities in preparation to the start of production simulations being conducted.

The main technical achievements in PQ13 were the extension of interoperation of the accounting infrastructure by the production use of ARC/JURA and QCG/MAPPER and testing of the EDGI Desktop Grids, MPI and Cloud solutions, the use of SSM 2.0/EMI 3 APEL client for publishing of accounting records through messaging, the extension and adaptation of GGUS following the end of the EMI and IGE projects with a review of support units and support for different quality of service levels and of workflows for the handling of tickets not making progress, the completion of the migration from EMI-1 to EMI-2 services under the supervision of the COD team, and the start of the migration of the infrastructure towards software versions that are SHA-2 compliant.

No security incidents were reported or handled during PQ13. The IRTF continued to track new security vulnerabilities in operating systems and other non-Grid software. Two "critical" advisories were *issued* to all site security contacts during the quarter. One of these, a Linux kernel vulnerability CVE-2013-2094, resulted in a large amount of work for the CSIRT in monitoring and handling the requirement for sites to install patches or to deploy suitable mitigations within the defined time. The final report of the Security Service Challenge run by NGI_UK was completed and remains confidential. The security monitoring sub-group was very busy developing probes to track all SVG and CSIRT alerts and advisories as required, in particular for CVE-2013-2094. A pilot of site-wide monitoring was deployed at KIT, where the Pakiti client was installed on all the worker nodes to report to the EGI Pakiti server. Activity on security training and dissemination included a successful one-day security forensics training session given at RAL in the UK. Plans were made for several

[1] https://www.egi.eu/solutions/fed-ops/

[2] https://documents.egi.eu/document/1870

[3] http://www.drihm.eu/

security training sessions at the EGITF. Progress was made on an EGI CSIRT procedure for compromised certificates and emergency suspension[4] and work continued on the Central Emergency Suspension Project for the enforcement of the Service Operations Security Policy v. 3.0[5].

In preparation to the migration of end-entity certificates to SHA-2, which is foreseen to start in October 2013, an operational campaign started in July aiming at upgrading non-SHA-2 compliant services to newer software versions supporting SHA-2. Problems are being faced with a few services for which to date no suitable production-quality replacement is available from the UMD distribution, namely StoRM and dCache[6]. This required the deployment of ad-hoc Nagios probes for the identification of services to be upgraded and the generation of alarms into the Operations Dashboard.

PQ13 is the first reporting period after the end of the EMI and IGE projects. Thanks to the preparatory work undertaken to adapt the EGI support structures, and to the commitment of the Technology Providers formerly coordinated by EMI and IGE, no problems affected UMD software provisioning and the 3rd level technical support offered were observed. PQ13 saw a major release of the UMD (UMD-3) that incorporates all the EMI-3 products. After the major release two updates were already released UMD-3.1.0 and UMD-3.1.1. In total over 50 products and sub-components were deployed and tested covering all of EMI products with a total of 2 rejections, gridsite 2.1.0 and APEL 4.0.0. Stage Rollout activities and feedback from testing is now being reported in the context of the new UMD Release Team (URT) activity providing lightweight coordination of software release activities. In the coming quarter the UMD software provisioning procedures will be adapted as various product teams will start releasing software into third-party repositories like EPEL.

The APEL SSM client that was released as part of UMD 3.0 is now using the production ActiveMQ broker network. In order to only receive usage records from authorized end-points, a component was deployed on the production message broker network, which is responsible of authenticating the gLite-APEL nodes. The prototype of a new Availability/Reliability dashboard was deployed in the Operations Portal. The SAM Update-22 release was finalized after a pre-release testing phase to which various NGIs contributed in June. A large set of new operational tests was deployed in midmon and the list of OPERATIONS test run by NGI SAM instances was extended.

The new data retention policy requiring the retention of personal data for a maximum duration of 18 months was enforced as of the 1st of July. This affected accounting views displaying information aggregated per User DN. No accounting information was lost in this operation, and aggregated accounting information is still available in summarized form.

1.2. Main achievements

1.2.1. Security

The work of the EGI CSIRT, as ever, is split into several sub-groups, each of which is reported here. The whole team continues to meet monthly by video conference.

No security incidents were reported or handled. The IRTF continued to track new security vulnerabilities in operating systems and other non-Grid software. Two "critical" advisories were issued to all site security contacts during the quarter. One of these, a Linux kernel vulnerability CVE-2013-

[4] https://documents.egi.eu/document/1018

[5] https://documents.egi.eu/document/1475

[6] https://indico.egi.eu/indico/conferenceDisplay.py?confId=1393

2094[7], resulted in a large amount of work for the CSIRT in monitoring and handling the requirement for sites to install patches or to deploy suitable mitigations within the defined time.

For the Security Service Challenge (SSC) activity[8], the final confidential report from the SSC of 11 sites in the UK NGI was produced. The German NGI will run the next SSC in PQ14. Extensions have been made to the SSC framework for NGI runs in particular to add the functionality needed to do concurrent runs in different NGIs. This has been done in parallel with preparations for the NGI-DE-SSC run. Plans for training other NGIs to run their own SSC will be given at the EGITF13.

The security monitoring sub-group was very busy developing probes to track all SVG and CSIRT alerts and advisories as required, in particular for CVE-2013-2094. A pilot of site-wide monitoring was deployed at KIT, where the Pakiti client was installed on all the worker nodes to report to the EGI Pakiti server. The pilot will be extended to other sites over the next few months. A workflow to handle security issues in GGUS has been drafted and discussed internally in the team. After minor changes it will be passed on to the GGUS team so a joint discussion could be organized at EGITF13. Training has been planned for the EGITF in security logging and auditing.

The Software Vulnerability Group (SVG) continued to handle all reported vulnerabilities. During PQ13, 11 new vulnerabilities were handled, including 4 from the on-going vulnerability assessment of CREAM. One SVG advisory was issued[9]. The final report on the security assessment of the gLite WMS is still awaited and the assessment of CREAM continues.

Activity on security training and dissemination included a successful one-day security forensics training session given at RAL in the UK. Plans were made for several security training sessions at the EGITF including an EGI Security update session covering all aspects of operational security. A member of the team presented the EGI-CSIRT at the Academic Track at the FIRST meeting in Bangkok. Two members of the EGI CSIRT were in the winning team of the Team Cymru Challenge at FIRST.

During PQ13 work continued on the EGI CSIRT procedure for compromised certificates and emergency suspension. A nearly final draft has been completed[10]. In addition, the CSIRT team identified the need for easy access to VO security contact information and a vo-security-contacts mail list has been established. A brief document was prepared describing the requirements for this. The team has been carrying out a major re-organization of the communications and information access levels in EGI-CSIRT.

A report providing further information on "EGI Security threat risk assessment" was produced in preparation to the PY3 review. This included information on activities being carried out to reduce the impact of some of the higher risk threats.

Work continued on the Central Emergency Suspension Project for the enforcement of the Service Operations Security Policy v. 3.0[11] approved in April 2013 requiring that "*You must implement automated procedures to download the security emergency suspension lists defined centrally by Security Operations and should take appropriate actions based on these lists, to be effective within the*

[7] https://wiki.egi.eu/wiki/EGI_CSIRT:Alerts/kernel-2013-05-14

[8] https://wiki.egi.eu/wiki/SSC6_NGI_UK

[9] https://wiki.egi.eu/wiki/SVG:Advisory-SVG-2013-5268

[10] https://documents.egi.eu/document/1018

[11] https://documents.egi.eu/document/1475

specified time period". Progress has been made on the ARGUS server deployment scenario, necessary for the definition of a policy enforcement plan.

1.2.2. Service Deployment and Integration

PQ13 saw a major release of the UMD (UMD-3) that incorporates all the EMI-3 products. After the major release two updates were already released UMD-3.1.0 and UMD-3.1.1. In total over 50 products and sub-components were deployed and tested covering all of EMI products with a total of 2 rejections, gridsite 2.1.0 and APEL 4.0.0.

Stage Rollout activities and feedback from testing is now being reported in the context of the new UMD Release Team (URT) activity providing lightweight coordination of software release activities. This activity started in May 2013 and the main purpose is to keep the communication channels open between the product teams, as they existed previously within the middleware projects and open new lines of communications between EGI and the product teams, as these were mediated by the middleware projects technical coordination. Staged Rollout activities collaborated with EGI CSIRT in order to check the readiness of the software towards the SHA-2 implementation[12] and ARGUS interoperability[13].

Several campaigns were conducted to gather new Early Adopters for some products like glexec and CREAM and also for new products like SLURM and the full QCG distribution.

1.2.3. Help desk & Support Activities

A new GGUS release was deployed in July 2013. Because of the end of EMI and IGE as projects ensuring coordination of 3rd level support of the EMI and IGE distributions, the list of 3rd level middleware support units was reviewed and many were decommissioned together with other units that were inactive. Additional support units were renamed and others merged, as documented on wiki[14].

The host and service certificates were renewed. In addition, a SAML/Shibboleth-based access was implemented on the test instance. Testing is on-going. The objective of this is to provide a complementary new access mode to X.509 valid certificates. Documentation on the EGI wiki was updated. As to the GGUS system, a number of important new workflows were rolled to production:

- An automated work flow for tickets waiting for submitter input[15]. Purpose of this development is to automate as much as possible the follow-up of tickets with inactive submitters via automated e-mail notifications.
- A new work flow for tickets waiting of input from the support team[16] was implemented aiming at reminding supporters whenever feedback is needed and when ETAs (the estimated time of availability of patch) is violated. Purpose of this workflow is to handle 3rd level support tickets in a scenario where different support teams can provide different responsiveness depending on the amount of resources locally available. A new policy was introduced for testing, requiring the addition of ETA information to every software ticket which reaches the 3rd level of escalation requiring the release of a patch.

[12] https://wiki.egi.eu/wiki/Middleware_products_verified_for_the_support_of_SHA-2_proxies_and_certificates

[13] https://wiki.egi.eu/wiki/Middleware_argus_interoperability

[14] https://wiki.egi.eu/wiki/SA1.6-QR13

[15] https://wiki.egi.eu/wiki/FAQ_GGUS-Waiting-For-Submitter-Process

[16] https://wiki.egi.eu/wiki/FAQ_GGUS-Waiting-For-PT-Process

- Three different quality of service levels were introduced, requiring different responsiveness to tickets depending on the level of criticality of ticket itself.

Various bugs affecting the interface to CERN SNOW were fixed. In addition, the alarm and interface tests after each GGUS release are now testing for changes. The GGUS test instance was moved to the new high availability structures for testing the processes.

Grid Oversight

- **Followup upgrades of unsupported software.** COD was responsible of overseeing the process of retirement EMI-1 middleware. The upgrade campaign was completed in PQ13. Currently COD is monitoring the progress of the StoRM service retirement (7 instances). In the near future the EMI-1 dCache service withdrawal, that has extended support until 31.08.2013, will be performed.
- **Unknown Probe Result.** Monitoring results produced locally by the SAM system run at an NGI level can be reported as unknown in case of problems with the issuing of tests or the shipping of results. The implementation of a Nagios probe that checks the percentage of UNKNOWN test results and raises an alarm in case this percentage exceeds a given threshold was discussed.
- **Followup NGI Core Services availability.** COD regularly issued GGUS tickets to NGIs that do not meet the 99% availability requirement according to the service level targets defined in the Resource Provider OLA. In case of violation, information about the service improvement plans is gathered from the NGIs. The two NGIs that in PQ13 were affected by recurrent performance issues were the federated operations centre of Latin America – which is facing a consolidation of the central services after the decommissioning of the second operations centre active in the region (IGALC), and Armenia. The sharing of a different top-BDII service provided by another NGI, or the use of a catch-all service is being discussed.
- **Nagios Probe working group.** Under the coordination of COD, the Nagios Probe working group performed a technical analysis of the EMI-1 probes in preparation to their integration into SAM Update 22, and a proposal – requiring the removal of some of the probes, mainly ARC ones – was submitted to the OMB for approval. The working group will be also in charge of proposing which probes should be OPERATIONS, once SAM Update 22 will be in production. The working group is currently reviewing some requests of new probes and assessing the new MPI probes.

Software Support

The activity ran smoothly following the established procedures. The number of tickets handled in this period was lower (125 tickets vs. 173 and 192 in PQ12 and PQ11 respectively), because of the summer period. The ratio of solved tickets is 24% which remains within the usual range (20-30%). This is the first reporting period after the end of EMI and IGE projects. Thanks to thorough preparation and establishment of support relationships with the individual technology providers, no particular issues were encountered.

Network Support

A partnership with DANTE and the National Research and Education Networks (NRENs) was established in PY3[17]. A collaboration is now in place with the eduPERT [18] team. A training session will be provided during EGITF13. Network support was stopped in PY13 and the corresponding effort transferred to software support activities provided by INFN through the UMD Release Team.

NGI User Support

[17] https://documents.egi.eu/document/501

[18] http://geant3.archive.geant.net/service/edupert/pages/home.aspx

- **DRIHM.** The DRIHM VO (hydrology and meteorology) became operational and 9 different NGIs and related Resource Centres offered resources for testing activities. Central services (myproxy, VOMS, workload services – WMS and catalogues) were set-up to support the new VO. Testing activities will continue in PQ14. The status of the DRIHM-EGI collaboration and the testing infrastructure is documented on wiki.
- **NGI_CZ.** The local installation of the DIRAC File Catalogue was completed. Purpose of this activity is to compare this service to LFC. This activity was driven by needs of the VO AUGER. Transfers of ATLAS user data to tapes hosted by CESNET Data Storage and the random retrieval of selected files were conducted. NGI_CZ participated to the second Belle MC Challenge started at the end of July, activities will continue in PQ14.
- **NGI_FR.** A policy was drafted to propose the DIRAC service to new VOs and a first local VO accepted the service to perform testing activities. France Grilles is currently preparing its yearly scientific French speaking meeting[19]. This event is co-organised with the "Groupe Calcul". It will take place in Paris (13-14 November 2013). The call for papers was sent to the France Grilles and regional HPC competence centre user communities.
- **NGI_GR.** Problems affecting the functionality of WS-PGRADE portal were fixed with an upgrade of the portal to its latest version. The WRF application for Scientific Gateway (WRF4SG) was installed as an extension of WS-PGRADE portal. Finally, the broken interface between GGUS and HellasGrid RT was restored.
- **IberGrid.** A user Support survey was sent to regional users in order to better define their activity profile. RT – the national NGI helpdesk – is completely integrated with GGUS. This system is also deployed to provide support to regional user communities. The DIRAC documentation is being revised for IBERGRID, with the objective of spreading its use. Resources were provided to the Distributed Research Infrastructure for Hydro-Meteorology Study (DRIHM) project at some of the Iberian Resource Centres. The IberGrid support mailing list was made public to allow public consultation from users. Finally, several sites started the decommission procedure; these were supporting regional users. The orphaned user communities were migrated to the IFCA-CSIC infrastructure.
- **NGI_IT**. User support activities for new communities during PQ13 focused on the following main areas.
    - BioComputing Group of the Bologna University, Italy: Support was provided to create and run a computing model for a use case based on the BLAST application for sequence alignment, 17 million sequences aligned all-against-all. The production requires about 800,000 core hours and is now almost completed (about 3TB the foreseen output data size) - a complex data management model was needed for the input data.
    - Establishing contacts and support activities to the DRIHM.eu project community: DRIHM is a project about meteorology and hydrology to study and forecast flooding events coordinated by the CIMA Foundation – Italy. Technical work was conducted to support part of their computing model. For one computing model a cloud approach based on WNoDES will be proposed. WNoDES is a virtualisation system that instantiates virtual machines on grid resources via grid jobs. NGI_IT also contributes

[19] http://succes2013.sciencesconf.org/

resources to the EGI-DRIHM testbed and related activities coordinated by EGI to support other layers of the computing model.

- Support to the EMSO ESFRI project: The project is about data handling for a distributed infrastructure of submarine experimental sites. The coordination is in Italy under the responsibility of INGV. After a period of inactivity, some activities were resumed and new actions were defined. The computing model requirements were analysed, mainly for what concerns the data management and the interoperability between grid resources, different DB and storage systems already in use by the community. Some NGI_IT resources were provided to the community through groups created in a catch all national VO (a VO dedicated to EMSO does not exist yet).
- Support to the COMPCHEM VO: Various user support activities and application porting for several applications were completed.
- A new INFN community - the SPES experiment at the Legnaro National Laboratories, Padova - requested the porting of the FLUKA monte carlo application to the NGI_IT resources. This is being supported by porting activity and probably by providing a high-level web interface in the IGI Portal for the community.

During PQ14 the on-going community support activities will be completed. A grid school based on real-life applications is being planned. Purpose of the school is the porting to the distributed infrastructure of applications for a selected number of research groups belonging to the computational chemistry and astrophysical disciplines.

- **NGI_AEGIS**. During PQ13 the case study of a Serbian physicist Nenad Vukmirovic from the Institute of Physics Belgrade has been published on the EGI web site[20]. His recent work – published in the Physical Review Letters – used NGI_AEGIS Grid computing resource to calculate how electrons interact with phonon waves. Together with the Serbian chemistry community, the SZMAP application[21] was deployed in NGI_AEGIS Resource Centres. This OpenEye's application aims to help researchers to understand the role of water in molecular interactions such as ligand binding. In addition, the previously installed OpenEye's applications EON were updated to the latest versions. The Helpdesk[22] and the NGI_AEGIS website[23] (http://www.aegis.rs/) have been regularly maintained and updated. NGI_AEGIS participated to the testing of the new recent GGUS release and of the GGUS-NGI_AEGIS Helpdesk interface functionality. During PQ14, the NGI_AEGIS software stack will be extended with the Rosetta[24] software suite for modelling of macromolecular structures.
- **NGI_TR.** The NGI was in contact with the ELIXIR VT team to get recommendations and MoU templates for setting up national bioinformatics initiative. NGI representatives participated to the VC meeting in between the main institutions and groups of the national bioinformatics community to share the NGIs experience about national initiatives.

[20] http://www.egi.eu/case-studies/eng_tech/semiconductor.html
[21] http://www.eyesopen.com/SZMAP
[22] https://helpdesk.aegis.rs
[23] http://www.aegis.rs
[24] https://www.rosettacommons.org/home

1.2.4. Infrastructure Services

Messaging. The APEL SSM client that was released as part of UMD 3 is now using the production ActiveMQ broker network. In order to only receive usage records from authorized end-points, a component was deployed on the production message broker network, which is responsible for authenticating the gLite-APEL nodes. This component retrieves the list of authorized nodes from GOCDB.

GOCDB. The deployment of the GOCDB 5 was postponed due to the need of keeping site and service endpoint IDs from GOCDB version 4 for interoperability with SAM. Other operational tools performed tests of new GOCDB 5 features.

Operations Portal. The prototype of a new Availability/Reliability dashboard was deployed in the Operations Portal.

SAM. The SAM Update-22 release was finalized after a pre-release testing phase to which various NGIs contributed in June. Update 22 contains significant changes compared to the previous release[25]. In order to clear out bugs before the staged rollout it was decided to have a testing phase. During the testing phase NGIs deployed additional local SAM instances. The central Nagios server "midmon" responsible of the central EGI monitoring function was extended with the new set of tests monitoring middleware compliance to SHA-2 certificates and a new test monitoring the publishing of User DN information in the accounting records by Resource Centres.

The list of OPERATIONS tests was extended by adding the following new tests:

- Monitoring tests of the central EGI.eu operational tools and instances;
- user DN publishing tests run by midmon;
- SHA-2 compliance tests for service types CREAM-CE, VOMS and WMS run by midmon.

Accounting. The integration of the accounting infrastructure significantly advanced during PQ13. The new data retention policy requiring the retention of personal data for a maximum duration of 18 months was enforced as of the 1st of July. This affected accounting views displaying information aggregated per User DN. No accounting information was lost in this operation, and aggregated accounting information is still available in summarized form.

The adoption of the new SSM 2.0/EMI 3 APEL Client publishing to the production APEL server through messaging started. ARC/JURA and QCG/MAPPER accounting clients have now successfully tested sending records to the production APEL server using SSM 2.0; EDGI – Desktop Grid Accounting also have successfully sent records to the APEL test server using SSM 2.0.

MPI Accounting using the EMI 3 APEL client has been tested and the summaries of MPI accounting have been verified by the MPI VT.

New versions of the APEL client and server packages have been released in response to RT5615 https://rt.egi.eu/rt/Ticket/Display.html?id=5615 which highlighted insecure file permissions. The Regional APEL Server is being tested by a number of partners.

Summaries of test cloud accounting records, received from 8 of the 10 EGI Fedcloud task resource providers, are now sent twice a day to the EGI Accounting Portal using SSM 2.0.

[25] https://tomtools.cern.ch/confluence/display/SAMDOC/FAQs#FAQs-WhichmetricshavebeenchangedbetweenSAMUpdate20andSAMUpdate22%3F

There was a network problem overnight on the 22nd/23rd July which caused a break in connectivity to the APEL service. The problems were caused by a router closing down the port linking the network segment containing the APEL service in response to an excess of broadcast traffic.

Availability reporting. Availability and Reliability reporting was conducted on a monthly basis as usual. Publication of results and re-computation requests regarding monitoring results and Availability/Reliability figures were handled by the Service Level Management support unit in GGUS.

Catch all operations services. A migration of the VOMRS service supporting the DTEAM VO is needed in order to support SHA-2 certificate encryption and decommission VOMRS. The testing of this migration from VOMS to the latest EMI-3 version of VOMS-Admin has begun. This activity will be completed in PQ14 assuming the test results will be satisfactory. A similar migration of the VOMRS supporting the OPS VO is being discussed with CERN. The operation of the EGI Catch All CA took place as normal. The infrastructure for Resource Centre certification was timely operated. The midmon dedicated SAM instance – used for monitoring of running middleware versions on sites and other central monitoring activities – underwent maintenance work. Also, several new probes have been regularly added to assist the campaign for unsupported middleware service instances and to migrate to SHA-2.

1.2.5. Tool Maintenance and Development

GOCDB. GOCDB V5 developments included:

- Implement remaining programmatic interface (PI) methods: 'get_cert_status_changes' and 'get_cert_status_date.'
- Completed role refactoring/improvements.
- Completed project to NGI relationship.
- Added Service Group (SG) Admin role to user who created the SG.
- Completed multi-scoping logic and updated the PI to support multi-scoping. Updated the 'scope' parameter to add a comma-separated list of scope values and the new 'scope_match' parameter to filter for 'all' or 'any' of the specified scopes.
- Carry-over of v4 primary keys for Downtimes.
- Added new 'org.nordugrid.arex' service type.
- Completed admin interface.
- Added pagination via 'page' parameter for the ‘get_downtime’ PI query.
- Roll out of updated v5 test instance for JRA1 acceptance testing.

Operations Portal. A refactoring of different modules in the portal has been completed to replace the heterogeneous JavaScript libraries by the use of a standard one: jQuery. The different interfaces and “look and feel” will be homogenized with the help of the bootstrap framework. The global performances and display will be improved and we will also correct minor bugs on the different features. This work will be done step by step and module per module:

- Refactoring of the VO ID cards – Achieved
- Refactoring of the VO Administration Module – Achieved
- Refactoring of the Broadcast - Almost Achieved
- Refactoring of the Dashboard - On going

All of these developments are visible on http://operations-portal.egi.eu/next and these improvements will be released into production before the end of the year.

Service Availability Monitor (SAM). The main achievement in PQ13 has been the development of SAM Update 22. This release is mainly focused on the integration of EMI probes, which involved:

- Major repackaging of SAM and developments necessary to adopt new libraries (from EPEL);
- Determining how to map the EMI probes to the current EGI metrics;
- Coordination of probe development with EMI (https://twiki.cern.ch/twiki/bin/view/EMI/NagiosServerEMITestbed0022012), which includes opening tickets and follow-up;
- Helping EMI to test the developed probes in an integrated SAM/EMI environment as well as contribution to establishing EMI2RC testbed;
- Analyzing impact of changes in EMI probes to EGI operations;
- Changes and development fixes in all the components that can pop-up during this integration;

The following probes were integrated:

- ARC probes (nordugrid-arc-nagios-plugins-1.6.1-1.rc1.el5);
- ARGUS probes (nagios-plugins-argus-1.1.0-2.el5);
- BDII probes (nagios-plugins-bdii-1.0.14-1.el5);
- CREAMCE probes (emi-cream-nagios-1.0.1-4.el5.sam);
- FTS probes (nagios-plugins-fts-1.0.1-1.el5);
- GLEXEC probe (nagios-plugins-emi.glexec-0.3.0-1.sl5);
- LFC probes (nagios-plugins-lfc-0.9.5-1.el5);
- new MPI probes (egi-mpi-nagios-0.0.4-1.el5);
- SRM probes (emi.dcache.srm-probes-1.0.0-1.el5);
- UNICORE probes (unicore-nagios-plugins-2.2.1-1.sl5);
- WMS probes (emi-wms-nagios-3.5.0-3.sl5);
- WN replication probes (nagios-plugins-wn-rep-1.0.0-1.sl5).

In addition, as part of SAM Update 22, bugs identified during the deployment of SAM Update 20 and during the validation phase (pre-SR) were fixed. Release notes are available at: https://tomtools.cern.ch/confluence/display/SAMDOC/Update-22 which resolved 106 tickets. As part of the integration of EMI probes, several profiles changes were needed. Several metrics need to be removed from profiles, as they have been deprecated by their developers. With these removals, the following metrics disappeared from all APIs and interfaces (by 1st of June 2013):

- org.sam.LFC-CertLifetime (there is no replacement)
- org.arc.AUTH (not needed, as this is tested indirectly at any job submission)
- org.arc.SW-VERSION (checked the ARC version publishing, this functionality is provided by new test org.nordugrid.ARC-CE-ARIS)
- org.sam.mpi.CE-JobSubmit (replaced by new MPI tests)
- org.sam.WN-MPI (replaced by new MPI tests)

Some metrics have been renamed by their developers. Both names will be kept until all instances are upgraded:

- The central instance and upgraded NGIs with the new names
- Non-upgraded NGIs with the old names

SAM Update-22 includes a metric-renaming mechanism, to ensure correct functionality during transition period. The metric history will be preserved; this change will not affect Availability and Reliability calculation. The messaging infrastructure underwent the following changes:

- Added nagios reports on the broker mailing list;
- Cleaning unwanted queues;

- Storage, database and log maintenance;
- APEL issue resolved.

EGI Helpdesk (GGUS). During PQ13, two major releases have been delivered, the release note are available at https://ggus.eu/pages/owl.php. The main activities performed during this time include:

- Report Generator: New report ETA accuracy introduced in the Report Generator;
- Decommissioned support units: "UCST", "EMI QA", "EMI Testbeds", "EMI Release Management", "EMI Common", "EMI Common Data Library", "ISIN", "gLite VOBOX", "gLite UI", "gLite WN", "StratusLab", "ROC_IGALC", "NGI_IE";
- Renamed support units: "IGE" -> "EGCF", "gLite WMS" -> "WMS";
- New support unit: "NGI_ZA";
- Introduced new VO: "drihm.eu";
- GGUS Web Portal:
    - New "Did you knows?" about the following topics:
        - Changes with the end of EMI;
        - Notification on re-opening alarm tickets;
    - Renewed GGUS service certificate used for signing alarm notifications;
    - Renewed GGUS host certificate;
    - Testing a SAML/Shibboleth based access to GGUS;
    - Updated documentation in EGI wiki;
- GGUS System:
    - Automated work flow for tickets waiting for submitter input;
    - Introduced quality of service levels;
    - New work flow for tickets waiting for PT input;
    - Email notification to the agreed "Emergency email" address when an ALARM ticket gets re-opened;
- Interfaces with other ticket system: Fixed bugs in interface to CERN SNOW;
- Alarm tests after GGUS releases: Executed the alarm and interface tests after GGUS releases;
- High availability: Moved GGUS test instance to the new high availability structures for testing the processes.

Accounting Repository. For CPU Accounting:

- ARC/JURA and QCG/MAPPER accounting clients are now in production use at sites;
- Globus/Gridsafe: APEL team to provide an updated version of the aggregated usage record;
- EDGI/Desktop Grid: Accounting being testing;
- MPI: Use of the EMI 3 APEL client testing (by the MPI VT) verified;
- Security fix released, in response to RT 5615: https://rt.egi.eu/rt/Ticket/Display.html?id=5615.

For Cloud Accounting:

- Summaries of cloud accounting records, received from 8 of the 10 EGI Federated Cloud resource providers, sent twice a day to the EGI Accounting Portal using SSM 2.0;
- Work with sub-team of FedCloud Task force to compare cloud accounting records from the resource providers so that the format and type of data is consistent across resource providers.

For Storage Accounting**:**

- Work continued (at INFN) on the storage accounting BDII sensor.

Accounting Portal. Work continued on:

- Security work;

- Updating of VO Metrics processing;
- Inter-NGI developments;
- Fixed CSV reporting;
- Improvements on endpoint for UserDN publication SAM probe;
- Further Core refactoring;
- OOP migration;
- Regionalization improvements;
- Fixed XML endpoints;
- UserDN SAM probe monitoring and discussion;
- Cloud accounting third iteration, meetings;
- Schema adaptations for cloud;
- Revised codebase for new accounting;
- Changes for new accounting;
- Installation of new SSM software;
- Updated RT tickets on dashboard.

Metrics Portal

- Addition of new SA1 and SA2 metrics;
- Changes, deprecation and restructuring in SA1 metrics;
- Software support metrics moved from SA2 to SA1;
- NGI summed metrics for NA2;
- Changes in quarterly views and Excel reports;
- Redundant tickets view removed;
- Fixed problem with history view;
- Restored SA2 metrics;
- UserDN SAM probe atomic table changes implemented;
- Updated RT tickets on dashboard;
- Changes in the auth system;
- Changes for QR13;
- Changes on project metrics;
- New mechanism for deprecation of project metrics

1.3. Issues and Mitigation

1.3.1. Issue 1: SAM

The EMI-NAGIOS meta-package support ended. This meta-package contains all the procedures to install and configure the EMI probes. The SAM team is not available to take charge of the EMI-NAGIOS meta-package maintenance because they already allocated all the remaining JRA1 effort in other activities (e.g. maintenance and bug-fixing of the existing components).

1.3.2. Issue 2: Grid Software Maintenance and Support

Continued grid software maintenance and third level support of software in EGI is paramount. Both will be 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 will require have to be reflected with changes in the EGI software provisioning processes.

Solved. In PQ11 the Operations Management Board assessed the risk and the related affecting operations assets[26]. The min risks identified were: the availability of specialized support and the commitment to a timely delivering of fixes in case of high or critical vulnerabilities affecting the production infrastructure. In PY13 the UMD Release Team was successfully constituted to facilitate communication among software providers, and between them and the UMD release team. Various urgent fixes were successfully release to meet the need of the production infrastructure. Different Quality of Service levels were enabled in GGUS and the majority of the Technology Providers ensured continuity of their specialized software support activities through GGUS.

1.3.3. Issue3: NGI operations sustainability

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.

Mitigation: The impact of the current funding position of NGI operational activities was assessed in a new survey[27] having the objective of defining which services in the operations service portfolio are of interest to NGIs either as consumers and providers and the conditions to be met to rely on externally provided services, with the ultimate aim of facilitating the federation of NGI services where needed. The outcome of the survey will be processed in PQ14 and actions will be defined accordingly.

1.4. Plans for the next period

1.4.1. Operations

Security

During PQ14, the EGI CSIRT team will continue to work on all if its current activities in the same sub-groups. Apart from the usual on-going regular operational duties, the following items are mentioned.

- For IRTF, planning will continue for incident handling beyond the end of EGI-InSPIRE. A joint meeting between EGI CSIRT and security staff from PRACE and EUDAT is planned for October. Future cooperation on security operations will be one of the topics to be discussed there.
- For the Security Drills team, the German NGI SSC will be performed. Training will be given at the EGI Technical Forum to help other NGIs prepare for and operate their own SSC.
- For the monitoring team, further testing of site-wide monitoring will be performed, working towards a full-blown proposal to EGI for deployment. Work will continue on Pakiti to support this. Collaboration with the dashboard developers will work towards the provision of better reports on security issues to sites, operations and management.
- The SVG will consider how to improve distribution/version handling and tracking. Revision of the vulnerability issue handling document will take place now that the post-EMI/IGE situation is clearer, and will take account of other changes that are happening. The SVG will act on the reports of the WMS and CREAM security assessments when these become available.
- The Emergency Suspension document will be finalised and OMB approval will be sought. First implementation of the suspension ARGUS system will either be deployed and tested or planned for PQ15

[26] https://indico.egi.eu/indico/getFile.py/access?contribId=2&resId=0&materialId=2&confId=1096

[27] https://wiki.egi.eu/wiki/EGI_Operations_Surveys#NGI_services_provisioning_and_usage

- Members of the team will attend the EGITF13 to give various security training courses and to present at and run the planned EGI security sessions. Plans will be made for future training and dissemination.
- Work will continue on forming a better understanding of the requirements for security in federated clouds, taking forward a suitable use case and deployment of monitoring and logging in the virtualised environment.

Staged Rollout

For PQ14, Staged Rollout activities will be affected by an important change concerning the release of software that was formerly part of the EMI distribution, and which will be released in third -party repositories like EPEL. This will completely change the way UMD gets the new releases, with a consequent increase in the complexity for the UMD release. During PQ14 the BDII and DPM product teams will start making there releases into EPEL testing repository. The software provisioning procedures for the release of UMD will be adapted accordingly.

Operational tools

- GOCDB v5 is planned to be released to production in PQ14.
- The deployment of the Operations Portal tool providing the new Availability/Reliability calculation is expected by the end of 2013.
- The start of Staged Rollout of SAM Update-22 is scheduled at the beginning of September.

Accounting

The integration of accounting records published by Globus/Gridsafe based on an updated version of "AUR" will be tested. In addition, the Regional APEL Server will be enhanced to include the following functions.

- Sites can include and exclude certain sites in publishing to the central server, as well as including/excluding VOs.
- A server can publish the same summaries to several receiving SSMs, this is in response to the requests from OSG/DGAS for summaries to be sent back to them as well as being published to the Accounting Portal.
- Improved error handling.

Helpdesk

Various new features are being discussed and are planned for the coming quarter.

- The use of GGUS alarm tickets as notification mechanism in case of failures of EGI central operational tools is being discussed.
- The workflow for tickets needing information about UMD releases when an issue is solved by a support team is now defined and will be implemented in the next GGUS release.
- A bulk ticket submission feature will be implemented.
- Interfaces with other systems will be finalised, in particular an xGUS instance for MAPPER will be instantiated. The interface to external support systems for network connectivity and performance troubleshooting will be discussed.
- GGUS will be migrated to the new GOC DB programmatic interface.

Grid Oversight

- **Review of certification procedure.** The certification procedure and the handling of testing activities before a site joins the production infrastructure were reviewed in PY3 and a proposal for change was prepared. In PQ14 the proposed changes will be discussed by the OMB, the impact of the changes on the existing operational tools will be evaluated and the required changes will be implemented.

- **Evolution of COD activities.** The evolution of the technical activities conducted by the Grid Oversight team was already discussed and proposed in PY3[28]. Some changes were implemented in the coming quarter, including the stop of the monthly follow up of NGIs failing minimum availability thresholds and other performance indicators. This activity will continue but focusing on NGIs with repeated performance problems with the objective of providing technical support to these NGIs.

1.4.2. Tool Maintenance and Development

GOCDB

The main target is to deploy GOCDB v5 into production in early September before the EGITF13:

- Complete acceptance testing with JRA1 / refresh v5 test instance data;
- Add new monitoring scripts;
- Add audit tables (change log tables) to record who did what action and when;
- User change their DN;
- Complete new failover installation: gocdb-failover.dl.ac.uk.

Operations Portal

The main activity for PQ14 will be the achievement of the dashboard refactoring and the preparation of the pre-production instance.

Service Availability Monitor (SAM)

A general direction of the development will focus on maintenance and bug fixing of the existing components. Regarding the GOCDBv5 changes, we will continue with the tests to ensure that the changes introduced in the GOCDB PI doesn't affect any component. SAM Update 22.1 will focus on bug fixing identified during the wide deployment of SAM Update 22.

EGI Helpdesk (GGUS)

- GGUS web portal:
  - Implement a bulk submit feature;
  - Implement alarm ticket process for operational tools;
- GGUS structure:
  - Integration of Operations Portal in GGUS. This action is postponed as requested by Operations Portal administrators;
  - Fully integrate CMS VO in GGUS and retire interface to Savannah;
  - Migrate GGUS shopping list from Savannah to JIRA;
  - Notification of failures of operational tools through GGUS;
  - Work flow for tickets needing information about UMD releases when issue was solved by PT;
- Interfaces with other ticketing systems:
  - Finish implementation of xGUS instance for MAPPER;
  - Start implementation of interface to DANTE ticketing system;
  - Migrate GOCDB interface to PI version 6;
  - Implement interface to PRACE RT system.

Accounting repository (APEL)

- CPU Accounting:

[28] https://documents.egi.eu/public/ShowDocument?docid=1529

  - Implement database loader improvements for APEL server and APEL regional server packages, including revised Aggregated Usage Record (AUR);
  - Work with accounting portal team to provide example summaries including MPI data in order to develop visualisation for MPI accounting;
- Cloud Accounting:
  - Verify data from the different EGI Federated Cloud resource providers and work with resource providers to ensure data is comparable;
  - Support two resource providers in publishing accounting records to the Cloud Accounting System using SSM 2.0 (Wnodes and CESNET);
- Storage Accounting:
  - Ensure data received from the different storage clients is comparable across sites;
  - Continue work defining the form the summaries of storage accounting data will take which can be sent to the portal.

Accounting portal

- New accounting;
- More InterNGI changes;
- Updates from scientific-discipline-classification VT;
- New XML endpoint format;
- Regional Portal finalization.

Metrics portal

- Authentication improvements;
- Cross-browser integration;
- New metrics implementation;
- Promote better infosis publication.

1.5. NGI Reports

NGI PQ13 operations reports are available from https://documents.egi.eu/document/1908



2. SOFTWARE PROVISIONING

2.1. Summary

In PQ13 SA2 continued the regular provisioning of UMD updates supporting two major releases on multiple operating systems. The infrastructure and the workflows supporting the UMD software provisioning did not undergo major changes, since they are efficient and adaptable. Only small changes and improvements were implemented. The quality criteria have been translated to YAML in order to improve the process of criteria definition and their management. The criteria document is being reviewed and a new release is expected in PQ14.

The verification templates have been aligned with the new criteria, including templates for the new products in the QCG stack. The testbed processes have been further integrated into EGI's Fe federated Cloud activities. Through the VMPublisher tool the verified middleware virtual machine images will be distributed among the Federated Cloud resource providers to be available for deployment.

The QCG products started the UMD software provisioning process at the end of PQ13 and they will be probably released in the production UMD repositories at the beginning of PQ14.

Four minor updates and a major release have been released during PQ13. UMD-2 had two minor updates. During May the first release of UMD-3 was published, followed by a large minor update that released most of the missing products in UMD-3, and an emergency update to fix a dependency issue. Almost all the UMD-1 products are considered unsupported and there were no updates for those versions. Two UMD-1 products are still formally in security support – the support was extended by the developers to wait for newer versions that should fix blocking issues – but no updates were necessary.

EGI's Federated Clouds taskforce is progressing towards the goal of providing production level resources to the EGI users through the integration with the EGI operational infrastructure, including a commercial provider. Several new features are under development, for example automatic virtual images distribution and a consistent authentication and authorization framework.

2.2. Main Achievements

2.2.1. Quality Criteria

SA2.2 has continued with the production of the 6th release of the Quality Criteria. In order to improve the process of criteria definition, the criteria were translated into YAML[29] files that are managed using a git repository. These criteria are then rendered into a final document representation that is stored in DocDB. A draft of the document is available as a web page[30]. The 6th release of the documents includes a complete review of all the criteria focusing on security and interoperability criteria that will reduce the verification effort and allow external teams to take care of verification of products (e.g. for community provided software).

The SA2.2 team has also tracked the QosCosGrid releases and introduced the products into the software provisioning workflow as soon as they were available.

[29] http://www.yaml.org/spec/1.2/spec.html

[30] http://enolfc.github.io/egi-qc

2.2.2. Criteria Verification

In PQ13, SA2.3 team created the VMpublisher[31] script to distribute the new verified VM images through EGI's Federated Cloud taskforce members or external users. This new tool is based on the VMcaster tool and the VM Marketplace. The script could be used after any successful verification by SA2 staff to generate a VM image that contains a deployed instance of the new UMD software, ready to be used by EGI sites. This mechanism gives user communities the ability to test new software versions without the need to spend time installing and configuring a new machine. The new generated VM images will be signed by the SA2.3 task leader and published through CESGA image list[32]. In addition in PQ13 the verification templates were upgraded to use the new Quality Criteria version (https://documents.egi.eu/document/417). The new templates were updated for all UMD products and it includes the new products provided by QosCosGrid TP (http://www.qoscosgrid.org/trac/qcg).

During PQ13 a total of 89 products were verified and only 1 product was rejected (SL6 versions of GridWay 5.14.0 for UMD3).

2.2.3. Support Infrastructure

During PQ13 TSA2.4 continued to support SA2 software provisioning activities as usual. The following releases were published:

UMD-2

Release	Date	Type	Content
UMD 2.5.0	24/05/2013	Minor release	EMI products updated: • CREAM Torque 2.0.1 • WMS 3.4.1 • Blah 1.18.3 • Torque server config 1.0.1-1 • LB 3.2.10 IGE updates: • GridFTP 5.2.3 • Gsisshterm 1.3.4 • GRAM5
UMD 2.6.0	12/06/2013	Minor release	EMI products updated: • UNICORE/X6 5.1.0 • UNICORE TSI6 5.1.0 • EMI-WN 2.0.1 • GFAL/lcg_util 1.15.0 • gLExec-WN 1.1.2 • EMI-UI 2.0.2-1

UMD-3

[31] https://github.com/alvarosimon/VMpublisher

[32] http://cloud.cesga.es/files/image.list

Release	Date	Type	Content
UMD 3.0.0	14/05/2013	Major release	EMI products: • Argus • APEL parsers • Bdii-site • Bdii-top • Bdii-core • CANl • Cream • Cream-torque • DPM • EMI-UI • Gfal-lcg_util • Glexec • glite-yaim-core • Gridsite • Gsoap-gss • LB • Lcg-info-clients • LFC • Torque Server • TORQUE WN • Voms • WMS • WN
UMD 3.1.0	26/06/2013	Minor release	EMI products, first release in UMD-3: • ARC InfoSys • ARC core • ARC CE • ARC Client • ARC gridftp server • CREAM LSF • UNICORE Gateway6 • UNICORE XUUDB • UNICORE Registry6 • UNICORE Client6 • UNICORE TSI6 • gLite MPI • StoRM

			• GLite Cluster EMI products, updates: • WMS • BDII core • DPM • LB
UMD 3.1.1	01/07/2013	Emergency release	EMI products, updates: • EMI-UI 3.0.1 • CANL 2.1.1 • GFAL/lcg_util 1.15.0

There were no updates for UMD-1 as almost all the products released in the first major release of UMD are now unsupported and they are now released and supported in the other UMD major releases. Only two products, dCache and StoRM, have been supported until PQ13 but no security updates were necessary.

Two updates for the IGTF trust anchors release have been made available through the EGI repositories:

- CA Update 1.53-1 released on 29/05/2013
- CA Update 1.54-1 released on 25/06/2013

During PQ13 TSA2.4 performed regular maintenance and upgrade of the EGI instances of the Stratuslab marketplace (http://marketplace.egi.eu/) and appliance repository (https://appliance-repo.egi.eu/) to be used by TSA 2.3 in a pilot service that will offer virtual machines with preinstalled middleware services.

2.2.3.1. Repository Front End Activities

- Admin support for the web front end (wordpress upgrades, minor changes in the content)
- Minor bug fixes and enhancements (support for the display version feature) for the rss plugin
- Added Support for UMD-3

2.2.3.2. Repository Backend Activities

- Regular maintenance and operation.
- Added Support for UMD-3

2.2.3.3. Repository Statistics

- Regular maintenance and operation.
- Added support for UMD-3

2.2.3.4. IT support and RT Activities

- Maintenance of the EGI web site
- Updated the look and feel of the EGI web site
- Monthly updates of inspire-members list from PPT
- Implemented deletion of user for EGI SSO
- Ongoing backoffice administration, maintenance and user support.

2.2.4. Federated Private Clouds

The EGI Federated Cloud task, TSA2.6, is progressing as planned. A number of new resource providers have followed the procedures and technical integrations as outlined in the EGI Federated Clouds Blueprint[33]. A commercial SME Cloud provider, 100%IT, has joint the group, and is both the first commercial supplier for any of EGIs services and to pioneer formal EGI certification as Cloud resource provider. This activity has triggered a number of necessary side-activities such as investigations into automated security monitoring for Cloud Computing and further developments of core policy documents. Many discussions have led to an agreed harmonisation of existing infrastructure towards a consistent Authentication and Authorisation infrastructure, adopting the standards based OpenStack A&A model. Implementations are underway with early versions already deployed in the testbed.

Contextualisation and automated application deployment have been added to the Federated Cloud computing portfolio. Implementations exist and utilise OCCI's extensibility with a request for standardising the developed OCCI extension submitted to OGF's OCCI Working Group. Likewise, the EGI Federated Cloud task's model of Cloud Accounting formed the basis of the Cloud related accounting enhancements in the recently released Usage Record 2 specification. Together with the AppDB development team the Federated Clouds group is working towards automated VM Image distribution across the Resource Providers, using a contributed technology called "vmcaster/vmcatcher[34]", which is also evaluated in the HEPiX Virtualisation activity. With AppDB essentially implementing the vmcaster part, EGI will be able to offer a powerful and convenient to use service for communities to manage their Virtual Appliances and have them automatically deployed to their supporting Resource Providers.

2.3. Issues and Mitigation

2.3.1. Issue 1: End of European middleware projects

In response to the end of EGI's main technology providers, namely EMI and IGE, SA2 is now running a lightweight coordination activity, the UMD Release Team, that is maintaining the communications with the product teams, and collecting information about their activities. The next steps will be to extend the UMD workflows to allow the usage of other repositories, such as EPEL and other repositories, as sources for the software provisioning process. This will allow the UMD workflows to be merged with the product team release process, and reduce the effort and the time required to release products in UMD.

2.4. Plans for the next period

SA2 will continue handling the communications with the technology providers and the product teams in the UMD Release Team. SA2.2's activities will continue to focus on the finalization of the 6th release of the Quality Criteria that will be used for verification of the upcoming products. For this new release, the test procedures will be reviewed and updated in the wiki and a new mapping will be produced.

[33] MS520 EGI Federated Clouds Blueprint https://documents.egi.eu/document/1773

[34] vmcatcher GitHUB page: https://github.com/hepix-virtualisation/vmcatcher

The SA2.3 team will improve the current UMD release candidate tester (the RC_tester script) by rewriting it in Python with new features and improved documentation so it can be used by others. After these changes the documentation will be included into SA2 wiki page and the code will be uploaded to github to be used by external verifiers. This change will help SA2 team to detect any issue (related with testing and production repositories) during software provisioning workflow.
SA2.4 will continue to support the current software provisioning infrastructure and tools, extending the current workflows to tackle the needs of the new technology ecosystem. With the end of EMI and IGE, UMD will need to support different repositories to pull the packages; in August the SA2.4 team will start testing a possible workflow to include also EPEL as source repository.
SA2.6 will continue to mature its services to production quality. The pre-released CDMI proxy for Cloud Storage will be beta-tested at Resource Providers, and integrated into the Federated Clouds A&A model. The Cloud storage portfolio will be further matured towards reliably and programmatically offering ephemeral, local block storage attached to a VM instance, and persistent, remote Object Storage (through the CDMI proxy service). In collaboration with a number of funded virtual teams and the HelixNebula project, two flagship use cases (ESA and CERN ATLAS) will be deployed in a Proof-of-Concept on the EGI Federated Clouds testbed.



3. COMMUNITY ENGAGEMENT

3.1. Summary

EGI's community engagement activities continued across technical and non-technical areas, both within and external to the EGI Community, supported by a professional Marketing and Communications team.

EGI-InSPIRE was present at International Supercomputing Conference in Leipzig, the 9th European Biophysics Congress in Lisbon and ISMB/ECCB 2013 in Berlin with planning for EGITF13 being finalised and the EGICF14 in Helsinki being prepared. To support promotional activities with the EGI Champions a new applications brochure on Biophysics was produced. The website was updated with information on EGI's service and solution portfolio that had been collected by the Strategy and Policy team.

In addition, the Strategy and Policy Team led the preparation on a Scientific Review Process to support Excellent Science in EGI that was endorsed by the EGI Council as well as the adoption of a new Scientific Discipline classification within EGI's tools. Work has progressed with the OpenAIRE collaboration with the publishing of the first data mining results allowing EGI to find publications that have been generated using resource from within the NGIs. In pursuing the inclusion of resources for EGI's pay-for-use experiments, agreement has been reached to run some of the HelixNebula's proof of concept experiments on EGI's Federated Cloud resources alongside commercial resource providers.

The 9 EGI Champions remain active attending events in their own communities supported by EGI.eu. The strengthening of the EGI Champions has continued through a series of webinars providing information on EGI and its activities and focused media and presentation training. Useful contacts have been established with the XSEDE program in the USA, which has a campus champions programme and is now exploring how to have expand these activities into domain specific outreach.

Technical outreach through specific consultancy and engagement through virtual teams has continued with support of NGI activity in the ELIXIR, CTA and Computational Chemistry and Materials Science virtual teams and collaboration with the ENVIRI and DHRIM projects. A broader collaboration between EGI/EUDAT/PRACE relating to various data issues is being supported by preparation of how EGI storage resources can be integrated and used by the Globus Online service.

3.2. Main Achievements

3.2.1. Marketing & Communication

TNA2U.2 and TNA2U.4 continued to work together on joint planning of outreach and attendance at events and in PQ13 attended 3 events: International Supercomputing Conference in Leipzig, the 9th European Biophysics Congress in Lisbon and ISMB/ECCB 2013 in Berlin. EGI had a booth at each event with staff from EGI.eu attending. The usefulness of each event and whether there will be an EGI presence at these events next year is being discussed.

The brochure portfolio on offer to the community continues to be improved and expanded, with input from various community representatives, particularly the Champions. In PQ13 EGI.eu released a new "Applications for Biophysics" brochure[35], the latest Annual Report[36] and the case for EGI document

[35] http://www.egi.eu/news-and-media/EGI_Biophysics_web.pdf

"Why EGI?"[37]. The "Applications for Biophysics" brochure was specifically asked for, and produced with, one of the Champions and was used at the 9th European Biophysics Congress and ISMB/ECCB 2013 meetings.

The Communications Team worked with the Policy & Strategy Team to update the Services area[38] of the website. This makes it easier for a visitor to determine the services offered to them as a researcher, resource provider or EGI.eu participant.

The team also published 11 news items, 2 case studies and 1 issue of the "Inspired" newsletter[39] during PQ13. EGI, and the science it supports was mentioned or the focus of 7 articles in international Science Grid This Week[40].

3.2.2. Strategic Planning & Policy Support

The Scientific Review Process was reviewed to finalise the policy document[41] and Terms of Reference (ToR) and to coordinate integration activities and related processes regarding OpenAIRE with the operations team. The SPT has led the Scientific Publication Repository Implementation Virtual Team that includes representatives from the OpenAIRE project through bi-weekly calls to take forward activities. Work has included a survey with EGI VOs (23 responses) designed to collect acknowledgement statements and related information to support OpenAIRE in preparing and updating mining rules and data models. OpenAIRE provided initial mock-up pages of the web interface, results from mining web of science metadata catalogue and from a wider set of repositories using EGI-related rules. They released initial results and are implementing the new data model that will be able to store the relationships between publications and EGI. All information is updated via a dedicated wiki[42].

Scientific Discipline Classification VT, also led by the SPT, made final refinements to classification, held a final call and submitted a final report for evaluation and approval through the EGI governance[43]. Implementation of the classification has already started, which can be seen in both the AppDB[44] with the most advanced interface, and within the Training Marketplace for both advertising[45] and the gadget[46].

The SPT made significant progress in developing, refining, and publishing the EGI solutions[47] and service[48] portfolios. This includes all names, descriptions and value proposition that build on the work supported by the FedSM project (www.fedsm.eu). As a consequent activity, work as started on

[36] http://www.egi.eu/news-and-media/EGI_AnnualReport2011.pdf
[37] http://go.egi.eu/why
[38] http://www.egi.eu/services/
[39] http://www.egi.eu/news-and-media/newsletters/Inspired_Issue_12/index.
[40] http://www.isgtw.org/
[41] http://documents.egi.eu/document/1415
[42] http://wiki.egi.eu/wiki/VT_Scientific_Publications_Repository_Implementation
[43] http://go.egi.eu/SDC-VT-final-report
[44] http://appdb.egi.eu/pages/statistics/software/discipline
[45] http://www.egi.eu/services/training_marketplace/index.html
[46] http://egitraining.esc.rl.ac.uk/ngi_gadget_calendar/term_pick.php?type=single
[47] http://www.egi.eu/solutions
[48] http://www.egi.eu/services



defining the NGIs Service Portfolio with a draft initial list of technical services that should be included considering also the EGI Federated Cloud.

Regarding the EGI Federated Cloud, collaboration has continued with the Helix Nebula project, which defined a new plan to demonstrate that Helix Nebula flagship applications can be executed on the EGI Federated Cloud, developed an initial skeleton of MoU between the two projects, and organised calls with key members to discuss test cases. Both the ESA and CERN flagship applications have been selected and contact established.
Pay-for-use activities have progressed through dedicated calls with JRA1 and APEL members to discuss billing functions and required accounting mechanisms. Resulting from the calls is the necessity to coordinate with other activities with overlapping discussions, issues and work such as the accounting in the EGI Federated Cloud and access policies within the Federated Resource Allocation team.
The SPT advanced the EGI Balanced Scorecard by updating the diagram and collected some extra values based on EGI Compendium data. The team also finalised the revision of EGI and EU2020 scorecard[49]. Existing MoUs are continuously monitored and tracked with three new MoUs underway with OSG, VERCE and DCH. One policy group meeting was held during the quarter, the TCB, where the SPT manager attended and took minutes. Other communication activities have been around updating the strategy and policy webpages, publishing the solutions and service portfolio, providing content for an EGI Inspired newsletter article and starting proposals for a new EGI tagline. The SPT launched the EGI Compendium 2012 questionnaire, analysed the responses and has drafted a report.

Organisation for the upcoming EGITF13 is underway as SPT members serve on the Programme Committee and are leaders of the Policy and Business Models for Open Data track. The team has submitted workshop abstracts, reviewed conference abstracts and has begun session development and speaker recruitment.

FOM has been carrying out work with the EUGridPMA and IGTF in a joint effort with the CILogon service and XSEDE to prepare a proposal for an 'identifier-only' assurance level. Meetings of the TAGPMA held in the US were attended with effective results in furthering the definition of the assurance level. Discussions with CILogon regarding the InCommon authentication levels clarified the possibilities for a joint assurance level between Europe and the US. These developments may also be relevant for EGI where the ubiquitous availability of light-weight CILogon credentials as observed in the US is sometimes seen as solely an advantageous development. The limitations in assurance level identified during the joint TAGPMA sessions and their subsequent discussion in the EUGridPMA and with PRACE make it clearer that the more dynamic binding between users and e-Infrastructure providers in Europe will pose additional challenges for one-on-one implementation of the same assurance level.
The guideline for trusted credential stores (addressing the need for secure storage of credentials in portals and on-line credential services that are emerging at the national and community level) was drafted during the EUGridPMA meeting in Kyiv.
STFC has continued to chair and lead the Security Policy Group (SPG). An updated version of the Service Operations Security Policy document was approved stating the requirement for resource centres to deploy the central security emergency suspension system[50]. A new clause in the user AUP to

[49] https://wiki.egi.eu/wiki/EU2020
[50] https://rt.egi.eu/rt/Ticket/Display.html?id=5509

include the requirement for users and communities to acknowledge EGI support in their publications was discussed. There is still no final agreement as to the best wording and was discussed with WLCG during a presentation on all security activities (12 June). Policy advice was given when requested, e.g. during discussion of the registration and availability of VO security contacts to the EGI CSIRT".
During PQ13, the SPG Chair also worked on the following security policy topics: 1) Attended regular EUGridPMA and TAGPMA meetings representing EGI and WLCG as a relying party. Topics of particular interest here are the preparation of a new IGTF profile addressing a lower level of assurance in identity vetting, guidance on the secure operation of credential stores and the plans for moving to SHA-2. 2) Chaired a meeting on "Security for Collaborating Infrastructures" in the USA with participation by XSEDE and FNAL[51]. This is aimed at building a standard framework for security policy and trust for interoperation, between cooperating infrastructures. A new version of the document was produced and an assessment to the extent which XSEDE and FNAL meet the requirements was produced[52]. This SCI work was presented to WLCG GDB (10 July). 3) Work continued in the Federated Identity Management for Research (FIM4R) activity. The SPG Chair participated in the federations tracks, including the REFEDS meeting, at the TERENA Networking Conference (2-6 June) and also presented the work of FIM4R at a Latin America Video meeting (19 June).

3.2.3. Community Outreach

The “EGI Champions” scheme has now been in operation for almost a year and the 9 Champions from the initial two cadres are growing in confidence and having an increasing impact throughout the community. They are first and foremost specialists in specific scientific research domains and it is here where they are proactively promoting the benefits of the EGI at various international conferences. With comparatively modest financial support, they are able to spread the EGI message to the very heart of research communities and make contact with scientists that can positively influence others in the use of our infrastructure. The following table summarises their participation at major events and demonstrates the areas where they have broadcast not just their research findings but also the important role that EGI had in their work – though at this stage there is no way of measuring the direct impact of this means of promotion, it is felt that such ‘ambassadorial’ promotions present powerful and compelling cases in support of the EGI cause.

Champion	Event	Venue	Link	Date	Days	Impact
Ashiq Anjum	Utility and Cloud Computing	Dresden	http://ucc2013.inf.tu-dresden.de/	09/12/13	4	Future event

[51] http://indico.cern.ch/conferenceDisplay.py?confId=246253
[52] http://www.eugridpma.org/sci/

Ashiq Anjum	5th IEEE International Conference on Cloud Computing and Science	Bristol	http://2013.cloudcom.org/	02/12/13	4	Future event
Silvio Pardi	International Symposium on Computing in Informatics and Mathematics	Tirana	http://iscim2013.epoka.edu.al/	26/09/13	2	Future event
Stella Arnaouti	35th IAHR World Congress	Chengdu, China	http://www.iahr2013.org/index.htm	09/09/13	4	Future event
Stella Arnaouti	NERA Summer Academy 2013	Lohninghof, Zell am See, Austria	http://www.nera-eu.org/	01/09/13	3	Future event
Afonso Duarte	EBSA2013 European Biophysics Congress	Lisbon	www.ebsa2013.org	13/07/13	5	Audience of 860; Close contact established with 2 Principal Investigators and 15 young researchers. Good exposure to the wider community
Joeri van Leeuwen	Radio Transients with SKA PAthfinders and Percursors	Skukuza, South Africa	https://sites.google.com/site/jointtransients/	08/07/13	4	60 participants; Very good personal contact with research deciders - may reap benefits
Tomáš Kulhánek	EMBC 2013	Osaka, Japan	http://embc2013.embs.org/index.html	03/06/13	5	Audience of 3000 that represents potential for future leads

Eleni Katragkou	European Geosciences Union (EGU) General Assembly 2013	Vienna	http://www.egu2013.eu/	08/04/13	2	Audience was over 11,000 but only 50 of Atmospheric Science community attended session. Learned more about preparation for an event.

Additionally, the Champions are playing an increasingly active part at the EGI Forums and for the EGITF in Madrid four EGI Champions will be running a double session dedicated to the Life Sciences community.

Some valuable team building work with the Champions was initiated in June when a training webinar was conducted with the support of professional Media Communications specialists at 'Matin Ince Communications Ltd'; the aim of the training was to twofold in that it gelled the team of Champions into a group of like-minded ambassadors of EGI and secondly gave them the chance to develop corporate ideas on the purpose of EGI and their role in the organisation. A follow-up training session will be conducted during the EGITF.

While the Champions' "Event Feedback Reports" provide a clear sense that the scheme has a very positive impact on the community, there is an obvious need to develop metrics that provide a more quantifiable demonstration of the return on investment. This is need for a measure of success is mirrored in other parallel schemes such in the US's XSEDE programme and the UK's Software Sustainability Institute, both of which recognise the benefits yet have to date not established formal metrics. Work on this will be progressed in this area during PQ14.

3.2.4. Technical Outreach to New Communities

The activities and achievements performed/achieved by the TONC group of EGI.eu in PQ13 (including supporting and contributing to the community engagement projects[53]) were:

- Virtual Team – Collaboration between EGI/NGIs and ELIXIR: Within the project the participating NGI-ELIXIR representatives delivered one presentation per country, and during the reporting period a final report about the project's achievements and recommended next steps have been drafted. The report will be finalised and published during PQ14.
- Virtual Team – Technology study for the Cherenkov Telescope Array: During PQ13 the project published the final version of the CTA requirements for science gateways and single sign-on, organised a webinar workshop to present and discuss technologies and initiatives that could address the requirements, prepared and discussed the first draft of the strategy proposal that will be the final deliverable of the project. The project members will iterate on and will finalise and publish this document during PQ14.
- Virtual Team – Towards a Chemistry, Molecular & Materials Science and Technology Virtual Research Community: During PQ13 the project prepared and discussed the first draft of the document that provides details on the structure and scope of the VRC that should be setup in CMMST domain. The document will be refined and published during PQ14.

[53] See up to date information about these projects at https://wiki.egi.eu → Projects

- EGI-EUDAT-PRACE pilots on data sharing and uniform data access: The EGI.eu UCST investigated how the 'File Transfer Service' and 'Globus Online' service can be used to transfer files between EGI and EUDAT sites. The setup will be extended to PRACE sites during PQ14.
- ENVRI Study Case with EISCAT_3D: The project organised several teleconferences and as an outcome drafted a document that outlines the work plan towards a demonstrator for EISCAT. The demonstrator would enable members of the EISCAT community to perform customised processing, visualisation and other operations on data that has been collected by EISCAT between 1981and 2013 (~60TB). The document will be presented for and discussed with the EISCAT community during the 'EISCAT International Symposium' in August, and will be refined and extended based on the input from this event.
- EGI-DRIHM collaboration: The goal of the collaboration is to setup a web based science gateway for the hydrometeorological community to enable them running pre-defined simulation workflows using resources from the EGI. To achieve this goal the collaboration has to integrate various hydrometeorological models with EGI, setup of a science gateway, develop workflows in the science gateway, develop unique interfaces for the workflows to simplify their use by scientists. During the reporting period the collaboration started working on (1) Integration of four models with EGI (WRF-NMM, RainFARM, DRIFT, RIBS), (2) Configuration of a science gateway to work with the DRIHM VO of EGI and with the 'DRIHM Repository', (3) Development of workflows, (4) Development of unique interfaces for the workflows. The tasks should conclude during PQ14 and the setup will be demonstrated at the 2nd DRIHM EC project review (end of October).
- EGI Webinar programme[54]: During the reporting period five webinars have been delivered, recorded and the recordings made publicly available. Arrangements for several PQ14 webinars are under discussion.
- EGI-XSEDE collaboration: The goal of this collaboration is to identify and exchange best practices and solutions between the XSEDE and EGI so they can operate more efficiently and they can better serve scientists in the U.S. and Europe. During PQ13 the TONC members began supporting the Computational Chemistry use case that that have been submitted to the 'Collaborative Use Examples' call. Following a number of teleconferences a workplan for this support has been prepared in July, and then has been finalised during XSEDE13 conference that representatives of EGI.eu attended. The implementation for this use case should conclude in PQ14. Support for other use will begin in PQ14.
- Support for the existing and for new use cases of the EGI Federated Cloud continued. Resources for a new use case from the Italian NGI (Catania Science Gateway Framework) has been arranged.
- Prepare an EGI-VERCE MoU to foster the technical and operations integration of the VERCE Virtual Research Environment (VRE) and support structures into EGI. In this broad context, the specific goals of the collaborations are to: (1) Integrate the VERCE VRE and support services with the Operations and Support Services of EGI, (2) Establish joint dissemination activities to increase awareness and promote the results of the project and the collaboration, (3) Define a process to create temporary task forces to collaborate on specific technical topics, such as data access, workflows, science gateways. The MoU is expected to be signed and the technical work to begin in PQ14.

[54] EGI Webinars: http://go.egi.eu/webinars

- Supported two of the SA4 mini-projects as shepherd: Massive Open Online Course Development, Evaluation of Liferay modules. See progress report about these projects in Section4.
- Review applications in AppDB from the Biophysics domain for a new domain-specific EGI leaflet. The leaflet has been prepared by the press team and since then it has been used to promote EGI services at several events where EGI.eu/NGI representatives were present.
- Discussions with the Slovakian NGI and nanotechnology groups from Slovakia about a strategy that EGI should follow to engage with and offer services for nanotechnology research teams in Europe. Support from additional NGIs is needed before a project (e.g. a Virtual Team project) could be formulated for the setup and promotion of services for nanotechnology. These NGIs must provide EGI a better understanding of the distributed computing uses cases of the European nanotechnology community, and must provide contacts from key nanotechnology institutes and projects that are committed to work in the new project. Discussions about this with the NILs have already started and will continue at the Technical Forum in Madrid.
- Support the NA2.5 technical services teams (Application Database, CRM, Training Marketplace), particularly with promoting the solutions to the NGIs and projects, with curation of content in these systems, with testing/reviewing new versions before public releases. See the dedicated sections below for details about progress with the three technical services.
- The University of Chicago provides access to the Globus Online file transfer services for European communities via a dedicated portal front-end since 2011. Using the 'SRM' type storage elements of EGI with Globus Online is not a trivial task for Virtual Organisations; therefore the UCST prepared a 'Globus Online cookbook'[55] for EGI VOs. The cookbook provides step-by-step instructions on how to register EGI SRM storage services as endpoints of file transfers managed by Globus Online and how to use these endpoints for transfers. The cookbook has been promoted EGI VOs, the NGI International Liaison and Operation communities. The service and the cookbook will be demonstrated at the EGITF13. EGI continues to collaborate with the Globus Online team to integrate new services into the European Globus Online service, for example the sharing functionality, which allows collaborators in a virtual organization to share files directly from their own storage systems, without using a storage cloud.

Applications Database

PQ13 began for the AppDB with the first revision update to the v4.2 series being released to the public. The update was focused on functionality enhancements related to the EGI Community Software Repository support, which was introduced late PQ12. The most important feature of this release is the support for requesting software release management permissions.

During the first half of PQ13 work was focused on delivering the minor release v4.3, which was deployed in mid-June. This release introduced the ability to classify software entries under more than one high level categories (e.g. science gateway, tool, workflow system, etc.), allowing more rational organisation of data and more efficient searches. Other improvements in the v4.3 series were the support for Search Engine Optimization (SEO). SEO makes it possible for search engines such as Google to find and index pages about individual software entries, then present these to users when they search in the engine. As a result of this work the content of AppDB has became more visible through Google and other worldwide-used search platform. A poster on this facility will be displayed at the EGITF13. A number of stylistic changes were applied to the software registration and editing forms, making them more user-friendly, and several bugs were addressed. AppDB's caching

[55] http://go.egi.eu/globusonlinecookbook

mechanism was upgraded to make use of differential rebuild upon data changes, thus rendering the search mechanism significantly faster.
Development continued throughout PQ13 on the v4.3 series with two revisions released addressing several bugs, while working in parallel on the next minor release, v4.4 which was deployed mid-July. The v4.4 release featured a number of innovations, the most important of which was the faceted search functionality. This functionality allows users to gradually filter-out software entries while searching, in a graphical way, by applying any number of filters based on indexed individual software properties. Upon each round of filtering, the user is presented with the list of matching entries, along with the remaining properties that may be applied, followed by the number of matches they would leave, if they were to be applied. Another important innovation was the complete re-write of the graphical browsing functionality, which is provided through new types of charts that make the graphical representation of data much more friendly and comprehensive. Lastly, in the list of innovations, the scientific classification hierarchy that was used by AppDB (from EGEE) has been replaced with the new hierarchy that was defined by the 'Scientific Discipline Classification' Virtual Team in May 2013. Software items have been updated according to the new schema (automatically where it was possible). Other items delivered with v4.4 included some performance improvement, thanks to the use of live full-text indexes, and many bug fixes filed in EGI's RT system.
Finally, after the release of the 4.4 series, development of the AppDB focused on the future 5.0 major release, which will feature support for Virtual Appliances. Preliminary works include appropriate REST API resources, backend extension, a new GUI tab under the software details view, and evaluation on vmcaster integration.
The team will contribute to the EGITF13 with one tutorial session, one demonstration, and one poster.

Client Relationship Management system (CRM)

During PQ13 the work of the CRM team has been focused on further developments and customization of the CRM User Interface, as well as on the dissemination of the tool to the NGI International Liaisons.

A major development was triggered by new requirements from TNA2.5 leadership suggesting the introduction of a hierarchical view of Research Institutes and Person Contacts associated to different projects. The purpose was to allow an easier identification of objects (Research Institutes of a particular ESFRI project, and Personal Contacts at those institutes) that have missing information under the scope of a given NGI. This requirement lead to the design of a new "*BrowseNGIData*" php based module, invoked from the "*Home*" module through a series of new buttons introduced next to the main toolbar, and with the following functionalities:

- Production of an expandable list tree of Projects per Type in two different scopes: Global[56] (including data from all NGIs) and NGI specific[57]. The default view for NILs is the NGI specific one but it is possible to switch to the Global view.
- Production of an expandable list branch of Research Institutes per Project Type.
- Production of an expandable list branch of Person Contacts per Research Institute.
- Visual identification of Research Institutes and Person Contacts records with incomplete or missing information regarding its "*Potential for EGI*" or its "*Interest in e-infrastructures*".
- Linkage with the specific CRM records.

56 https://crm.egi.eu/index.php?module=Accounts&action=BrowseNGIData

57 https://crm.egi.eu/index.php?module=Home&action=BrowseNGIData

- Automatic production of PDF files (for printing purposes) with the summary of the relevant information captured per project.

Another important development consisted on the enhancement of the CRM Web UI to be able to show n-n relationships between Person Contacts and Organizations (Projects and Research Institutes). In its original form, CRM restricts a 1-1 relationship between Contacts and Organizations. This restriction was relaxed with the introduction of the Project List association linking Person Contacts and Research Institutions to multiple Projects, and introduction a multilevel hierarchical mapping. However, up to this point, the CRM UI Web Interface was not able to show in a visual form that important enhancement. Now, Person Contacts associated to Projects via Project List are displayed as Contacts for Project Organizations although having a different main organization[58].

The repository for CRM Monthly Activity Reports and the CRM Metrics Portal were integrated in the CRM layout, and can now be accessed through the "*Home*" module, and displayed without the need to exit the CRM environment. Finally, a weekly report regarding CRM changes has been implemented alerting UCST by email about the past week activity.

In the dissemination area, an EGI webinar was prepared, presented and recorded during June. The seminar was a follow-up of the tutorial held at the EGICF13 which had a very low attendance due to clashing of other events.

The major issue with the CRM system is its current low use. Several events have been delivered in the past project quarters (several tutorials and seminar, Wiki pages, information in bulletin, etc...) but there is still not a sustainable use of the system. There are very few accesses from the NIL community and there are countries and NILs who never logged in. Requests for support are also very scarce. Therefore we assume that the low use is caused not because of a technical problem with CRM, or a lack of specific features, but with the priorities of the NIL community: the NILs do not seem to consider the CRM essential for their work, because they either do not work in outreach, or they do not see the benefit of using such a tool or they are unwilling to share information in the CRM related to potential user communities. A CRM demonstration will be given at the EGITF13.

Training Marketplace

The Training Marketplace's first development in PQ13 was the incorporation of a new content type to the forms, views and database – webinars. Webinars are becoming more frequent in the provision of training and to avoid confusion to users it was decided to develop this new category of content. The webinar development included designing a new advertising form, results display and back-end database tables and queries. It was released at the end of PM37.

The next large development in PQ13 is the redesign of customisable gadgets. In PQ12 a customisable calendar-list gadget was implemented but the appearance remained outdated. In PQ13 the gadget was redeveloped with a new look and feel. The old option was to display a calendar and list side by side, or a calendar that flipped within its space to a list on a click. User feedback indicated that either one or the other was required, not both, and a list was preferable. Other requests included displaying a full page or as a small block within a page. With this in mind and incorporating the filtering features developed on the back-end PQ12, a new list gadget is being developed. Filtering options include location, project and research domain. Display options include: customisation by overall size (full page or set dimensions, width x height). The font style and colouration can be set for the titles and

58 https://crm.egi.eu/index.php?action=CallRelatedList&module=Accounts&record=5117&parenttab=Marketing&selected_header=Contacts&relation_id=1

text. The number of fields to display can be selected from a list of many options, as can the amount of information per field and number of events to display. Finally, gadgets can be created to be forward looking, or to show past events (and be incorporating both a user could display all relevant events to his community).
This gadget development is 85% complete and that the final developments and testing will finish in August 2013, ready for deployment by the end of that month.
The remainder of work in PQ12 has been a number of system and security updates, and some checks on the monitoring systems to ensure that EGI and STFC run monitoring systems are providing the same data, (they are).
In PQ13 filtering options will be implemented on the main site so that users interacting with the EGI website can filter the main database directly to display results most relevant for themselves. A TMP demonstration will be given at the EGITF.

3.2.5. Community Activity

At the time of preparing this report there are 4 VT projects under way. Additionally, there is a tentative proposal which has been submitted for consideration by the Slovak NGI. The status of the VT projects is presented via the EGI VT Wiki[59].

3.2.5.1. VT - Scientific Discipline Classification

Project Lead: Sy Holsinger (EGI.eu)

Period of operation: The SDC VT made final refinements to the classification, held the last call and submitted a final report for evaluation and approval through the EGI governance. The VT concluded with the submission of a final report on 24 May 2013[60]. Implementation of the classification has already started, which can be seen in both the AppDB[61] with the most advanced interface, and within the Training Marketplace for both advertising[62] and the gadget[63].

3.2.5.2. VT – Scientific Publication Repository Implementation

Project Lead: Sergio Andreozzi (EGI.eu)

Period of operation: Work has included a survey with EGI VOs (23 responses) designed to collect acknowledgement statements and related information to support OpenAIRE in preparing and updating mining rules and data models. OpenAIRE provided initial mock-up pages of the web interface, results from mining web of science metadata catalogue and from a wider set of repositories using EGI-related rules. Initial results have been released and a new data model is being implementing that will be able to store the relationships between publications and EGI. All information is updated via a dedicated wiki[64].

3.2.5.3. VT – Collaboration between EGI/NGIs and large ESFRI project ELIXIR

Project Lead: Pavel Fibich (NGI CZ)

[59] https://wiki.egi.eu/wiki/Virtual_Team_Projects
[60] http://go.egi.eu/SDC-VT-final-report
[61] http://appdb.egi.eu/pages/statistics/software/discipline
[62] http://www.egi.eu/services/training_marketplace/index.html
[63] http://egitraining.esc.rl.ac.uk/ngi_gadget_calendar/term_pick.php?type=single
[64] https://wiki.egi.eu/wiki/VT_Scientific_Publications_Repository_Implementation

Period of Operation: The project ran from Oct 2012 until Jul 2013 and established a good network of contacts through the majority of participating NGIs. The report on the projects achievements has been drafted and has already had a number of high level reviews but given the scope and current status of ELIXIR, there are sensitivities that made the completion of the report more challenging than usual. It is currently with UCST for review and will be completed and published during PQ14.

3.2.5.4. VT – Technology study for CTA (Cherenkov Telescope Array)

Project Lead: Claudio Vuerli (INAF)

Period of Operation: The project was initiated in Jan 2013 with a proposed duration of 6 months but work has proved to be extensive and the closure point has been re-scheduled for the end of October 13. Nevertheless (and albeit to a delayed timetable), the project has progressed steadily and key tasks are being achieved in accordance with the aims published in the VT's wiki[65]. The "CTA requirements concerning scientific gateways and an SSO system" document was published as Task 2, following which an early draft of a "Strategy Proposal" was circulated for further development. This has been well received and will be part of the final deliverable (Task 4) during this next reporting period; it is anticipated that the EGITF will provide an opportunity for the main findings to be presented.

3.2.5.5. VT – Towards a Chemistry, Molecular & Materials Science and Technology (CMMST) Virtual Research Community (VRC)

Project Lead: Antonio Lagana (University of Perugia)

Period of Operation: The project started in Feb 2013 with an expectation of completing by mid-August after 6 months work. To date, tasks have progressed in accordance with original objectives published in the VT's Wiki[66] and so Milestones M1 to M4 have all been accomplished. The final report that will recommend the establishment of a CMMST VRC has also been circulated for in draft form for comment and some final inputs and while completion of the project may be slightly delayed, the work has been substantially completed. The report should be published by mid-September and findings will be discussed during the EGITF.

3.2.5.6. Potential new VT – Towards a Nanotechnology Virtual Research Community (VRC)

Project Lead: To be decided

The Slovak NGI has proposed starting a Nanotechnology VRC. An initial teleconference between UCST and a number of potential Slovak stakeholders has already been conducted – EGI is in favour of the project providing that other NGIs also see a genuine need for such a VRC. In short, the use case (a nanotechnology simulation) that has already been presented which is running on a cluster within the Slovak NGI needs to be ported onto the grid as a proof of concept. Support from other organisations with similar interests and needs should then be sought. Once this has been achieved, it should be possible to better define the exact aims and deliverables for a Nanotechnology VT to work to with a good chance of success. The Slovak NGI is already in contact with SZTAKI to port the above mentioned simulation on to the grid.

3.3. Plans for the next period

[65] https://wiki.egi.eu/wiki/VT_Technology_study_for_CTA

[66] https://wiki.egi.eu/wiki/Towards_a_CMMST_VRC

Marketing and Communication plans for PQ13 include the preparations for the EGITF13 in Madrid, including the EGI booth, NILs session, press liaison and outreach for the event. The communications team will also work with the hosts of the EGICF14 in Helsinki to create a poster and website for that event. There will also be an EGI presence at the 5th Innovation Summit[67] in Brussels, and the European Conference of Computational Chemistry[68] in Sopron, Hungary.

The team is also preparing to update the EGI generic A5 brochure[69] and the "Applications for Biophysics" brochure alongside producing new "Applications for …" brochures possibly aimed at the Astronomy/Astrophysics and Computational Chemistry communities.

Further case studies and news items will be published on the EGI website, and disseminated through the all of EGI's channels and partners. EGI will also provide an editorial for the "Pan European Networks: Science & Technology" publication[70]. There will also be a press release written and distributed around the CloudWATCH launch in early September.

In PQ14 the Communications Team, working with the User Community Support Team and the Operations team, will begin defining the latest human network "The Developer Community" and the channels and methods of engaging with them.

During PQ14, the SPT plans to finalise and publish the EGI Terms of Use, Privacy Policy and Cookie Policy relating to the website and related products. The Pay-for-Use experiment will continue through links between other activities such as the EGI Federated Cloud and Federated Resource Allocation. The negotiation for the MoU with Helix Nebula will be completed and the collaboration on the deployment of the Helix Nebula flagship application will continue. Work will start to implement the recommendations coming out from the EC project review. The workshops planned for the EGITF will be fully developed and managed. The next period will also be used to further develop the identifier-only profile, and the validation of the trusted credential store and AA operations guidelines with selected service providers. The extent of the trust fabric will be broadened by the incorporation of identity providers in countries with which EGI has entered into service agreements. Work will also be carried out to evolve EGI's IT Service Management and the solutions lifecycle.

The TONC team will work on

- Development of the content of the 'Virtual Research Environments' track of the EGI Technical Forum, together with several demonstration and poster contributions.
- Preparation for the 9th European Conference on Computational Chemistry[71] where Gergely Sipos is an invited speaker and will deliver the talk 'Bridging Grid, Cloud, Supercomputing and Storage Resources at a Global Scale'.

[67] http://www.knowledge4innovation.eu/5th-european-innovation-summit-2013

[68] http://www.euco-cc9.mke.org.hu/

[69] http://www.egi.eu/news-and-media/EGIbrochure_web.pdf

[70] http://www.paneuropeannetworks.com/science-and-technology.html

[71] http://www.euco-cc9.mke.org.hu/

4. ACCELERATING EGI'S H2020 GOALS ("MINI-PROJECTS")

4.1. Summary

Soon after the mini-project negotiations finished, mini-project leaders held two plenary sessions at the EGICF13. With that kick-off event, all mini-projects started settling in, set up their respective infrastructure, and began working on their agreed topics.

Quickly, mini-projects connected with each other (TSA4.4, TSA4.7 & TSA4.8) as well as external contributors (TSA4.2). Through technical management conducted by shepherds, and project management provided by TSA4.1 mini-projects provide weekly/bi-weekly progress reports to each other and, summarised by the Work Package Management, the wider EGI audience present in the EGI-InSPIRE Activity Management Board.

Most mini-projects began with a phase of investigation, such as "hunting" for fitting tools, libraries etc., requirements engineering and functional specification development, or simply refactoring code that was written for other projects and lacked a solid software engineering foundation.

Over the course of PQ13, first tangible results are available or are about to be published. For example, the current alpha release of the rOCCI framework provides better and more complete support for the OCCI standard, and a first feature-complete implementation of the agreed HTTP Digest authentication across Cloud Management Frameworks deployed in EGI. Another example is a first version of stoxy – an implementation of the CDMI standard for Cloud Data management. Supported by the work of the Cloud Capabilities project, a first specific extension concerning Contextualisation to the OCCI standard was submitted to the OGF OCCI-WG for further standardisation.

Also, a VO-oriented operations portal is gradually being assembled and augmented with user-oriented reports such as computing element availability, jobs success reports etc. A re-designed availability and reliability (A/R) calculation engine taps into existing deployed EGI services such as the EGI Messaging infrastructure, and combines this with new data analysis algorithms – in this case the Map/Reduce approach using Apache Hadoop. Many of these emerging solutions are interfacing with EGI's Service Registry built on top of GOCDB. GOCDB, in turn, is developed towards Software as a Service solution augmented by a powerful scoping functionality.

4.2. Main Achievements

4.2.1. Work package Management

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

On 14 December 2012 the EGI Project office announced a call for funded mini-projects within the scope and funding regulations of the EGI-InSPIRE project[72]. A total of 29 mini-projects were submitted, and by the end of January 2013, the PMB prioritised these and started negotiation with the submitters. In total, 11 mini-projects were funded, while two proposals ("Implementation and testing

[72] https://mailman.egi.eu/mailman/private/inspire-taskleaders/2012-December/000106.html (might require login)

of central banning in the European Grid Infrastructure", and "OpenAIRE-based Scientific Publication Repository") were integrated into existing activities without additional funding.

Mini-projects leaders held two plenary sessions at the EGICF13 and provided a brief overview and objectives of their mini-projects[73]. During the EGICF13 it was also decided to formally request the EC's approval to amend the DoW for managing the mini-projects as a newly formed Work Package – this Work Package.

The Work Package management is split along project and technical management aspects: Four shepherds managing the EGI platforms described in the EGI Platform Roadmap[74] take care of providing sufficient context and guidance to the mini-projects so that outputs may be integrated into the EGI production infrastructure as seamless as possible. In practical terms, formal Work Package management is kept at a minimum presuming that mini-projects mostly organise themselves. Mini-projects utilise the following EGI infrastructure:

- An overview of the mini-projects is maintained in the EGI Wiki[75],
- Mini-projects record their meetings in EGI Indico[76] unless folded into other EGI-InSPIRE meetings
- DocDB, including an appropriate topic, will be used for permanent documentation[77]
- Weekly reports are collected by WP8 management and relayed to the Activity Management Board, including an executive summary. Through this mechanism, mini-projects are encouraged (and already did so) to report delays, raise issues that require support outside the individual mini-projects, and more. Mini-projects may choose their own reporting frequency (e.g. weekly, bi-weekly) but are required to consistently follow their choice.
- A spread sheet maps members to mini-projects, and shepherds to mini-projects. It is managed online, and anyone with the link may view it. EGI-InSPIRE PO, shepherds and WP8 management may edit it.
- Two mailing lists are provided for mini-project leaders, their deputies and shepherds, and for all mini-project members, respectively, although these are rarely used except for regular weekly report collection. This is not an issue, since all mini-projects are well-embedded in their target platform ecosystem.

4.2.2. TSA4.2 – Massive Open Online Course Development

After a period of evaluating alternative course production frameworks the team decided to use the platform from the University of Amsterdam (UvA). Visualisation of course material will employ animations, slides, and cover job distribution on local clusters & Grids, and pilot job frameworks. A tool, Sakai CLE[78], is explored for integrating quizzes and tests as part of the course. A number of external contributors have been contacted and are assisted in providing material about use cases.

[73] EGI Community Forum 2012 mini-project sessions:
Tue 9 Apr: https://indico.egi.eu/indico/sessionDisplay.py?sessionId=29&confId=1222#20130409
Wed 10 Apr: https://indico.egi.eu/indico/sessionDisplay.py?sessionId=29&confId=1222#20130410

[74] https://documents.egi.eu/document/1773

[75] https://wiki.egi.eu/wiki/Overview_of_Funded_Virtual_Team_projects

[76] https://indico.egi.eu/indico/categoryDisplay.py?categId=93

[77] https://documents.egi.eu/public/ListBy?topicid=51

[78] http://www.sakaiproject.org/node/2260

4.2.3. TSA4.3 – Evaluation of Liferay modules

After a phase of settling the task organisation and leadership, the team set up a shared basic instance of Liferay with a small number of modules deployed for Social Office collaboration and Synchronisation. This involved testing Liferay plugins and apps for Android phones, and customised portlets in Liferay. The integration of Liferay Office module and the portlet with the IGI portal are underway. In parallel, integration with the EGI SSO system is being developed to allow using Liferay for EGI.

In this context, the mini-project is investigating how to provide Liferay and its modules for multiple "customers" (which are usually funded academic projects). This widened the scope of eligible Liferay modules and features of the Liferay portal, thus a detailed plan for evaluation scenario of each feature is being refined. This spurred a number of aspects for investigation, such as a set of alternative AAI modules to be able to offer Liferay to different communities with disparate authentication and authorisation requirements, multi-site deployment of a distributed Liferay instance, request tracking modules with custom workflows, and existing real life use cases such as the IGI portal and EGI SSO.

Currently, the project is preparing a demonstration for the EGITF demonstrating the outcomes and the activities for the mini-project until April 2014.

4.2.4. TSA4.4 – Providing OCCI support for arbitrary Cloud Management Frameworks

One major technical outcome for the OCCI implementation was to refactor the existing code into clearer and more reusable components as the solid foundation for developments and improvements to come. This, for example, also implies changes in the support for OCCI as a standardised Cloud Computing Interface – ironically, the outcome of this will be *better* support of the OCCI standard in that all actions for computing resources will be explicitly supported. While the refactoring of the rOCCI components took most of PQ13, it has been accomplished while maintaining the current release that is deployed in the Federated Clouds infrastructure, and elsewhere (the mini-project is collaborating with unfunded external partners).

This has led to little effort left for integrating new features, however during the last three months, support for VOMS proxy certificates has stabilised and allows consistent use of RFC3820-compliant proxy certificates in the federated Clouds infrastructure. Recently, the Federated Clouds activity has decided to work towards a consistent authentication process across Cloud Management Frameworks based on an extension of standardised HTTP Digest Authentication (RFC2617[79]). Since the rOCCI server is used as a façade fronting OpenNebula, which does not support such extension, the behaviour of this protocol must be mimicked in the rOCCI server's backend connector for OpenNebula.

Very recently, the team has released rOCCI 3.1.2, which is backwards compatible with the current implementations, and the rOCCI refactoring as version 4.0.0 that already implements basic support for this consistent multi-step authentication process and support for dynamic contextualization with public keys and arbitrary user data.

4.2.5. TSA4.5 – CDMI Support in Cloud Management Frameworks

First steps involved analysing the existing codebase coming out of the Venus-C project[80]. The result is a setup of a code repository[81] a local Continuous Integration system and a skeleton implementation

[79] http://tools.ietf.org/html/rfc2617

[80] http://resources.venus-c.eu/cdmiproxy/docs/index.html

[81] https://github.com/stoxy/stoxy

that will be gradually fleshed out with code fragments ported from the original CDMI proxy service. The development of this component is also supported with active software engineering effort coming from the external sponsor The OpenNode[82].

This activity faced an issue with the overloading commitment of the main contributing person with duties in another major European project (EUDAT). EGI (through EGI.eu) and KTH as the contributor's home institute are closely collaborating in this project, and agreed to suspend development in this mini-project for six weeks during PQ13. After this, the project resumed its work, and is seeking to catch up the delays compared to the original timeline through suspending work on EUDAT for a while and focus in this mini-project. This has contributed to a recent release of the first version of the stoxy component.

4.2.6. TSA4.6 – Dynamic Deployments for OCCI Compliant Clouds

Preliminary work took place to harmonise the auto-scale design and roadmap of the SlipStream engine between this mini-project and the CELAR project[83] (also FP7 funded). After the kick-off meeting at the EGICF the mini-project decided to swap two development tasks, i.e. begin with the auto-scaling implementation and postpone development of an OCCI connector for the Slipstream engine. Significant work took place to improve the user interface of SlipStream to host the auto-scale feature. A complex multi-layer demonstration application was also developed (called LAMP++), which we will use to validate the system as well as the OCCI connector, prior to deploying real Helix Nebula scientific applications.

With the recent decision to deploy the Helix Nebula flagships as Proofs of Concepts on the EGI Federated Clouds testbed, this mini-project is receiving temporary development support to develop a proof-of-concept level OCCI connector, such that SlipStream can provision complex applications on the EGI Federated Clouds testbed. This is being integrated in the open source part of SlipStream, such that all can use it without constraints.

4.2.7. TSA4.7 – Automatic Deployment and Execution of Applications using Cloud Services

Early on in the project the members created the necessary infrastructure (e.g. amended the Wiki space and a GitHub repository[84]) and decided to collaborate with two other mini-projects (TSA4.4, section 4.2.4 and TSA4.8, section 4.2.8) to generalise application deployment into a Contextualisation capability for the EGI Federated Cloud. First prototypes using CloudInit[85] successfully demonstrated the approach.

In order to formalise the interface it was further tested against OpenStack and OpenNebula deployments in the EGI Federated Clouds testbed. This has led to developing an extension to the OCCI specification, as well as a formal request for standardisation in the OGF OCCI Working Group[86]. A dynamic application deployment server is currently being developed using phenomenology applications as real life use cases, and integration with Puppet is currently investigated.

[82] http://www.opennodecloud.com/

[83] http://www.celarcloud.eu/

[84] https://github.com/AppDeployment

[85] http://cloudinit.readthedocs.org/

[86] http://www.ogf.org/pipermail/occi-wg/2013-July/003334.html

4.2.8. TSA4.8 – Transforming Scientific Research Platforms to Exploit Cloud Capacity

The analysis and distilling of common required Cloud Capabilities for User Communities started its work with the usual setup of the necessary infrastructure. The initial set of examined use cases covered those coming from Research Communities that are already affiliated with the EGI Federated Clouds activity. Apart from a number of other Capabilities assessed by this mini-project, Contextualisation was one of the most needed capabilities. On this the work coordination between TSA2.6, TSA2.7 and TSA2.8 was particularly beneficial and has already led to tangible results (see above). The report about the assessed Cloud Use Cases[87] is currently in the last review phase before publication and publication is expected to be just after the end of PQ13.

4.2.9. TSA4.9 – VO Administration and operations PORtal (VAPOR)

The project officially kicked off with the employment of a software engineer working on this project for 12 months. Early on, the project defined the functional specification[88] and liaised with a number of EGI VOs, such as CompChem, eNMR, and France Grille VO. A number of technical conferences were held with the EGO Operations Portal team and other VOs to synchronise the developments, synergies and tools that were agreed for integration[89].

Technical development includes the integration of a number of software libraries for web presentation (Twitter Bootstrap), graph plotting (JavaScript Dygraph), Symfony web application framework and JavaScript AJAX implementations. VO Operations management pages are developed covering reporting on aspects of resource availability and performance, such as number of successfully finished jobs, number of timed out jobs, etc. These are augmented by more extensive reports on historic data, and spatial reports along resource topography (e.g. reports scoped per computing element utilised by the respective VO). Also, the VAPOR development and testing environment is hosted on a dedicated virtual machine, in addition to a SVN software repository and Redmine server for project reporting.

4.2.10. TSA4.10 – A new approach to Computing Availability and Reliability Reports

The basic infrastructure of the alternative A/R reporting is based on Apache Hadoop and Apache Pig. It is integrated with the EGI Messaging infrastructure, collecting raw metrics information for the initial mapping tasks generated by Apache Pig. The first phase of the mini-project focused on application integration to form a relatively generic foundation for a number of specific end-to-end A/R calculation use cases.

With the initial foundation in place, the project looked at continuously extending the capabilities of the solution. Integration with the EGI Service Registry (a GOCDB instance) is underway, as well as with the POEM component of the EGI Service Availability Monitoring infrastructure to collect the calculation profiles on an hourly and daily basis. Recently, a number of new and improved components were added to the solution, such as a service downtime calculator (ingesting GOCDB downtime information) and a data pre-filtering module (used for data validation and integrity checks).

4.2.11. TSA4.11 – GOCDB Scoping Extensions and Management Interface

In order to allow site administrators and managers to declare and configure resources across multiple projects and infrastructures without duplication of information, the system must support the

[87] https://documents.egi.eu/document/1824

[88] https://wiki.egi.eu/wiki/VT_VAPOR:VAPOR_features_description

[89] https://indico.egi.eu/indico/categoryDisplay.py?categId=100

aggregation of resources into multiple concurrent groupings. To do this, resources must be tagged with different project and/or infrastructure scopes (i.e. 'scoping'). This requires changes in the GOCDB domain model, business and presentation tiers as well as extending the management interface and API for scoping. The general thrust of the development is aimed towards a 'Software as a Service' solution to facilitate self-service topology management.

During PQ13 a number of changes were introduced into the GOCDB v5 to enable scoping and to establish scoped relationships between projects, NGIs and Services. This included changes of many modules of GOCDB, including the API, the query engine and overall frontend appearance. A GOCDB admin interface has also be developed for v5 to simplify daily operational tasks.

4.2.12. TSA4.12 – Tools for automating applying for and allocating federated resources

This mini-project directly supports one of EGI's key strategic activities, in that it will allow the automatic provisioning of federated EGI resources for scientific use cases that have undergone review and negotiation by a scientific excellence committee in EGI. The initial design of the solution has been finished and is documented within the Resource Allocation Task Force wiki[90]. After a phase of technology assessment the team decided to use the Agreemount framework[91] and has begun to implement version 1 which is expected to complete in October 2013.

4.3. Issues and mitigation

4.3.1. Issue I4.1 – Weekly reporting misunderstanding

In the early phase of the mini-projects and the work package setup, mini-projects were grouped in one single work package (SA4) with direct technology contact and peers (the shepherds). This split of responsibilities (i.e. project management and technical management) may be compared to matrix management and was not expected by some of the mini-project leaders. This has led to some mini-projects not reporting weekly as required for some time.

Further explanation of the concept and sharing of responsibilities has resolved this situation, and reporting commences satisfactory.

4.3.2. Issue I4.2 – Reporting of delays and issues

Early in the mini-projects setup phase the reporting of a delay or change in development priorities has slipped the attention of the affected mini-projects and the management (both technical and project). This has caused some knock-on effects on related projects where EGI.eu is also involved in an unsatisfactory manner.

This issue was more of a social issue, in that mini-project leaders expected that reporting delays would be understood as some sort of failure on their side. After reassuring and explanations of the necessity of reporting delays and issues mini-project leaders now explicitly state whether there are issues and delays that need further attention or not – with the latter being the case in almost all reports.

4.3.3. Issue I4.3 – Mini-project team member over-commitment

The activities around resolving issue I4.3 has led to an efficient management of the situation of a mini-project leader's over-commitment in two EC-funded projects. By early reporting of this situation, the

[90] https://wiki.egi.eu/wiki/Resource_Allocation_Task_Force

[91] http://agreemount.com/, to be published soon.

management of both affected EC projects were able to proactively resolve this to the satisfaction of all three involved parties without out further knock-on effects.

4.3.4. Issue I4.4 – Mini-project dissemination and public progress reporting

At the EGICF13, the public dissemination and networking of mini-projects was conducted through two sessions dedicated only to the mini-projects. However, the split in technical and project management between shepherds and SA4 management reflects the strategic goal of the mini-projects of focused funding to accelerate existing activities. The concrete result of this is the alternative dissemination strategy for the EGITF13: Instead of conducting separate dedicated sessions for mini-project dissemination, the individual reports will be embedded where they fit with their target technology and strategic goals.

4.4. Plans for the next period

What began with the kick-off of the mini-projects and the SA4 task in the EGI-InSPIRE project at the EGICF13 will be continued at the EGITF13. However, different to the organisation in Manchester, this time the mini-projects will present their progress and outcomes embedded into their pertinent EGI Platform track at the Forum. This means that TSA4.2, TSA4.3 & TSA4.9 representatives will speak in the "Services for VREs" track, TSA4.4, TSA4.5, TSA4.6, and TSA4.7 & TSA4.8 will be presented in the "IaaS Cloud services" track, and finally TSA4.10, TSA4.11 and TSA4.12 will present their progress in the Operational Services track.

The MOOC mini-project is seeking to finish the lecture content. This will include activities such as recording final video lecture versions, packaging and testing VM images for students, configuration and provisioning of Grid resources, course website and final course award (e.g. a certificate of accomplishment).

In PQ14, the extended Liferay evaluation scenarios will be finalised so that they may be examined over the project quarters to come. These scenarios will be detailed in the intermediate milestone due in PQ14.

The OCCI mini-project will continue adding long-awaited features to the components, such as support for executing arbitrary actions on resources (thus supporting all standardised actions in OCCI 1.1), pushing mix-in standardisation for popular features (compute resource templates, user-specific resource instances, etc.) and work on a new rOCCI 4.0.0 version and documentation for all framework components.

The CDMI mini-project will continue to add new features to the components, such as support for VOMS and the EGI Federated Cloud authentication interface. In the coming quarter, stoxy will be available as a packaged component for easy deployment. A basic browser based UI will be presented, and one or two use cases coming from affiliated research communities will be supported.

A first OCCI connector for Slipstream will be developed and deployed, which will be used to demonstrate successful deployment of Helix Nebula flagships on the EGI federated Clouds infrastructure. Additionally the first version of auto-scaling will be available.

The OCCI extension for Cloud Computing contextualization will be pushed in the standardization process, and a service will be implemented providing standardised contextualization using formalised



contextualisation taxonomy for phenomenology applications[92]. A web interface and Puppet integration will be investigated in the coming quarter.

The Cloud Capabilities mini-project will publish a final version of its analysis document, and begin working with the first two identified user communities, BioVeL and WeNMR.

VAPOR continues implementing new reports for compute resource monitoring, and begins implementing VO data management procedures (e.g. consistency checks across Cos and VO file catalogue, clean-up of dark data and lost files, and more).

The Map/Reduce based A/R computation system plans including A/R reports for sites & NGIs, for core services pertaining to NGIs and VOs, as well as integrating Lavoisier for a public API and report distribution. Later, after the EGITF13, the team will begin working on availability profiles, VO topology information, and adjustable factors in A/R calculations and data retention support.

The GOCDB scoping extension mini-project will conclude during PQ14. These will see preparatory activities according to a coordinated release schedule for GOCB v5, such as final refinements on UI and business logic, acceptance testing on a dedicated pre-release instance[93], documentation updates, EGI Wiki updates, and a final demonstration at the EGITF13 in Madrid.

The federated resource allocation mini-project will focus on delivering the first prototype of the allocation platform, as aligned and coordinated with the Resource Allocation Task Force. Implementation includes customising the Agreemount framework for supporting broker-based resource allocation, and integrating with GOCDB and EGI SSO for authentication and authorisation. The tools are planned for publication at the end of the project quarter; however a demonstration will be given at the EGITF13.

[92] https://github.com/IFCA/feynapps, https://github.com/IFCA/feynapps_panel

[93] https://gocdb-test.esc.rl.ac.uk/v5

5. CONSORTIUM MANAGEMENT

5.1. Summary

The project completed the reporting for the 3rd project year and organised the annual project review in Amsterdam to comply with the project's grant conditions. A project extension was discussed by the project and a 6 month extension presented to the reviewer's. The EC review report endorsed the proposed 6 month extension and suggested that a longer extension should be considered.

5.2. Main Achievements

5.2.1. Project Management

The main focus during PQ13 was the preparation for the third EC Project Review that was held in Amsterdam on the 25-26th June 2013. This was attended by the project officer, 4 EC reviewers and representatives from the coordinator and the project consortium. Two rehearsals were organised (one by phone and another F2F) during June to prepare and align material in the presentations. Information was collected from the partners to prepare the Form C's and the project's work packages to prepare the periodic report.

The timeline for the Horizon 2020 calls started to become clear from the announcements coming from the European Commission. With the calls not opening until December 2013, the calls would not probably close until late March or early April 2014. As a consequence, any funding decision would take place after the current end of the project, and any new project would not start until late 2014. The project through the single PMB meeting that took place during this period, discussed the possibility of extending the project for an additional 6 months. The project office undertook to survey the consortium to understand any financial, legal or logistical restrictions to an extension, and if there was to be an extension where the effort should be focused. The results of the survey will be analysed and a detailed plan presented for the project's Project Management Board to review and the Collaboration Board to approve.

5.2.2. Milestones and Deliverables

Id	Activity No	Deliverable / Milestone Title	Nature (***)	Lead partner	Original Delivery date(*)[94]	Revised delivery date(*)	Status (**)
D2.23	WP2	EGI-InSPIRE Presentation	R	EGI.eu	37	39	PMB Approved
MS238	WP2	Marketing and Communication Handbook	R	EGI.eu	38	40	PMB Approved
MS431	WP4	Deployed Middleware Support Unit Operations Procedures	R	CESNET	38	39	PMB Approved
MS516	WP5	Software Provisioning Process	R	Egi.eu	38	40	PMB Approved

[94] *(*) 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*

5.2.3. Consumption of Effort

Selected period: PM37 to PM39 (May 2013 to July 2013). Report extracted on 05 September 2013

Project Quarter 13

Type	Work Package	Hours Declared	PM Declared	Committed PM	PQ13 Achieved %
MGT	WP1-E	1,080.0	7.5	9.3	80.4%
MGT	WP1-M	1,476.0	10.3	11.2	92.4%
COORD	WP2-E	4,223.6	29.8	31.8	93.7%
COORD	WP2-N	6,202.0	45.5	46.1	98.7%
SUPPORT	WP4-E	6,457.0	47.7	41.4	115.0%
SUPPORT	WP4-N	33,780.5	244.7	244.3	100.2%
SUPPORT	WP5-E	2,616.0	19.5	25.5	76.3%
SUPPORT	WP5-N	1,918.3	14.4	6.5	221.2%
RTD	WP7-E	1,417.2	10.5	9.7	108.3%
RTD	WP7-G	1,222.6	9.2	10.0	92.0%
SUPPORT	WP8-S	3,918.6	29.2	31.0	94.2%
	Total:	**64,311.7**	**468.3**	**466.9**	**100.3%**

The detailed breakdown of effort contributed to each work package by each partner is provided in the following tables for PQ13. 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 workpackage, WP8 started in March 2013 has been added as part of the SUPPORT activities. The workpackage WP6 has ended on April 2013.

Selected period: PM37 to PM39 (May 2013 to July 2013). Report extracted on 05 September 2013

WP1-E - NA1 Management (EGI)

Partner	Hours Declared	Pm Declared	Committed PM	Achieved PM
1-EGI.EU	1080	7.5	9.3	80.4%

WP1-M - NA1 Management

Partner	Hours Declared	Pm Declared	Committed PM	Achieved PM
1-EGI.EU	1476	10.3	11.2	92.4%

WP2-E - NA2 Community Engagement (EGI)

Partner	Hours Declared	Pm Declared	Committed PM	Achieved PM
1-EGI.EU	3396	23.6	26.5	88.9%
12A-CSIC			0.4	
16A-GRNET	0	0.0	1.4	0.0%
16E-IASA	0	0.0	0.4	0.0%
26A-FOM	59	0.4	0.3	141.6%
29-LIP	256.5	1.9	0.5	392.3%
34A-STFC	512.1	3.9	2.3	166.1%
Sum	4223.6	29.8	31.8	93.7%

WP2-N - NA2 Community Engagement

Partner	Hours Declared	Pm Declared	Committed PM	Achieved PM
2-UPT			0.8	
3-IIAP NAS RA	50	0.3	0.4	90.9%
5A-IICT-BAS	0	0.0	0.9	0.0%
7A-ETH ZURICH	0	0.0	0.2	0.0%
7B-UZH	100	0.6	0.4	168.7%
7C-SWITCH	0	0.0	0.4	0.0%
8-UCY			0.8	
9-CESNET	331.4	2.2	1.6	134.9%
10B-KIT-G	776.8	5.7	3.3	173.7%
10C-DESY				
10D-JUELICH				
10E-BADW	0	0.0		
10G-FRAUNHOFER				
12A-CSIC	760	6.1	1.5	403.7%
12D-UPVLC	188	1.5	1.8	82.7%
13-CSC	96.39	0.7	2.0	35.9%
14A-CNRS	221	1.7	2.2	75.3%
14B-CEA	0	0.0	0.7	0.0%
14C-HealthGrid			0.2	
15-GRENA	69	0.4	0.3	160.3%
18A-MTA KFKI	0	0.0	0.3	0.0%
18B-BME	14	0.1	0.4	23.9%
18C-MTA SZTAKI	65	0.5	0.4	130.3%
19-TCD			0.3	
20-IUCC	413.5	2.8	0.5	518.9%
21A-INFN	734	5.8	3.1	190.2%
22-VU	147	0.9	0.8	103.2%
23-RENAM	28	0.2	0.1	213.3%

Partner	Hours Declared	Pm Declared	Committed PM	Achieved PM
26A-FOM	41	0.3	0.4	79.4%
26B-SARA	29	0.2	0.3	69.8%
27A-SIGMA			0.6	
27B-UIO			0.4	
27C-URA			0.7	
28A-CYFRONET	118	0.8	1.2	67.4%
28B-UWAR	224	1.6	0.9	184.6%
28C-ICBP			0.6	
29-LIP	21	0.2	1.9	8.5%
30-IPB	282	1.8	1.4	130.1%
31-ARNES	60	0.4	1.7	25.8%
31B-JSI	40	0.3	0.9	30.9%
32-UI SAV	349.2	2.7	2.3	118.1%
33-TUBITAK ULAKBIM	441	3.2	2.4	129.6%
34A-STFC	320.37	2.4	2.3	104.2%
34C-UG	56	0.4	0.2	211.6%
34D-IMPERIAL	0	0.0	0.3	0.0%
34E-MANCHESTER	0	0.0	0.3	0.0%
36-UCPH	75	0.6	1.0	55.4%
38-VR-SNIC	0	0.0	0.1	0.0%
38A-KTH	0	0.0	0.2	0.0%
39-IMCS-UL	12	0.1	1.4	6.2%
40A-E-ARENA	139.32	1.0	1.2	83.4%
Sum:	**6201.98**	**45.5**	**46.1**	**98.7%**

WP4-E - SA1 Operations (EGI)

Partner	Hours Declared	Pm Declared	Committed PM	Achieved PM
1-EGI.EU	632	4.5	5.0	90.8%
9-CESNET	598	4.0	2.6	153.7%
10B-KIT-G	735	5.4	4.4	122.3%
10D-JUELICH	146.58	1.1	0.4	285.3%
12A-CSIC	250	2.0	1.1	188.2%
12B-FCTSG	156.5	1.1	0.8	150.3%
13-CSC			0.5	
14A-CNRS	126	1.0	0.8	127.8%
16A-GRNET	427.7	3.3	4.4	74.5%
17-SRCE	536	3.7	2.4	152.0%
21A-INFN	1223	9.7	3.8	258.8%
21B-GARR			0.8	
26A-FOM	10	0.1	0.8	10.0%
26B-SARA	67.5	0.6	1.4	38.9%
28A-CYFRONET	93	0.7	1.4	46.0%
29-LIP	517	3.9	1.8	215.4%
34A-STFC	292.73	2.2	4.6	48.4%
35-CERN	524	3.7	3.7	99.6%
38A-KTH	0	0.0	0.7	0.0%
38B-LIU	122	0.9	0.4	241.0%
Sum:	**6457.01**	**47.7**	**41.4**	**115.0%**

WP4-N - SA1 Operations

Partner	Hours Declared	Pm Declared	Committed PM	Achieved PM
2-UPT	0	0.0	1.2	0.0%
3-IIAP NAS RA	289	2.0	1.2	165.9%
5A-IICT-BAS	0	0.0	1.6	0.0%
5B-IOCCP-BAS	0	0.0	0.5	0.0%
5C-NIGGG-BAS	74	0.5	1.5	35.2%
6-UIIP NASB	360	2.6	1.9	137.1%
7A-ETH ZURICH	153	1.0	2.1	48.2%
7B-UZH	88	0.5	1.1	47.8%
7C-SWITCH	184	1.2	2.1	56.0%
8-UCY	168	1.2	3.0	41.0%
9-CESNET	1021	6.8	7.8	87.1%
10B-KIT-G	680.2	5.0	7.0	71.2%
10C-DESY	138	1.0	1.9	51.9%
10D-JUELICH	224.24	1.6	1.4	113.9%
10E-BADW	677.28	4.9	3.0	164.4%
10G-FRAUNHOFER	123.5	0.9	1.9	46.9%
10H-LUH	220	1.6	1.4	116.5%
11-UNI BL	420	3.2	4.7	68.3%
12A-CSIC	570	4.6	2.8	165.8%
12B-FCTSG	1492	10.7	4.1	260.5%
12C-CIEMAT	381	3.0	2.4	128.3%
12D-UPVLC	219	1.8	1.8	100.1%
12E-IFAE	468	3.7	2.9	130.2%
12F-RED.ES	769	5.8	3.3	178.6%
12G-UNIZAR-I3A	360	2.9	3.3	88.6%
12H-UAB	855	4.4	2.5	174.1%
13-CSC	629.81	4.8	4.2	114.6%
14A-CNRS	1644.5	12.5	15.1	82.7%

Partner	Hours Declared	Pm Declared	Committed PM	Achieved PM
14B-CEA	898.4	7.0	4.0	175.7%
15-GRENA	183	1.1	1.2	91.7%
16A-GRNET	829.5	6.3	7.7	82.2%
16B-AUTH			0.8	
16C-CTI	41	0.3	0.8	38.4%
16D-FORTH	45	0.3	0.8	42.2%
16F-ICCS	0	0.0		
16G-UI			0.5	
16H-UP	118	0.9	0.6	143.8%
17-SRCE	631	4.4	4.5	96.9%
18A-MTA KFKI	676	4.4	4.1	108.5%
18B-BME	186	1.3	1.8	73.3%
18C-MTA SZTAKI	214	1.5	1.5	101.9%
19-TCD			3.3	
20-IUCC	548	3.7	1.6	233.8%
21A-INFN	2294	18.2	22.3	81.8%
21B-GARR			0.8	
22-VU	579	3.4	0.5	686.2%
23-RENAM	217	1.6	1.3	124.0%
24-UOM	396	2.6	3.6	71.2%
25-UKIM	484	3.5	4.4	77.9%
26A-FOM	113	0.8	2.0	42.4%
26B-SARA	712.7	5.9	7.6	78.0%
27A-SIGMA			2.1	
27B-UIO	273	2.2	1.4	158.8%
27C-URA	342	2.6	0.7	382.7%
28A-CYFRONET	1231.2	8.8	7.2	121.2%
28B-UWAR	212	1.5	0.4	359.9%
28C-ICBP	178	1.3	1.1	112.5%
28D-POLITECHNIKA WROCLAWSKA	330	2.3	1.0	236.1%

Partner	Hours Declared	Pm Declared	Committed PM	Achieved PM
29-LIP	1209.5	9.1	6.7	136.6%
30-IPB	1128	7.3	7.4	99.2%
31-ARNES	599	4.3	2.7	159.2%
31B-JSI	986.4	7.0	3.2	221.0%
32-UI SAV	729.7	5.6	6.0	93.6%
33-TUBITAK ULAKBIM	945	6.8	8.1	83.1%
34A-STFC	481.81	3.6	6.4	56.5%
34C-UG	514	4.0	3.6	110.5%
34D-IMPERIAL	681.5	5.1	3.6	141.0%
34E-MANCHESTER	602.5	4.4	3.6	120.9%
35-CERN	130	0.0	0.3	0.0%
36-UCPH	215	1.6	2.9	55.8%
38A-KTH	0	0.0	0.4	0.0%
38B-LIU	135	1.0	1.9	53.3%
38C-UMEA	376	2.8	3.0	92.8%
39-IMCS-UL	157	1.1	3.3	34.5%
40A-E-ARENA	69.76	0.5		
40B-SINP MSU	332.61	2.4	1.3	190.1%
40C-JINR	129.04	0.9	0.8	113.4%
40D-RRCKI	129.53	0.9	0.8	113.9%
40F-ITEP	113.8	0.8	0.8	108.4%
40G-PNPI			0.8	
51A-ICI	170	1.1	1.4	81.5%
51C-UPB			0.8	
51D-UVDT	0	0.0	0.6	0.0%
51E-UTC	0	0.0	0.6	0.0%
51H-INCAS			0.2	
51J-UB	5	0.0	0.1	26.4%
Sum:	**33780.48**	**244.7**	**248.2**	**98.6%**

WP5-E - SA2 Provisioning Soft. Infrastr. (EGI)

Partner	Hours Declared	Pm Declared	Committed PM	Achieved PM
1-EGI.EU	336	2.4	2.3	107.6%
9-CESNET	336	2.2	5.3	41.9%
10D-JUELICH			0.8	
12A-CSIC	420	3.4	3.3	101.4%
12B-FCTSG	256	1.8	1.1	173.5%
16A-GRNET	235	1.8	3.5	51.2%
16B-AUTH			0.8	
16E-IASA	0	0.0	0.8	0.0%
16F-ICCS	225	1.7	0.8	211.0%
21A-INFN			1.8	
29-LIP	808	6.1	4.4	139.5%
38B-LIU			0.7	
Sum:	**2616**	**19.5**	**25.5**	**76.3%**

WP5-N - SA2 Provisioning Soft. Infrastr.

Partner	Hours Declared	Pm Declared	Committed PM	Achieved PM
1-EGI.EU	60	0.4	0.3	133.3%
9-CESNET	116	0.8	0.2	412.4%
10B-KIT-G	264.96	1.9	0.8	257.2%
10D-JUELICH	93.1	0.7	0.4	181.2%
10H-LUH	64	0.5	0.3	186.4%
12B-FCTSG	82	0.6	0.4	157.5%
14A-CNRS	126	1.0	0.6	153.3%
21A-INFN	581	4.6	1.4	335.4%
26B-SARA	0	0.0	0.4	0.0%
32-UI SAV	245.2	1.9	0.8	251.5%
34F-OXFORD	70	0.5	0.4	135.8%
38A-KTH	216	1.6	0.8	208.1%
Sum:	**1918.26**	**14.4**	**6.5**	**221.2%**

WP7-E - JRA1 Operational Tools (EGI)

Partner	Hours Declared	Pm Declared	Committed PM	Achieved PM
10B-KIT-G	474	3.5	2.9	117.5%
12A-CSIC				
12B-FCTSG	31.1	0.2	0.8	29.9%
14A-CNRS	203	1.5	0.8	205.8%
16A-GRNET	81.8	0.6	0.8	83.1%
17-SRCE	128	0.9	0.8	118.0%
21A-INFN	228	1.8	1.5	120.6%
34A-STFC	93.25	0.7	1.5	46.9%
35-CERN	178	1.2	0.8	166.4%
Sum:	**1417.15**	**10.5**	**9.7**	**108.3%**

WP7-G - JRA1 Operational Tools

Partner	Hours Declared	Pm Declared	Committed PM	Achieved PM
10H-LUH	248	1.8	1.1	160.5%
12A-CSIC				
12B-FCTSG	284	2.0	1.3	155.9%
14A-CNRS			3.5	
17-SRCE			0.2	
21A-INFN	361	2.9	1.6	176.3%
34A-STFC	329.62	2.5	1.9	132.6%
35-CERN			0.4	
Sum:	**1222.62**	**9.2**	**10.0**	**92.0%**

WP8-S - SA4 Advancing EGI - Strategic Goals

Partner	Hours Declared	Pm Declared	Committed PM	Achieved PM
1-EGI.EU	0	0.0	2.1	0.0%
9-CESNET	602	4.0	3.2	125.4%
10D-JUELICH	108.26	0.8	0.9	87.8%
12A-CSIC	380	3.0	1.9	160.0%
12B-FCTSG	380	2.7	1.9	144.1%
14A-CNRS	740.5	5.6	6.0	93.9%
16A-GRNET	62	0.5	1.5	31.5%
17-SRCE	150	1.0	1.1	94.3%
18C-MTA SZTAKI			0.6	0.0%
21A-INFN	83	0.7	0.4	164.7%
26B-SARA	455	3.8	5.0	75.3%
28A-CYFRONET	345	2.5	2.5	98.1%
34A-STFC	432.8	3.3	2.6	125.6%
38A-KTH	180	1.3	1.3	102.6%
Sum:	**3918.56**	**29.2**	**31.0**	**94.2%**

5.2.4. Overall Financial Status

Selected period: PM37 to PM39 (May 2013 to July 2013). Report extracted on 05 September 2013

Partner	Pm Declared	Committed PM	Achieved PM	Eligieble Cost Estimate	Estimated Funding
1-EGI.EU	48.8	56.6	86.1%	432,970.5	261,736.2
2-UPT	0.0	1.9	0.0%	0.0	0.0
3-IIAP NAS RA	2.3	1.6	147.9%	6,885.6	2,272.2
5A-IICT-BAS	0.0	2.6	0.0%	0.0	0.0
5B-IOCCP-BAS	0.0	0.5	0.0%	0.0	0.0
5C-NIGGG-BAS	0.5	1.5	35.2%	3,226.9	1,064.9
6-UIIP NASB	2.6	1.9	137.1%	9,874.3	3,258.5
7A-ETH ZURICH	1.0	2.4	43.5%	8,788.4	2,900.2
7B-UZH	1.1	1.5	77.3%	8,045.5	2,655.0
7C-SWITCH	1.2	2.6	46.4%	16,549.3	5,461.3
8-UCY	1.2	3.8	32.6%	10,620.9	3,504.9
9-CESNET	20.0	20.8	96.2%	131,793.0	61,548.1
10B-KIT-G	21.3	18.3	116.8%	189,836.6	75,958.1
10C-DESY	1.0	1.9	51.9%	8,938.2	2,949.6
10D-JUELICH	4.2	3.8	110.3%	37,149.9	16,829.5
10E-BADW	4.9	3.0	164.4%	43,867.0	14,476.1
10G-FRAUNHOFER	0.9	1.9	46.9%	7,999.0	2,639.7
10H-LUH	3.9	2.8	140.9%	34,457.3	12,495.3
11-UNI BL	3.2	4.7	68.3%	13,056.0	4,308.5
12A-CSIC	19.0	10.9	175.0%	148,873.8	66,236.3
12B-FCTSG	19.3	10.2	188.7%	151,025.9	64,193.9
12C-CIEMAT	3.0	2.4	128.3%	23,832.3	7,864.7
12D-UPVLC	3.3	3.6	91.2%	25,458.7	8,401.4
12E-IFAE	3.7	2.9	130.2%	29,274.3	9,660.5
12F-RED.ES	5.8	3.3	178.6%	45,379.7	14,975.3

Partner	Pm Declared	Committed PM	Achieved PM	Eligieble Cost Estimate	Estimated Funding
12G-UNIZAR-I3A	2.9	3.3	88.6%	22,518.7	7,431.2
12H-UAB	4.4	2.5	174.1%	34,041.3	11,233.6
13-CSC	5.5	6.7	82.2%	57,083.5	18,837.5
14A-CNRS	23.3	29.0	80.4%	201,129.1	90,483.1
14B-CEA	7.0	4.7	149.9%	60,721.1	20,038.0
15-GRENA	1.5	1.4	103.9%	3,690.0	1,217.7
16A-GRNET	12.5	19.2	64.8%	96,477.3	40,836.8
16B-AUTH		1.6			
16C-CTI	0.3	0.8	38.4%	2,417.8	797.9
16D-FORTH	0.3	0.8	42.2%	2,653.7	875.7
16E-IASA	0.0	1.2	0.0%	0.0	0.0
16F-ICCS	1.7	0.8	211.0%	13,268.6	6,634.3
16G-UI		0.5			
16H-UP	0.9	0.6	143.8%	6,958.6	2,296.3
17-SRCE	10.0	9.0	111.1%	49,542.9	22,379.3
18A-MTA KFKI	4.4	4.8	91.7%	17,299.7	5,708.9
18B-BME	1.4	2.2	64.0%	7,885.7	2,602.3
18C-MTA SZTAKI	2.0	2.0	97.5%	12,100.6	3,993.2
20-IUCC	6.4	2.1	306.1%	82,733.9	27,302.2
21A-INFN	43.7	35.8	122.0%	285,465.4	110,115.8
21B-GARR		1.5			
22-VU	4.3	1.3	320.2%	35,794.5	11,812.2
23-RENAM	1.8	1.3	130.2%	5,250.0	1,732.5
24-UOM	2.6	3.6	71.2%	6,182.8	2,040.3
25-UKIM	3.5	4.4	77.9%	13,828.6	4,563.4
26A-FOM	1.7	3.5	48.5%	17,126.4	6,552.6
26B-SARA	10.5	14.7	71.0%	107,134.4	52,521.5
27A-SIGMA		2.7			
27B-UIO	2.2	1.8	124.8%	21,665.3	7,149.5

Partner	Pm Declared	Committed PM	Achieved PM	Eligieble Cost Estimate	Estimated Funding
27C-URA	2.6	1.4	191.3%	26,097.2	8,612.1
28A-CYFRONET	12.7	12.4	102.3%	108,756.6	45,669.4
28B-UWAR	3.1	1.3	241.9%	26,531.9	8,755.5
28C-ICBP	1.3	1.7	72.8%	10,831.8	3,574.5
28D-POLITECHNIKA WROCLAWSKA	2.3	1.0	236.1%	20,081.5	6,626.9
29-LIP	21.2	15.2	139.4%	116,373.3	49,529.6
30-IPB	9.1	8.8	104.2%	49,900.3	16,467.1
31-ARNES	4.7	4.4	108.2%	28,214.6	9,310.8
31B-JSI	7.3	4.1	178.3%	43,944.6	14,501.7
32-UI SAV	10.2	9.0	112.9%	81,483.1	26,889.4
33-TUBITAK ULAKBIM	9.9	10.6	93.8%	69,696.0	22,999.7
34A-STFC	18.6	21.6	86.0%	190,761.0	90,645.1
34C-UG	4.4	3.8	115.9%	45,614.8	15,052.9
34D-IMPERIAL	5.1	3.9	131.9%	52,492.5	17,322.5
34E-MANCHESTER	4.4	3.9	113.1%	45,001.3	14,850.4
34F-OXFORD	0.5	0.4	135.8%	5,228.4	1,725.4
35-CERN	4.9	5.1	97.2%	70,856.1	35,428.0
36-UCPH	2.2	4.0	55.7%	24,393.1	8,049.7
38-VR-SNIC	0.0	0.1	0.0%	0.0	0.0
38A-KTH	2.9	3.3	87.7%	33,557.3	17,480.3
38B-LIU	1.9	2.9	65.1%	21,778.4	8,944.4
38C-UMEA	2.8	3.0	92.8%	31,862.5	10,514.6
39-IMCS-UL	1.2	4.6	26.1%	9,464.0	3,123.1
40A-E-ARENA	1.5	1.2	125.1%	5,914.0	1,951.6
40B-SINP MSU	2.4	1.3	190.1%	9,408.1	3,104.7
40C-JINR	0.9	0.8	113.4%	3,650.0	1,204.5
40D-RRCKI	0.9	0.8	113.9%	3,663.8	1,209.1
40F-ITEP	0.8	0.8	108.4%	3,218.9	1,062.2

Partner	Pm Declared	Committed PM	Achieved PM	Eligieble Cost Estimate	Estimated Funding
40G-PNPI		0.8			
51A-ICI	1.1	1.4	81.5%	6,814.9	2,248.9
51C-UPB		0.8			
51D-UVDT	0.0	0.6	0.0%	0.0	0.0
51E-UTC	0.0	0.6	0.0%	0.0	0.0
51H-INCAS		0.2			
51J-UB	0.0	0.1	26.4%	200.4	66.1
Totals	**468.3**	**466.9**	**100.3%**	**3,696,663.4**	**1,551,466.6**

5.3. Issues and mitigation

5.3.1. Deviations from linear plan

Some partners are deviating from the linear plan committed to the project and over reported in PQ13:

- WP2-E: LIP, STFC, FOM;
- WP4-E: CESNET, JUELICH, CSIC, SRCE, INFN, LIP, LIU
- WP5-E: FCTSG, ICCS, LIP; overall WP5 is reporting 76% of the linear plan
- WP7-E: CNRS, CERN
- WP8-S: INFN, CSIC, FCTSG

The deviation will be monitored during the subsequent quarter when it occurs again. Some partners are catching up low activity in the previous quarters. 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. Work package 8 over reporting from a few of the partners is due to the extra work during the start-up phase of the activity. Deviations will be monitored in PQ14 to understand what the impact on PY4 activity is.

Within the N-work packages the deviations are not monitored as 67% of the efforts are funded by the members; more efforts reported within their limited budget are of benefit to the project.

The total PMs used for this quarter is 100.3% in line with the plan. Per work package, overall activity of WP5-E and WP1-E is lower than the plan, respectively 76 and 80%. In WP5-E it is due to the under spending or not reporting from few partners and will be watched in PQ14. For EGI.eu it is due to the holiday periods and will be balanced in the subsequent quarters.

5.4. Plans for the next period

During the next period an amendment will be prepared for the European Commission relating to the proposed 6 month (or longer) project extension.

6. PROJECT METRICS

6.1. Overall metrics

The Project Metrics are available from the EGI Metrics Portal – http://metrics.egi.eu

No	Objective Summary	Metrics	Achieved PY3 (PQ12)	Achieved PQ13	Target PY4
PO1	Expansion of a nationally based production infrastructure	Total number of production resource centres that are part of EGI (EGI-InSPIRE and integrated partners) (M.SA1.Size.1)	**347 (including suspended sites)**	**337 (only certified sites)**	345 (350) (355)
		Total number of job slots available in EGI-InSPIRE and integrated resource providers (M.SA1.Size.2a)	**361,287**	**433,878**	400,000 (425,000) (450,000)
		EGI monthly availability and reliability of Resource Centre (M.SA1.Operation.5)	**96.43%/ 96.94%**	**95.41%/ 95.91%**	97.0/97.5% (97.5/98.0%) (98.0/98.5%)
		Average monthly availability and reliability of NGI core middleware services (MSA1.Operation.4)	**99.4%/ 99.5%**	**98.33%/ 98.53%**	99.60/99.80% (99.65/99.85%) (99.67/99.87%)
		EGI monthly availability and reliability of critical central operations tools (MSA1.Operation.6a)	**99.53%/ 99.89%**	**99.71%/ 99.91%**	99.60/99.80% (99.65/99.85%) (99.67/99.87%)
		EGI monthly averaged VO availability and reliability (M.SA1.Operation.7)	N/A	**97.27%/ 98.34%**	98%/99% (98.5/99.0%) (98.7/99.2%)
PO2	Support of	Number of papers	**72**	**9**	70

	European researchers and international collaborators through VRCs	from EGI Users (M.NA2.5)			(80) (90)
		Number of jobs done a day (M.SA1.Usage.1)	**1.43**	**1.19 M (grid)** **1.45 M (grid and local)**	1.6 M (1.8 M) (2.0 M)
PO3	Sustainable support for Heavy User Communities	Number of production sites supporting MPI (M.SA1.Integration.2)	**77**	**80**	90 (100) (120)
		Number of users from HUC VOs (M.SA1.VO.7)	**11,595**	**11,656**	12,500 (13,000 (14,000)
		Total number of High Activity VOs (M.SA1.VO.5)	N/A	**53**	55 (60) (65)
PO4	Addition of new User Communities	Number of users from non-HUC VOs (M.SA1.VO.6)	**10,602**	**10,368 (*)**	11,000 (11,500) (12,000)
		Public events organised (attendee days) (M.NA2.6)	**8877**	**210**	15,000 (17,000) (19,000)
PO5	Transparent integration of other infrastructures	Number of on-going Research Infrastructures/new communities being integrated (M.SA1.Integration.4)	N/A	**5 (**)**	5 (7) (9)
		MoUs with resource providers (M.NA2.10)	**3**	**3**	4 (5) (5)
PO6	Integration of new technologies and resources	Number of resource centres offering federated cloud services accessible to authorised users (M.SA2.16)	**14**	**14**	15 (20) (25)

6.2. Activity metrics

These are available from the EGI Metrics Portal - *http://metrics.egi.eu/quarterly_report/QR13/*

7. ANNEX A1: DISSEMINATION AND USE

7.1. Main Project and Activity Meetings

Date	Location	Title	Participants	Outcome (Short report & Indico URL)
19-21st June 2013	CERN	SAM Workshop		
25-26 June 2013	Amsterdam Netherlands	3rd EGI-InSPIRE Review		Q&A Notes: https://documents.egi.eu/document/1838

7.2. Conferences/Workshops Organised

Date	Location	Title	Participants	Outcome (Short report & Indico URL)
7-8/5/ 2013	Boulder, Colorado	Security for Collaborating Infrastructures	1	http://indico.cern.ch/conferenceDisplay.py?confId=246253. Organised and chaired to work on building trust and standards in security policies and procedures.
28-30/ 5/2013	LLR Polytechnique, Palaiseau	LCG France and France Grilles operations meeting	50	https://indico.in2p3.fr/conferenceDisplay.py?confId=8140
18-19/ 6/2013	LPC Clermont Ferrand	NGI Security meeting	18	https://indico.in2p3.fr/conferenceDisplay.py?confId=8454

7.3. Other Conferences/Workshops Attended

Date	Location	Title	Participants	Outcome (Short report & Document Server URL to presentations made)
6-7/5 2013	Boulder, Colorado	TAGPMA Meeting	1	http://indico.rnp.br/conferenceDisplay.py?confId=161. Representing WLCG and EGI.
7-8/5 2013	Boulder, Colorado, USA	Security for Collaborating Infrastructures	Rep from STFC	http://indico.cern.ch/conferenceDisplay.py?confId=246253 Organised and chaired meeting to work on building trust and standards in security policies and procedures
13/05/ 2013	Barcelona, Spain	LHCP Conference	2	The LHC Tier1 at PIC: experience from first LHC run (http://lhcp2013.ifae.es/)

13-15/ 5/2013	Kyiv, Ukraine	EUGridPMA 28th meeting	2	Presented CALG self-audit, https://www.eugridpma.org/meeti http://agenda.nikhef.nl/conferenceDisplay.py?confId=2493. At
13-17/ 5/2013	Leinsweiler Hof, Germany	8th Belle II Computing Workshop	1	presentation of CESNET, http://kds.kek.jp/conferenceTimeTable.py?confId=11545#20130515
21-23/ 5/2013	CERN	LHCb Computing Workshop	1	
22-23/ 5/2013	Dublin, Ireland	e-IRG Workshop	Rep from EGI.eu	http://www.e-irg.eu/e-irg-events/events-archive/2013/workshop-22-23-may.html
27/05/ 2013	Berlin	7th dCache WS	1	Martinelli presented a local solution for establishing advisory quotas for users and groups (q.v. progress summary)
2-4/6 2013	Siauliai, Lithuania	Nordugrid 2013	~40	http://indico.hep.lu.se//conferenceDisplay.py?confId=1273
2-6/6 2013	Maastricht, Netherlands	TERENA Networking Conference 2013	1 Rep from STFC and EGI.eu	https://tnc2013.terena.org/ Participated in all Federated Identity Management tracks including REFEDs meeting to represent FIM4R Activity
3-4/6 2013	CSCS Lugano	Infiniband Foundation Course	1	
4-6/6 2013	Siauliai, LT	NorduGRID 2013 conference	1	Meeting with ARC middleware developers, http://www.nordugrid.org/NorduGrid2013/
05/6 2013	Chisinau, Academy of Sciences of Moldova	Information Day on the NATO Science for Peace and Security Programme	Representatives from research institutions of the Academy of Sciences and universities of Moldova	Presentation of Dr. Peter Bogatencov: "NATO support to networking infrastructure and services development for research and education in Moldova. Research and Educational eInfrastructura in Moldova"
06/6 2013	RAL	UK HEP System Managers Workshop	1	
10/6 2013	CERN	Atlas Software and Computing Week	1	

24/6 2013	UCL	JANET High Throughput Networking workshop		
26/06/ 2013	Lisbon, Portugal	FET- Flagship HBP: Workshop on Human Brain Project: A roadmap for Portugal	1	http://www.gppq.fct.pt/_7pq/eventos.php?id=987
27/06 2013	Imperial	GridPP workshop	1	Future of Big Data Management
22-28/ 06/2013	Albena, Bulgaria	5th International Conference AmiTaNS'13 – "Fifth Conference of the Euro-American Consortium for Promoting the Application of Mathematics in Technical and Natural Sciences"	R&D representatives from European countries	Dr. Peter Bogatencov presented joint report: Boris RYBAKIN, Peter BOGATENCOV, Grigore SECRIERU, Nicolai ILIUHA - "Mathematical modelling of impulsive loading of explosive charge"
1-6 Jul 2013	SZTAKI, Budapest, Hungary	Summer School on Grid and Cloud Workflows and Gateways	30	Summer School on Grid and Cloud Workflows and Gateways has been organized from 1st to 6th June 2013 at SZTAKI, Budapest, Hungary. The summer school was organized by the SCI-BUS, ER-flow, and SZTAKI Cloud project, but its subject was not restricted to the technologies developed by these projects. Participants got detailed view on how the various Grid, Cloud middleware technologies can be combined and utilized via high level user-oriented tools and environments like science gateways and workflow systems. Nikola Grkic from the Institute of Physics Belgrade participated in the school, and as the outcome a first NGI_AEGIS gUSE/WS-PGRADE portal has been deployed at AEGIS01-IPB-SCL Grid site.

12 -22/ 7/2013	National House of Mihajlo Idvorski Pupin, Idvor, Serbia	Java in physics simulation	30	In Idvor, home village of the scientist and inventor Mihajlo Pupin, best known for his numerous patents related to long-distance telephone communication, an educational and research summer camp for high school students has been organized. It featured lectures on Java programming for simulations in physics. As a part of this 10-day camp, Dusan Vudragovic from the Institute of Physics Belgrade presented overview of the Grid technologies, usage of the Java programming language in Grid environment, and demonstrated one Grid-related tool developed in Java.

7.4. Publications

Publication title	**Journal / Proceedings title**	**DOI code**	**Journal references** *Volume number* *Issue* *Pages from - to*	**Authors** *Initials*	**Authors** *Surname*
0IGI Portal: portale web di accesso a risorse Grid e Cloud per le comunita' scientifiche	Workshop GARR CSD Selected paper		ISBN 978-88-905077-4-8, pag.14-19	M. D. A. A. E. G. R. P.	Bencivenni Michelotto Ceccanti Cristofori Fattibene Misurelli Brunetti Veronesi
Grandi infrastrutture di storage per il calcolo ad elevato throughput e Cloud	Workshop GARR CSD Selected paper		ISBN 978-88-905077-4-8, pag.50-56	M. A. L. M. D. M. A. P.P. E. V. V. V. G.	Di Benedetto Cavalli Dell'Agnello Favaro Gregori Pezzi Prosperini Ricci Ronchieri Sapunenko Vagnoni Venturi Zizzi

Distributed Open Cloud Computing, Storage e Network con WNoDeS: Esperienza ed Evoluzione	Workshop GARR CSD Selected paper		ISBN 978-88-905077-4-8, pag.63-67	D. M. V. G, A. E. D.	Andreotti Caberletti Ciaschini Dalla Torre Italiano Ronchieri Salomoni
Sull'interoperabilita' tra le risorse locali, Grid e Cloud per la realizzazione di un'infrastruttura di calcolo distribuito in Italia	Workshop GARR CSD Selected paper		ISBN 978-88-905077-4-8, pag.69-75	D. G. R., R. M. A. G. S. R. R. D.	Scardaci Andronico Barbera Bruno Fargetta Fornaia La Rocca Monforte Ricceri Rotondo Saitta
Realizzazione di un'infrastruttura Cloud pilota basata su OpenStack	Workshop GARR CSD Selected paper		ISBN 978-88-905077-4-8, pag.76-82	L. E. M. H. D. A. P. V.	Fano' Illic Fattibene Manzali Riahi Salomoni Valentini Veronesi Venturi
Implementation of PKI IDP Management Systems for Access to Resources of European R&E E-Infrastructures	Proceedings of ITSEC-2012, International Conference on Information Technologies and Security, Chisinau, 15-16 October 2012		NCAA, 2013, pp. 227-237. ISBN 978-9975-4172-3-5	P. V.	Bogatencov Pocotilenco

Dipolar Bose-Einstein Condensates in Weak Anisotropic Disorder	Phys. Rev. A		88 (2013) 013624 DOI: 10.1103/PhysRevA.88.013624	B. A. A.	Nikolic Balaz Pelster
Scaling Exponents and Phase Separation in a Nonlinear Network Model Inspired by the Gravitational Accretion	Physica D		255 (2013) 52 DOI: 10.1016/j.physd.2013.04.004	A. A. A.	Bogojevic Balaz Belic
Nonadiabatic Molecular Dynamics Simulation for Carrier Transport in a Pentathiophene Butyric Acid Monolayer	Phys. Rev. B		87 (2013) 205117 DOI: 10.1103/PhysRevB.87.205117	J. N. L.	Ren Vukmirovic W. Wang