



EGI-InSPIRE

D2.26 ANNUAL REPORT ON EGI AND ITS COMMUNITY ENGAGEMENT ACTIVITY

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Abstract

This document provides a report on the activities related to the community engagement. It is organised by customer segments: scientific communities, resource providers, policy makers, SME & industry, and general public. The document also provides an update on the activities related to the gender action plan and a review of the technical services directly supporting community engagement (AppDB, training marketplace and CRM).



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I. DELIVERY SLIP

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II. DOCUMENT LOG

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6	17/06/2014	Updates based on reviewers' feedback	Gergely Sipos, Javier Jimenez, Neasan O'Neill/EGI.eu

III. 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.

IV. 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>

V. TERMINOLOGY

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



VI. 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.



EXECUTIVE SUMMARY

Science today is no longer exclusively produced in single research labs or within national boundaries. Modern scientific challenges call for integrated solutions, cross-country collaborations and computing power with flexible usage to analyse vast amounts of data.

E-infrastructures allow scientists to share information securely, analyse data efficiently and collaborate with colleagues worldwide. The 'European Grid Infrastructure' collaboration (EGI) operates one of the largest, collaborative e-Infrastructures of the world. EGI supports the digital European Research Area (ERA) through its pan-European infrastructure, based on an open federation of reliable ICT services, which provide uniform, cost effective, user oriented and collaborative access to computing and data storage resources in more than 30 countries.

Identifying the various stakeholder categories, defining a proper service offering, a process for engagement and communication channels are key to achieve recognition and growth. This document describes the EGI engagement activities performed over the last year, and provides details of the achievements. The report is organised according to the following stakeholder categories: scientific communities, resource providers, policy makers, SME & industry, and general public.

For the scientific communities, a well-defined engagement process has been defined during the 4th project year (PY4) and this runs in collaboration with the NGIs, scientific communities. The process, as well as the tools and teams that it integrates are described in the report, alongside with the technical engagement activities performed through the virtual teams and the research champions, two key elements of the process.

For the resource providers, the engagement and communication activities are mainly reported with regards to the peer infrastructures such as XSEDE/OSG, EUDAT, PRACE and Desktop Grids. A general solution definition related to the federated operations is also highlighted as applying to this customer segment.

For the policy makers, the activity reported is mainly around ensuring the EGI presence in key events and in producing key publications targeted at this specific segment.

Concerning SMEs and industry, this is a new customer segment that has been introduced and where more focus will be put in the future. Concerning the general public, the activity performed came mainly from the eScienceTalk project, while a new project is being developed for.

The document also reports on the activities connected to the gender action plan and closes with an evaluation of the technical services that are used in the area of community engagement, mainly the application database, the training marketplace and the Client Relationship Management.



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1 INTRODUCTION

Science today is no longer exclusively produced in single research labs or within national boundaries. Modern scientific challenges call for integrated solutions, cross-country collaborations and computing power with flexible usage to analyse vast amounts of data.

E-infrastructures allow scientists to share information securely, analyse data efficiently and collaborate with colleagues worldwide. The 'European Grid Infrastructure' collaboration (EGI) operates one of the largest, collaborative e-Infrastructures of the world. EGI supports the digital European Research Area (ERA) through its pan-European infrastructure, based on an open federation of reliable ICT services, which provide uniform, cost effective, user oriented and collaborative access to computing and data storage resources in more than 30 countries.

Identifying the various stakeholder categories, defining a proper service offering and efficient communication channels are key to achieve recognition and growth. This document describes the EGI engagement activities performed over the last year and the results achieved. The report is organised according to the following categories: scientific communities, resource providers, policy makers, SME & industry, and general public.

The document concludes with an update on activities connected with the gender action plan and with an evaluation of the three technical services that are directly related to community engagement, that are the application database, the training marketplace and the client relationship management.



2 COMMUNITIES

2.1 *Scientific Communities*

EGI's mission is to help scientists to make the most of the latest computing technologies and available compute and storage resources, such as grids and clouds. EGI's sustainability plans have become increasingly coupled with its long-term strategy: connect researchers from all fields of science across the whole ERA with the reliable and innovative ICT services from EGI that they need to undertake their collaborative world-class and world-inclusive research. Engagement with research communities is a key element of this EGI strategy and needs to:

- Identify scientific communities from the ERA that could break current scientific barriers with the use of EGI/NGI solutions.
- Reach out to and carry out discussions with these communities about ICT technologies to capture details of their e-infrastructure use cases and requirements.
- Help the communities address their scientific challenges with existing EGI solutions, and by bringing in new solutions to EGI as required.
- Support scientific communities during the whole process they have to go through to become active, and self-sufficient users of EGI e-infrastructure services.

EGI provides a world-class e-infrastructure that can support researchers in pushing the frontiers of science, in particular within areas with massive data or computational requirements. In the next two years a growing number of Research Infrastructures (RIs) from the ESFRI roadmap and from national roadmaps are expected to reach implementation or operational stage. These RIs are already exploring the current and future needs of their user communities and thus they are key instruments in bringing together a wide diversity of stakeholders to look for solutions to many of the problems science is facing today. Given their international nature and awareness of the benefits of e-infrastructures ESFRI RIs, their preparatory projects, and other similarly large, multinational and structured scientific collaborations are considered as the primary potential beneficiaries of EGI services and therefore one of the prime targets of EGI Engagement activities. These projects and communities come with some advantages, and disadvantages, which need to be considered when engaging with them.

Advantages:

- Usually one point of contact, for example a technical coordinator exists.
- Requirement gathering should be simpler and can build on the established network of contacts of the RIs.
- Acceptance and integration of EGI into the ESFRI plans should lead to a long term partnership between e-infrastructure and research infrastructures.



- Awareness of their problems and typically also of the benefits of using e-infrastructures in addressing them.
- More likely to have some internal expertise that can work with EGI and speed up collaborative work.
- Given their scale, using common resources and solutions is expected to imply a significant reduction in the global cost of development and provisioning.

Disadvantages:

- Convincing a large community of an outside solution could be difficult.
- Sometimes need to work with existing/previously chosen tools.
- The full pay off (i.e. scientific breakthrough enabled by EGI solutions) may not be seen for a number of years.

A second target group for EGI Engagement is the large number of highly dynamic, small research collaborations and research networks. Unlike RIs, these groups may scarcely, or not be aware of e-infrastructures, and their benefits to science, so discussions have to start at a more basic level. They come with different unique advantages and disadvantages that need to be recognised when engaging with them.

Advantages:

- Being usually more flexible on using new technologies and tools.
- Bringing new insights and tools that could have a wider use.
- Be the possible first step in integrating a much wider community.
- Be more suited to establish spinoffs and start-ups.

Disadvantages:

- The group is not visible, have no clearly identifiable contacts for engagement.
- Could be not as big a pay off from a usage perspective.
- May not be aware of their e-science problems and the benefits of e-infrastructures.
- Requirement gathering may not be straightforward.
- Might be lacking in technical expertise and funding.

2.1.1 Engagement Process

Engagement with scientific communities requires the coordinated work of specific members of the EGI community, and the mobilisation/integration of specific tools. This is achieved by a process that aligns all the relevant elements into a single workflow that helps EGI runs continuously to reach new users and to support them reach scientific results through EGI services. This workflow runs in many instances, both at the national and international level. The workflow is depicted in Figure 1 and it consists of three phases:



- **Outreach:** This phase aims to identify those members of the ERA whose work could be lifted to the next level by EGI's e-infrastructure services. First contact is made with them (face-to-face or email/phone/skype) so they gain a basic understanding of the solutions that EGI provides and how these solutions could benefit specific scientific collaborations and applications. Using communication and marketing approaches this phase raises awareness of EGI within the ERA, and generates interest towards the EGI services within scientific communities. While some of these communities (or individuals from these communities) can immediately become active EGI users by following the manuals and tutorials that exists on EGI/NGI websites, complex and new ways of e-infrastructure usage typically requires expert assistance. Moreover changes and further development of EGI's solutions to be able to support the use cases of new communities may also be required. These complex cases have to be handed over to, and followed in the second phase of the workflow.
- **Scoping:** In this phase engagement with new users is deepened, and detailed requirements from their e-infrastructure use cases are captured and translated into focussed support project plans. The projects are formalised in collaboration with the prospective users and aim at e-infrastructure setups that can help these users solve their scientific problems with EGI's solutions. The projects are formalised as 'Virtual Team projects' assembling a team of experts with specific skills to carry out specific tasks for the new community within a 3-6 month timeframe. The primary output of this phase is project plans endorsed by both the EGI community and by the prospective user community. The plans are handed over to the third phase of Engagement.
- **Implementation:** This phase initiates, then executes the Virtual Team projects according to the endorsed plans. The projects, after successful completion, must enable the user(s) reaching new frontiers in science, and indirectly result in an increased and/or diversified use of EGI's solutions. During execution the projects are monitored by EGI.eu to ensure timely delivery.

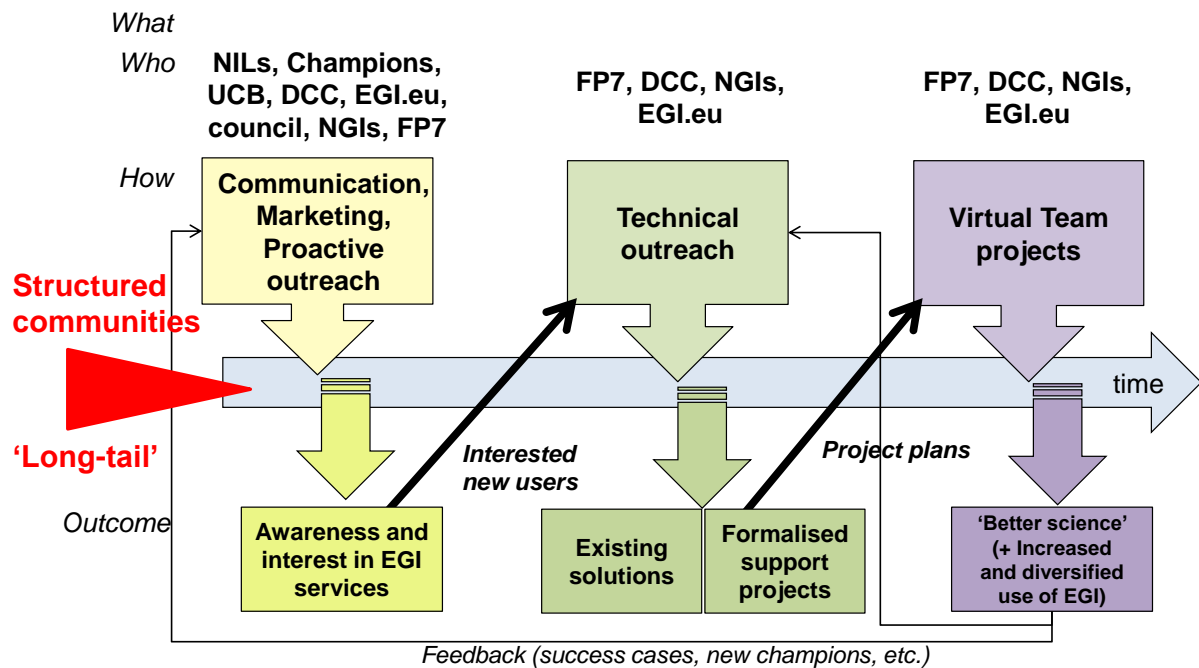


Figure 1: Engagement with Research Communities Process

2.1.2 Service Definition

The scientific communities are the most important customers of the EGI collaboration and the very reason for existence. Therefore, there have been developed the most diversified bundle of services to attend their needs and bring benefits.

The core Service for all researchers in the target groups is common and can be described very simply: supported computing and data managing capacity for running their research work. A series of services has been built for creating the actual services¹.

During the last period a big effort has been made in order to introduce the concept of solution marketing and create a bundle of products, services, and knowledge known as the EGI solutions². The

¹ The Professor Philip Kotler, considered the main contributor to the modern theory of Marketing, introduced the concept Core Product or Actual Product. In his book "Principles of Marketing", he devised a very interesting concept of benefit building with a product or service. The core product (or service) would give the answer to the question: What is the core benefit your product or service offers? For example customers who purchase a camera are buying more than just a camera, they are purchasing memories. Continuing with the example of the cameras the Actual Product would be the memories capturing cameras, over which the company add branding, features and benefits, which offer value to the customers, which in the end creates the differential advantage over other players in the market.



solutions marketing is a relatively new and vibrant trend in marketing philosophy, which pursues the idea to start from the customer instead of the services or products that an organization has already developed and is prepared to offer. The basic idea is to focus on the customer needs, to deliver value and benefits that the customer expects and needs. The solutions components may come from any of the members of the EGI collaboration: e.g., EGI.eu, NGIs, Technology and Resource Providers, Service Providers and commercial partners.

The EGI solution portfolio was first developed during 2013 to present dedicated answers to specific user needs. As the users' requirements evolved or, the EGI Solutions were again fully redefined during the first half of 2014 to better reach better EGI's users, and to align within a business framework. The EGI solutions aimed to serve the broad research community are:

The **Community-Driven Innovation & Support solution**³, which addresses the way EGI, responds to the researchers' support queries. Whenever researchers encounter a challenge accessing EGI resources, they can, as before, knock on many doors. But if the problem requires a new technology, it is now possible to summon a group of experts to put their brains together and create an innovative answer. This will then become part of the pool of previously existing applications, workflows or any other already existing approach. This solution is based in two basic services provided by EGI: **Technical consultancy and networking**: helps research communities take the first steps in working with the infrastructure by providing the best solutions for their requirements and get scientific applications up and running; **Helpdesk support**: Offers professional, reliable and efficient technical support to guarantee a well-run infrastructure with improved productivity and usability.

The **Federated Cloud solution**⁴ is a seamless grid of academic private clouds and virtualised resources, built around open standards and focusing on the requirements of the scientific community. This is the long-awaited response to the demand for a European federation of academic clouds. With this solution, researchers obtain a single cloud system for their research activities, which they are able to scale to their requirements, which is fully resilient and free from vendor lock-in. The user-researchers can focus on their core work and obtain new, innovative approaches to their work.

The **High-Throughput Data Analysis solution**⁵ represents the core of the EGI activity, which is the provision of high quality data and computation intensive resources in a distributed infrastructure. The infrastructure links hundreds of independent research institutes, universities and organisations delivering top quality computing resources. This solution is composed of a series of software services such as: the **Applications database**, which allows researchers to share, rate, use and re-use up-to-date scientific applications, and the **Training marketplace**, which provides a space for trainers and

² <http://www.egi.eu/solutions/>

³ <https://documents.egi.eu/document/2199>

⁴ <https://documents.egi.eu/document/2197>

⁵ <https://documents.egi.eu/document/2198>



trainees to advertise and look for training events, online courses and training materials on a wide-range of scientific and distributed computing topics

The Marketing and Outreach services provided by EGI can be considered as a service for the researchers, as they fulfil the need of highlighting both the strategic value of the infrastructure for research in Europe and its scientific outputs to the general public, policy makers and potential users.

The Outreach service, which is fully described in this document, ensures knowledge transfer, promotes use cases to attract new users, and guarantees that existing users make the most of the available tools and services.

All the solutions and services described above are targeted to all the segments composing the scientific community of the ERA (Research Infrastructures (RIs) from the ESFRI and national roadmaps, the large number of highly dynamic, and the small research collaborations and research networks). They are however perfectly valuable for the long tail of science.

2.1.3 Outreach

This phase is the first stage in identifying and engaging with potential users and communities. The work in this phase uses communication, marketing and proactive outreach techniques to communicate and disseminate EGI and its benefits to research communities. The main goal for this phase is to raise awareness about how EGI could help them overcome their current challenges. To be effective, this activity uses both online and offline (face-to-face) mechanisms, and involves a large number of experts who can communicate EGI's messages to scientific communities.

The activity relies on many actors within the EGI community including EGI.eu staff, representatives of the NGIs and people from the scientific communities EGI serves. The actors and the parts they play within the strategy are:

EGI.eu staff

The Communications Team at EGI.eu is the coordinator and owner of this phase (press@egi.eu).

- Prepare online (web) and offline (printed) materials about EGI and its services that emphasise the benefits of these solutions to science, and thus can attract the attention of scientific communities of the ERA. Keep the materials up to date using input and feedback from the community
- Identify prospective user communities for EGI within the ERA, proactively engage with them to promote EGI to their representatives using the most suitable message format and channels, such as web, email, conferences, exhibitions, 'cold calls'
- Coordinate the distribution of materials and the promotion of EGI within the NGIs through the International Liaisons (NILs), the Distributed Competence Centre (DCC) and the EGI council.



- Coordinate the distribution of materials and the promotion of EGI within scientific communities through the Champions⁶, the User Community Board (UCB) and at events

NGIs

The National Grid Initiatives are our local contacts and can provide support through event attendance and local knowledge about research activities within their country.

- Using content and templates from EGI.eu and from the NGIs to prepare online (web) and offline (printed) materials about solutions that are relevant for the ERA. Keep the materials up to date based on input and feedback from EGI members and national partners
- Identify prospective user communities for EGI and NGI from the ERA, but primarily within the country. Promote EGI/NGI services to these target audiences using the most suitable message format and channels, such as web, email, conferences, exhibitions, proactive 'cold calls'
- Provide feedback to EGI.eu on a regular basis about progress and achievements in community engagement and scientific achievements made available with the support of EGI
- Coordinate through the NILs the distribution of materials and the promotion of EGI/NGI within the country and report back about this on a regular basis to EGI.eu
- Help EGI identify and collect the references of scientific publications that received support from the NGIs (resources, services)

Members of scientific communities supported by EGI

Successful users of the infrastructure are the best advertisement for the benefits of EGI. They are useful both to the end of engaging users and providing feedback for the activities and materials supplied by others in this phase.

- Promote EGI within the community using the most suitable message format and channels, such as presentation at conferences, leaflets/demos at exhibitions, email lists, websites, social networking, etc.
- Publish scientific papers that acknowledge EGI/NGIs for the resources and services that enabled scientific achievements
- Use the online and offline promotional materials provided by EGI.eu and help as well in keeping them up to date
- Provide feedback to EGI.eu on a regular basis about progress and achievements in community engagement
- Provide technical support teams to deal with community-specific issues when using NGI/EGI services.

⁶ http://www.egi.eu/community/egi_champions/



During the 4th project year⁷ (PY4) this phase of the strategy has become a greater focus of the communications activities of both EGI.eu and EGI as a whole. One of the important aspects of this has been the establishing of the EGI Research Champions [R1]. The Champions have increased the number of discipline-specific events where EGI can attend and contribute with content. PY4 also saw the creation of the EGI Solutions [R2], these have also made it easier to present the concrete benefits of EGI to researchers.

The Champions, in particular, have improved the quality of EGI's face-to-face engagement at discipline-specific events. The Champions understand their community and make it easier not only to select the correct events to attend and to engage with potential users but also to provide expertise about the specific benefits of EGI to the community. During PY4 EGI had presence at 14 different events, many of that had not been targeted before, covering computational chemistry, geosciences, computational biology, mathematics and more. These were:

- Utility and Cloud Computing in Germany
- 5th IEEE International Conference on Cloud Computing and Science in the UK
- Hotwired III in the United States of America
- International Symposium on Computing in Informatics and Mathematics in Albania
- 35th IAHR World Congress in China
- IRIS-NERA Summer Academy 2013 in Austria
- 2013 IEEE International Conference on Cyber, Physical and Social Computing in Beijing
- EBSA2013 European Biophysics Congress in Portugal
- Radio Transients with SKA Pathfinders and Precursors in South Africa
- EMBC 2013 in Japan
- MRU2013 - Modern Radio Universe in Germany
- European Geosciences Union (EGU) General Assembly in Austria
- European Conference on Computation Biology in Germany
- European Conference on Computational Chemistry in Hungary

The Champions and EGI.eu staff provided feedback on the usefulness of each event and this is being used to inform decisions within PY5 as to the events that should be targeted and the shape of this participation.

During PY4 the Communications Team has also worked on improving the other channels used by EGI to engage researchers. These have included the production of materials based around the EGI Solutions, brochures aimed at specific disciplines and the curation of the "How To" section of the

⁷ The 4th project year of EGI-InSPIRE started on the 1st of May 2013 and lasted until the 30th of April 2014.



website⁸ aimed at different use cases, including new users [R3]. Alongside this has been the EGI Webinar series⁹, which provides an opportunity to engage specific communities [R4]. The plan for PY5 is to extend these to provide the resources needed by the EGI community when engaging potential users.

2.1.4 Scoping

During this phase engagement with prospective communities is deepened, and formalised in project plans that describe joint activities to develop, deploy and promote the e-infrastructure services required by the new community. During this process the technical challenges of the scientific community must be captured, understood, and matched with possible solutions.

Because the strongest links between EGI members and a specific scientific community may exist at the national level (inside one/more NGIs) or at the European level (with EGI.eu), the scoping of technical activities is performed in two ways:

- (1) bottom-up approach: assessing the NGIs' collaborations with national nodes/institutes of scientific projects/communities and collecting the national requirements into European Virtual Team projects
- (2) top-down approach: building human bridges between EGI and scientific projects through management-level meetings arranged between EGI.eu and the representative institutes/bodies of scientific projects/communities.

Both approaches require regular interactions between EGI members and the scientific community, and aim to capture scope for joint work in the form of 'project initiation documents'. These documents must be typically endorsed by the representatives of both EGI and the scientific community in order to ensure that the joint work will result outcome for mutual benefits. The members who must be involved in these scoping activities, and their responsibilities are:

EGI.eu staff:

- Nuno Ferreira, User Community Support Officer at EGI.eu is the coordinator and owner of the bottom-up approach (i.e. building on NGI community engagement activities).
- Gergely Sipos, Technical Outreach Manager at EGI.eu is the coordinator and owner of the top-down approach (i.e. facilitating technical engagements between EGI and scientific communities).

⁸ <http://www.egi.eu/how-to/>

⁹ https://wiki.egi.eu/wiki/EGI_Webinar_Programme



- Provide guidance and templates for project formalisation (project initiation document, wiki website)
- Invite technology experts from EGI and the broader e-infrastructure community to participate in the requirement collection, analysis and solution identification process (from the DCC, NGIs, partner projects, etc. as required)
- Get approval and support for the project from EGI, and from scientific communities.

Distributed Competence Centre members (DCC), NILs, projects with EGI MoU:

- Capture and analyse the technical challenges and requirements of the scientific community
- Identify solutions by which the requirements can be addressed
- Contribute to project initiation document
- Maintain and improve the network of expertise and human capital (typically technical knowhow) among partners

Members of the scientific community:

- Capture and provide technical requirements to EGI, and participate in their analysis with the technical experts
- Propose solutions by which the requirements can be addressed
- Contribute to project initiation document
- Approve project initiation document

The bottom-up approach has been run extensively in PY3 and in the first half of PY4 to define new Virtual Team projects attract interest in multiple NGIs. This process built on those NGIs who recognised common interest in some certain scientific areas, and are willing to proceed into defining a multi-national user support project around this. Most of these proposals gained momentum in PY4, and one of them reached a Virtual Team status:

- Genome Analysis and Protein Folding: the Virtual Team objectives, tasks and allocation of effort is concluded and described in the GAPF VT Project Initiation Document. The expected Outcomes/Deliverables from the GAPF VT are:
 - Table including applications for the protein *Structural Biology* and *Sequencing (Protein/DNA/RNA)* communities. The running state of the applications will be assessed and EGI AppDB data sanitization performed.
 - Establish a contact-network with persons of financed European Projects focused in the areas of this VT.



- Setup and “put in motion” tutorial and webinar sessions for specific tools and applications for the user communities.
- Produce dissemination material on production level applications relevant for the community.
- Make the porting of new tools easier via EGI (e.g. by the use of high level platforms)

Several other proposals are still under discussion with the interested NGIs:

- Agricultural sciences
- Environmental Sciences
- Astronomy and astrophysics
- CLARIN ESFRI project

Some of the bottom-up initiatives could not get sufficient interest from multiple NGIs to become Virtual Team project. For example, the proposal from the Slovakian NGI about a new Virtual Team to develop and offer domain-specific services for nanotechnology research teams.

Following the top-down approach the representatives of EGI.eu hold meetings with the representatives of various scientific project/collaboration during PY4 with the goal to define collaborative projects that can be run in the form of Virtual Team projects. The projects that have been defined with the top-down approach during PY4, and are already active are described in the next section. Those projects that have been defined, but are yet to start are:

- LifeWatch ESFRI: EGI.eu participated in a LifeWatch ESFRI RI Operational meeting in Feb. 2014. EGI solutions were presented and a set of objectives to be implemented inside the Virtual Team framework were delineated. It is currently under consideration of LifeWatch.
- EMSO ESFRI: EGI.eu invited EMSO ESFRI RI managerial team for a meeting, where current ESFRI status was discussed and willingness to explore EGI services portfolio assessed. A set of pertinent requirements by the ESFRI were captured and are under discussion.
- ICOS ESFRI: During a face-to-face meeting between the ICOS Director General and the representatives of EGI.eu and a few NGIs (CZ, FR, PL, FI) initial topics for collaboration have been discussed, and it was agreed that these will be documented in a short document that will serve as a basis of scoping joint work between ICOS and EGI.

Project implementation

During the implementation phase the Virtual Team (VT) projects are instantiated according to the plans, then executed. The projects are monitored by EGI.eu staff to ensure progress and to initiate



corrective actions (such as update to project plan) if required. Compared to previous phases the execution of VT projects requires a relatively small number of members. These members (the type of experts), their commitment level (e.g. hours/week), and expected contributions should be defined as much as possible in the project initiation documents. The responsibilities of project members are:

- EGI.eu staff:
 - Gergely Sipos, Technical Outreach Manager at EGI.eu (gergely.sipos@egi.eu) is the owner and coordinator of this phase. He monitors the projects, and if necessary initiates corrective actions (e.g. change to project plan).
 - Nuno Ferreira, User Community Support Officer at EGI.eu (nuno.ferreira@egi.eu) helps projects to start (membership, website, email lists, etc).
 - Contribute to project as required according to the project initiation document.
 - Disseminate project results.
- NGIs (NILs, DCC, council), projects with EGI MoU:
 - Contribute to project as required according to the project initiation document.
 - Disseminate project results.
- Members of the scientific community:
 - Contribute to project as required according to the project initiation document.
 - Disseminate project results.

During PY4 the following Virtual Team projects have been active (some were called in other names, not as Virtual Teams, but operated as such):

VT 1. Virtual Team – Collaboration between EGI/NGIs and large ESFRI project ELIXIR: The Virtual Team project was closed with two outputs:

- A social network that has been established in and among the NGIs and ELIXIR nodes.
- An agreement between the EGI and ELIXIR management representatives to strengthen collaborations by intensifying knowledge exchange between the NGIs and the ELIXIR nodes. A face-to-face meeting was held during January at EBI and technical pilots have been scoped:
 - Use case 1: evaluate the EGI Federated Cloud tools to support the "enlighten your Research" project.



- Use case 2: execution of the Ensembl¹⁰ application in the EGI Federated Cloud environment.

- VT 2. Virtual Team – Technology study for the Cherenkov Telescope Array ESFRI: The Virtual Team project was closed during Project Quarter 15¹¹ (PQ15). The output was a technical recommendation for CTA about the integration of the WS-PGRADE and InSilicoLab technologies. The technological integration is estimated to require about 2PM effort and then the members would setup a central CTA gateway based on the integrated package. Once setup, the central CTA gateway would be promoted for the CTA community to gather applications and scientific workflows that can serve the broader community, and would generate more specific requirements for the ‘CTA Very High Energy gamma-ray Science Gateway’. The integration and development of the gateway started in April 2014 outside of the Virtual Team project, but based on the technological recommendations of the VT.
- VT 3. Virtual Team – Towards a Chemistry, Molecular & Materials Science and Technology (CMMST) Virtual Research Community (VRC): During the reporting period the project refined the draft of the document that provides details on the structure and scope of the VRC that should be setup in CMMST domain. The document defines also new forms of collaboration between technology providers and experts, tries to define parameters for evaluating the quality of services and users, outlines a tentative Credit System aimed at developing a Grid Economy based on the synergistic collaborative model proposed by the community. The recently joint groups (MosGrid, ScalaLife, SCI-BUS) provided input into the report. The report was finalised and published and the VT was closed in PQ16, and the setup of the VRC has started (outside of the Virtual Team project).
- VT 4. ENVRI Study Case with EISCAT_3D: During the reporting period the project worked with the ENVRI project to define and implement a proof of concept system for the EISCAT_3D ESFRI to help them define a big data system. The proof of concept system made ~2TB historical data set from earlier observations sharable, searchable and downloadable for the community through metadata. The proof of concept is based on the EGI Federated Cloud (as storage) and the Open Source Geospatial Catalogue as a catalogue and web frontend. The setup was successfully demonstrated to EISCAT_3D and ENVRI representatives in February 2014, and discussions about the scale-up and extension of this system for the start of the EISCAT_3D production state are currently on-going.
- VT 5. EGI-DRIHM collaboration: The collaboration was established with the DRIHM project to setup a web based science gateway for the hydrometeorology community and enable them to run simulation workflows using resources from the European Grid Infrastructure as well as from other sources, particularly PRACE and ‘local sites’. The collaboration made good progress during the year, and had successful demonstration at the DRIHM annual EC meeting, as well as

¹⁰ www.ensembl.org

¹¹ The 15th project quarter of EGI-InSPIRE run between 1st of February – 30th of April 2014.



at other events. The collaboration continues until the end of the DRIHM project, and will focus on

- Integration of Windows based simulations with the EGI Federated Cloud
- Development of new workflow applications
- Development of community-specific GUIs for the workflows
- Assessing the portability of currently PRACE-based models to EGI given that the PRACE allocation that DRIHM currently receives will expire at the end of 2014.

During PY4 support was provided for at least 20 use cases on the EGI Federated Cloud. 5 of these are already in production and have been demonstrated at the EGI Community Forum in Helsinki in May 2014. Below the full list of use cases with a short description:

Cloud 1. WeNMR¹²: The objective of WeNMR is to optimize and extend the use of the NMR and SAXS research infrastructures through the implementation of an e-infrastructure in order to provide the user community with a platform integrating and streamlining the computational approaches necessary for NMR and SAXS data analysis and structural modelling.

- Use case 1: using VMs prepared with Gromacs and some other software to run MD simulations for educational purpose, possibly on multi-core VMs.
- Use case 2: validating and improving biomolecular NMR structures using VirtualCing, a VM equipped with a complex suite of ~25 programs. The cloud usage framework is based on a pilot job mechanism making use of the ToPoS¹³ tool. Therefore, such a framework would naturally allow for execution of VirtualCing¹⁴ tasks across multiple cloud providers. Do notice that the framework is independent on the cloud access interface: it would work also with simple grid jobs, as far as the user-defined (or VO manager defined) VirtualCing VM is available at the grid site e.g. in a SE (or in the VO software area mounted by the WNs) and the grid job is allowed to start the VM^{15 16}.

Cloud 2. Peachnote.com¹⁷ is a music score search engine and analysis platform. The system is the first of its kind and can be thought as an analogue of Google Books Ngram Viewer and Google

¹² <https://www.wenmr.eu/>

¹³ https://grid.sara.nl/wiki/index.php/Using_the_Grid/ToPoS

¹⁴ <http://code.google.com/p/cing/wiki/VirtualCing>

¹⁵ Technical details about its current implementation are available at <http://code.google.com/p/cing/w/list>

¹⁶ A live demonstration about the deployment and use of VirtualCing on the WNoDeS testbed of the INFN-CNAF computing centre has been shown at the EGI TF 2012 held in September: <http://prezi.com/hrzwekguwx/virtualcing-cloud-demo-on-wnodes/>

¹⁷ <http://www.peachnote.com/>



Books search for music scores. Peachnote provides visitors and researchers access to a massive amount of symbolic music data.

- Use case 1: the ability to upload and start a prepared VMware VM. The VM has only to be able to make outbound connections: to Amazon's SQS for job information, to HBase cluster to retrieve and store data, and to the peachnote server to regularly update the workflow code. No inbound connections are needed, which hopefully means less administrative and security concerns.
- Use case 2: the ability to run a small Hadoop and HBase cluster in the cloud.

Cloud 3. WS-PGRADE¹⁸ is a portal environment for the development, execution and monitoring of workflows and workflow based parameter studies on different Distributed Computing Infrastructures (DCI).

- Use case 1: biologists, chemists simulating molecular docking by the autodock software tool are potential users of this use case. This use case gives the ability to run a small BOINC based desktop grid infrastructure as a DCI and to submit a pre-defined application (called autodock) to this DCI through the WS-PGRADE/gUSE portal as a (predefined) workflow.
- Use case 2: any scientists requiring an on-demand, scalable computing infrastructure are potential users of this use case. This use case gives the ability to run a small BOINC based desktop grid infrastructure providing virtualisation support (GBAC) on the computational resource (BOINC client). The job submission interface in this scenario is the WS-PGRADE/gUSE system where compound applications (i.e. workflows) can be easily built and executed on the BOINC based desktop grid DCI. The submitted jobs of the workflow are executed on minimal linux OS used as the virtualised environment. Scalability can be improved by attaching external (non-cloud) resources to the desktop grid server.

Cloud 4. DIRAC interware for eScience communities¹⁹: The DIRAC interware project provides a framework for building ready to use distributed computing systems. It has been proven to be a useful tool for large international scientific collaborations integrating in a single system, their computing activities and distributed computing resources: Grids, Clouds and HTC clusters. In the case of Cloud resources, DIRAC is currently integrated with Amazon EC2, OpenNebula, OpenStack and CloudStack. The work integrates the resources provided by the multiple private clouds of the EGI Federated Cloud and additional WLCG resources, providing high-level scientific services on top of them by using the DIRAC framework.

¹⁸ <https://guse.sztaki.hu/liferay-portal-6.0.5/>

¹⁹ <http://diracgrid.org/>



- Use Case 1: running LHCb simulations of Monte Carlo jobs using IaaS federated manner, for integration and scaling tests.
- Use Case 2: VMDIRAC as portal for VM scheduler, with third party job broker.

Cloud 5. Catania Science Gateway Framework²⁰: The Catania Science Gateway Framework (CSGF) has been developed by INFN, Division of Catania (Italy), to provide application developers with a tool to create Science Gateways in short time and in a very easy way. CSGF is made of a set of libraries to manage Authentication & Authorization mechanisms and to interact with several different kinds of DCIs (grid, cloud, HPC, local, etc.). The CSGF would like to use the EGI Federated Cloud to develop a new CSGF plugin implementing the service model SaaS exploiting OCCl.

- Use Case 1: the use case is an interoperability test, implemented as a new Liferay portlet in CSGF, to make the portal capable of submitting applications to the EGI Federated Cloud, grids and HPC resources in a user-transparent way. The portlet includes a set of VMs, each pre-configured with some test applications and providing an application specific SaaS environment built on grids and IaaS clouds. Users will see that cloud sites are resources that are available to execute applications without worrying about technical matters. The CSGF will select and start a VM to execute an application on behalf of the user, according to application characteristics. The VM management issues will be completely managed by CSGF and will be hidden from end users.
- Use Case 2: the second use case aims to show how the cloud-tenant of a real or virtual organisation can sign in on a Science Gateway using his/her federated credentials, select VMs from a geographically shared repository and deploy/move/copy it/them across the “personal virtual-cloud” he/she is entitled to use. The VMs should belong to the same domain name independently of the site where it/they are instantiated and of the underlying cloud middleware stack. This service is named MyCloud and uses the Cloud-Enabled Virtual Environment²¹ (CLEVER) to orchestrate the cloud services through their OCCl-compliant and rOCCI-enabled interfaces.

Cloud 6. The ENVRI²² target is on developing common capabilities including software and services of the environmental and e-infrastructure communities. While the ENVRI infrastructures are very diverse, they face common challenges including data capture from distributed sensors, metadata standardization, management of high volume data, workflow execution and data visualization. The common standards, deployable services and tools developed will be

²⁰ <http://www.catania-science-gateways.it/>

²¹ <http://clever.unime.it/>

²² <http://envri.eu/>



adopted by each infrastructure as it progresses through its construction phase. In the context of the ENVRI project, the EGI Federated Cloud will host data access and dissemination service on the Federated Cloud Storage as a Service and provide computing resources to ENVRI processing services via the EGI Federated Cloud IaaS service. The objective is to offer to the ENVRI partners a reliable, flexible and easy to use system to perform data discovery and dissemination and to support computing services.

- Use case 1: data access, catalog and dissemination (EISCAT 3D).
- Use case 2: data processing (CNR-Pisa).

Cloud 7. Next Generation Sequencing Applications and Computational workflow: RNA-sequencing analysis of data has performed to understand different biological features and behaviour. The research team generated a workflow based on a pipeline built to satisfy many experiments using Python 3.4, third party-libraries (numpy, pysam, matplotlib) and some external tools as segemehl and R. The running time heavily depends on the size and type of data, and usually takes from several hours to several days. The workflow will be published as open source tool soon. Indeed, it's a very common approach.

- Use case: the use case consists of running this workflow on the EGI Federated Cloud.

Cloud 8. DCH-RP²³: The DCH-RP project is willing to run data preservation services on the EGI Federated Cloud.

- Use case: running the following data preservation services on the EGI Federated Cloud. (1) Preservation Aware Data Management: dropbox equivalent online storage for direct and dynamic data handling during information creation time, (2) OAIS Complaint Archive, (3) collaborative Task-based Search & Access: ElasticSearch Server for searching metadata, provenance, full-text, pictures and video and, (4) User Interface.

Cloud 9. BSIM2²⁴: BSIM2's mission is to boost the discovery and optimisation of new drug candidates, led by efficient computational methodologies and workflows.

- Use case: this startup company is exploring a set of Proof's of Concept on the EGI Federated Cloud.

Cloud 10. European Space Agency²⁵: in the context of the Helix Nebula²⁶ initiative, the European Space Agency organized a Proof of Concept using EGI Federated Cloud resources. The

²³ <http://www.dch-rp.eu/>

²⁴ <http://www.bsimsquare.com/>



objective is to prove the interoperability between commercial (Helix Nebula) and academic (EGI Federated Cloud) cloud providers and to prove the possibility to provide processing services to scientists using the Federated Cloud IaaS system. ESA target is volcano and earthquake monitoring in the context of the SuperSites Exploitation Platform project²⁷.

- Use case: the proof of concept deploys and test performances of a computing cluster, by running a set of processing jobs on it. The cluster will use the Globus Grid middleware and will be connected to the ESA Grid-Processing On Demand²⁸ system for job submission.

Cloud 11. Biovel²⁹ provides workflows for the processing of data in major areas of biodiversity research: ecological niche modelling, ecosystem functioning, and taxonomy.

- Use case 1: OpenModeller web-service in Europe (niche modelling).
- Use case 2: Sustain BioSTIF web-service (data visualization).
- Use case 3: Portal to access/visualize Catalogue of Life taxonomy data (EDIT).
- Use case 4: OpenRefine

Cloud 12. VERCE³⁰: Earthquake and seismology research addresses fundamental problems in understanding the Earth's internal wave sources and properties, thereby aiding society in the management of natural hazards, energy resources, environmental changes, and national security. VERCE is supporting this effort by developing a data-intensive e-science environment to enable innovative data analysis and data modelling methods that fully exploit the increasing wealth of open data generated by the observational and monitoring systems of the global seismology community.

- Use case: evaluate EGI Federated Cloud capabilities for data analysis and post-processing.

2.1.5 Future Plans to engage with scientific communities

During PY5 the priority for the Communications Team and the engagement phase is the streamlining the activities to maximise impact and improve resource usage. This includes the creation of more

²⁵ <http://www.esa.int/ESA>

²⁶ <http://www.helix-nebula.eu/>

²⁷ <https://wiki.services.eoportal.org/tiki-index.php?page=SSEP>

²⁸ <http://gpod.eo.esa.int/>

²⁹ <http://www.biovel.eu/>

³⁰ <http://verce.eu/>



discipline specific brochures highlighting grid software that can be used by those users. These will be part of the communications activities at selected events in PY5 including European Bioenergetics Conference in France, the 10th European Biophysics Congress and the European Conference on Computational Biology in Lisbon. The Communications team will also continue to investigate how to further interactions with ESFRI projects, take part in virtual teams to produce material for use in the engagement phase, collect statistics on the publications being published using EGI. Most importantly the results of the Implementation phase will be monitored to ensure that these are documented and used as case studies to feed into future engagement activities.

For the user community support team of EGI.eu, the priority will be the successful completion of those engagement activities that have been started in PY4. These include closing the 'Promoting Desktop Grids' Virtual Team project, the ENVRI study case with EISCAT-3D, the 'EGI-DRIHM collaboration', establishing a VRC for CMMST, ELIXIR cloud activities, Support for Genome Analysis and Protein Sequencing. Another priority will be to launch and then complete those virtual team projects that are under development for LifeWatch, ICOS, EMSO, DIRAC. Further collaborations with other ESFRI projects are expected to be formalised in the second half of 2014 for example as a result of EGI.eu's involvement in the BioMedBridges and ENVRI clusters of ESFRI projects. Improved materials on the EGI solutions, the new federated cloud operational infrastructure, as well as joint meetings with the representatives of structured scientific communities will be the key facilitators of this work.

2.2 Resource Providers

During PY4 EGI strengthened its collaborations with various peer-infrastructures. Particularly:

- EGI identified and setup a number of pilots with the EUDAT and PRACE e-infrastructures during PY4. The pilots aimed to simplify file transfer and access across the three e-infrastructures for specific applications proposed by scientific communities. EGI contributed to the pilots with technological investigation on how the 'gLite File Transfer Service' and 'Globus Online' service can be used for file transfer between EGI and EUDAT sites. The findings have been documented for the scientific communities, and have been used by the MAPPER community for multi-scale simulations.
- EGI-XSEDE collaboration: The goal of this collaboration is to identify and exchange best practices and solutions between the XSEDE-OSG and EGI infrastructures so they can operate more efficiently and they can better serve scientists in the U.S. and Europe. During PY4 the representatives of the two infrastructures held knowledge-exchange sessions at the EGI Forum and at the XSEDE 2013 Conference, and worked on the support of the Computational Chemistry and WeNMR use cases that have been submitted to the 'Collaborative Use Examples' call opened by EGI-XSEDE.
 - The WeNMR use case since then has been built as a production application on a joint EGI-OSG Virtual Organisation.



- The computational chemistry use case is now under implementation with the SCI-BUS project and is expected to result in a science gateway that can run complex workflows on EGI clusters and XSEDE supercomputers. The work is expected to conclude in 2014 and contribute to the setup of the CMMST VRC.
- Desktop Grids (as a middleware technology for e-Infrastructures) is available for NGIs as a result of multi-year long joint work between the EGEE-III/EGI-InSPIRE and the EDGeS/EDGI projects. However, desktop grids as a distributed computing technology, and as a low entry barrier solution to attract user communities have not been fully exploited within the NGIs and VOs until now. During Q4 of 2013 EGI-InSPIRE with the International Desktop Grid Federation started a Virtual Team project to change this situation. The project is expected to finish during PY5 and will
 - Promote and train the Desktop Grid related technologies in the EGI communities
 - Utilize the available bridged Desktop Grid resources (such as EDGeS@home) by more EGI VOs
 - Increase the number of heavily used EGI applications on the integrated (Desktop Grid) infrastructure with focus on widespread tools/solutions/approaches
 - Improve documentations that are available about desktop grids including Road maps, Training materials and Manuals.
 - Complete the final remaining steps for full integration concerning e.g. support tools
 - Find joint EGI champion(s) - IDGF ambassador(s)

2.2.1 Service Definition

During last year, a solution was defined for the Resource Providers that are members of the EGI collaboration and also the means to provide the core service to the main target group, which are researchers. This includes NGIs, EIROs and in general, the resource providers of the e-Infrastructures that are part of EGI.

The **Federated Operations solution**³¹ is aimed at them, to make their operations even more efficient and effective. It is also aimed to those Resource Providers wishing to become members of EGI, to guarantee a seamless integration.

³¹ <https://documents.egi.eu/document/2196>



This solution relies on the lightweight standards family for service management in IT service provision, known as FitSM³², which EGI has helped shape, and which has been considered as a major breakthrough in the implementation of service management routines in all federated IT service provisioning, not necessarily related with scientific production.

The solutions are based on a series of services that are continuously being evolved to address better the needs. In this document, and in the website of EGI, the services are grouped into different services categories.

Software Services and Platforms

Federated operations: Simplifies the day-to-day operations of a federated heterogeneous infrastructure avoiding duplication of costs and providing re-usable tools.

Repository of validated software: Provides a trusted and unified point of access where research communities and resource providers can find the latest updates and software they require.

Coordination

Operations coordination: Synchronises operational activities across the infrastructure to ensure seamless integration of computing services and to minimise fragmentation across Europe.

Technology coordination: Ensures continuous technological innovation through sourcing of software components from technology providers to meet the current and emerging needs of both researchers and resource providers.

Security coordination: Ensures a secure and stable infrastructure to mitigate threats, enhance services, and give users the protection and confidence they demand from a service.

Consulting and support

Helpdesk support: Offers professional, reliable and efficient technical support to guarantee a well-run infrastructure with improved productivity and usability.

Policy development: Ensures transparent approval of the policies and procedures required to steer operations and support the federated infrastructure with clear usage and technical guidelines.

³² <http://www.fedsm.eu/fitsm>



The Marketing and Outreach services are meant to help research providers to highlight the value generated by them in a federated structure and is aimed at their own stakeholders and financing bodies at different levels.

2.2.2 Communication

Even though the communications activities for EGI shifted focus to the research communities in PY4 EGI continued to engage with peer infrastructures, technology providers and developers. This included:

- International Supercomputing in Germany

A technology and vendor focussed meeting attracting over 4,000 attendees from across Europe further afield. EGI had a booth in the exhibition area and made useful contacts with technology providers.

- Supercomputing '13 in the United States of America

An international computing focussed meeting attracting over 10,000 attendees. EGI had a booth in the exhibition area and made useful contacts with various technology providers and international resource providers.

- The International Symposium on Grids and Clouds in Taiwan

An international meeting with many contributions from the EGI community on the technical aspects of the infrastructure as well as the research that it supports.

EGI also organised its annual Technical Forum in Barcelona [R5]. It was held in conjunction with IBERGRID 2013, Cloud PlugFest #10, OpenGrid Forum 39, GlobusEUROPE2013 and EU-Brazil OpenBIO. It brought together 238 scheduled contributions, organised in 96 sessions, and was attended by 471 participants. There is a full report available in MS243³³.

2.2.3 Technical Outreach

For the engagement activities the NGI International Liaisons are the most important human network in EGI. Efficient coordination of this network is crucial for the success of engagement. During PY4 this coordination gradually migrated from the email based monthly newsletters to monthly teleconference meetings, extended with topic-specific teleconferences with smaller NIL-groups. Since Q4 of 2013 2 hours long teleconferences are held by EGI.eu for the NILs every month. The format of these meetings is stable:

- Update by EGI.eu about the Engagement strategy execution

³³ <https://documents.egi.eu/document/1981>



- Updates by the NILs about progress with national engagement activities
- Other updates from EGI.eu (such as Forum preparation, sustainability, operations, etc.)

During PY4 another human network, the Distributed Competence Centre has been established to support the technical engagement with new communities. The DCC includes skilled user-support personnel and technical assets that can be accessed by the EGI community to support the uptake of EGI services by new user communities and Research Infrastructures. The DCC works as a distributed team of experts run under the EGI.eu coordination. Experts from the DCC are appointed for to help EGI capture, refine and document requirements of specific new communities or in other word to support the scoping of new Virtual Team projects. DCC members are also able to join Virtual Team projects and help the implementation with technical knowledge about certain tools/software/system that is in the topic of the Virtual Team.

2.2.4 Future Plans

The coordination and support of the NGI International Liaisons network is planned to continue without major change in PY5. Monthly NIL teleconferences, regular face-to-face meetings and the NIL email list will continue to provide forums for information sharing among the NGIs and EGI.eu. A slight change here will be the merge of UCB, NIL and Champion teleconferences, recognising the benefits of direct information exchange between these groups, and the strong links between the different roles in some of the countries.

The DCC will become a funded activity in EGI-InSPIRE PY5. This funding will cover travel expenses for DCC members to visit and work with scientific communities, and partly also the effort too spent on the consultancy and support. This is expected to give a boost to DCC members' engagement with new communities and strengthen 'bottom-up' engagement activities.

Engagement with scientific communities will continue to use the bottom-up and top-down approaches in parallel, and choosing the most suitable balance for each community and research infrastructure. Planning the user community engagement and support for the post EGI-InSPIRE period already began. This work will continue and intensify as we reach autumn. During PY5 the Communications Team will work with the other staff at EGI.eu and within the collaboration when engaging resource and technology providers. This will include the production of material around the EGI Solutions and the Federated Cloud that targets these communities. However EGI will judge the merits of having a presence at events aimed at this audience, in 2014 EGI will not have a presence at International Supercomputing or Supercomputing while will be attending the XSEDE 14 conference together with the interested VRCs.



2.3 Policy makers

2.3.1 Service Definition

Policy makers do not have a need for high throughput analysis or operation and production services. However, during the last few years our need for more meaningful communication with policy makers at different levels (European, National, Regional and Local) has risen. Improved communication about the value emerging out of e-infrastructure activities is needed in order for the funding bodies to design the general policy of research at European and at the national level.

Policy makers can also directly benefit from the services provided by EGI Marketing and Outreach, which can become an added value for the e-Infrastructure and the whole EGI collaboration, including NGIs, Resource centres, Technology providers and the supported communities. They can get advantage from an activity that makes aware the society about the use of the funds raised by their taxes, and of the scientific advances achieved and exploited to create innovation, to enhance economic and to boost the market labour, and to tackle the challenges that the modern society has to face now and in the future.

Marketing and outreach

Marketing: Showcases both the strategic value of the infrastructure for research in Europe and its scientific outputs to the general public, policy makers and potential users.

Outreach: Ensures knowledge transfer, promotes use cases to attract new users, and guarantees that existing users make the most of the available tools and services.

2.3.2 Communication

Throughout PY4 EGI produced targeted content and attended events aimed at decision makers and politicians across Europe. The events included:

- ICT2013 in Lithuania

The conference featured top ICT professionals from industry, academia, research. Speakers from across the ICT sector addressed a range of issues from cloud computing, broadband, ICT infrastructures, ICT skills, cyber security, long term visions on the future and much more. It was attended by almost 5,000 people, EGI had a booth in the exhibition area contributed to numerous sessions during the week.

- ICRI in Athens

A high-level international meeting for key stakeholders to meet, discuss and contribute to bringing forward global issues related to Research Infrastructures. It was attended by almost 700 people and EGI had talks and presentations in the programme.



- 5th European Innovation Summit in Brussels

A smaller meeting held to bring together decision makers in Brussels to discuss the importance of innovation in a modern economy.

During PY4 the Communications Team also wrote editorials for the Pan-European Networks magazine³⁴ and created the “Why EGI?” document³⁵ to target policy makers and make the case for EGI within a broad European context but also at a national level. The EGI Strategy and Policy team also contributed to the e-ScienceBriefings³⁶ provided by the e-ScienceTalk project, which were aimed at explaining topical areas from e-science to policy makers.

2.3.3 Future Plans

EGI will be at the UK’s National Science and Innovation Conference in June with its UK partners to engage with policy makers there. EGI.eu is also leading a proposal for the next phase of the e-ScienceTalk project, which will target decision makers through many of its activities. During PY5 the “Why EGI?” document will be updated to reflect feedback and changes in the current environment.

2.4 SMEs and Industry

2.4.1 Service Definition

EGI currently operates within a publicly funded research and academic environment providing free of charge services at point of delivery made available to the whole community with resources acquired from dedicated grants or either by direct allocation or peer review. In principle, SMEs and large corporations (they make up an important part of the so called commercial sector or industry), are not currently using the services provided by EGI.

However, with the advent of cloud computing, business models and user expectations are shifting towards on-demand and pay-per-use service provision increasing flexibility and portability. This new paradigm provides motivation for EGI to explore new service models by enabling the possibility to provide ICT services that can be paid for, along with the more traditional procurement of resources managed and offered for free.

This approach also allows researchers and resource providers to better understand costs to access individual services and would enable the creation of innovative business models and pricing schemes (e.g. pay-per-use).

In early 2013, the EGI Council approved a policy to explore business models for pay-for-use service delivery to couple together with the traditional method of free-at-point-of-use. The goal of this

³⁴ <http://www.paneuropeannetworks.com/science-publications/science-technology-publication/>

³⁵ <https://documents.egi.eu/document/1825>

³⁶ <http://www.e-sciencetalk.org/briefings.php>



activity still is to support the implementation of this policy in collaboration with NGIs through the definition and execution of proof of concepts. The mandate of the group is to create a proof of concept pay-for-use prototype³⁷.

The Pay-for-Use proof of concept will help to understand what can be offered, under what conditions, which will establish the basis for defining development of future service. The main goal remains being to support scientific and research work and including the industry is perfectly aligned with the objectives of Horizon 2020 programme.

It should be noted that there are many ways of establishing relationships between EGI and industry. Some of these do not involve direct economic transactions, still creating economic value and are aligned with the objectives of supporting excellent science.

A Virtual Team was created at the beginning of April to explore these possibilities and create synergies with SMEs. The motivational background of such an activity is based on the idea that there are more than 20 million SMEs in the EU representing 99% of businesses. SMEs are considered one of the key drivers for economic growth, innovation, and employment. In fact, one of the objectives in the Horizon 2020 program aims to put SMEs in the lead for the delivery of innovation to the market.

The final output of this VT is a well-defined Business Engagement program for SMEs validated with a number of initial companies. The VT will also produce a list (or database) of suitable SMEs across Europe potentially willing to collaborate with EGI and able to do so (NGIs' representatives will be crucial to identify them).

1. SME Business Engagement Program describing target organisations, rules of engagement, value proposition
2. List of potential candidate SMEs
3. Initial list of SMEs that engage with the program and provide feedback about it.

The **FondaCloud** proposal, which aims to investigate, develop and deploy solutions to boost the adoption of innovative cloud services in Europe, based on resource federation, has also provided with numerous interactions with SMEs. This is not surprising considering that the premise for the proposal was that the European market of ICT services, which is distributed by construction both at the level of supplying and demand, needs to be empowered with the deployment of interoperable services, enabling resource and service federation, to produce the desired synergies across the continent.

At the time of writing this document, the FondaCloud remains at the state of proposal. The names of the SMEs contacted cannot be thus disclosed, but for the benefit of the readers of this document general information about the scientific and economic disciplines of the end users representatives SMEs can be given. They are sea data monitoring, applied aquatic ecology, bioinformatics,

³⁷ More information available at https://wiki.egi.eu/wiki/EGI_Pay-for-Use_PoC:Home



environmental technology, other life sciences, e-Health, e-Governance, space and aeronautics, and transportation. There were also other use cases generated by operational use cases in software platform provision, system integration, cloud services, and other technological and platform services.

2.4.2 Communication

No specific communication actions were taken during the last period as this is a new segment being addressed in the last phase of EGI-InSPIRE.

2.4.3 Future Plans

Communications activities within EGI have not previously targeted SMEs and industry. EGI.eu's involvement in potential ICT 07 and Horizon 2020 projects may change this in PY5

2.5 General public

EGI is a publicly funded organisation at a European and National level, the benefits and success stories of the EGI work should be communicated to the people who ultimately pay for it. Any activities in this area however will impact on the others as wider dissemination of the work will make it easier to reach resource providers, Policy Makers and SMEs.

2.5.1 Service Definition

The general public or the society is both the origin and the end, and the reason of existence of the EGI, the scientific community it supports and all the stakeholders involved. They should be informed of the achievement of the activity of the EGI community and of the value it creates. This also serves to measure and prove that the value generated by the whole activity is far greater than the cost the community incur for its establishment, maintenance and operation.

The services developed to serve them and to engage them are the same as for other targeted groups, but the tools and the outputs are naturally tailored for this audience.

Marketing and Outreach highlight the strategic value of the infrastructure for research in Europe and its scientific outputs to the general public, as it does for the scientific community, members and policy makers, by a series of different means. The Marketing and Outreach services ensure that society becomes aware of the achievements of scientific experimentation leading to innovation, economic growth, job creation and providing tools for tackling societal challenges.

2.5.2 Communication

Before PY4 many of the activities aimed at engaging a wider community were tied into the e-ScienceTalk project through the GridCafe, GridGuide, GridCast and other products. Since the end of this procedure in PY4 the focus has been on potential users and resource providers. However all communications aimed at people outside the EGI community is written in non-technical language.



2.5.3 Future Plans

EGI.eu is planning to lead a proposal for the second phase of e-ScienceTalk which will increase engagement with the public in collaboration with other e-Infrastructure partners.



3 GENDER ACTION PLAN

EGI-InSPIRE has included a Gender Action Plan (GAP) in its deliverables and is committed to working towards gender equality in its spheres of influence. The latest version of the GAP can be found in D1.10³⁸ and the activities already achieved during PY1 and PY2 in these areas are outlined in D1.6 Gender Action Plan Report³⁹.

3.1 Aims

The aims of EGI-InSPIRE's gender action plan are: To promote the work of the EC in moving towards gender equality; To collaborate with other organisations working in this area where possible; To gather statistics on participation with the project and project events; To act as conduit for information to project partners and the project's target audiences; To actively feature work emanating from the grid user communities about women, by women and for women through the project's dissemination channels.

3.2 Equal Opportunity Policy

EGI.eu as coordinating partner is an equal opportunity employer. At EGI.eu, 10 out of 23 employees are female, about 43% of the staff. This compares to an average of 16% in the EGI SSO service⁴⁰. The project partners are encouraged to create and follow similar equal opportunities policies. These policies can be linked to and shared on the EGI website. During PY4 and PY5 women have held the positions of chair of the Project Management Board, Deputy Director and Technical Director.

3.3 Activities and representation

There are thirteen women featured in the 26 use cases⁴¹ on the EGI website. At the annual EGI events the percentage of female participants peaked at the 2012 Community with 19% of attendees being female with the lowest being 14% at 2011's Technical Forum. The EGI Champions scheme has had nine people involved two of which are female making over 20%, which is above the average of the community as a whole.

3.4 Conclusion

In PY3 and PY4 EGI-InSPIRE has not been very pro-active in this area but has maintained the representation of women within the community and has had women in senior positions within the organisation. Female representation in EGI's case studies and outward facing activities has been more than the community average (using both SSO and statistics from the annual forums). This must be maintained and EGI's presence at events with gender-orientated objectives should be increased.

³⁸ <https://documents.egi.eu/document/1270>

³⁹ <https://documents.egi.eu/document/982>

⁴⁰ The EGI Single Sign records gender but it is not compulsory of the 2292 accounts 381 have claimed to be female, 1801 male and 110 have not said. There are also duplicate accounts.

⁴¹ <http://www.egi.eu/case-studies/>



4 ASSESSMENT OF TECHNICAL SERVICES

This section provides a report about the progress with those user-facing technical services that are provided in EGI by the EGI-InSPIRE project. These services are the Applications Database, the Client Relationship Management System and the Training Marketplace.

4.1 Applications Database (AppDB)

Description: The EGI Applications Database (AppDB) is a centralised service that stores and provides information to EGI members, and to the general public about:

- Tailor-made scientific applications that are integrated with the EGI production infrastructure, or with some EGI partner infrastructure (for example with a desktop grid).
- Software tools, components and frameworks that application developers can use to integrate new scientific models and applications with the EGI production infrastructure, or with some EGI partner infrastructure.
- Publications about the aforementioned scientific application and software items.
- Programmers and scientists, who develop, drive the development and/or provide user support about the above software.

The AppDB facilitates the reuse of scientific software and software developer tools. By choosing a proven, off-the-shelf solution from AppDB scientists and scientific programmers can save time when using scientific applications at a large scale, or when porting software to EGI. The AppDB helps the community find synergies across multiple groups, and help us avoid duplicated software developments. Among other community features the AppDB provides rating and commenting services for the registered items, and web gadgets and API for integration with third party websites and services.

Progress and assessment: The functionality has gradually and significantly evolved during the 4th project year, with many new releases with expanded support and information for users. The most significant addition was the introduction of a 'Virtual Appliances Marketplace' section, to support the uptake of EGI's new production infrastructure, the Federated Cloud. The new marketplace section enables the sharing of Virtual Appliances - set of Virtual Machine images that belong to a single scientific application setup. The shared appliances are deployed on the sites of the Federated Cloud through Virtual Organisations, and then can be instantiated on-demand by VO members using the provided command line of the Federated Cloud, or one of the high level, graphical environments contributed by the NGIs. The front-end of the Applications Database has been significantly renewed to incorporate and highlight the Marketplace features.



The developer team at IASA contributed with a huge unfunded effort to the further development of the system during the last year, and promptly responded to all request coming from EGI.eu and the broader EGI community.

4.2 Client Relationship Management system (CRM)

Description: EGI's Client Relationship Management System is a client database with a web interface providing capabilities for the NGIs to record contact leads to new communities and e-infrastructure requirements captured through these leads about the new communities. The CRM system also provides statistical overviews and reports about the community engagement activities and therefore it helps EGI gain a global understanding of the needs of new communities, as well as the effectiveness and performance of the NGIs' outreach and engagement activities.

Progress and assessment: The CRM system has been setup in March 2012 for the request of the NGI Council to provide an online, relationship management system that could support and coordinate the NGI's outreach and community engagement activities. The CRM started as an 'out-of-the-box' vTiger CRM (an open source tool), and was gradually extended with custom features according to the needs of the NGIs, EGI.eu and specific VTs (such as the 'ESFRI Contact List', 'Fire Simulation', 'Collaboration between EGI/NGIs and large ESFRI project ELIXIR').

The use of the CRM has slowly, but gradually increased in the first 12 months after its start. However the use decreased later, and by the end of 2013 the system received no new entries from EGI. EGI.eu's understanding of the situation is that the outreach work that the CRM system aimed to support within EGI does not need a dedicated and custom-made system. Acceptable level of information-sharing and coordination can be achieved in the EGI outreach activity with the other existing tools, particularly with the monthly NIL teleconferences where EGI.eu and the NILs report about progress with outreach activities, the NIL and UCST email lists where new leads and community-information can be shared, and with the Virtual Team framework where focussed requirement-capturing exercises can be supported. In this context the CRM system was considered as 'a hurdle' instead of a facilitator. The CRM system will be discontinued after the end of April by EGI-InSPIRE. The database content will be archived for possible use, the software will be archived in a virtual machine image, so if needed, restart will be possible in the future.

4.3 Training Marketplace (TMP)

Description: The Training Marketplace is an online registry to advertise and to view (browse and search) training events, online training materials, training resources and university courses that relate to EGI. The service supports cooperation between trainers and trainees in different localities and projects by connecting the groups through the stored items that are advertised in the Training Marketplace. The Training Marketplace is typically used together with the EGI Document Database to index and highlight materials files from the Document Database that relate to training. The Training Marketplace provides rating and commenting facilities for the registered items, and web gadgets for integration with third party websites, such as NGI sites and research community sites.



Progress and assessment: After the intensive further development of the Training Marketplace in its first year of existence, the service reached its current form in 2013. Unpopular item categories have been removed as part of this process. The remaining categories have been extended with features that increase system usability, for example permalinks to some of the item categories, larger variety of gadgets.

The service improved according to plans. Statistics indicate that the event registration part of the Marketplace is the most popular section (13 entries between May 2013 April 2014), while other parts are used moderately. These statistics did not change despite the further development of the gadget engine during the same period. During the 4th project year the team worked on engaging with projects that would become direct customers of the marketplace and build a sustainable future on multiple, independent customers, of which EGI would be one. The system will become unfunded in EGI-InSPIRE after April 2014, but STFC, the provider from the UK NGI continues providing TMP for EGI at least until the end of 2014.



5 CONCLUSION

This document provided a report on the activities related to the community engagement. It is structured by customer segments according to the following categories: scientific communities, resource providers, policy makers, SME & industry, and general public.

For the scientific communities, a new engagement process is defined that consists of three main phases: outreach, scoping and implementation; the solutions being defined are described and the various communications actions are reported. The document reports also on the activities performed through the virtual teams and the research champions.

For the resource providers, the engagement and communication activities are mainly reported with regards to the peer infrastructures such as XSEDE/OSG, EUDAT, PRACE and Desktop Grids. A general solution definition related to the federated operations is also highlighted as applying to this customer segment.

For the policy makers, the activity reported is mainly around ensuring the EGI presence in key events and in producing key publications targeted at this specific segment.

Concerning SMEs and industry, this is a new customer segment that has been introduced and where more focus will be put in the future. Concerning the general public, the activity performed came mainly from the eScienceTalk project, while a new project is being developed for.

The document also reports on the activities connected to the gender action plan and closes with an evaluation of the technical services that are used in the area of community engagement, mainly application database, training marketplace and the Client Relationship Management.



Appendix 1: Tools for engagement with research communities

A number of online resources and tools exist to support EGI's engagement with research communities. These tools are:

- Repository of communication and marketing materials and templates: <http://www.egi.eu/news-and-media/publications/>
- Registry of upcoming events that can be relevant for EGI members to attend and promote EGI (with planned contributions from EGI): http://wiki.egi.eu/wiki/Research_Conferences
- How to capture scientific leads with who scoping should follow up:
 - Report back during the regular NIL, Champion, UCB teleconference meetings
 - Email contacts to ucst@egi.eu
- Regular meetings for NILs and Champions; for the UCB, for the DCC:
 - Agenda pages of NIL meetings: <https://indico.egi.eu/indico/categoryDisplay.py?categId=36>
 - Agenda pages of Champion meetings: <https://indico.egi.eu/indico/categoryDisplay.py?categId=85>
 - Agenda pages of UCB meetings: <https://indico.egi.eu/indico/categoryDisplay.py?categId=21>
 - Agenda pages of DCC meetings: <https://indico.egi.eu/indico/categoryDisplay.py?categId=120>
- Email lists:
 - NILs: ngi-international-liaisons@mailman.egi.eu
 - Champions: Champions-discuss@mailman.egi.eu
 - UCB: UCB-discuss@mailman.egi.eu
 - DCC: dcc@mailman.egi.eu
- NIL contact table: <http://www.egi.eu/community/ngis/NILs.html>
- DCC contact table: <http://go.egi.eu/dcc>
- NGI collaborations tables: These tables provide up-to-date information on active collaborations that NGIs have with ESFRI RIs, and with other scientific groups/collaborations. The tables are results of Outreach activity that took place in the NGIs until now, and therefore are important input for the Scoping phase. The tables help us keep focused on RIs/communities that have connections to multiple NGIs, and are therefore prime candidates to a European-level support activity, i.e. a Virtual Team project. The two tables are updated on a regular basis using input from the NILs, the Council and other members of the EGI community.
 - NGI-ESFRI collaborations table: <https://documents.egi.eu/document/2073>
 - NGI-community collaborations table: <https://documents.egi.eu/document/2074>



- Requirements Tracker: The evolution of the European Grid Infrastructure is driven by the users. Therefore capturing and following up feedback from users reached during Engagement is a key goal for all the three phases of the Engagement activity. The EGI-InSPIRE project has established a process and a database to collect, capture, process, and resolve user requirements and recommendations. Requirements and recommendations from users must be captured in the 'RT system', and are followed up by technical experts in EGI, and externally through the Technology Coordination Board. Details are described on this page: https://wiki.egi.eu/wiki/Requirements_Tracking
- List of Virtual Teams (both active, and inactive): https://wiki.egi.eu/wiki/Virtual_Team_Projects
- Templates for Virtual Team projects:
 - Project initiation document template, and project final report template: <https://documents.egi.eu/document/1991>
 - VT project wiki page template: https://wiki.egi.eu/wiki/VT_Template_Wiki_page